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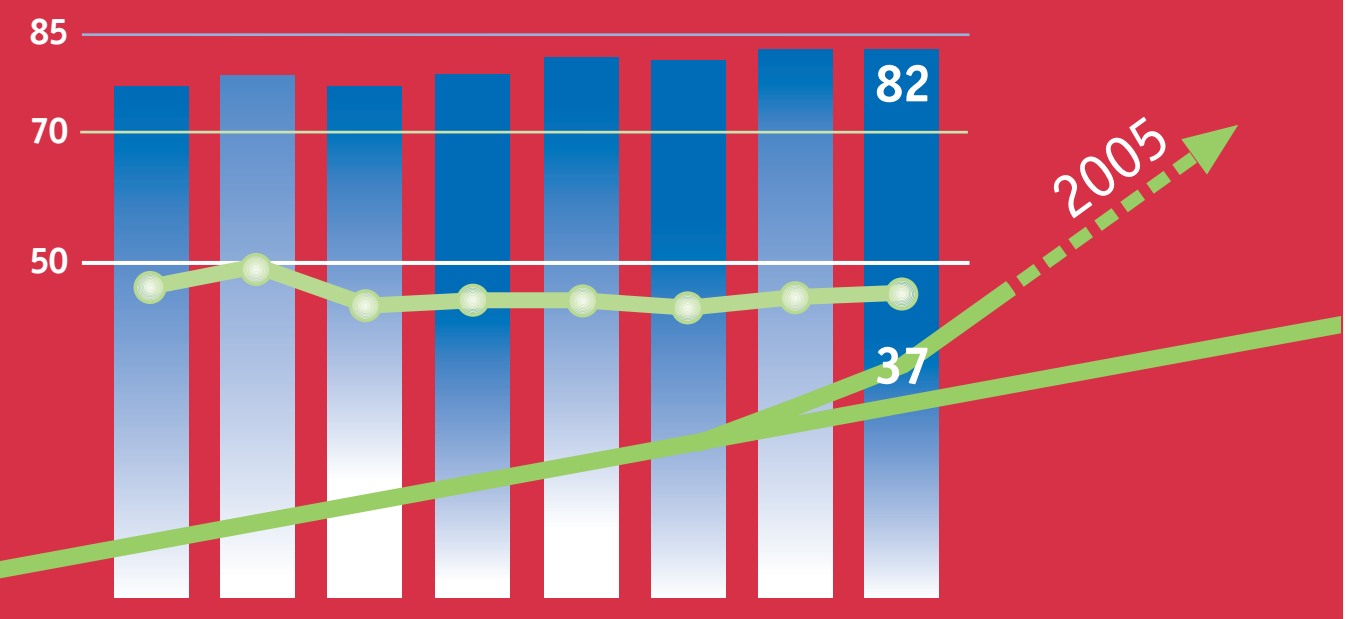
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WHO REPORT 2004  
**Global Tuberculosis Control**  
Surveillance, Planning, Financing



WORLD HEALTH ORGANIZATION  
GENEVA

WHO REPORT 2004

# **Global Tuberculosis Control**

Surveillance, Planning, Financing



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**Cover:** The image depicts progress towards the principal WHO targets of 70% TB case detection and 85% treatment success, which should be achieved by 2005. The smear-positive case detection rate was estimated to be 37% in 2002 (green line), and accelerating. The treatment success (blue bars) was 82% in the 2001/2 cohort. To reach case detection rates above 50%, national TB control programmes employing the DOTS strategy must expand their services beyond the present limits of public health systems.

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# Abbreviations

|          |   |        |  |
|----------|---|--------|--|
| ACD      | Afghan Committee for Development  | DRS    | Drug resistance surveillance   |
| ADB      | Asian Development Bank  | EMR    | WHO Eastern Mediterranean Region   |
| AFB      | Acid fast bacilli   | EMRO   | WHO Regional Office for the Eastern Mediterranean  |
| AFR      | WHO African Region  | EQA    | External quality assurance   |
| AFRO     | WHO Regional Office for Africa  | EU     | European Union   |
| AIDS     | Acquired immunodeficiency syndrome  | EUR    | WHO European Region  |
| ALERT    | All Africa Leprosy, TB, and Rehabilitation Training Centre                    | EURO   | WHO Regional Office for Europe   |
| ALM      | American Leprosy Mission  | FDC    | Fixed-dose combination   |
| ALTI     | Aide au Lépreux et Tuberculeux de l'Ituri                                     | FHI    | Family Health International  |
| AMR      | WHO Region of the Americas  | FILHA  | Finnish Lung and Health Association  |
| AMRO     | WHO Regional Office for the Americas  | GDF    | Global Drug Facility   |
| ART      | Anti-retroviral therapy   | GFATM  | Global Fund to Fight AIDS, TB and Malaria  |
| BRAC     | Bangladesh Rural Advancement Committee  | GLC    | Green Light Committee  |
| CCM      | Country Coordinating Mechanism  | GLRA   | German Leprosy Relief Association  |
| CDC GAP  | Centers for Disease Control Global AIDS Program, USA                          | GMS    | German Medical Service   |
| CDC LIFE | Centers for Disease Control Leadership and Investment in Fighting an Epidemic | GNI    | Gross national income  |
| CDC      | Centers for Disease Control and Prevention, USA                               | GoJ    | Government of Japan  |
| CDR      | Case detection rate (i.e. smear-positive case detection rate, whole country)  | GTZ    | Deutsche Gesellschaft für Technische Zusammenarbeit (German development agency)                                    |
| CENAT    | Centre National Anti-Tuberculeux  | HBC    | High-burden country of which there are 22 that account for approximately 80% of all new TB cases arising each year |
| CHC      | Community health centre   | HIV    | Human immunodeficiency virus   |
| CI       | Confidence interval   | HR     | Human resource   |
| CIDA     | Canadian International Development Agency                                     | HRDP   | Human resource development plan  |
| COMBI    | Communication for Behavioural Impact  | HSDP   | Health Sector Development Programme  |
| DANIDA   | Danish International Development Agency                                       | ICC    | Interagency Coordinating Committee   |
| DARE     | District AIDS and Reproductive Health Project (Kenya)                         | IEC    | Information, Education, Communication  |
| DDR      | DOTS detection rate (i.e. smear-positive case detection rate under DOTS)      | IFRC   | International Federation of Red Cross and Red Crescent Societies   |
| DFB      | Damien Foundation Belgium   | IUATLD | International Union Against Tuberculosis and Lung Disease  |
| DFID     | UK Department for International Development                                   | JATA   | Japan Anti-Tuberculosis Association  |
| DoH      | Department of Health  | JICA   | Japan International Cooperation Agency   |
| DOT      | Directly observed treatment   | JSI    | John Snow, Inc.  |
| DOTS     | The internationally recommended control strategy for TB                       | KIL TB | Kings College, Imperial College, and London School of Hygiene & Tropical Medicine TB Consortium                    |
|          |   | KNCV   | Royal Netherlands Tuberculosis Association   |

|         |   |            |   |
|---------|---|------------|---|
| LEPCO   | Tuberculosis and Leprosy Control (A German NGO) | PIH        | Partners in Health  |
| LEPRA   | The British Leprosy Relief Association          | PPM        | Public-private mix  |
| LGA     | Local Government Areas                          | QA         | Quality assurance   |
| LHL     | Norwegian Lung and Heart Association            | SAPP II    | Social Action Programme, Project II (Pakistan)                |
| LMI     | Leprosy Mission International                   | SARS       | Severe Acute Respiratory Syndrome                             |
| MCNV    | Medical Committee Netherlands-Viet Nam          | SEAR       | WHO South-East Asia Region                                    |
| MDR     | Multidrug resistance                            | SEARO      | WHO Regional Office for South-East Asia                       |
| MDR-TB  | Multidrug-resistant tuberculosis                | STD        | Sexually transmitted disease                                  |
| MEDAIR  | An international humanitarian aid organization  | STI        | Sexually transmitted infection                                |
| MERLIN  | Medical Emergency Relief International          | TB         | Tuberculosis  |
| MoH     | Ministry of Health                              | TBCTA      | Tuberculosis Coalition for Technical Assistance               |
| MoPH    | Ministry of Public Health                       | TBL        | Tuberculosis and leprosy                                      |
| MoU     | Memorandum of understanding                     | TLMI       | The Leprosy Mission International                             |
| MSF     | Médecins Sans Frontières                        | UNAIDS     | Joint United Nations Programme on HIV/AIDS                    |
| NGO     | Nongovernmental organization                    | UNDP       | United Nations Development Programme                          |
| NHLS    | National Health Laboratory Services             | USAID      | United States Agency for International Development            |
| NICC    | National Interagency Coordinating Committee     | VCT        | Voluntary counselling and testing                             |
| NLR     | Netherlands Leprosy Relief                      | WFP        | World Food Programme  |
| NORAD   | Norwegian Agency for Development                | WHO        | World Health Organization                                     |
| NPO     | National programme officer                      | WHO-CHOICE | Choosing Interventions that are Cost-Effective, a WHO project |
| NTP     | National Tuberculosis Control Programme         | WPR        | WHO Western Pacific Region                                    |
| PAHO    | Pan-American Health Organization                | WPRO       | WHO Regional Office for the Western Pacific                   |
| PHC     | Primary Health Care                             |            |   |
| PHILCAT | Philippines Coalition against TB                |            |   |
| PHRI    | Public Health Research Institute                |            |   |



# Summary

## Background and methods

**1.** This is the 8th WHO annual report on global TB control. It includes data on case notifications and treatment outcomes from all national TB control programmes that have reported to WHO, together with an analysis of plans, budgets, expenditures, and constraints on DOTS expansion for 22 high-burden countries (HBCs). Eight consecutive years of data are now available to assess progress towards the 2005 global targets for case detection (70%) and treatment success (85%).

**2.** During 2003, a standard form for reporting surveillance and financial data was sent to 210 countries via WHO regional offices. The form requests information about policy and practice in TB control, about the number and types of TB cases notified in 2002, and about the outcomes of treatment and retreatment for smear-positive cases registered in 2001. It also asks for information about NTP budgets, expenditures, and funding sources, and about the way in which the general health infrastructure is used for TB control.

**3.** National programme managers in the 22 HBCs were also asked, via a separate questionnaire and interviews, to summarize plans for TB control from 2003 onwards, focusing on activities to improve political commitment, expand access to DOTS, strengthen diagnosis, improve treatment outcomes, ensure adequate staffing, and improve programme monitoring and supervision. They were asked about collaborative TB/HIV activities, the management of drug resistance, and the development of partnerships, and to identify major constraints to reaching TB control targets.

## Improving the detection and treatment of TB cases

**4.** A total of 201 countries reported to WHO on their strategies for TB control, and on TB case notifications and/or treatment outcomes.

**5.** Using trends in case notifications to update estimates of incidence, we calculate that there were 8.8 million new cases of TB in 2002, of which 3.9 million were smear-positive. The global incidence rate of TB (per capita) was growing at approximately 1.1% per year, and the number of cases at 2.4% per year. The growth in case notifications has been much faster in African countries with high HIV prevalence, and in eastern Europe (mainly the former Soviet Union), but growth has been decelerating in both these regions since the mid 1990s.

**6.** The number of countries implementing the DOTS strategy increased by 25 during 2002, bringing the total to 180 (out of 210). NTPs reported that, by the end of 2002, 69% of the world's population lived in countries, or parts of countries, covered by DOTS. DOTS programmes notified 3.0 million new TB cases, of which 1.4 million were smear-positive. A total of 13.3 million TB patients, and 6.8 million smear-positive patients, were treated in DOTS programmes between 1995 and 2002.

**7.** The 1.4 million smear-positive cases notified by DOTS programmes in 2002 represent 37% of the estimated incidence, just over half way to the 70% target. The increment in smear-positive cases notified under DOTS between 2001 and 2002 (214 656) was greater than the average from 1995–2000 (134 157). The acceleration in notifications was

more pronounced for all TB cases, which increased by 610 228 between 2001 and 2002, as compared with the average annual increment of 269 268 in the interval 1995–2000. Nonetheless, to reach 70% case detection by 2005, an additional 1.04 million TB cases, and an additional 433 000 smear-positive cases, must be found in each of the years 2003–5.

**8.** While the number of TB cases reported by DOTS programmes appears to have been accelerating since 2000, the total number of TB cases reported to WHO increased very little over the period 1995–2002 (average detection rate 46%). The number of smear-positive cases reported from all sources has been increasing (44% detection rate in 2002), but much more slowly than the increases reported under DOTS. If these trends continue, all cases notified to WHO by 2005 will be notified by DOTS programmes.

**9.** Twenty-eight percent of the additional smear-positive cases reported under DOTS in 2002 were found in India. There were smaller but apparently significant improvements in case detection in South Africa (contributing 12% of the total increase), Indonesia (10%), Pakistan (4%), Bangladesh (3%), and the Philippines (3%). These 6 countries together accounted for over 60% of the additional cases detected in 2002.

**10.** As DOTS programmes have expanded geographically, the smear-positive case detection rate within DOTS areas has remained roughly constant since 1996 (average 49%), though there are signs of a slow increase in the HBCs, led by India, Indonesia, Bangladesh, and the Philippines.

**11.** Treatment success under DOTS for the 2001 cohort was 82% on average, the same as for the 2000

cohort. As in previous years, treatment success was substantially below average in the WHO African Region (71%) and in eastern Europe (70%). Low treatment success in these two regions can be attributed, in part, to the complications of HIV co-infection and drug resistance, respectively. Equally important, though, is the failure of NTPs to monitor the outcome of treatment for all patients.

**12.** Based on case reports and WHO estimates, 18 countries had reached the targets for case detection and cure by the end of 2002. However, Viet Nam was the only high-burden country among them.

### Planning and DOTS implementation

**13.** All 22 HBCs had formulated an overall plan for DOTS expansion by the end of 2003. Detailed plans for major improvements in DOTS coverage, case detection, and programme quality had been made by several countries, including India and Indonesia. However, strategic planning to overcome the constraints to TB control remains weak in several countries with low case detection or cure rates.

**14.** The six most common constraints identified were: lack of qualified staff; poor monitoring and evaluation; inadequate infrastructure; weak laboratory services; the failure of DOTS programmes to engage private practitioners and other public providers; and ineffective decentralization. The remedies required to overcome these constraints include: the development of staffing plans for TB control that are consistent with plans to strengthen the health workforce in general; public-private mix projects and schemes to involve other public providers and facilities; and the provision of adequate funding for, and the building of local capacity in, countries with decentralized health systems. Intersectoral cooperation

will be critical in overcoming constraints that lie beyond the full control of NTPs.

**15.** The effectiveness of DOTS, and the prospects for expanding the strategy, are also limited by the failure of drug supplies, inconsistent drug quality, and inadequate drug policies. A consequence is the spread of drug resistance. Part of the remedy will be to establish testing for drug sensitivity as an integral part of DOTS programmes, to standardize treatment regimens for patients that have failed treatment, and to ensure that second-line drugs are available and properly used for patients with MDR-TB.

**16.** While the DOTS strategy must remain at the heart of TB control policy, a wider range of interventions will be needed to reduce TB burden in the countries most affected by HIV/AIDS, especially those in eastern and southern Africa. The recommended interventions are set out in WHO's *Interim Policy on Collaborative TB/HIV Activities*, but so far they are being carried out on a small scale, in districts or regions of countries, rather than nationally.

### Financing DOTS expansion

**17.** Financial data were received from 123 countries, 77 of which provided complete data on 2003 budgets (including 17 HBCs), and 74 of which provided complete, disaggregated expenditures for 2002 (including 15 HBCs).

**18.** Expenditure on TB control in the HBCs in 2002 was US\$ 834–884 million. This was lower than the anticipated expenditure of US\$ 976 million, the sum that would have been required, in our estimation, to achieve 70% case detection by 2005. Total estimated costs for the HBCs in 2003 amounted to approximately US\$ 1 billion. This is an increase of about US\$ 150 million on 2002 expenditures, but probably still too

little to meet the target for case detection by 2005.

**19.** In 14 HBCs, the cost per patient treated was in the range US\$ 125–380. For three others (Brazil, the Russian Federation, and South Africa), costs per patient were significantly higher (> US\$ 700) because the prices of labour and capital are high, or because they rely more on inpatient care. In all HBCs that reported data for both years, the cost per patient increased between 2002 and 2003. The reasons were made clear in some budgets (e.g. a prevalence survey in Viet Nam, equipment in Myanmar), but not all.

**20.** In 2003, the governments of HBCs contributed (from national funds and loans) 70% of funds specified in NTP budgets, and 87% of total costs. But government contributions to total costs varied from 0% (Afghanistan) to 100% (e.g. Brazil), and tended to be greater in richer countries. External grants contributed about one half or more of the NTP budgets of Afghanistan, Bangladesh, DR Congo, Ethiopia, Pakistan, and Tanzania.

**21.** The overall funding gap reported by HBCs was US\$ 41 million in 2003 (excluding South Africa and Zimbabwe, for which there were no data), about 4% of total costs, but a much larger fraction of the costs in poorer countries. Between 2002 and 2003, the funding gap narrowed in seven countries, mainly because more funds were promised by governments (including loans) and the GFATM. The gap increased in five countries because more (unfunded) activities were planned to accelerate DOTS expansion.

**22.** By the end of 2003, the GFATM had approved grants (for up to 5 years) of US\$ 608 million for TB control activities and US\$ 319 million for collaborative TB/HIV activities in 56 countries. The total for the first 2 years is US\$ 294 million for TB control and US\$ 90 million for TB/HIV.

Approximately 70% of the combined total is for HBCs. Although the GFATM grants will make a major contribution to TB control in some countries, the disbursement of money has been slow.

**23.** We estimate that, if the 2005 targets for case detection and cure are to be met, US\$ 0.95 billion must be spent in the HBCs (except the Russian Federation) in 2004, and US\$ 1.1 billion in 2005, compared with US\$ 0.65 billion spent in 2002 and US\$ 0.85 billion budgeted for 2003. The Russian Federation reported a budget of around US\$ 400 million for 2004, of which US\$ 200 million is yet to be found.

## Conclusions

**24.** The global, smear-positive case detection rate was 37% in 2002, over half way to the 70% target, and rising more quickly than at any time

since 1995. Based on recent trends, we expect the case detection rate to be about 50% by 2005, by which time all TB patients reported in the public sector will receive the internationally recommended standard of care under DOTS. Smear-positive case detection by DOTS programmes could be increased from 37% to 50% simply by ensuring that the diagnosis and treatment of known TB cases in the Americas, Europe, and South-East Asia conforms with DOTS standards. To get above 50% case detection will be challenging because the notification rate of all TB cases by public health authorities has been stable for many years, and because DOTS programmes will probably have exhausted this supply of cases by 2005. Beyond 2005, and preferably sooner, DOTS programmes and public health authorities must begin to recruit patients from non-participating clinics and hospitals, notably in the private sector in Asia,

and from beyond the present limits of public health systems in Africa. A special effort must be made to improve cure rates in Africa.

**25.** To achieve these goals, governments and NTPs will need to take a more strategic approach to planning, match budgets more closely with plans, and match fundraising activities to realistic budgets. This is already happening in several HBCs, but not in all. If disbursements from the GFATM and other donors can be made more expeditiously, these funds will make a major contribution to TB control in several of the poorer HBCs whose governments cannot adequately support TB control. The HBCs planned to spend an extra US\$ 150 million in total in 2003 (as compared with 2002), which is almost certainly too little to put them on the road to 70% case detection by 2005.

# Résumé

## Introduction et méthodes

**1.** Ce rapport est le huitième rapport annuel de l'OMS sur la lutte antituberculeuse dans le monde. Il contient des informations concernant le nombre de cas notifiés et les résultats du traitement en provenance de tous les programmes nationaux de lutte qui ont envoyé des rapports à l'OMS, ainsi qu'une analyse des plans, du financement et des obstacles à l'extension de la stratégie DOTS concernant les 22 pays fortement touchés par la tuberculose. On dispose désormais de neuf années consécutives de données pour évaluer les progrès accomplis en vue de la réalisation des cibles mondiales fixées pour 2005 concernant le dépistage des cas (70 %) et le succès thérapeutique (85 %).

**2.** En 2003, un formulaire type pour la notification des données de surveillance a été envoyé à 210 pays par l'intermédiaire des bureaux régionaux de l'OMS. Le formulaire sollicite des informations sur la politique et l'organisation de la lutte antituberculeuse, le nombre et le type de cas de tuberculose notifiés en 2002 et les résultats du traitement ou du retraitement des cas à frottis positif enregistrés en 2001. Des informations sont également demandées sur le budget, les dépenses et les sources de financement des programmes nationaux ainsi que sur l'utilisation de l'infrastructure de la santé en général pour la lutte antituberculeuse.

**3.** Les administrateurs de programmes nationaux des 22 pays fortement touchés ont également été invités, au moyen d'un questionnaire distinct et d'entretiens, à résumer leurs plans de lutte antituberculeuse à partir de 2003 en mettant l'accent sur les activités visant à améliorer l'engagement politique, le diagnostic, les résultats du traitement, le suivi et la

supervision du programme, ainsi que l'accès à la stratégie DOTS et à assurer une dotation adéquate en personnel. Ils ont été interrogés sur les activités concernant à la fois la lutte contre la tuberculose et le VIH, les mesures prises en ce qui concerne la pharmacorésistance, le renforcement des partenariats et d'identifier les principales contraintes pour atteindre les cibles de la lutte antituberculeuse.

## Améliorer le dépistage et le traitement des cas de tuberculose

**4.** Au total, 201 pays ont présenté à l'OMS un rapport sur la stratégie nationale de lutte antituberculeuse et sur la notification des cas de tuberculose et/ou les résultats du traitement.

**5.** En utilisant les tendances des notifications de cas pour mettre à jours les estimations de l'incidence, on a calculé qu'il y avait 8,8 millions de nouveaux cas de tuberculose en 2002 dont 3,9 millions étaient à frottis positif. Le taux d'incidence mondial de la tuberculose progresse annuellement au rythme d'environ 1,1 % et le nombre de cas de 2,4 %. Les notifications de cas ont augmenté bien davantage dans les pays africains à forte prévalence du VIH ainsi qu'en Europe de l'Est (principalement dans l'Ex-Union soviétique), bien que l'on observe un ralentissement de la croissance des cas dans ces deux régions depuis le milieu des années 90.

**6.** En 2002, le nombre de pays appliquant la stratégie DOTS a augmenté de 25 pour atteindre 180 (sur 210). Les programmes nationaux ont indiqué qu'à la fin de l'année 2002, 69 % de la population mondiale vivait dans des pays ou dans des régions de pays où la stratégie était appliquée. Les

programmes DOTS ont notifié 3,0 millions de nouveaux cas de tuberculose dont 1,4 million à frottis positif. Au total, 13,3 millions de malades de la tuberculose et 6,8 millions de cas à frottis positif ont été traités dans le cadre de programmes DOTS entre 1995 et 2002.

**7.** Les 1,4 million de cas à frottis positifs notifiés par les programmes DOTS en 2002 représentent 37 % de l'incidence estimée, c'est-à-dire un peu plus de la moitié des 70 % fixés pour cible en 2005. L'augmentation du nombre de cas à frottis positif notifiés sous traitement DOTS entre 2001 et 2002 (214 656) est supérieure à la moyenne annuelle de 1995 à 2000 (134 157). L'accélération des notifications est plus prononcée pour l'ensemble des cas de tuberculose puisque l'augmentation atteint 610 228 entre 2001 et 2002 contre une augmentation annuelle de 269 268 au cours de la période de 1995 à 2000. Mais pour atteindre le taux de dépistage de 70 % en 2005, il faudrait trouver annuellement en 2003, 2004 et 2005 1 040 000 cas supplémentaires de tuberculose dont 433 000 cas supplémentaires à frottis positif.

**8.** Si l'on constate une accélération depuis 2000 du nombre de cas de tuberculose rapportés par les programmes DOTS, le nombre total des cas rapportés à l'OMS n'a cependant augmenté que très faiblement au cours de la période de 1995 à 2002 (taux de dépistage moyen 46 %). Le nombre de cas à frottis positif rapportés par l'ensemble des programmes a augmenté (taux de dépistage 44 % en 2002) mais beaucoup plus lentement que celui rapportés par les programmes DOTS. Si la tendance se maintient, tous les cas notifiés à l'OMS en 2005 le seront par des programmes DOTS. Tous les patients dé-



pistés par les systèmes de santé publique dans le monde recevront des soins selon les normes internationales mais le nombre de ces représentent moins que les 70% fixé comme objectif pour le dépistage en 2005.

**9.** En 2002, 28 % de tous les cas à frottis positif supplémentaires dans les programmes DOTS ont été signalés par l'Inde. Des améliorations plus modestes mais apparemment significatives du dépistage ont été enregistrées en Afrique du Sud (12 % de l'augmentation totale), en Indonésie (10 %), au Pakistan (4 %), au Bangladesh (3 %) et aux Philippines (3 %). Ensemble, ces six pays regroupent plus de 60 % des cas supplémentaires dépistés en 2002.

**10.** Avec l'extension géographique des programmes DOTS, le taux de dépistage des cas à frottis positif dans ces zones est resté assez constant depuis 1996 (49 % en moyenne) bien qu'on observe des signes d'une lente augmentation dans les pays fortement touchés, en particulier l'Inde, l'Indonésie, le Bangladesh et les Philippines.

**11.** Le taux de succès thérapeutique enregistrés pour la cohorte 2001 dans les programmes DOTS était en moyenne de 82 %, le même niveau que pour la cohorte 2000. Comme les années précédentes, le taux a été sensiblement inférieur à la moyenne dans la Région africaine de l'OMS (71 %) ainsi qu'en Europe de l'Est (70 %). Le faible taux dans ces deux régions peut être attribué, en partie et respectivement, aux complications dues à la co-infection par le VIH et à la pharmacorésistance. Un autre facteur tout aussi important a été l'incapacité des programmes nationaux de suivre les résultats du traitement de tous les malades.

**12.** Sur la base des cas déclarés et des estimations de l'OMS, à la fin de l'année 2002, 18 pays ont atteint les cibles concernant le dépistage des cas et la guérison; le Viet Nam est toutefois le seul pays fortement touché à faire partie du groupe.

## **Planification et application de la stratégie DOTS**

**13.** A la fin de l'année 2003 l'ensemble des 22 pays fortement touchés avaient formulé un plan national de l'extension de la stratégie DOTS. Des plans détaillés concernant des améliorations majeures de la couverture par la stratégie DOTS, du dépistage des cas et de la qualité du programme avaient été établis par plusieurs pays, dont l'Inde et l'Indonésie. Mais la planification stratégique visant à surmonter les obstacles à la lutte antituberculeuse reste insuffisante dans plusieurs pays à faible taux de dépistage.

**14.** Les six contraintes les plus fréquentes que l'on a observés étaient les suivantes : manque de personnel qualifié ; carences en matière de suivi et d'évaluation ; infrastructure inadéquate ; faiblesse des services de laboratoires ; incapacité des programmes DOTS à associer les praticiens privés et d'autres dispensateurs publics de soins à la stratégie; et décentralisation mal conduite. Parmi les solutions permettant de surmonter ces obstacles, on peut mentionner : l'élaboration de plans de ressources humaines pour la lutte antituberculeuse correspondant aux plans de renforcement du personnel de santé en général ; projets mixtes public/privé visant à associer d'autres dispensateurs et structures de soins du secteur public ; financement suffisant et formation d'une capacité locale dans les pays à système de santé décentralisé. La coopération intersectorielle sera déterminante pour surmonter les obstacles qui dépassent le cadre des compétences des programmes nationaux.

**15.** L'efficacité de la stratégie DOTS et les perspectives concernant l'extension de la stratégie sont également limitées par l'approvisionnement insuffisant en médicaments, leur qualité irrégulière et par les politiques sur les produits pharmaceutiques insuffisamment développées. Cette situation favorise

l'extension de la pharmacorésistance. La solution consistera en partie à intégrer dans les programmes DOTS les tests de sensibilité aux médicaments, à normaliser les schémas thérapeutiques en cas d'échec du traitement et à veiller à ce que des médicaments de deuxième ligne soient disponibles et correctement utilisés chez les malades ayant une tuberculose polychimiorésistante.

**16.** Si la stratégie DOTS doit rester au cœur de la politique de lutte antituberculeuse, il faudra pouvoir compter sur un plus large éventail d'interventions pour réduire la morbidité tuberculeuse dans les pays les plus touchés par le VIH/SIDA, notamment ceux d'Afrique orientale et australe. Les interventions recommandées sont énoncées dans la politique intérimaire de l'OMS sur les activités concernant la tuberculose et le VIH, mais jusqu'ici il s'agit d'interventions à échelle réduite dans des districts ou des régions plutôt que dans l'ensemble d'un pays.

## **Financement de l'extension de la stratégie DOTS**

**17.** Des données financières ont été reçues de 123 pays, dont 77 (y compris 17 pays fortement touchés) ont fourni des données complètes sur le budget 2003 et 74 (y compris 15 pays fortement touchés) des données complètes et ventilées pour les dépenses en 2002.

**18.** Les dépenses consacrées à la lutte antituberculeuse dans les pays fortement touchés en 2002 ont atteint US \$834 à 884 millions. C'est moins que le montant prévu de US \$976 millions estimé nécessaire pour atteindre la cible de 70 % pour le dépistage en 2005. Le montant total estimé des coûts concernant les pays fortement touchés en 2003 était de l'ordre de US \$1 milliard, c'est-à-dire environ US \$150 millions de plus que les dépenses de 2002, mais probablement moins que le montant nécessaire pour atteindre les 70% de dépistage en 2005.

**19.** Dans 14 des pays fortement touchés, le coût par malade traité était situé dans une fourchette de US \$125 à 380. Dans trois autres (l'Afrique du Sud, le Brésil et la Fédération de Russie) le coût par malade était sensiblement plus élevé (plus de US \$700) en raison du coût élevé du travail et du capital ou du recours plus fréquent à l'hospitalisation. Dans tous les pays fortement touchés qui ont fourni des données concernant les deux années le coût par patient a augmenté entre 2002 et 2003. Certaines des raisons, ont été précisées dans certains budgets mais pas tous (par exemple enquête sur la prévalence au Viet Nam, matériel au Myanmar).

**20.** En 2003, les gouvernements des pays fortement touchés ont apporté (sous forme de fonds nationaux et de prêts) 70% des fonds prévus dans le budget du programme national et couvert 87 % du coût total. Mais la part de l'Etat varie entre 0 % (Afghanistan) et 100 % (par exemple au Brésil) et elle a tendance à être plus élevée dans les pays plus aisés. Les subventions de l'étranger représentaient la moitié ou plus du budget national de l'Ethiopie, de l'Afghanistan, du Bangladesh, de la Tanzanie, de la République démocratique du Congo et du Pakistan.

**21.** Le déficit financier global signalé par les pays fortement touchés était de US \$41 millions en 2003 (à l'exclusion de l'Afrique du Sud et du Zimbabwe pour lesquels on ne disposait pas de données), représentant 4 % environ du coût total, mais une proportion beaucoup plus importante du coût dans les pays plus pauvres. Entre 2002 et 2003, le déficit a été réduit dans sept pays, principalement grâce à l'augmentation du financement par les gouvernements (y compris sous forme de prêts) et le Fonds mondial de lutte contre le SIDA, la tuberculose et le paludisme. Le déficit a augmenté dans cinq pays en raison de la planification d'un nombre accru d'activités (non financées) pour accélérer l'extension de la stratégie DOTS.

**22.** A la fin de 2003, le Fonds mondial avait approuvé des subventions (jusqu'à 5 ans) d'un montant de US \$608 millions pour les activités de lutte contre la tuberculose, et de US \$319 millions pour les activités de lutte dirigées à la fois contre la tuberculose et le VIH dans 56 pays. Le montant total pour les deux premières années atteint US \$294 millions pour la lutte antituberculeuse et US \$90 millions pour la lutte contre la tuberculose et le VIH. Environ 70 % du total combiné concerne les pays fortement touchés. Si les subventions du Fonds mondial peuvent apporter une contribution majeure à la lutte antituberculeuse dans certains pays, on constate que jusqu'à présent les fonds n'ont été déboursés qu'avec lenteur.

**23.** On estime que, pour atteindre les cibles concernant le dépistage et la guérison en 2005, il faudra dépenser US \$950 millions dans 21 pays fortement touchés (à l'exception de la Fédération de Russie) en 2004 et US \$1,1 milliard en 2005 contre des dépenses de US \$650 millions en 2002 et un budget prévu de US \$850 millions en 2003. La Fédération de Russie a annoncé un budget d'environ US \$400 millions pour 2004 dont US \$200 millions restent à trouver. Le plan quinquennal russe 2003-2007 prévoit des chiffres du même ordre pour 2005.

## Conclusions

**24.** Le taux de dépistage mondial des cas à frottis positif était de 37 % en 2002, ce qui correspond à plus de la moitié des 70 % fixé pour cible, et l'augmentation enregistrée a été la plus rapide depuis 1995. Sur la base des tendances actuelles, on estime que le taux de dépistage des cas sera de l'ordre de 50 % en 2005, et qu'alors tous les cas de tuberculose déclarés dans le secteur public seront dans les programmes DOTS et recevront des soins selon les normes internationales. Pour faire passer le dépistage des cas à frottis positif par

les programmes DOTS de 37 % à 50 %, il suffirait de veiller à ce que le diagnostic et le traitement des cas de tuberculose connus dans les Amériques, en Europe et en Asie du Sud-Est, respectent les normes de la stratégie. Il sera plus difficile de dépasser la barre des 50 % car le taux de notification de l'ensemble des cas de tuberculose par les autorités de santé publique est resté stable depuis de nombreuses années et les programmes DOTS auront probablement épuisé cette source de cas en 2005. Après 2005, et de préférence même avant, les programmes DOTS et les autorités de santé publique devront commencer à rechercher les malades dans les centres et les hôpitaux qui ne participent pas aux programmes, notamment ceux qui relèvent du secteur privé en Asie ou qui ne sont pas desservis par le système de santé publique en Afrique. Un effort particulier devra être fait pour améliorer les taux de guérison en Afrique.

**25.** Pour atteindre ces buts, les gouvernements et les programmes nationaux devront adopter une approche plus stratégique face à la planification, veiller à ce que les budgets correspondent mieux aux plans et que les efforts de financement s'appuient sur des budgets réalistes. C'est une tendance qu'on constate déjà dans plusieurs pays fortement touchés, mais pas partout. Si les ressources qu'il fournit peuvent être déboursées plus rapidement, le Fonds mondial apportera une contribution majeure à la lutte antituberculeuse dans plusieurs des pays fortement touchés dont les gouvernements ne sont pas en mesure d'apporter un appui suffisant. Les pays fortement touchés ont prévu de consacrer à la lutte antituberculeuse en 2003 US \$150 millions de plus qu'en 2002, ce qui est probablement trop peu pour pouvoir atteindre la cible de 70 % de détection des cas en 2005.

# Resumen

## Antecedentes y métodos

**1.** Este es el octavo informe anual de la OMS sobre la lucha mundial contra la tuberculosis (TB), en el que se aportan datos de todos los programas nacionales de control de la enfermedad que han informado a la OMS sobre los casos notificados y los resultados del tratamiento, además de un análisis de los planes, presupuestos, gastos y obstáculos a la expansión de la estrategia DOTS (tratamiento breve bajo observación directa) en los 22 países con alta carga de TB (PACT). Actualmente hay datos sobre nueve años consecutivos que permiten evaluar los progresos realizados hacia la consecución de las metas mundiales de detección de los casos (70%) y de éxito del tratamiento (85%).

**2.** En 2003, a través de las oficinas regionales de la OMS se envió a 210 países un formulario estándar para que informaran de los datos de vigilancia y financieros. En él se pedía información sobre la política y las prácticas de la lucha contra la TB, sobre el número y el tipo de casos de TB notificados en 2002, y sobre los resultados del tratamiento y de su repetición en los casos bacilíferos registrados en 2001. Asimismo se solicitaba información sobre los presupuestos, gastos y fuentes de financiación de los programas nacionales contra la TB (PNT) y acerca de cómo se utiliza la infraestructura sanitaria general en la lucha contra la TB.

**3.** Mediante entrevistas y un cuestionario distinto, también se pidió a los directores de los programas nacionales de los 22 PACT que resumieran sus planes de lucha contra la TB a partir de 2003, centrándose en las actividades destinadas a aumentar el compromiso político, a ampliar el acceso a la estrategia DOTS, a forta-

lecer el diagnóstico, a mejorar los resultados del tratamiento, a garantizar suficiente dotación de personal y a mejorar el seguimiento y supervisión del programa. Se les preguntó sobre las actividades de lucha integrada contra la TB y el VIH, la actuación frente a la farmacoresistencia y la creación de alianzas, y se les pidió que señalaran los principales obstáculos a la consecución de los objetivos de la lucha contra la TB.

## Mejorar la detección y el tratamiento de los casos de tuberculosis

**4.** Doscientos un países informaron a la OMS de sus estrategias de lucha contra la TB, así como de las notificaciones de casos y de los resultados del tratamiento.

**5.** Utilizando las tendencias de las notificaciones de casos para actualizar las estimaciones de la incidencia, hemos calculado que en 2002 hubo 8,8 millones de nuevos casos de TB, de los cuales 3,9 millones fueron bacilíferos. La tasa mundial de incidencia de TB (per cápita) creció en aproximadamente un 1,1% anual, y el número de casos en un 2,4% anual. El crecimiento de la notificación de casos ha sido mucho más rápido en los países africanos con alta prevalencia de infección por el VIH y en Europa oriental (sobre todo en la antigua Unión Soviética), aunque se ha frenado en ambas regiones desde mediados de la década de los noventa.

**6.** En 2002 se sumaron 25 nuevos países a los que aplican la estrategia DOTS, con lo cual la cifra actual es de 180 (de un total de 210). Los PNT informaron que a finales de 2002 el 69% de la población mundial vivía en países (o zonas de países) cubiertos por la estrategia DOTS. Los pro-

gramas DOTS notificaron 3 millones de nuevos casos de TB, de los cuales 1,4 millones eran bacilíferos. Entre 1995 y 2002 se trataron en los programas DOTS 13,3 millones de pacientes con TB y 6,8 millones de pacientes bacilíferos.

**7.** Los 1,4 millones de casos bacilíferos notificados por los programas DOTS en 2002 representan un 37% de la incidencia estimada, o sea, poco más de la mitad del objetivo propuesto (70%). El aumento de los casos bacilíferos notificados a través de los programas DOTS entre 2001 y 2002 (214 656) fue mayor que la media de 1995 a 2000 (134 157). El aumento de las notificaciones fue más acusado con respecto a la totalidad de los casos de TB, que aumentó en 610 228 entre 2001 y 2002, en comparación con un aumento anual de 269 268 en el período 1995-2000. No obstante, para alcanzar en 2005 la detección del 70% de los casos, en cada uno de los años que van de 2003 a 2005 habrá que encontrar a otros 1,04 millones de casos de TB y a 433 000 casos bacilíferos.

**8.** Aunque el crecimiento del número de casos de TB notificados por los programas DOTS parece haberse acelerado desde 2000, el número total de casos de TB notificados a la OMS ha aumentado muy poco entre 1995 y 2002 (tasa media de detección del 46%). El número de casos bacilíferos notificados por todas las fuentes ha estado en aumento (tasa de detección del 44% en 2002), pero mucho más lentamente que el de los notificados a través de los programas DOTS. En caso de que estas tendencias se mantengan, todos los casos notificados a la OMS en 2005 lo serán a través de los programas DOTS y todos los pacientes detectados por los sistemas de salud pública en todo el mundo recibirán el tratamiento

estándar recomendado, pero el reservorio de tales casos se habrá agotado antes de que se alcance la meta de detección de casos.

**9.** El 28% de los casos bacilíferos adicionales notificados a través de los programas DOTS en 2002 se detectaron en la India. También hubo aumentos menores, pero aparentemente significativos, de la detección de casos en Sudáfrica (12% del aumento total), Indonesia (10%), Pakistán (4%), Bangladesh (3%) y Filipinas (3%). En conjunto, estos seis países aportaron más del 60% de los casos adicionales detectados en 2002.

**10.** A medida que los programas DOTS se han extendido geográficamente, la tasa de detección de casos bacilíferos a través de ellos ha permanecido prácticamente constante desde 1996 (media del 49%), aunque hay signos de un lento incremento en los PACT, liderados por la India, Indonesia, Bangladesh y las Filipinas.

**11.** El éxito del tratamiento en los programas DOTS fue del 82% por término medio en la cohorte de 2001, o sea, el mismo que en la cohorte de 2000. Igual que en años anteriores, el éxito del tratamiento fue considerablemente inferior a la media en la Región de África (71%) y en Europa oriental (70%). El escaso éxito del tratamiento en estas dos regiones puede atribuirse, en parte, a las complicaciones de la coinfección por VIH y a la farmacorresistencia, respectivamente, pero el fracaso de los PNT a la hora de supervisar el resultado del tratamiento en todos los pacientes es igualmente importante.

**12.** Con base en los casos notificados y en las estimaciones de la OMS, 18 países habían alcanzado los objetivos de detección y curación de los casos a finales de 2002. Sin embargo, entre estos países sólo había un PACT: Viet Nam.

## **Planificación y aplicación de la estrategia DOTS**

**13.** Los 22 PACT habían formulado un plan general de expansión de la estrategia DOTS a finales de 2003. Varios países, entre ellos la India e Indonesia, habían hecho planes detallados para mejorar considerablemente la cobertura de los programas DOTS, la detección de casos y la calidad del programa. No obstante, la planificación estratégica para superar los obstáculos al control de la TB sigue siendo débil en varios países con bajas tasas de detección de casos.

**14.** Los seis obstáculos identificados con mayor frecuencia fueron la inexistencia de personal cualificado; el escaso seguimiento y evaluación; la infraestructura insuficiente; la debilidad de los servicios de laboratorio; el fracaso de los programas DOTS a la hora de atraer a los médicos privados y a otros profesionales de la sanidad pública, y la descentralización incompleta. Los recursos necesarios para superar estos obstáculos incluyen la elaboración de planes de dotación de personal para la lucha contra la TB que sean coherentes con los planes de fortalecimiento del personal sanitario en general; los proyectos y planes mixtos, públicos y privados, para involucrar a otros profesionales sanitarios y servicios públicos, y el fortalecimiento de la capacidad local, así como la provisión de financiación suficiente para ello, en países con sistemas de salud descentralizados. La cooperación intersectorial será esencial para superar los obstáculos que están fuera del pleno control de los PNT.

**15.** La efectividad de la estrategia DOTS y las perspectivas de su expansión también se ven limitadas por los fallos del suministro de fármacos, la calidad variable de estos y la inexistencia de políticas farmacéuticas. Una de las consecuencias de esto es la propagación de la farmacorresistencia. Parte de la solución consistirá en integrar las pruebas de

determinación de la sensibilidad a los fármacos en los programas DOTS, normalizar los regímenes terapéuticos para pacientes cuyo tratamiento previo haya fracasado y garantizar que haya fármacos de segunda línea para los pacientes con TB multirresistente y que esos fármacos se utilicen debidamente.

**16.** Aunque la estrategia DOTS debe seguir siendo parte esencial de la política de lucha contra la TB, será necesaria una gama más amplia de intervenciones para reducir la carga de TB en los países más afectados por el VIH/SIDA, especialmente los de África occidental y meridional. Las intervenciones recomendadas se explican en el documento de la OMS «*Interim Policy on Collaborative TB/HIV Activities*», pero hasta la fecha sólo se están llevando a cabo a pequeña escala, distrital o regional, más que nacional.

## **Financiación de la expansión de la estrategia DOTS**

**17.** Se recibieron datos financieros de 123 países, 77 de los cuales (entre ellos 17 PACT) proporcionaron datos completos sobre los presupuestos de 2003, y 74 (entre ellos 15 PACT) datos completos y desagregados sobre los gastos realizados en 2002.

**18.** En 2002, el gasto en la lucha contra la TB en los PACT fue de US\$ 834–884 millones, o sea, inferior al gasto previsto de US\$ 976 millones, suma que, según nuestras estimaciones, hubiera sido necesaria para lograr la detección del 70% de los casos en 2005. El costo total estimado para 2003 en los PACT ascendió a aproximadamente US\$ 1000 millones, lo cual representa un aumento de alrededor de US\$ 150 millones con respecto a los gastos de 2002, pero probablemente siga siendo insuficiente para lograr la meta de detección de casos propuesta para 2005.

**19.** En 14 PACT, el costo por paciente tratado osciló entre US\$ 125 y 380;



en otros tres (Brasil, Federación de Rusia y Sudáfrica) fue significativamente mayor (>US\$ 700), debido a que los precios del trabajo y del capital son elevados, o a que se basan más en la asistencia hospitalaria. El costo por paciente aumentó entre 2002 y 2003 en todos los PACT que proporcionaron datos relativos a ambos años. Las causas de este aumento estaban claras en algunos presupuestos (por ejemplo, una encuesta de prevalencia en Viet Nam y compra de equipamiento en Myanmar), pero no en todos.

**20.** En 2003 los gobiernos de los PACT contribuyeron (de fondos y préstamos nacionales) con un 70% de los fondos asignados a los presupuestos de sus PNT y un 87% de los costos totales. Sin embargo, las contribuciones de los gobiernos a los costos totales variaron entre el 0% (Afganistán) y el 100% (Brasil, por ejemplo), con tendencia a ser mayores en los países más ricos. Las subvenciones externas contribuyeron con aproximadamente la mitad o más de los presupuestos de los PNT del Afganistán, Bangladesh, Etiopía, el Pakistán, la República Democrática del Congo y la República Unida de Tanzania.

**21.** El déficit global de financiación notificado por los PACT fue de US\$ 41 millones en 2003 (se excluyen Sudáfrica y Zimbabwe, de los que no había datos), o sea, aproximadamente un 4% de los costos totales, aunque este porcentaje fue mucho mayor en los países más pobres. Entre 2002 y 2003, el déficit de financiación se redujo en siete países, debido sobre todo al aumento de la financiación por los gobiernos (incluidos los préstamos) y el Fondo Mundial de Lucha contra el SIDA, la Tuberculosis y la Malaria (FMSTM). En cinco países aumentó porque se planificaron más actividades (no financiadas) para acelerar la expansión de la estrategia DOTS.

**22.** A finales de 2003, el FMSTM había aprobado subvenciones (para períodos de hasta cinco años) por valor

de US\$ 608 millones para actividades de lucha contra la TB, y de US\$ 319 millones para actividades de lucha integrada contra la TB y el VIH, en 56 países. El total para los dos primeros años es de US\$ 294 millones para la lucha contra la TB y de US\$ 90 millones para la lucha integrada contra la TB y el VIH. Aproximadamente un 70% del total combinado se destina a los PACT. Aunque las subvenciones del FMSTM representarán una importante contribución a la lucha contra la TB en algunos países, el desembolso del dinero ha sido lento.

**23.** Calculamos que si se quieren alcanzar los objetivos de detección y curación de casos para 2005, en 2004 habrá que gastar US\$ 950 millones en 21 PACT (todos, excepto la Federación de Rusia), y US\$ 1100 millones en 2005, en comparación con los US\$ 650 millones gastados en 2002 y los US\$ 850 millones presupuestados para 2003. La Federación de Rusia presentó un presupuesto de aproximadamente US\$ 400 millones para 2004, de los cuales todavía no se ha conseguido la mitad. El plan de Rusia para el quinquenio 2003-2007 contiene cifras similares para 2005.

## Conclusiones

**24.** La tasa mundial de detección de casos bacilíferos fue del 37% en 2002, lo cual representa poco más de la mitad del objetivo propuesto (70%), y aumentó más rápidamente que en cualquier momento desde 1995. Basándonos en las tendencias recientes, esperamos que la tasa de detección de casos sea de aproximadamente un 50% en 2005, momento en que todos los pacientes con TB notificados al sector público recibirán el tratamiento estándar recomendado internacionalmente por los programas DOTS. La detección de casos bacilíferos por los programas DOTS podría aumentar del 37% al 50% simplemente garantizando que el diagnóstico y el tratamiento de los casos de TB conocidos en las Américas,

Europa y Asia Sudoriental se ajusten a los estándares DOTS. Superar una tasa de detección de casos del 50% será un reto porque la tasa de notificación de la totalidad de los casos de TB por las autoridades de salud pública ha permanecido estable durante muchos años y porque los programas DOTS probablemente hayan agotado esta aportación de casos en 2005. Después de 2005, y a ser posible antes, los programas DOTS y las autoridades de salud pública deben comenzar a reclutar pacientes de las clínicas y hospitales no participantes, en particular en el sector privado en Asia y más allá de los límites actuales de los sistemas de salud pública en África. Se deberá hacer un esfuerzo especial para mejorar las tasas de curación en África.

**25.** Para alcanzar estos objetivos, los gobiernos y los PNT necesitarán darle a la planificación un enfoque más estratégico, ajustar mejor los presupuestos a los planes y ajustar las actividades de recaudación de fondos a presupuestos realistas. Esto está ocurriendo ya en algunos PACT, pero no en todos. Si los desembolsos del FMSTM se pudieran realizar de forma más expedita, el Fondo podría hacer una importante contribución a la lucha contra la TB en algunos de los PACT más pobres, cuyos gobiernos no pueden apoyar adecuadamente la lucha contra la TB. Los PACT han planeado gastar un total de US\$ 150 millones adicionales en 2003 (en comparación con 2002), lo cual será casi seguramente muy poco para ponerlos en el camino de lograr la detección del 70% de los casos en 2005.

# Introduction

The goal of this series of annual reports is to chart progress in global TB control and, in particular, progress in implementing the DOTS strategy, the internationally recommended approach to TB control.<sup>1,2</sup> The targets for global TB control ratified by the 1991 World Health Assembly<sup>3</sup> are: (1) to treat successfully 85% of detected smear-positive TB cases, and (2) to detect 70% of all smear-positive cases. Since these targets were not reached by the end of year 2000 as originally planned, the target year has been re-set to 2005.<sup>4</sup>

Monitoring and evaluation are carried out through WHO's Global TB Monitoring and Surveillance Project, in close collaboration with the DOTS Expansion Working Group of the Stop TB Partnership. In the 2003 report<sup>5</sup> we estimated that the smear-positive case detection rate was 32% at the end of 2001, and concluded that, if the observed rate of DOTS expansion

from 1995 to 2001 was maintained, the 70% detection target would not be reached by 2005. The report pointed out that, to reach the 70% target, DOTS programmes would have to improve case finding within areas already designated as DOTS, and they would have to continue expanding DOTS geographically. To reach the 85% target for treatment success, cure rates would have to be improved under DOTS in some countries, especially those in sub-Saharan Africa. Although funding for TB programmes, and planning for DOTS expansion, had both improved during 2002, deficiencies in staff and health infrastructure were identified as significant obstacles to DOTS expansion. In addition, NTPs were significantly underestimating the cost of rectifying these deficiencies.

This 8th annual report provides an update of progress in TB control for most WHO member states and other

territories. We present data collected during 2003 on case notifications for 2002 and treatment results for patients registered in 2001, and compare the status of DOTS implementation within and among countries by the end of 2002. We also reassess plans for, and the major constraints to, TB control in the 22 HBCs, and analyse the latest available data on expenditures (2002) and budgets (2003). Our review of the planning process includes, for the first time, an assessment of collaborative TB/HIV activities in countries and the steps being taken to manage drug resistance, including some data from recent surveys of resistance.<sup>6</sup> All this information is placed in the context of data presented in previous reports, allowing us to chart progress in global TB control over the past eight years, and to consider the prospects for reaching the targets for case detection and cure by 2005.

<sup>1</sup> WHO. Tuberculosis Programme. Framework for Effective Tuberculosis Control. Geneva, WHO/TB/94.179.

<sup>2</sup> WHO. *An Expanded Framework for Effective Tuberculosis Control*. Geneva, WHA44/1991/REC/1.

<sup>3</sup> WHO. Forty-fourth World Health Assembly, Resolutions and Decisions. Geneva, WHA44/1991/REC/1.

<sup>4</sup> WHO. Fifty-third World Health Assembly. Stop Tuberculosis Initiative, Report by the Director General. A53/5, 5 May 2000.

<sup>5</sup> WHO. Global Tuberculosis Control: Surveillance, Planning, Financing. WHO Report 2003. Geneva, WHO/CDS/TB/2003.316. See [www.who.int/gtb/publications/globrep/](http://www.who.int/gtb/publications/globrep/)

<sup>6</sup> These data will be fully described and analysed in a separate report: WHO/IUATLD. Anti-tuberculosis Drug Resistance in the World. Report No. 3 (to be published 2004).

# Methods

## Monitoring the detection and treatment of TB cases

### Data collection

Every year, WHO requests information from TB control programmes (or relevant public health authorities) in 210 countries or territories via a standard data collection form. The latest form was distributed in 2003 and the section dealing with surveillance asked for data on: TB control strategies implemented in 2002, TB case notifications in 2002, and treatment outcomes for TB patients registered during 2001. The form can be downloaded from [www.who.int/gtb/publications/globrep](http://www.who.int/gtb/publications/globrep)

### Data verification

Completed data collection forms are collected via WHO country offices, and the data are reviewed at all levels of WHO. WHO/HQ sends an acknowledgement back to the country, re-tabulating all data supplied, in order to complete any missing responses and to resolve any inconsistencies.

In the WHO European region only, data collection and verification is performed jointly by the regional office and a WHO collaborating centre, EuroTB (Paris), using an expanded format. EuroTB subsequently publishes an annual report with additional analyses, using data that are considered more final for the European region (see [www.eurotb.org](http://www.eurotb.org)).

### DOTS classification

DOTS is the internationally recommended approach to TB control. It is not simply a clinical approach to individual patients, but rather a management strategy for public health systems that includes political commitment, and the technical elements (listed in Table 1). From the NTP re-

TABLE 1

## Technical elements of the WHO TB control strategy (DOTS)<sup>a</sup>

**MICROSCOPY** ■ Case detection among symptomatic patients self-reporting to health services, using sputum smear microscopy.<sup>b</sup>

**SCC/DOT** ■ Standardized short-course chemotherapy using regimens of 6–8 months for at least all confirmed smear-positive cases. Good case management includes directly observed treatment (DOT) during the intensive phase for all new smear-positive cases, during the continuation phase of regimens containing rifampicin, and during the entirety of a retreatment regimen.<sup>c</sup>

**DRUG SUPPLY** ■ Establishment and maintenance of a system to supply all essential anti-tuberculosis drugs, and to ensure no interruption in their availability.

**RECORDING AND REPORTING** ■ Establishment and maintenance of a standardized recording and reporting system, allowing assessment of treatment results (see Table 2).

<sup>a</sup> The DOTS strategy comprises 5 elements in all, including political commitment.

<sup>b</sup> Sputum culture is also used for diagnosis, but direct sputum smear microscopy should still be performed for all suspected cases.

<sup>c</sup> In countries that have consistently documented high treatment success rates, direct observation of treatment may be reserved for a subset of patients, as long as cohort analysis of treatment results is provided to document the outcome of all cases.

sponses as a whole, but particularly from the section on policy, WHO accepts or revises the NTP's own determination of its DOTS status.

### Presentation of data

Data on policy and strategy are collected for both DOTS and non-DOTS areas separately; Annex 2 shows which of the 4 technical components of the DOTS strategy are in place in each country. Numbers of TB cases are collected in terms of site of disease, history, and sputum smear status, but this report focuses on total and new smear-positive cases. All cases notified since 1980 are shown in Annex 2, together with new smear-positive cases notified since 1995. By convention, WHO does not include retreatment cases in the calculation of TB notification rates, assuming that these episodes of disease have been registered and reported during their first round of treatment. An exception is made for relapses, which may represent new episodes of disease, the previous episode of disease having been declared cured.

In Annex 2, for European countries only, there is a column for "EURO total" cases. European countries consider these numbers to be the total cases notified. They may differ from the total notifications reported by WHO because, by European convention, all types of TB cases are included in the notification rate, not just new and relapse cases.

We ask for a breakdown of cases by age and sex for new smear-positive cases only, and these numbers, as well as age- and sex-specific rates per capita, are shown in Annex 2. Annexes showing data by region and by country also show "laboratory-confirmed" cases; these are new pulmonary cases; that were smear-positive or culture-positive.

Treatment outcomes are collected according to six mutually exclusive outcome categories (Table 2). Outcomes are collected for new smear-positive cases (by strategy, DOTS or non-DOTS) and for all retreatment case types combined (also by strategy). However, only the DOTS retreatment outcomes are shown in

TABLE 2

**Definitions of tuberculosis cases and treatment outcomes**

| <b>A. DEFINITIONS OF TUBERCULOSIS CASES</b> |   |
|---|---|
| <b>CASE OF TUBERCULOSIS</b>                 | ■ A known tuberculosis case is one which has been bacteriologically confirmed, or has been diagnosed by a clinician.  |
| <b>DEFINITE CASE</b>                        | ■ Patient with positive culture for the <i>Mycobacterium tuberculosis</i> complex. In countries where culture is not routinely available a patient with 2 sputum smears positive for acid-fast bacilli (AFB+) is also considered a definite case.   |
| <b>SMEAR-POSITIVE PULMONARY CASE</b>        | ■ At least two initial sputum smear examinations (direct smear microscopy) AFB+; or one sputum examination AFB+ and radiographic abnormalities consistent with active pulmonary tuberculosis as determined by the treating medical officer; or one sputum specimen AFB+ and culture positive for <i>M. tuberculosis</i> .   |
| <b>SMEAR-NEGATIVE PULMONARY CASE</b>        | ■ Pulmonary tuberculosis not meeting the above criteria for smear-positive disease. Diagnostic criteria should include: at least 3 sputum smear examinations negative for AFB; and radiographic abnormalities consistent with active pulmonary TB; and no response to a course of broad-spectrum antibiotics; and decision by a clinician to treat the patient with a full course of anti-tuberculosis therapy; or positive culture but negative AFB sputum examinations.   |
| <b>EXTRAPULMONARY CASE</b>                  | ■ Patient with tuberculosis of organs other than the lungs e.g. pleura, lymph nodes, abdomen, genito-urinary tract, skin, joints and bones, meninges. Diagnosis should be based on one culture-positive specimen, or histological or strong clinical evidence consistent with active extrapulmonary disease, followed by a decision by a clinician to treat with a full course of anti-tuberculosis chemotherapy. Note: a patient diagnosed with both pulmonary and extrapulmonary tuberculosis should be classified as a case of pulmonary tuberculosis. |
| <b>NEW CASE</b>                             | ■ Patient who has never had treatment for tuberculosis, or who has taken anti-tuberculosis drugs for less than 1 month.   |
| <b>RELAPSE CASE</b>                         | ■ Patient previously declared cured but with a new episode of bacteriologically positive (sputum smear or culture) tuberculosis.  |
| <b>RETREATMENT CASE</b>                     | ■ Patient previously treated for tuberculosis whose treatment failed, who defaulted (see below), or who relapsed.   |
| <b>B. DEFINITIONS OF TREATMENT OUTCOMES</b> |   |
| <b>CURED</b>                                | ■ Initially smear-positive patient who is smear-negative in the last month of treatment, and on at least one previous occasion. <sup>a</sup>  |
| <b>COMPLETED TREATMENT</b>                  | ■ Patient who has completed treatment but does not meet the criteria for cure or failure.   |
| <b>DIED</b>                                 | ■ Patient who dies for any reason during treatment.   |
| <b>FAILED</b>                               | ■ Smear-positive patient who remained smear-positive, or became smear-positive again, at least 5 months after the start of treatment.   |
| <b>DEFAULTED</b>                            | ■ Patient whose treatment was interrupted for two consecutive months or more.   |
| <b>TRANSFERRED OUT</b>                      | ■ Patient who has been transferred to another reporting unit and for whom the treatment outcome is not known.   |
| <b>SUCCESSFULLY TREATED</b>                 | ■ The sum of cases that were cured and that completed treatment (expressed as a percentage of the number registered in the cohort). <sup>b</sup>  |

<sup>a</sup> Some European countries define cure in terms of culture conversion, rather than sputum smear conversion.

<sup>b</sup> A cohort is a group of patients diagnosed and registered for treatment during a given time period, usually one quarter of a year

Annex 2. This report presents treatment outcomes for 2001. The assessment of outcomes always lags by 1 year to ensure that all patients have completed treatment. A DOTS country must report treatment outcomes, unless it is newly-classified as DOTS, in which case it would take an additional year to report outcomes from the first cohort of patients treated.

Special circumstances surrounding the data submitted by some countries (e.g. additional breakdown of cases of interest, late-reported data, reasons for incomplete data) are mentioned in the "country notes" in Annex 2.

**Calculation of indicators**

Following the 1991 World Health Assembly resolution, the main indicators which we use to measure progress in TB control are detection of infectious TB cases (target 70%) and successful treatment of such cases (target 85%). Because WHO urges worldwide implementation of the DOTS strategy, this report focuses on case detection and treatment success under DOTS.

**Estimation of TB incidence**

To calculate the case detection rate, we estimate TB incidence for every country in the world. Our estimates are based on a consultative and analytical process described elsewhere, and have been regularly updated since 1997.<sup>7,8</sup> The approach to estimating incidence (the number of new cases in a given year, and the trend) is not the same for all countries and regions, but rather depends on the direct and indirect evidence available

<sup>7</sup> Dye C, Scheele S, Dolin P, Pathania V, Ravigione MC. Global burden of tuberculosis: estimated incidence, prevalence and mortality by country. *Journal of the American Medical Association* 1999; 282: 677-686.

<sup>8</sup> Corbett EL, Watt C, Walker N, Maher D, Ravigione MC, Williams BG, Dye C. The growing burden of tuberculosis: global trends and interactions with the HIV epidemic. *Archives of Internal Medicine* 2003; 163: 1009-1021.



(e.g. surveys of the prevalence of infection and disease, vital registration data, quality of the surveillance system).

In all calculations of TB indicators, we use population estimates provided by the UN Population Division,<sup>9</sup> even though they sometimes differ from estimates made by the countries themselves (some of which are based on more recent survey data). Where estimates of TB indicators, such as the case detection rate, are based on data and calculations that work with rates per capita, discrepancies in population estimates do not affect the indicators. Where rates per capita are used as a basis for calculating numbers of TB cases, these discrepancies sometimes do make a difference. Some examples of important differences are given in the country notes in Annex 2.

### Case detection

The term “detection”, as used in this report, means that a patient is diagnosed as having TB (correctly or incorrectly), and is reported within the national surveillance system, and then to WHO. Smear-positive cases are the focus of DOTS programmes because they are the principal sources of infection to others, because sputum smear microscopy is a highly-specific (if somewhat insensitive) method of diagnosis, and because patients with smear-positive disease typically suffer higher rates of morbidity and mortality than smear-negative patients.

We calculate the proportion of new sputum smear-positive cases out of all new pulmonary cases, which has an expected value of 65–80% in areas with a low prevalence of HIV infection.<sup>10</sup> We calculate the case detection rate by dividing the number of notified smear-positive cases by the number of new cases estimated for that year. Detection is presented in two ways – as the case detection rate (countrywide) and as the DOTS detection rate (by DOTS programmes):

$$\begin{aligned} \text{case detection rate} &= \frac{\text{annual new smear-positive notifications (country)}}{\text{estimated annual new smear-positive incidence (country)}} \\ \text{DOTS detection rate} &= \frac{\text{annual new smear-positive notifications (under DOTS)}}{\text{estimated annual new smear-positive incidence (country)}} \end{aligned}$$

The case detection rate (CDR) and the DOTS detection rate (DDR) are identical when a country reports only from DOTS areas. This should happen only when DOTS coverage (see below) is 100%.

Although these indices are termed “rates”, they are actually ratios. The number of cases notified is usually smaller than estimated incidence because of incomplete coverage by health services, under-diagnosis, or deficient recording and reporting. However, the calculated detection rate can exceed 100% if case finding has been intense in an area that has a backlog of chronic cases, if there has been over-reporting (e.g. double-counting) or over-diagnosis, or if estimates of incidence are too low.

### Treatment success

Focusing on new smear-positive cases, treatment success is the proportion of patients who complete their entire course of treatment, with or without bacteriological confirmation of cure (Table 2).<sup>11</sup> Cure and completion are among the 6 mutually exclusive outcomes in DOTS cohort analysis.<sup>12</sup> These 6 possible outcomes, plus the fraction of cases not evaluated, add up to 100%.<sup>13</sup>

We also compare the number of new cases registered for treatment in 2001 with the number of cases notified as smear-positive (also in 2001). All registered cases should be evaluated, and the numbers registered and evaluated should therefore be the same (discrepancies arise e.g. when sub-national reports are not received at national level). If the number registered is not provided, we use the number notified for the cohort year as the denominator. (For retreatment outcomes, we cannot assess how

many cases should have been registered on retreatment regimens.)

### DOTS population coverage

We define coverage as the percentage of people living in areas where health services have adopted the DOTS strategy. The units of population covered are usually the administrative units used for other purposes within countries (e.g. counties, districts, oblasts), and the outcome is usually expressed as a percentage of the national population. DOTS coverage is used in this report to monitor progress during the geographic expansion of DOTS programmes, and is based on information available to the NTP.<sup>14</sup>

Population units nominally covered by DOTS do not necessarily provide full access to DOTS services.

<sup>9</sup> United Nations Population Division. *World Population Prospects – the 2002 revision*. New York, 2003.

<sup>10</sup> WHO. *Tuberculosis Handbook*. Geneva, WHO/TB/98.253.

<sup>11</sup> TB control programmes should ensure high treatment success before expanding case detection. The reason is that a proportion of patients given less than a fully-curative course of treatment remain chronically infectious, and continue to spread TB. Thus DOTS programmes must be shown to achieve high cure rates in pilot projects before attempting countrywide coverage.

<sup>12</sup> Veen J, Ravigliore MC, Rieder HL, Migilori GB, Graf P, Grzemska M, Zalesky R. Standardized tuberculosis treatment outcome monitoring in Europe. *European Respiratory Journal* 1998; 12: 505–510.

<sup>13</sup> Although treatment outcomes are expressed as percentages, they are usually referred to as ‘rates’ (as for case detection).

<sup>14</sup> The term “coverage” is used by health programmes in various ways, and has sometimes been misinterpreted in the context of DOTS. For example, coverage is neither the number of patients treated, nor the number of patients receiving DOT, but rather the fraction of the population living in areas where health services have adopted the DOTS strategy (usually expressed as %).

Access to health services varies widely, within and among countries, according to the number and distribution of health centres, travel time for patients, transportation infrastructure, the number and type of health care providers, out-of-pocket costs to patients, and other factors. There is no standard, international measure of “access”, though there are working definitions in some countries (e.g. living within 10km of a health facility in Ethiopia). In general, the precise definition and assessment of DOTS population coverage is left to the NTP, and interpretations inevitably differ among countries.

In the context of measuring access to DOTS, the ratio of DDR to population coverage estimates the case detection rate within DOTS areas (as distinct from the case detection rate nationwide), assuming that the TB incidence rate is homogeneous across counties, districts, provinces, or other administrative units. Ideally, this ratio would have a value of 70% or more as DOTS coverage increases within any country. Where the value of this indicator is much lower, it suggests that the DOTS programme has been poorly implemented. Changes in the value of this ratio through time are a measure of changes in the quality of TB control, after the DOTS programme has been established.

## Planning and DOTS implementation

The information on strategic planning presented in this report reflects activities during 2003, including some activities that began in 2002. The Global DOTS Expansion Plan (GDEP) is monitored through several mechanisms including direct discussions with NTP managers, collaboration with international technical agencies, monitoring missions, comprehensive programme reviews, GFATM applications, regional NTP managers’ meetings, and the annual meeting of the DOTS Expansion Working Group (DEWG). In writing this report, WHO

TABLE 3

### Format of country profiles (Annex 1)

1. ■ **OVERVIEW OF THE TB CONTROL SYSTEM** describes TB control in the context of the overall health care system.
2. ■ **SURVEILLANCE, PLANNING, OPERATIONS** provides the most recent surveillance data available to WHO including, where possible, preliminary information on coverage during 2003. The section also describes progress toward implementation of the DOTS expansion plans, adds new information on MDR-TB, summarizes TB/HIV collaborative activities, and notes constraints to implementation of plans.
3. ■ **PROGRESS IN TB CONTROL** is a summary box showing key epidemiological and financial indicators, primary constraints to achieving targets, and remedial actions needed to overcome those constraints.
4. ■ **PARTNERSHIPS** describes the key technical and financial partners, along with the type of support each provides.
5. ■ **BUDGETS AND EXPENDITURES** presents budget estimates, existing funding, and budget gaps for 2003, together with expenditures for 2002.

staff worked with NTP managers of the 22 HBCs to:

1. Assess national TB control activities planned and carried out during 2003, focusing on activities to improve political commitment, expand access to DOTS, strengthen diagnosis, improve treatment outcomes, ensure adequate staffing, improve programme monitoring and supervision, and implement additional strategies.
2. Update the country profiles<sup>5</sup> to summarize progress made by the end of 2003 in implementing, or scaling up, national plans for DOTS expansion.
3. Analyse constraints to reaching the targets for detection and treatment success.
4. Review and revise the list of partners operating in, or on behalf of, each country.
5. Assess levels of drug resistance and planning activities to address MDR-TB.
6. Determine the status of collaborative TB/HIV activities.

### Planning activities carried out in 2003

In preparation for the 4th DEWG meeting (The Hague, Netherlands, 7–8 October 2003), NTP managers for the 22 HBCs were asked to summarize what activities had been planned for implementation during 2002, which of those activities were implemented and which were not, why planned activities were not implemented, and what corrective actions were taken so that these activities could be implemented in 2003 (objective 1). WHO country staff then determined which of the activities planned for 2003 were actually implemented. The information from these DEWG summary tables, supplemented with additional information provided by WHO staff, is incorporated into the country profiles.

### Update of country profiles

Country profiles were updated (objective 2) by incorporating information from the following sources: summary tables prepared for the 4th DEWG; country posters presented by the 22 HBCs at the DEWG meeting; and consultations with, and reviews of the country profiles by, NTP staff and collaborating technical agencies. Each country profile in Annex 1 contains the 5 sections shown in Table 3.

## Constraints and remedial actions

Following last year's analysis of constraints to DOTS expansion and remedial actions proposed,<sup>5</sup> this year's report provides an update (objective 3). Constraints and remedial actions were assessed with information provided at the DEWG meeting, and through personal communications with NTP managers and staff.

## Partnerships and coordination

The list of donors and collaborating organizations was updated in consultation with NTP managers, WHO regional offices, and partners (objective 4). Major technical agencies, along with financial partners, are listed in each country profile. The coordination of these numerous agencies is vital for the efficient use of limited resources within countries, and is facilitated through a formal coordination mechanism, such as the NICC.

## Planning for MDR-TB control

The status of plans to address MDR-TB (objective 5) was assessed through personal communication with the NTPs of 9 HBCs (China, India, Kenya, Nigeria, the Russian Federation, South Africa, Tanzania, the Philippines, Viet Nam). These countries either have high rates of MDR-TB, or high absolute numbers of MDR-TB cases. Some have started DOTS-Plus pilot projects, approved by the Green Light Committee (GLC), to manage drug resistance (the Philippines, the Russian Federation), some have applications under review by the GLC (India, Kenya), and some are preparing applications to the GLC (Tanzania, Viet Nam, and possibly South Africa).

In 1994, due to the lack of standardized data on anti-TB drug resistance, and in an effort to assess the geographical distribution of drug resistance, WHO, IUATLD, and other partners developed the Global Project on Anti-tuberculosis Drug Resistance Surveillance (DRS). The project as-

sembled a network of supranational laboratories to aid national reference laboratories in conducting drug susceptibility testing to international standards, in conjunction with national or local surveys of anti-TB drug resistance. We report here some of the results of the 3rd global review of anti-TB drug resistance, which will appear in full in a separate report to be published in 2004.<sup>6</sup> The country profiles contain MDR-TB survey data for those countries participating in the WHO/IUATLD surveillance project, and which could provide new information by January 2004. These new data supplement earlier estimates of MDR-TB rates,<sup>15</sup> which are also given in the tables at Annex 1.

## Collaborative TB/HIV activities

HIV fuels the TB epidemic and collaboration between TB and HIV control programmes will be vital to address this growing problem. A rapid assessment was undertaken to determine the extent to which the 22 HBCs are implementing collaborative TB/HIV activities (objective 6). A simple questionnaire was developed for interviewing NTP managers during the 4th DEWG meeting. Respondents were asked whether the following 12 collaborative activities (outlined in WHO's interim policy on collaborative TB/HIV activities<sup>16</sup>) are carried out in the country: establishment of TB/HIV collaborating bodies; HIV surveillance in TB patients; joint TB/HIV planning; TB/HIV monitoring and evaluation; intensified TB case finding in people infected with HIV; isoniazid preventive therapy; TB infection control in health facilities and congregate settings (e.g. prisons, workers' hostels, police and military barracks); HIV testing of TB patients; TB patients provided with HIV prevention methods; cotrimoxazole preventive therapy; HIV care and support for TB patients; and ART for HIV-infected TB patients. Any collaborative programme services or pilot projects implemented in any scale by the MoH, NGOs, or research

organizations were included in the survey.

## Financing DOTS expansion

### Background and objectives

This series of annual reports on global TB control included financial analyses for the first time in 2002.<sup>17</sup> In the 2002 report, we presented annual financial requirements and funding gaps in the 22 HBCs for 2002 and for the period 2001–5, based on 5-year plans and costing studies. A full analysis of financial needs and gaps was published as a scientific paper.<sup>18</sup> In last year's report,<sup>5</sup> we continued to focus on the 22 HBCs. We analysed the funding requirements, funding sources and funding gaps for the calendar year 2003, based on data collected from a standardized form that was sent to all HBCs as part of a new WHO financial monitoring system. We also included an assessment of new funding made available between March 2002 and December 2002, and revised estimates of funding gaps for the planning period 2001–2005, based on data obtained via the new monitoring system and from donor agencies, and on a review of GFATM proposals and World Bank project documents.

This year's report has 4 objectives:

1. For HBCs in fiscal year 2003, to quantify total and per patient NTP budgets and TB control costs (i.e. including costs not reflected in NTP budget data), and the funding sources and gaps related to these budgets and costs;

<sup>15</sup> Dye C, Espinal MA, Watt C, Mbiaga C, Williams BG. Worldwide incidence of multidrug-resistant tuberculosis. *Journal of Infectious Diseases* 2002; 185: 1197–1202.

<sup>16</sup> WHO. Interim Policy on Collaborative TB/HIV Activities. Geneva, WHO/HTM/TB/2004.330 and WHO/HTM/HIV/2004.1.

<sup>17</sup> WHO. Global Tuberculosis Control: Surveillance, Planning, Financing. WHO Report 2002. WHO, 2002. WHO/CDS/TB/2002.295.

<sup>18</sup> Floyd K, Blanc L, Raviglione M, Lee JW. Resources required for global tuberculosis control. *Science* 2002; 295: 2040–2041.

2. For HBCs in fiscal year 2002, to quantify total and per patient NTP expenditures and TB control costs, and the funding for these expenditures and costs;
3. For HBCs in fiscal years 2004 and 2005, to estimate the total resources required to meet global targets for case detection and cure;
4. For other countries in fiscal year 2003, to quantify NTP budgets and funding gaps.

### Data collection

We collected data from 4 main sources: NTPs, GFATM proposals, the WHO CHOICE website,<sup>19</sup> and costing guidelines developed for the *Disease Control Priorities in Developing Countries* project (DCPP).<sup>20</sup> Data provided directly by countries were collected by means of a 1-page questionnaire included in the annual WHO data collection form ([www.who.int/gtb/publications/globrep](http://www.who.int/gtb/publications/globrep)). NTP managers were asked to complete 2 tables. The first table concerned the NTP budget for fiscal year 2003 in US\$, and the funding and funding gaps related to this budget. The second concerned NTP expenditures in US\$, and the source of funds for these expenditures, for fiscal year 2002. The form also requested information about dedicated TB control infrastructure and the way in which general health infrastructure is used for TB control – for example, the number of dedicated TB beds that exist, the number of visits that patients need to make to a general health facility during treatment, and the average number of days for which patients are hospitalized. We also asked for an estimate of the number of patients that would be treated in 2003. Compared to data collection in 2002, we requested data on fiscal rather than calendar years because it is the fiscal year for which budget and expenditure data are routinely recorded in countries' financial systems. We searched the GFATM website for each

HBC and downloaded any proposals that were identified for TB control. We used the WHO CHOICE website to identify the average costs, in international dollars (I\$), of a hospital bed day and an outpatient visit to a clinic in each HBC. The costing guidelines for the DCPP were used to identify the purchasing power parity exchange rates required for conversion of I\$ costs to costs in US\$ (for consistency with budget and expenditure data reported on the surveillance form).

### Data analysis: high-burden countries

For each country, we used the data provided on the WHO data collection form to complete the budget and expenditure sections of two sets of standardized tables. One set covered NTP expenditures, costs not covered in NTP expenditure data, and total TB control costs in 2002; the other covering NTP budgets, costs not covered in NTP budget data, and total TB control costs in 2003 (see *Budgets and expenditures* in country profiles, Annex 1). For NTP budgets and expenditures, these tables were designed to show totals, and to give a breakdown by line item, as well as to show funding sources and funding gaps. Both sub-sections of these tables replicated the format in which data were requested on the surveillance form. When data were incomplete or included some apparent inconsistencies (e.g. as compared with data that were included in GFATM proposals), we followed up with WHO and NTP staff in the relevant countries and regions, and made the necessary revisions. We did not adjust data reported for 2002 to 2003 prices because it was not clear what exchange rates had been used for conversion of local costs to US\$, and any adjustment would make only a small difference to the values reported.

Costs not reflected in NTP budget and expenditure data were defined as: (a) days spent in hospital during

treatment, and (b) outpatient visits to health facilities for DOT and monitoring. These costs were estimated in four steps. First, we converted the international \$ prices of bed days and clinic visits reported on the WHO CHOICE website into US\$ prices using the exchange rates provided in the DCPP costing guidelines. Second, we multiplied the average number of hospital days and visits required per patient (estimated on the WHO surveillance form) by the average cost in US\$ for a bed-day and a clinic visit, to give the total cost per patient treated. Third, we multiplied the cost per patient treated by the number of patients notified in 2002 to estimate total costs in 2002. Fourth, we estimated total costs for 2003 as the number of patients that NTPs expected to treat in 2003 multiplied by the cost per patient treated.

We used these data to complete the "costs not reflected in NTP budgets" and "costs not reflected in NTP expenditures" sub-sections of the 2 sets of standardized tables described above. Finally, we summed all costs to calculate the total estimated costs of TB control in 2002 and 2003. The total cost per patient was calculated as the total cost divided by the total number of notifications (for 2002) or the total number of patients expected to be treated (for 2003). We then compared the total government contribution to TB control costs with total government health spending to estimate the percentage of total government health expenditures used for TB control. Total government spending on health was estimated by multiplying the year 2000 government health spending per capita in US\$ as estimated in the *World Health Report 2002*<sup>21</sup> by population size. We also explored the association be-

<sup>19</sup> [www3.who.int/whosis/cea/prices/unit](http://www3.who.int/whosis/cea/prices/unit)

<sup>20</sup> Disease Control Priorities Project. Guidelines for authors (unpublished), pp 71–74. Washington DC, World Bank/NIH, 2003.

<sup>21</sup> WHO. The World Health Report 2002: Reducing Risks, Promoting Healthy Life. Geneva, WHO 2002.



tween GNI per capita and (a) government contributions to total NTP budgets and TB control costs, and (b) the cost per patient treated. Data on GNI were taken directly from *World Development Indicators 2003*.<sup>22</sup>

To estimate funds needed in 2004 and 2005, we updated the analysis of resource requirements previously published for the period 2001–5.<sup>18</sup> We used the same methods described in this paper and related supplementary material, but revised the analysis to include new information wherever this was available. The main methodological points are:

1. The number of cases to be treated in 2004 and 2005 was estimated by assuming that the global targets for case detection and cure will be reached in 2005, and that there is constant progress towards these targets from 2002 (the most recent year for which notification are available; in the original analysis, the number of cases to be treated was projected from 1999 notification data).
2. Three categories of resource requirements were considered: those required by NTPs, those required within the general health services to support treatment of patients (e.g. the staff and infrastructure needed for inpatient care and outpatient visits for DOT and monitoring), and those required to operate dedicated TB hospitals (important only in the Russian Federation). The resources required by NTPs were generally estimated by multiplying the number of patients to be treated by either the NTP expenditures per patient in 2002 or the NTP budget per patient for 2003, whichever was higher. This implicitly assumes that the cost per patient treated remains constant as the number of patients treated expands in 2004 and 2005. Based on 2002

and 2003 data, this appears to be a realistic assumption for India and the Philippines. However, since comparison of 2002 and 2003 data suggest an increase in the cost per patient treated between 2002 and 2003 for most other countries, this assumption may lead to under-estimates of resource requirements in other countries. The one country for which this method was not applied was the Russian Federation. Here, the budget requirements included in a recently developed 5-year plan were used. Resource requirements for general health services were estimated by multiplying the cost per patient treated (estimated as explained above for costs beyond NTP expenditures/budgets in 2002 and 2003) by the number of patients to be treated. Requirements for dedicated TB hospitals were estimated by multiplying the cost per bed-day by the number of beds.

3. Sources of funding were defined as governments' regular budgets, loans, grants from the GFATM, and grants from other donors. When up-to-date information on projected funding from governments, loans and donors other than the GFATM, and remaining funding gaps, was not available for 2004 and 2005 (this applied to most countries since the WHO data collection form requested data for 2002 and 2003 only), we assumed that the 2003 level of funding would be in place in 2004 and 2005. For the resources required within the general health services, government regular budgets were assumed to be the only source of funding (as these resources are primarily staff, buildings, and the non-personnel inputs associated with operating facilities e.g. electricity and water, which are typically not funded by other sources). For GFATM funding, we used proposals, available in the public

domain, to estimate the funds that would be available in both 2004 and 2005. For example, for a country that had a proposal approved in late 2003, we assumed that the funds requested for year 1 of the proposal would be available in 2004. Crucially, this assumes that funds will become available relatively quickly after proposals have been approved. If this does not happen, then the funds projected to be available from the GFATM will become a funding gap. We then defined the difference between total resource requirements and total projected funding as a "possible gap".

### Data analysis: other countries

The data provided by countries other than the HBCs were less complete, and our analyses to date are more superficial. We used the data provided on the WHO surveillance form to calculate the total NTP budget and funding gap for each country submitting data, and summed the totals for each WHO region. We also assessed GFATM funding for both HBCs and other countries, as announced after the first 3 rounds of funding.

<sup>21</sup> World Bank. World Development Indicators. Washington DC, World Bank, 2003.

# Results

## Detection and treatment of TB cases

### Countries reporting to WHO

By the end of 2003, 201 (96%) of 210 countries and territories reported case notifications for 2002 and/or treatment outcomes for patients registered in 2001. We received reports from all 22 HBCs.

### DOTS population coverage, 1995–2002

The number of countries implementing DOTS increased by 25 during 2002, bringing the total to 180 out of 210 (Figure 1). One hundred and twenty-one countries determined

that DOTS was available to over 90% of their populations (Figure 2, Annex 5). Just one DOTS country had coverage under 10% (Turkey), and 58 were in the expansion phase (coverage 10–90%). All 22 HBCs had a DOTS programme in 2002. Nine countries implemented DOTS for the first time in 2002; five achieved moderate coverage (10–90%), and three reached high coverage (> 90%).

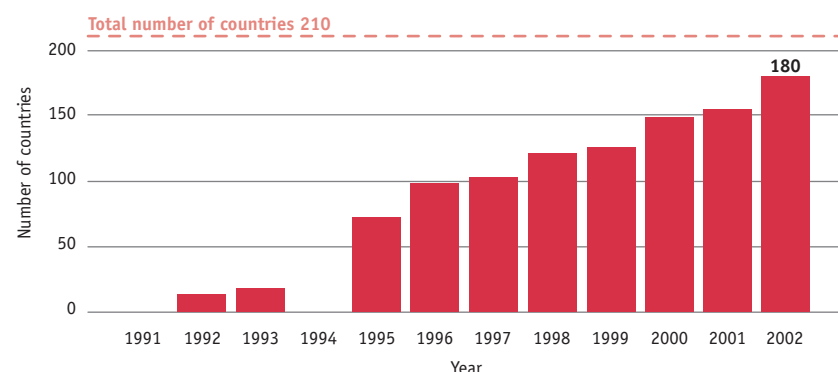
DOTS population coverage has steadily increased since 1995 (Figure 2; Table 4). By the end of 2002, 69% of the world's population lived in counties, districts, oblasts, and provinces of countries that had

adopted DOTS. Reported coverage was over 70% in the WHO regions of Africa, the Americas, the Eastern Mediterranean and the Western Pacific, and lowest in the European Region (40%, Figure 3).

All 22 HBCs provided data on detection and treatment from DOTS programmes covering at least part of the country. Ethiopia, South Africa, and Thailand reported that coverage increased to more than 90% of their populations. Afghanistan, Pakistan, Ethiopia, South Africa, all improved coverage by more than 20% between 2001 and 2002, Thailand by 18%, China by 10%, and India by 7% (Table 4).

FIGURE 1

### Number of countries implementing DOTS, 1991–2002



### Case notifications, 1995–2002

The 201 countries reporting to WHO in 2002 notified 4.0 million cases, of which 1.7 million (42%) were sputum smear-positive (Table 5, Annex 5). The global, crude notification rate (all forms of TB for all reporting countries) has been more or less stable since records began in 1980, and changed little between 2001 (62 per 100 000) and 2002 (66 per 100 000). By contrast, the total number of notified smear-positive cases increased by about 4% per year

FIGURE 2

### DOTS coverage, 1995–2002

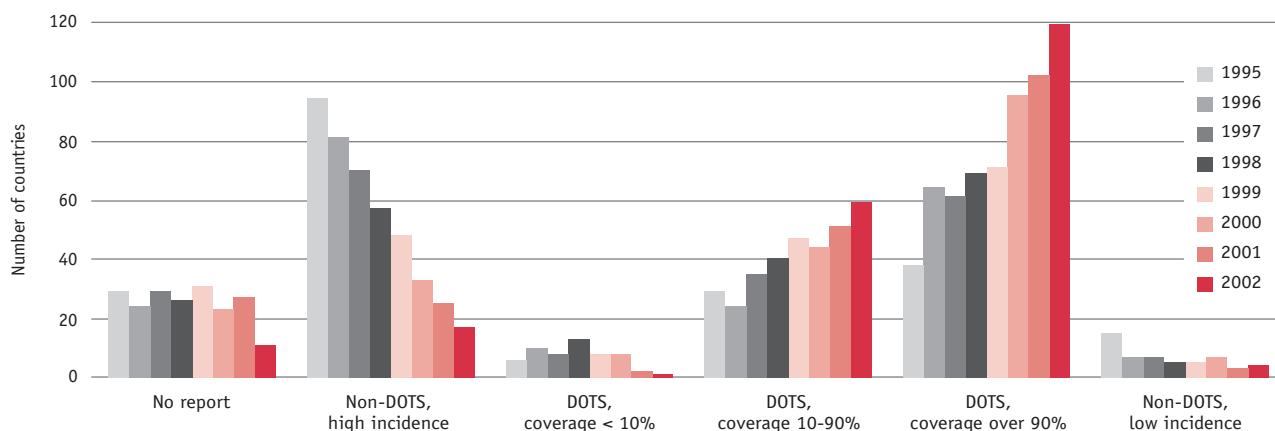
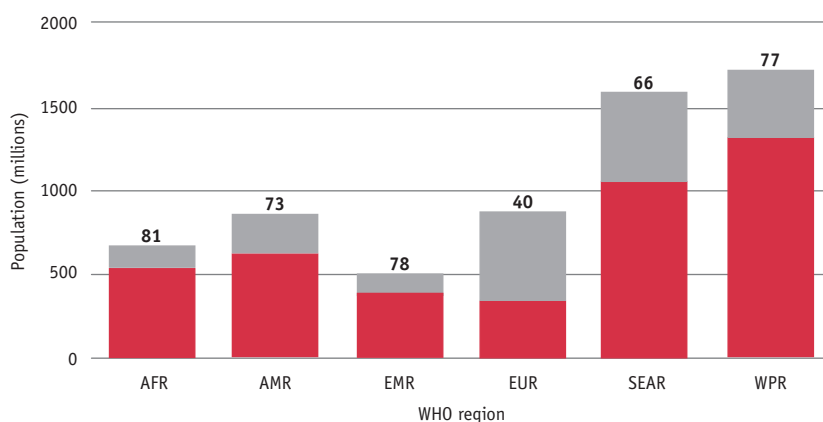


FIGURE 3

**DOTS population coverage by WHO region, 2002**

Each bar shows the population of the region, and the shaded portion of the bar shows the population covered by DOTS. The number above each bar is the percent of the population covered.



between 1995 and 2002, probably because of the emphasis placed by DOTS programmes on diagnosis by sputum smear microscopy. Based on notifications of all TB cases from countries thought to have reliable data, and where there has apparently been no significant change in case finding effort, we estimate that the global incidence rate of TB (all forms) was growing at 1.1% per year in 2002, and the total number of cases was growing at 2.4% per year.

The trends in case notifications between 1980 and 2002, and the presumed trends in incidence, differ among regions. The consistency in trend among countries within each region is revealed by the 95% CI on the standardized series of notification rates in Figure 4. Although the notification rate of TB has been rising quickly in eastern Europe (5% per year, 1997–2002), and in African countries with high HIV prevalence (eastern and southern African countries; 7% per year), the rate of increase has been slowing in both regions since the mid 1990s (Figure 5). In most other regions of the world, the case notification rate has been roughly stable or in decline.

This evaluation of trends in incidence has been used, with other data, to update estimates of TB incidence for every country and region of the

TABLE 4

**Progress in DOTS implementation, 2002**

|                              | PERCENT OF POPULATION COVERED BY DOTS |           |           |           |           |           |           |           |
|------------------------------|---------------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
|                              | 1995                                  | 1996      | 1997      | 1998      | 1999      | 2000      | 2001      | 2002      |
| 1 India                      | 2                                     | 2         | 2         | 9         | 14        | 30        | 45        | 52        |
| 2 China                      | 49                                    | 60        | 64        | 64        | 64        | 68        | 68        | 78        |
| 3 Indonesia                  | 6                                     | 14        | 28        | 80        | 90        | 98        | 98        | 98        |
| 4 Nigeria                    | 47                                    | 30        | 40        | 45        | 45        | 47        | 55        | 55        |
| 5 Bangladesh                 | 41                                    | 65        | 80        | 90        | 90        | 92        | 95        | 95        |
| 6 Pakistan                   | 2                                     | 8         | —         | 8         | 8         | 9         | 24        | 45        |
| 7 Ethiopia                   | 39                                    | 39        | 48        | 64        | 63        | 85        | 70        | 95        |
| 8 Philippines                | 4                                     | 2         | 15        | 17        | 43        | 90        | 95        | 98        |
| 9 South Africa               | —                                     | 0         | 13        | 22        | 66        | 77        | 77        | 98        |
| 10 DR Congo                  | 47                                    | 51        | 60        | 60        | 62        | 70        | 70        | 70        |
| 11 Russian Federation        | —                                     | 2         | 2         | 5         | 5         | 12        | 16        | 25        |
| 12 Kenya                     | 15                                    | 100       | 100       | 100       | 100       | 100       | 100       | 100       |
| 13 Viet Nam                  | 50                                    | 95        | 93        | 96        | 99        | 100       | 100       | 100       |
| 14 UR Tanzania               | 98                                    | 100       | 100       | 100       | 100       | 100       | 100       | 100       |
| 15 Brazil                    | —                                     | 0         | 0         | 3         | 7         | 7         | 32        | 25        |
| 16 Uganda                    | —                                     | 0         | 100       | 100       | 100       | 100       | 100       | 100       |
| 17 Zimbabwe                  | —                                     | 0         | 0         | 100       | 12        | 100       | 100       | 100       |
| 18 Mozambique                | 97                                    | 100       | 84        | 95        | —         | 100       | 100       | 100       |
| 19 Thailand                  | —                                     | 1         | 4         | 32        | 59        | 70        | 82        | 100       |
| 20 Afghanistan               | —                                     | —         | 12        | 11        | 14        | 15        | 12        | 38        |
| 21 Cambodia                  | 60                                    | 80        | 88        | 100       | 100       | 99        | 100       | 100       |
| 22 Myanmar                   | —                                     | 59        | 60        | 60        | 64        | 77        | 84        | 88        |
| <b>High-burden countries</b> | <b>28</b>                             | <b>32</b> | <b>37</b> | <b>43</b> | <b>46</b> | <b>55</b> | <b>61</b> | <b>68</b> |
| AFR                          | 43                                    | 47        | 56        | 62        | 56        | 70        | 70        | 81        |
| AMR                          | 12                                    | 48        | 50        | 59        | 66        | 69        | 73        | 73        |
| EMR                          | 23                                    | 11        | 18        | 33        | 51        | 65        | 71        | 78        |
| EUR                          | 5.4                                   | 8.2       | 17        | 22        | 23        | 26        | 32        | 40        |
| SEAR                         | 6.7                                   | 12        | 16        | 30        | 36        | 50        | 61        | 66        |
| WPR                          | 43                                    | 55        | 57        | 58        | 57        | 67        | 67        | 77        |
| <b>Global</b>                | <b>35</b>                             | <b>33</b> | <b>38</b> | <b>45</b> | <b>48</b> | <b>58</b> | <b>62</b> | <b>69</b> |

Zero indicates that a report was received, but the country had not implemented DOTS.  
— indicates that no report was received.

FIGURE 4

### Trends in case notification rates (all cases, sum of DOTS and non-DOTS) for selected countries in different regions, 1981–2002

To highlight trends in notifications within regions, the rates for all countries have been expressed relative to an arbitrary standard of 100 in 1990. Error bars are 95% CI on the standardized (unweighted) rates. Countries selected in each region are those for which case notifications were judged to represent trends in incidence over the period 1981–2002.



TABLE 5

**Case notifications, 2002**

|                              | NUMBER NOTIFIED  |                  |                  |                | SMEAR-POSITIVE CASE DETECTION RATE |               | % OF NEW PULMONARY CASES SMEAR-POSITIVE <sup>a</sup> |           |
|------------------------------|------------------|------------------|------------------|----------------|------------------------------------|---------------|--|-----------|
|                              | ALL CASES        |                  | SMEAR-POSITIVE   |                | DOTS                               | WHOLE COUNTRY | DOTS   | NON-DOTS  |
|                              | DOTS             | NON-DOTS         | DOTS             | NON-DOTS       |                                    |               |  |           |
| 1 India                      | 549 700          | 511 251          | 245 135          | 150 698        | 31                                 | 50            | 55   | 33        |
| 2 China                      | 388 195          | 74 414           | 180 239          | 14 733         | 27                                 | 30            | 51   | 22        |
| 3 Indonesia                  | 155 188          | —                | 76 230           | —              | 30                                 | 30            | 51   | —         |
| 4 Nigeria                    | 29 645           | 8 983            | 19 596           | 2 340          | 12                                 | 14            | 71   | 26        |
| 5 Bangladesh                 | 71 637           | 10 185           | 45 701           | 1 070          | 32                                 | 33            | 70   | 13        |
| 6 Pakistan                   | 47 754           | 4 418            | 15 331           | 934            | 13                                 | 13            | 40   | 24        |
| 7 Ethiopia                   | 110 289          | —                | 36 541           | —              | 33                                 | 33            | 52   | —         |
| 8 Philippines                | 118 408          | —                | 65 148           | —              | 58                                 | 58            | 58   | —         |
| 9 South Africa               | 212 616          | 2 504            | 97 656           | 1 143          | 96                                 | 97            | 62   | 57        |
| 10 DR Congo                  | 70 625           | —                | 44 518           | —              | 52                                 | 52            | 84   | —         |
| 11 Russian Federation        | 17 530           | 111 343          | 5 179            | 22 686         | 6.4                                | 34            | 33   | 22        |
| 12 Kenya                     | 80 183           | —                | 34 337           | —              | 49                                 | 49            | 52   | —         |
| 13 Viet Nam                  | 95 577           | —                | 56 811           | —              | 82                                 | 82            | 75   | —         |
| 14 UR Tanzania               | 60 306           | —                | 24 136           | —              | 43                                 | 43            | 52   | —         |
| 15 Brazil                    | 8 770            | 72 666           | 4 835            | 36 536         | 10                                 | 84            | 64   | 62        |
| 16 Uganda                    | 40 695           | —                | 19 088           | —              | 47                                 | 47            | 53   | —         |
| 17 Zimbabwe                  | 59 170           | —                | 15 941           | —              | 46                                 | 46            | 33   | —         |
| 18 Mozambique                | 25 544           | —                | 15 236           | —              | 45                                 | 45            | 71   | —         |
| 19 Thailand                  | 49 581           | —                | 25 593           | —              | 73                                 | 73            | 61   | —         |
| 20 Afghanistan               | 13 794           | —                | 6 509            | —              | 19                                 | 19            | 66   | —         |
| 21 Cambodia                  | 24 610           | —                | 17 258           | —              | 52                                 | 52            | 86   | —         |
| 22 Myanmar                   | 57 012           | —                | 24 162           | —              | 73                                 | 73            | 57   | —         |
| <b>High-burden countries</b> | <b>2 286 829</b> | <b>795 764</b>   | <b>1 075 180</b> | <b>230 140</b> | <b>35</b>                          | <b>42</b>     | <b>57</b>  | <b>32</b> |
| AFR                          | 958 365          | 33 689           | 438 259          | 13 394         | 44                                 | 45            | 59   | 44        |
| AMR                          | 134 267          | 99 381           | 76 212           | 51 142         | 46                                 | 77            | 72   | 63        |
| EMR                          | 179 594          | 8 864            | 73 639           | 1 323          | 26                                 | 27            | 59   | 19        |
| EUR                          | 134 917          | 238 580          | 43 005           | 40 450         | 20                                 | 39            | 40   | 27        |
| SEAR                         | 954 727          | 533 258          | 449 575          | 157 115        | 35                                 | 47            | 56   | 33        |
| WPR                          | 680 750          | 125 362          | 340 777          | 31 442         | 36                                 | 40            | 57   | 29        |
| <b>Global</b>                | <b>3 042 620</b> | <b>1 039 134</b> | <b>1 421 467</b> | <b>294 866</b> | <b>37</b>                          | <b>44</b>     | <b>57</b>  | <b>35</b> |

—Indicates not applicable (for countries with 100% DOTS coverage) or not available (no non-DOTS report received).

<sup>a</sup> Expected percentage of new pulmonary cases that are smear positive is 65–80%.

FIGURE 5

**Annual changes in TB notification rates 1992–2002**

Average percent change (on previous year) in notification rates (all forms, DOTS and non-DOTS) between consecutive years for 2 groups of countries; Africa – high HIV (red) and eastern European countries (grey). See Figure 4 for countries included.

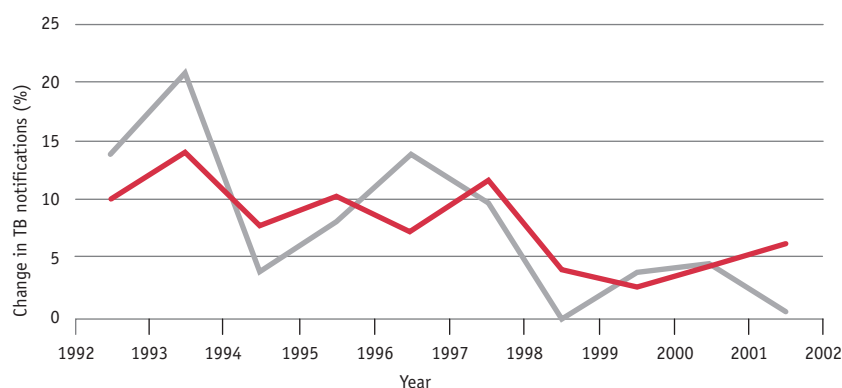


TABLE 6

**Estimated incidence of TB, 2002**

|                              | POPULATION<br>(1000s) | NUMBER ESTIMATED  |                         |                      |                         | CUMULATIVE INCIDENCE (%)<br>(REGIONAL PROPORTION OF GLOBAL TOTAL) |
|------------------------------|-----------------------|-------------------|-------------------------|----------------------|-------------------------|---|
|                              |                       | ALL CASES         |                         | SMEAR-POSITIVE CASES |                         |   |
|                              |                       | NUMBER<br>(1000s) | RATE PER<br>100 000 POP | NUMBER<br>(1000s)    | RATE PER<br>100 000 POP |   |
| 1 India                      | 1 049 549             | 1 761             | 168                     | 787                  | 75                      | 20  |
| 2 China                      | 1 294 867             | 1 459             | 113                     | 656                  | 51                      | 37  |
| 3 Indonesia                  | 217 131               | 557               | 256                     | 250                  | 115                     | 43  |
| 4 Nigeria                    | 120 911               | 368               | 304                     | 159                  | 132                     | 47  |
| 5 Bangladesh                 | 143 809               | 318               | 221                     | 143                  | 99                      | 51  |
| 6 Pakistan                   | 149 911               | 272               | 181                     | 122                  | 81                      | 54  |
| 7 Ethiopia                   | 68 961                | 255               | 370                     | 110                  | 159                     | 57  |
| 8 Philippines                | 78 580                | 251               | 320                     | 113                  | 144                     | 60  |
| 9 South Africa               | 44 759                | 250               | 558                     | 102                  | 227                     | 62  |
| 10 DR Congo                  | 51 201                | 196               | 383                     | 85                   | 167                     | 65  |
| 11 Russian Federation        | 144 082               | 182               | 126                     | 81                   | 56                      | 67  |
| 12 Kenya                     | 31 540                | 170               | 540                     | 70                   | 223                     | 69  |
| 13 Viet Nam                  | 80 278                | 155               | 192                     | 69                   | 86                      | 70  |
| 14 UR Tanzania               | 36 276                | 132               | 363                     | 56                   | 155                     | 72  |
| 15 Brazil                    | 176 257               | 110               | 62                      | 49                   | 28                      | 73  |
| 16 Uganda                    | 25 004                | 94                | 377                     | 41                   | 164                     | 74  |
| 17 Zimbabwe                  | 12 835                | 88                | 683                     | 35                   | 271                     | 75  |
| 18 Mozambique                | 18 537                | 81                | 436                     | 34                   | 182                     | 76  |
| 19 Thailand                  | 62 193                | 80                | 128                     | 35                   | 57                      | 77  |
| 20 Afghanistan               | 22 930                | 76                | 333                     | 34                   | 150                     | 78  |
| 21 Cambodia                  | 13 810                | 76                | 549                     | 33                   | 242                     | 79  |
| 22 Myanmar                   | 48 852                | 75                | 154                     | 33                   | 68                      | 80  |
| Total, high-burden countries | 3 892 274             | 7 005             | 180                     | 3100                 | 80                      | 80  |
| AFR                          | 672 238               | 2 354             | 350                     | 1 000                | 149                     | 26  |
| AMR                          | 856 916               | 370               | 43                      | 165                  | 19                      | 4.2   |
| EMR                          | 502 824               | 622               | 124                     | 279                  | 55                      | 7.2   |
| EUR                          | 877 887               | 472               | 54                      | 211                  | 24                      | 5.4   |
| SEAR                         | 1 590 833             | 2 890             | 182                     | 1 294                | 81                      | 33  |
| WPR                          | 1 718 314             | 2 090             | 122                     | 939                  | 55                      | 24  |
| Global total                 | 6 219 011             | 8 797             | 141                     | 3 887                | 63                      | 100   |

world (Table 6, Annex 5). There were an estimated 8.8 million (141 per 100 000) new TB cases in 2002, of which 3.9 million (63 per 100 000) were smear-positive. These revised incidence estimates are the denominators used to calculate case detection rates for 2002. The ranking of countries by number of TB cases has drawn attention to the 22 countries that account for roughly 80% of the world's burden of TB, but the importance of the TB problem for individual countries is better expressed as the incidence rate. Among the 15 countries with the highest estimated TB incidence rates per capita, 13 are in Africa and, in most, the prevalence of HIV infection among TB patients is high (Figure 6).

Case notifications from African

countries show two other patterns that appear 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 7), 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, some East African countries with high rates of HIV infection show a declining proportion of smear-positive cases among all TB cases notified (Figure 8). This is expected because smear-negative TB is more frequent among HIV-positive than HIV-negative TB cases, but might also reflect a decline in diagnostic performance, despite the

emphasis placed on sputum smear microscopy in DOTS programmes.

Among all TB cases reported in 2002, 3.0 million (over two-thirds) originated in DOTS areas (Table 5). Of the smear-positive cases, 1.4 million were notified by DOTS programmes (83%). The African (25%), South-East Asia (37%), and Western Pacific Regions (20%) together accounted for 82% of all notified cases and similar proportions of smear-positive cases. Because DOTS emphasizes diagnosis by sputum smear microscopy, 47% of all new cases were smear-positive (45–60% expected) in DOTS areas, compared with 30% elsewhere. Similarly, 57% of new pulmonary cases were smear-positive under DOTS (55–70% expected), compared with 34% elsewhere.

The increment in smear-positive cases detected by DOTS programmes was roughly constant between 1995 and 2000 (linear increase in total cases detected), but there are signs that case finding under DOTS has accelerated globally over the past 2 years. An extra 610 228 TB cases (all forms) were reported under DOTS between 2001 and 2002, as compared with the average of 269 268 over the period 1995–2000. Similarly, an extra 214 656 smear-positive cases were reported between 2001 and 2002, as compared with the 1995–2000 average of 134 157.

The number of cases enrolled under DOTS has continued to increase much more quickly than the total number of cases notified: DOTS programmes appear to have improved their performance primarily by recruiting cases that would otherwise have been notified outside DOTS programmes. Thus 25% more TB cases, and 18% more smear-positive cases, were recruited under DOTS in 2002 as compared with 2001. Conversely, the numbers of TB cases (both smear-positive and all forms) reported outside DOTS programmes fell by 28% between 2001 and 2002.

Approximately 28% of the addi-

FIGURE 6

**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 15–49 years; red bars), 2002**

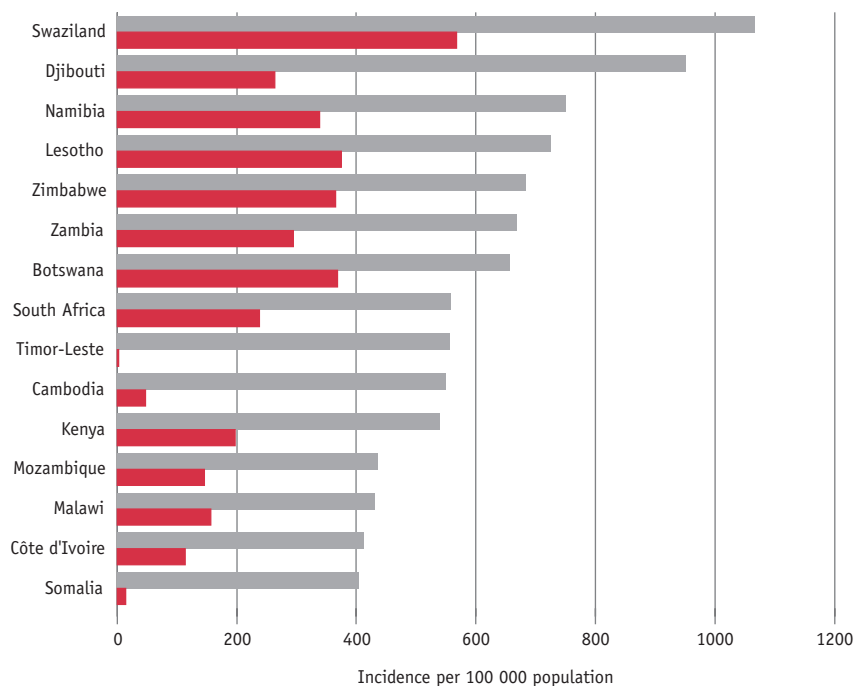


FIGURE 7

**The proportion of notified TB patients aged 15–24 years that were women, plotted against the estimated HIV prevalence in adults 15–49 years.** TB data are for 15 African countries in sub-Saharan Africa (2002); HIV estimates are from UNAIDS (2001);  $r^2 = 66\%$ .

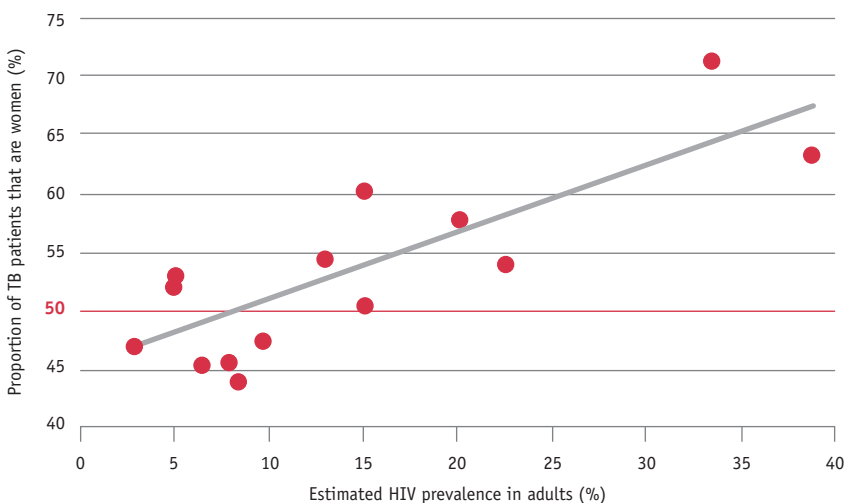




FIGURE 8

**Smear-positive cases as a proportion of all notified cases over time for 6 African countries with high HIV prevalence**

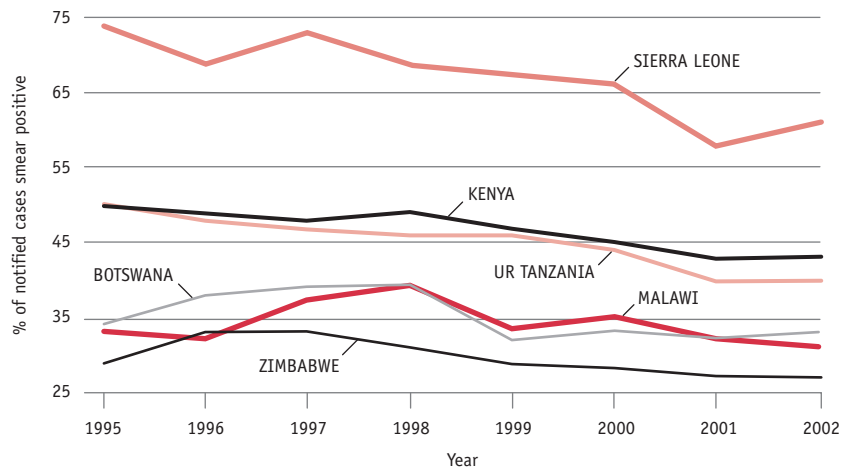
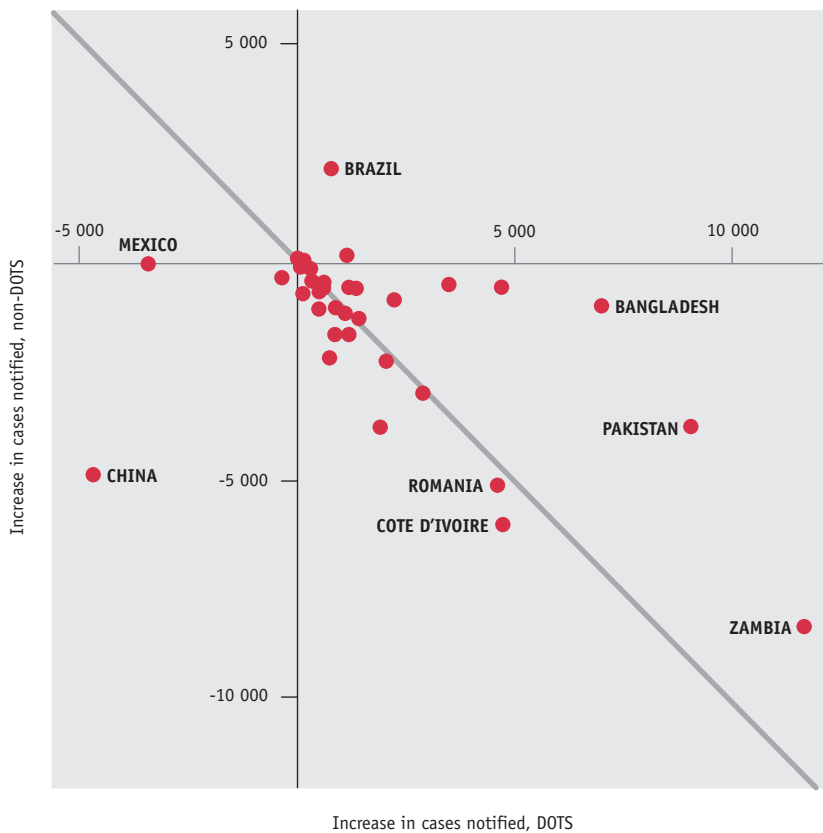


FIGURE 9

**Increases in DOTS notifications at the expense of non-DOTS notifications**

The graph shows the increase or decrease in numbers of smear-positive cases (2001 to 2002) notified from DOTS and non-DOTS areas in 49 countries. The gains to DOTS programmes match losses to non-DOTS programmes on the line (slope = -1). India (not shown) gained 59 858 cases under DOTS, but lost 48 852 cases from non-DOTS areas, while South Africa (not shown) gained 26 085 cases under DOTS, but lost 11 094 cases from non-DOTS areas.





tional smear-positive cases reported from all DOTS programmes in 2002 (compared with 2001) were in India. There were smaller but marked improvements in case detection in South Africa (contributing 12% of the total increase), Indonesia (10%), Pakistan (4%), Bangladesh (3%), and the Philippines (3%). These 6 countries together accounted for 61% of the additional cases notified under DOTS in 2002.

The global trade-off between cases recruited to DOTS programmes and at the same time lost from other programmes can also be seen in data from individual countries. Notifications from 51 countries show that the gain in DOTS areas is, by and large, offset by the loss from non-DOTS areas, and many of these countries

cluster around the line of exact compensation (slope  $-1$ ; Figure 9). India (not marked on the graph) gained 59 858 smear-positive cases under DOTS between 2001 and 2002, but notifications from outside DOTS programmes fell by 48 852, a net gain of 11 006 cases. Bangladesh, Brazil, Pakistan, and Zambia also made noticeable net gains (points lie above the line in Figure 9). China reported fewer cases from both inside and outside DOTS areas.

#### Case detection rate, 1995–2002

The 4.0 million cases of tuberculosis (all forms) notified in 2002 represent 46% of the 8.8 million estimated new cases; 1.7 million new smear-positive cases account for 44% of the 3.9 million estimated (Table 7). In par-

allel with trends in case notifications, the detection rate of all TB cases has remained stable since 1995 (Figure 10b, red points), while the detection rate of smear-positive cases has slowly increased (Figure 10a, red points).

Thirty-five percent of all new cases, and 37% of new smear-positive cases, were detected by DOTS programmes in 2002. The detection rate achieved by DOTS programmes has been rising much faster than the overall case detection rate, and appears to have accelerated since 2000. The acceleration is more pronounced for the total number of cases notified (Figure 10b, white points) than for smear-positives (Figure 10a, white points). However, to reach 70% case detection by 2005, an extra 1.04 million

TABLE 7

#### Case detection rate of new smear-positive cases (%), 1995–2002

|                              | DOTS PROGRAMMES |           |           |           |           |           |           |           | WHOLE COUNTRY |           |           |           |           |           |           |           |
|------------------------------|-----------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|---------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
|                              | 1995            | 1996      | 1997      | 1998      | 1999      | 2000      | 2001      | 2002      | 1995          | 1996      | 1997      | 1998      | 1999      | 2000      | 2001      | 2002      |
| 1 India                      | 0.2             | 0.8       | 1.0       | 1.5       | 6.6       | 12        | 23        | 31        | 33            | 36        | 34        | 35        | 43        | 44        | 49        | 50        |
| 2 China                      | 15              | 28        | 31        | 30        | 28        | 29        | 28        | 27        | 22            | 33        | 37        | 32        | 31        | 32        | 31        | 30        |
| 3 Indonesia                  | 1.3             | 4.5       | 7.5       | 12        | 19        | 20        | 21        | 30        | 12            | *         | *         | *         | *         | 21        | *         | *         |
| 4 Nigeria                    | 12              | 18        | 12        | 12        | 13        | 13        | 13        | 12        | *             | 12        | *         | *         | *         | *         | 16        | 14        |
| 5 Bangladesh                 | 6.4             | 14        | 18        | 23        | 24        | 25        | 27        | 32        | 14            | 21        | 23        | 26        | 26        | 27        | 28        | 33        |
| 6 Pakistan                   | 1.0             | 1.8       | —         | 3.8       | 2.0       | 2.8       | 5.2       | 13        | 2.5           | *         | —         | 14        | 5.5       | *         | 9.2       | 13        |
| 7 Ethiopia                   | 16              | 21        | 24        | 25        | 26        | 34        | 33        | 33        | *             | *         | *         | *         | 26        | *         | *         | *         |
| 8 Philippines                | 0.4             | 0.5       | 3.2       | 10        | 19        | 46        | 54        | 58        | 99            | 88        | 80        | 67        | 69        | 62        | *         | *         |
| 9 South Africa               | —               | —         | 6.1       | 22        | 68        | 72        | 76        | 96        | 41            | 68        | 80        | 90        | 90        | 88        | 89        | 97        |
| 10 DR Congo                  | 42              | 49        | 47        | 57        | 54        | 51        | 54        | 52        | 46            | *         | 46        | 57        | *         | *         | *         | *         |
| 11 Russian Federation        | —               | 0.4       | 0.9       | 1.0       | 1.7       | 4.8       | 5.2       | 6.4       | 58            | 63        | 61        | 59        | 29        | 36        | 34        | 34        |
| 12 Kenya                     | 53              | 55        | 54        | 59        | 58        | 49        | 51        | 49        | *             | *         | *         | *         | *         | 54        | *         | *         |
| 13 Viet Nam                  | 31              | 60        | 79        | 82        | 81        | 79        | 80        | 82        | 61            | 78        | 84        | 85        | 82        | *         | *         | *         |
| 14 UR Tanzania               | 53              | 53        | 52        | 53        | 51        | 48        | 46        | 43        | *             | *         | *         | *         | *         | *         | *         | *         |
| 15 Brazil                    | —               | —         | —         | 4.1       | 4.0       | 7.6       | 8.1       | 10        | 79            | 78        | 78        | 80        | 79        | 80        | 76        | 84        |
| 16 Uganda                    | —               | —         | 58        | 57        | 54        | 48        | 45        | 47        | 52            | 55        | 58        | *         | 55        | *         | *         | *         |
| 17 Zimbabwe                  | —               | —         | —         | 52        | 49        | 46        | 47        | 46        | 39            | 49        | 56        | *         | *         | *         | *         | *         |
| 18 Mozambique                | 60              | 54        | 52        | 52        | —         | 47        | 45        | 45        | *             | *         | *         | *         | 50        | *         | *         | *         |
| 19 Thailand                  | —               | 0.3       | 5.0       | 22        | 41        | 49        | 80        | 73        | 53            | 45        | 35        | *         | *         | *         | *         | *         |
| 20 Afghanistan               | —               | —         | 2.0       | 5.9       | 5.3       | 9.0       | 14        | 19        | —             | —         | *         | *         | *         | *         | *         | *         |
| 21 Cambodia                  | 41              | 34        | 44        | 47        | 51        | 47        | 44        | 52        | *             | 43        | *         | *         | *         | *         | *         | *         |
| 22 Myanmar                   | —               | 25        | 26        | 29        | 34        | 51        | 62        | 73        | 25            | 28        | 28        | *         | *         | *         | 63        | *         |
| <b>High-burden countries</b> | <b>8.0</b>      | <b>13</b> | <b>16</b> | <b>19</b> | <b>22</b> | <b>26</b> | <b>31</b> | <b>35</b> | <b>31</b>     | <b>35</b> | <b>36</b> | <b>36</b> | <b>38</b> | <b>39</b> | <b>40</b> | <b>42</b> |
| AFR                          | 23              | 26        | 29        | 35        | 36        | 37        | 39        | 44        | 38            | 43        | 42        | 45        | 45        | 42        | 43        | 45        |
| AMR                          | 23              | 27        | 30        | 34        | 37        | 45        | 44        | 46        | 71            | 72        | 77        | 77        | 76        | 75        | 77        | 77        |
| EMR                          | 11              | 9.1       | 10        | 17        | 17        | 22        | 23        | 26        | 20            | 25        | 24        | 30        | 27        | 23        | 25        | 27        |
| EUR                          | 2.2             | 3.2       | 4.3       | 11        | 11        | 12        | 14        | 20        | 55            | 58        | 55        | 57        | 45        | 46        | 42        | 39        |
| SEAR                         | 1.4             | 3.8       | 5.3       | 7.8       | 13        | 18        | 27        | 35        | 27            | 28        | 28        | 29        | 37        | 39        | 43        | 47        |
| WPR                          | 15              | 27        | 31        | 32        | 30        | 35        | 36        | 36        | 36            | 44        | 47        | 42        | 42        | 41        | 40        | 40        |
| <b>Global</b>                | <b>11</b>       | <b>16</b> | <b>18</b> | <b>21</b> | <b>24</b> | <b>28</b> | <b>32</b> | <b>37</b> | <b>35</b>     | <b>39</b> | <b>39</b> | <b>40</b> | <b>41</b> | <b>41</b> | <b>43</b> | <b>44</b> |

—Indicates not available.

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

FIGURE 10

### Progress towards the 70% case detection target

(a) Open circles mark the number of smear-positive cases notified under DOTS 1995–2002, expressed as a percentage of estimated new cases in each year. The solid line through these points indicates the average annual increment from 1995–2000 of about 134 000 new cases; the steeper line represents a higher annual increment of approximately 433 000 cases needed to reach the 70% target by 2005 (horizontal line). 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.

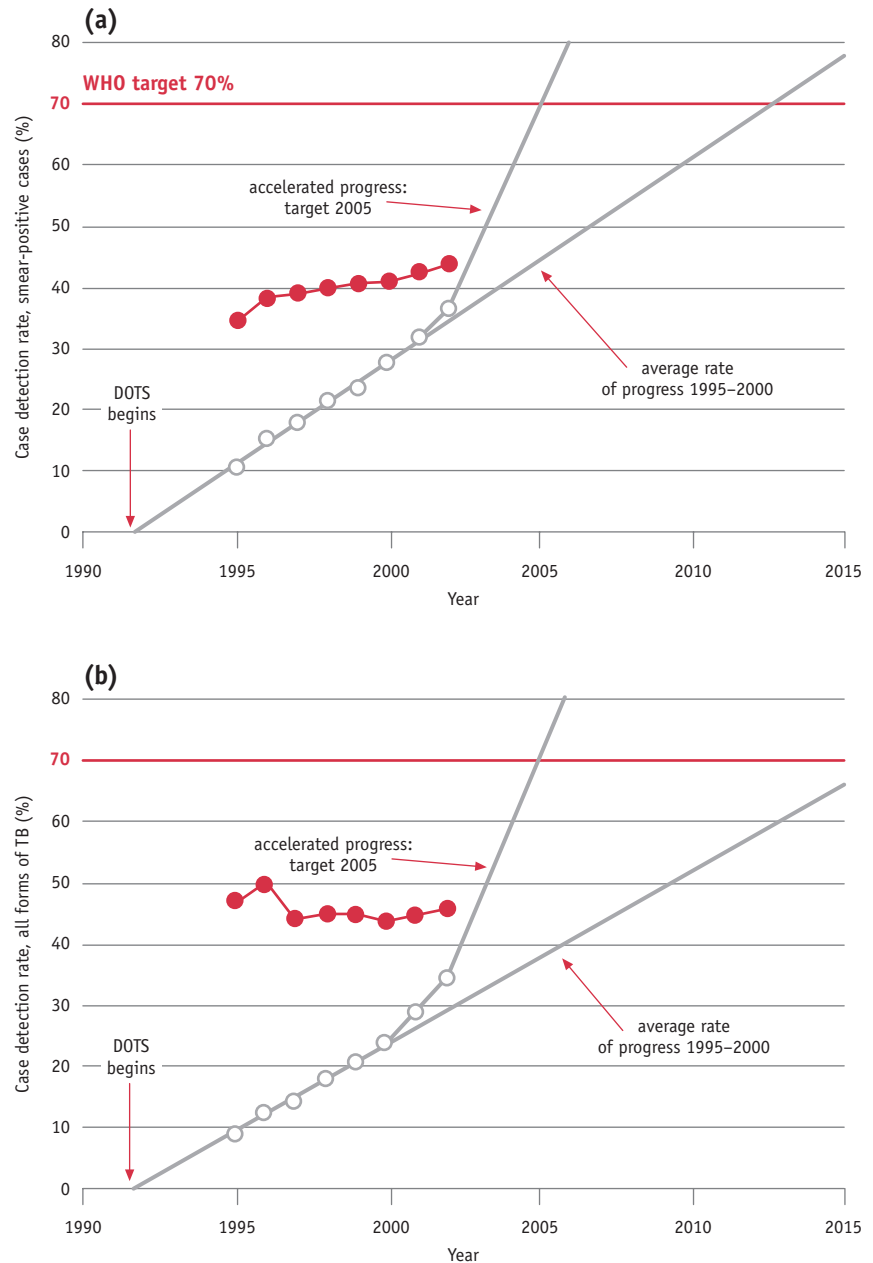
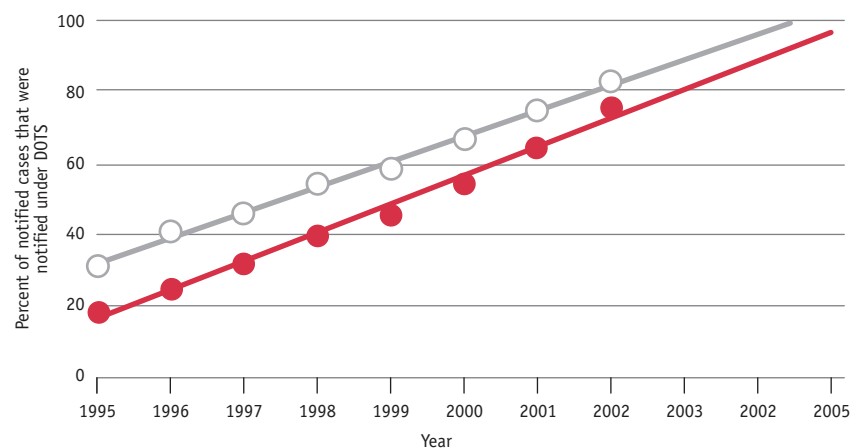


FIGURE 11

### Percent of notified smear-positive cases (open circles) and of all cases (closed circles) that were notified under DOTS, 1995–2002



cases (all forms), and an extra 433 000 smear-positive cases, must be found in each of the years 2003–5.

Because case detection under DOTS has increased faster than the overall rate of case detection, the proportion of notified cases that were notified by DOTS programmes has also increased. For smear-positive cases, that proportion has increased linearly since 1995, reaching 83% in 2002 (Figure 11). Seventy-five percent of all notified TB cases were reported under DOTS in 2002. If this trend continues, all TB cases reported to WHO by 2005 will be reported by DOTS programmes.

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 49% worldwide between 1996 and 2002 (Figure 12). There are signs of a slow rise in the HBCs, from 42% in 1996 to 51% in 2002, driven largely by improvements in India, Indonesia, Bangladesh, and the Philippines.

Smear-positive case detection rates by DOTS programmes in 2002 were lowest in the European Region (20%) and highest in the Americas (46%; Figure 13a, Table 7). In the Americas, Europe and South-East Asia, significant numbers of smear-positive cases were reported from outside DOTS programmes and, in the Americas, the overall smear-positive case detection rate exceeded 70%. There were similar differences among regions in the detection rates of all TB cases (Figure 13b). In the Americas, Europe and South-East Asia, large numbers of cases were reported from outside DOTS programmes, and the overall case detection rate approached, or reached, 70% both in the Americas and Europe.

### Treatment results, 1994–2001 cohorts

Over 1.2 million new sputum smear-positive cases were registered for treatment in DOTS programmes in

FIGURE 12

**Smear-positive case detection rate within DOTS areas for high-burden countries (red) and the world (grey), 1995–2002**

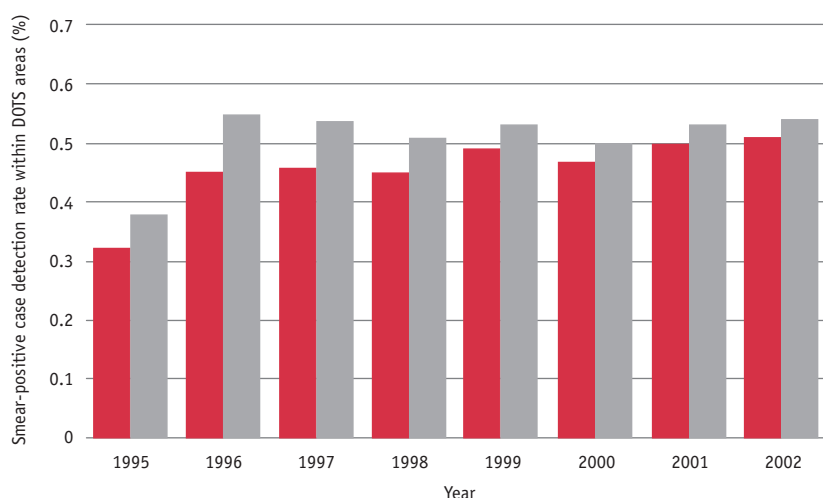
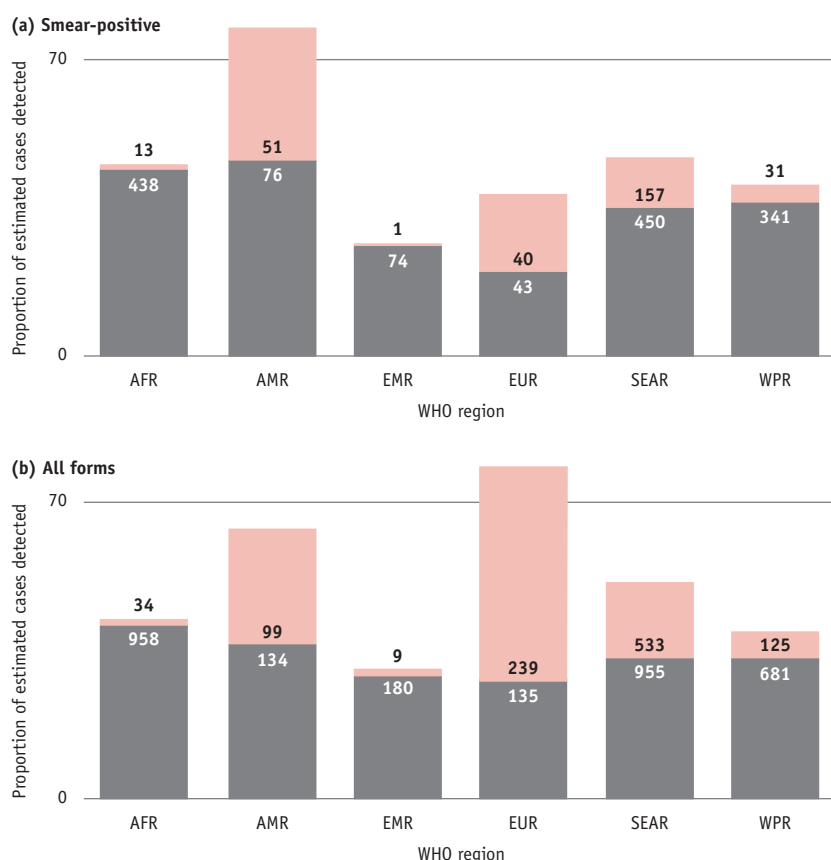


FIGURE 13

**Proportion of estimated new smear-positive (a) and of all estimated new cases (b) notified under DOTS (grey portion of bars) and non-DOTS (red portion of bars), 2002. Figures indicate the number of cases (in thousands) represented by each portion of each bar.**



2001, approximately the same number that were notified that year (Table 8, Annex 3 lists notified and registered cases for 2001 by country). However, there were marked discrepancies between notifications and registrations (>10% of cases notified) in data submitted by South Africa, Thailand, Brazil, and Afghanistan.

Of the registered DOTS cases, only 2.2% were not evaluated for treatment outcome (Table 8). The cure rate among registered cases was 73%, and a further 9.2% completed treatment (no laboratory confirmation of cure), giving a reported, overall treatment success rate of 82% under DOTS. An estimated 26% of all smear-positive

cases arising in 2001 were treated successfully by DOTS programmes.

By contrast with DOTS programmes, the quality of reporting and the outcomes of treatment were far worse in non-DOTS areas (Table 9). Only 5 HBCs reported treatment outcomes from non-DOTS areas. The discrepancies between cases notified and registered were significant for Brazil, China, and South Africa, but not for Bangladesh or India. The overall treatment success for these 5 countries was very low because outcomes were not evaluated for the majority of patients in India (61%). Among the cases that were registered for treatment, only 25% were cured

and 40% were successfully treated. The death rate among evaluated patients was lower than in DOTS programmes (3%), but the proportion lost to follow-up was far higher (default plus transfer, 23%), and a proportion of these lost patients would have died.

By WHO region, the documented treatment success rates by DOTS programmes varied from 71% in Africa to 93% in the Western Pacific Region (Figure 14a, Table 8). Fatal outcomes were most common in Africa (7%), where a higher fraction of cases are HIV-positive, and Europe (6%), where a higher fraction of cases are drug resistant (eastern Europe), or occur

TABLE 8

**Treatment outcomes for new smear-positive cases, DOTS strategy, 2001 cohort<sup>a</sup>**

|                              | NOTIFIED         | REGISTERED <sup>a</sup> | REGST'D (%) | TREATMENT OUTCOMES (%) <sup>a</sup> |                                  |            |            |            |             |            | % EST <sup>a</sup> CASES SUCCESSFULLY TREATED UNDER DOTS |                    |
|------------------------------|------------------|-------------------------|-------------|-------------------------------------|----------------------------------|------------|------------|------------|-------------|------------|--|--------------------|
|                              |                  |                         |             | CURED                               | COMPLETED TREATMENT <sup>a</sup> | DIED       | FAILED     | DEFAULTED  | TRANSFERRED | NOT EVAL'D | TREATMENT SUCCESS (%)                                    | TREATED UNDER DOTS |
| 1 India                      | 185 277          | 184 523                 | 100         | 84                                  | 1.1                              | 4.5        | 2.8        | 7.4        | 0.4         | 0.1        | 85 †   | 20                 |
| 2 China                      | 185 018          | 176 476                 | 95          | 94                                  | 2.1                              | 1.1        | 0.7        | 0.7        | 0.6         | 0.7        | 96 †   | 26                 |
| 3 Indonesia                  | 53 965           | 53 965                  | 100         | 69                                  | 16                               | 2.0        | 1.1        | 3.6        | 1.2         | 6.4        | 86 †   | 18                 |
| 4 Nigeria                    | 18 882           | 17 436                  | 92          | 68                                  | 11                               | 5.7        | 2.1        | 12         | 1.6         | 0.0        | 79   | 10                 |
| 5 Bangladesh                 | 38 728           | 38 722                  | 100         | 81                                  | 3.2                              | 4.5        | 0.8        | 6.7        | 3.1         | 0.6        | 84   | 23                 |
| 6 Pakistan                   | 6 255            | 6 251                   | 100         | 65                                  | 11                               | 3.2        | 1.1        | 13         | 5.0         | 1.0        | 77   | 4.0                |
| 7 Ethiopia                   | 33 028           | 32 391                  | 98          | 61                                  | 15                               | 6.6        | 0.8        | 6.0        | 3.7         | 7.2        | 76   | 25                 |
| 8 Philippines                | 59 341           | 55 402                  | 93          | 74                                  | 13                               | 2.3        | 1.3        | 6.0        | 2.7         | 0.0        | 88 †   | 44                 |
| 9 South Africa               | 71 571           | 83 233                  | 116         | 55                                  | 10                               | 6.9        | 1.6        | 12         | 12          | 2.4        | 65   | 58                 |
| 10 DR Congo                  | 42 054           | 40 884                  | 97          | 66                                  | 12                               | 6.2        | 0.9        | 10         | 4.8         | 0.6        | 77   | 41                 |
| 11 Russian Federation        | 4 079            | 4 079                   | 100         | 64                                  | 2.9                              | 8.3        | 14         | 6.4        | 3.5         | 0.5        | 67   | 3.5                |
| 12 Kenya                     | 31 307           | 30 855                  | 99          | 67                                  | 13                               | 5.1        | 0.3        | 8.1        | 6.1         | 0.0        | 80   | 40                 |
| 13 Viet Nam                  | 54 238           | 54 238                  | 100         | 91                                  | 1.6                              | 3.1        | 0.9        | 1.5        | 1.9         | 0.1        | 93 †   | 74                 |
| 14 UR Tanzania               | 24 685           | 24 235                  | 98          | 76                                  | 4.3                              | 10         | 0.4        | 4.2        | 4.5         | 0.0        | 81   | 37                 |
| 15 Brazil                    | 4 086            | 1 394                   | 34          | 36                                  | 32                               | 4.9        | 0.4        | 8.5        | 4.2         | 15         | 67   | 1.9                |
| 16 Uganda                    | 17 291           | 17 291                  | 100         | 28                                  | 28                               | 6.1        | 0.5        | 17         | 5.0         | 15         | 56   | 25                 |
| 17 Zimbabwe                  | 15 370           | 16 569                  | 108         | 63                                  | 7.1                              | 12         | 0.1        | 8.4        | 9.0         | 0.0        | 71   | 36                 |
| 18 Mozambique                | 13 964           | 14 047                  | 101         | 75                                  | 2.3                              | 9.7        | 1.2        | 8.7        | 2.6         | 0.3        | 77   | 35                 |
| 19 Thailand                  | 28 363           | 19 717                  | 70          | 71                                  | 4.0                              | 10         | 1.7        | 8.5        | 3.1         | 1.5        | 75   | 42                 |
| 20 Afghanistan               | 4 639            | 6 292                   | 136         | 53                                  | 32                               | 3.8        | 1.7        | 7.0        | 3.2         | 0.0        | 84   | 16                 |
| 21 Cambodia                  | 14 361           | 14 277                  | 99          | 89                                  | 2.5                              | 4.0        | 0.4        | 2.9        | 0.9         | 0.0        | 92 †   | 40                 |
| 22 Myanmar                   | 20 686           | 20 887                  | 101         | 74                                  | 7.7                              | 5.2        | 1.7        | 9.5        | 2.2         | 0.0        | 81   | 51                 |
| <b>High-burden countries</b> | <b>927 188</b>   | <b>913 164</b>          | <b>98</b>   | <b>77</b>                           | <b>6.7</b>                       | <b>4.4</b> | <b>1.4</b> | <b>6.2</b> | <b>3.0</b>  | <b>1.4</b> | <b>84</b>  | <b>25</b>          |
| AFR                          | 352 788          | 378 984                 | 107         | 58                                  | 13                               | 7.2        | 1.1        | 10         | 6.6         | 3.8        | 71   | 29                 |
| AMR                          | 73 877           | 68 142                  | 92          | 63                                  | 17                               | 4.7        | 1.0        | 4.8        | 3.0         | 5.9        | 81   | 32                 |
| EMR                          | 61 879           | 65 285                  | 106         | 69                                  | 14                               | 3.4        | 1.5        | 7.2        | 3.0         | 2.1        | 83   | 20                 |
| EUR                          | 28 141           | 30 449                  | 108         | 61                                  | 14                               | 5.9        | 8.1        | 5.5        | 2.2         | 3.2        | 75   | 11                 |
| SEAR                         | 353 423          | 345 270                 | 98          | 80                                  | 4.6                              | 4.4        | 2.1        | 6.7        | 1.2         | 1.2        | 84   | 22                 |
| WPR                          | 333 127          | 321 230                 | 96          | 86                                  | 6.6                              | 2.3        | 1.0        | 2.2        | 1.2         | 0.7        | 93   | 32                 |
| <b>Global (DOTS)</b>         | <b>1 203 235</b> | <b>1 209 360</b>        | <b>101</b>  | <b>73</b>                           | <b>9.2</b>                       | <b>4.7</b> | <b>1.5</b> | <b>6.5</b> | <b>3.1</b>  | <b>2.2</b> | <b>82</b>  | <b>26</b>          |

<sup>a</sup> Cohort: cases diagnosed during 2001 and treated/followed-up through 2002. See table 2 and accompanying text for definitions of treatment outcomes.

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. Est: estimated cases for 2001 (as opposed to notified or registered).

† Treatment success ≥ 85%.

TABLE 9

**Treatment outcomes for new smear-positive cases, non-DOTS strategy, 2001 cohort<sup>a</sup>**

|                              | NOTIFIED       | REGISTERED <sup>a</sup> | REGST'D (%) | TREATMENT OUTCOMES (%) <sup>a</sup> |                                  |            |            |            |              |            | TREATMENT SUCCESS (%) |
|------------------------------|----------------|-------------------------|-------------|-------------------------------------|----------------------------------|------------|------------|------------|--------------|------------|-----------------------|
|                              |                |                         |             | CURED                               | COMPLETED TREATMENT <sup>a</sup> | DIED       | FAILED     | DEFAULTED  | TRANS-FERRED | NOT EVAL'D |                       |
| 1 India                      | 199 550        | 199 550                 | 100         | 17                                  | 9.0                              | 0.4        | 0.8        | 10         | 1.8          | 61         | 26                    |
| 2 China                      | 19 573         | 14 024                  | 72          | 77                                  | 8.6                              | 1.3        | 3.0        | 5.4        | 2.2          | 2.4        | 86 †                  |
| 3 Indonesia                  | —              | —                       | —           | —                                   | —                                | —          | —          | —          | —            | —          | —                     |
| 4 Nigeria                    | —              | —                       | —           | —                                   | —                                | —          | —          | —          | —            | —          | —                     |
| 5 Bangladesh                 | 2 049          | 2 049                   | 100         | 43                                  | 22                               | 0.8        | 1.6        | 24         | 8.0          | 1.3        | 65                    |
| 6 Pakistan                   | —              | —                       | —           | —                                   | —                                | —          | —          | —          | —            | —          | —                     |
| 7 Ethiopia                   | —              | —                       | —           | —                                   | —                                | —          | —          | —          | —            | —          | —                     |
| 8 Philippines                | —              | —                       | —           | —                                   | —                                | —          | —          | —          | —            | —          | —                     |
| 9 South Africa               | 12 237         | 17 322                  | 142         | 24                                  | 15                               | 5.7        | 0.9        | 8.7        | 14           | 32         | 39                    |
| 10 DR Congo                  | —              | —                       | —           | —                                   | —                                | —          | —          | —          | —            | —          | —                     |
| 11 Russian Federation        | —              | —                       | —           | —                                   | —                                | —          | —          | —          | —            | —          | —                     |
| 12 Kenya                     | —              | —                       | —           | —                                   | —                                | —          | —          | —          | —            | —          | —                     |
| 13 Viet Nam                  | —              | —                       | —           | —                                   | —                                | —          | —          | —          | —            | —          | —                     |
| 14 UR Tanzania               | —              | —                       | —           | —                                   | —                                | —          | —          | —          | —            | —          | —                     |
| 15 Brazil                    | 34 392         | 40 043                  | 116         | 16                                  | 38                               | 3.9        | 0.3        | 8.4        | 6.8          | 26         | 54                    |
| 16 Uganda                    | —              | —                       | —           | —                                   | —                                | —          | —          | —          | —            | —          | —                     |
| 17 Zimbabwe                  | —              | —                       | —           | —                                   | —                                | —          | —          | —          | —            | —          | —                     |
| 18 Mozambique                | —              | —                       | —           | —                                   | —                                | —          | —          | —          | —            | —          | —                     |
| 19 Thailand                  | —              | —                       | —           | —                                   | —                                | —          | —          | —          | —            | —          | —                     |
| 20 Afghanistan               | —              | —                       | —           | —                                   | —                                | —          | —          | —          | —            | —          | —                     |
| 21 Cambodia                  | —              | —                       | —           | —                                   | —                                | —          | —          | —          | —            | —          | —                     |
| 22 Myanmar                   | —              | —                       | —           | —                                   | —                                | —          | —          | —          | —            | —          | —                     |
| <b>High-burden countries</b> | <b>267 801</b> | <b>272 988</b>          | <b>102</b>  | <b>20</b>                           | <b>14</b>                        | <b>1.3</b> | <b>0.8</b> | <b>10</b>  | <b>3.4</b>   | <b>51</b>  | <b>34</b>             |
| AFR                          | 34 785         | 25 591                  | 74          | 32                                  | 16                               | 6.2        | 1.4        | 10         | 11           | 23         | 48                    |
| AMR                          | 55 506         | 54 042                  | 97          | 23                                  | 34                               | 4.1        | 0.6        | 9.5        | 6.7          | 21         | 58                    |
| EMR                          | 726            | 726                     | 100         | 34                                  | 23                               | 1.4        | 0.4        | 18         | 4.4          | 19         | 57                    |
| EUR                          | 23 117         | 21 530                  | 93          | 39                                  | 27                               | 4.8        | 3.9        | 5.8        | 1.8          | 17         | 67                    |
| SEAR                         | 208 041        | 206 241                 | 99          | 18                                  | 9.1                              | 0.5        | 0.9        | 10         | 1.9          | 59         | 27                    |
| WPR                          | 37 804         | 24 960                  | 66          | 65                                  | 9.1                              | 2.0        | 2.6        | 4.2        | 4.1          | 13         | 74                    |
| <b>Global (non-DOTS)</b>     | <b>359 979</b> | <b>333 090</b>          | <b>93</b>   | <b>25</b>                           | <b>15</b>                        | <b>1.9</b> | <b>1.2</b> | <b>9.5</b> | <b>3.6</b>   | <b>44</b>  | <b>40</b>             |

—Indicates not available.

<sup>a</sup> See notes for Table 8.

among the elderly (western Europe). Treatment interruption (default) was most frequent in the African (10%), Eastern Mediterranean (7%), and South-East Asia Regions (7%). Transfer without follow-up was also especially high in Africa (7%). Treatment failure was conspicuously high in the European Region (8%), mainly because a high proportion of patients in eastern Europe are recorded as failures (11%).

DOTS treatment success was 80% or more in 11 HBCs, and exceeded the 85% target in 6 of these countries (Table 8). It was under 70% in South Africa, the Russian Federation, Brazil, and Uganda. In South Africa, 24% of patients defaulted from treatment, or were transferred without

follow-up. In Russia, 14% failed treatment. In Brazil and Uganda, the treatment results for 15% of patients were not evaluated in any way. An additional 17% defaulted from treatment in Uganda, which reported the lowest proportion of successful treatments among the 22 HBCs (56%).

A comparison of treatment results for 8 consecutive cohorts (1994–2001) shows that the overall success rates have been above 80% under DOTS since 1998 (Table 10). Treatment success rates were worse outside DOTS programmes in all regions, principally because large fractions of cases were not evaluated (Figure 14b).

In DOTS areas, over 186 000 cases were registered for retreatment in

2001 (Table 11). Some patients remain on treatment (included with those “not evaluated”), but the latest data give an overall treatment success rate of 73%. More failures and deaths are expected among patients being treated on a second or subsequent occasion, but the success rate is low in this cohort, as in the year 2000 cohort, mainly because of the high default rate.

#### Progress towards targets for case detection and treatment success

Data on both treatment success and case detection were provided by 173 DOTS countries. In 63 countries, DOTS detection and treatment success rates exceeded 50% and 70%, respectively

TABLE 10

**Treatment success for new smear-positive cases (%), 1994–2001 cohorts<sup>a</sup>**

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

—Indicates not available.

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

<sup>a</sup> See notes for Tables 8.

FIGURE 14

**Outcomes for those patients not successfully treated in (a) DOTS and (b) non-DOTS areas, by WHO region, 2001 cohort.** The true outcome of treatment is unknown for a high proportion of patients in non-DOTS areas.

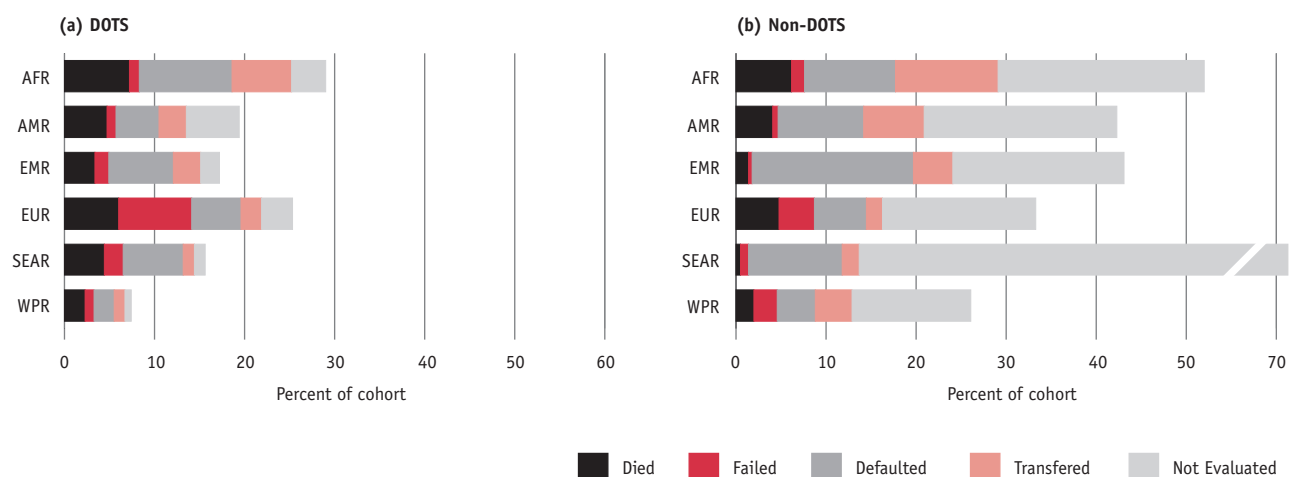


TABLE 11

**Retreatment outcomes in DOTS programmes, 2001 cohort<sup>a</sup>**

|                              | REGISTERED     | TREATMENT OUTCOMES (%) <sup>*</sup> |                                  |            |            |           |              |            | TREATMENT SUCCESS (%) |
|------------------------------|----------------|-------------------------------------|----------------------------------|------------|------------|-----------|--------------|------------|-----------------------|
|                              |                | CURED                               | COMPLETED TREATMENT <sup>*</sup> | DIED       | FAILED     | DEFAULTED | TRANS-FERRED | NOT EVAL'D |                       |
| 1 India                      | 68 012         | 66                                  | 3.3                              | 7.5        | 6.5        | 16        | 1.3          | 0.1        | 69                    |
| 2 China                      | 35 991         | 88                                  | 4.9                              | 2.0        | 2.0        | 1.2       | 0.8          | 1.0        | 93 †                  |
| 3 Indonesia                  | 2 708          | 58                                  | 25                               | 2.2        | 1.8        | 3.6       | 1.5          | 8.2        | 83                    |
| 4 Nigeria                    | 1 847          | 62                                  | 8.9                              | 8.9        | 6.0        | 12        | 2.3          | 0.0        | 71                    |
| 5 Bangladesh                 | 1 922          | 75                                  | 1.6                              | 4.6        | 1.4        | 5.3       | 2.5          | 9.3        | 77                    |
| 6 Pakistan                   | —              | —                                   | —                                | —          | —          | —         | —            | —          | —                     |
| 7 Ethiopia                   | 1 505          | 55                                  | 9.4                              | 6.8        | 3.1        | 5.6       | 2.5          | 18         | 64                    |
| 8 Philippines                | —              | —                                   | —                                | —          | —          | —         | —            | —          | —                     |
| 9 South Africa               | 17 869         | 43                                  | 10                               | 8.8        | 2.3        | 17        | 16           | 2.3        | 53                    |
| 10 DR Congo                  | —              | —                                   | —                                | —          | —          | —         | —            | —          | —                     |
| 11 Russian Federation        | 854            | 31                                  | 18                               | 12         | 26         | 6.1       | 7.1          | 0.0        | 48                    |
| 12 Kenya                     | 2 635          | 68                                  | 10                               | 9.8        | 0.5        | 6.6       | 5.7          | 0.0        | 77                    |
| 13 Viet Nam                  | 5 895          | 80                                  | 5.5                              | 5.2        | 5.5        | 2.0       | 1.9          | 0.0        | 85 †                  |
| 14 UR Tanzania               | 3 847          | 46                                  | 30                               | 14         | 1.2        | 5.1       | 3.9          | 0.0        | 76                    |
| 15 Brazil                    | 238            | 17                                  | 30                               | 4.2        | 3.8        | 19        | 4.2          | 22         | 47                    |
| 16 Uganda                    | 1 249          | 36                                  | 27                               | 11         | 0.4        | 16        | 6.2          | 3.9        | 63                    |
| 17 Zimbabwe                  | 1 084          | 54                                  | 6.6                              | 1.0        | 8.9        | 20        | 9.2          | 0.0        | 61                    |
| 18 Mozambique                | 1 470          | 70                                  | 1.0                              | 12         | 2.4        | 12        | 2.7          | 0.0        | 71                    |
| 19 Thailand                  | 2 033          | 45                                  | 4.0                              | 13         | 5.1        | 6.3       | 4.2          | 22         | 49                    |
| 20 Afghanistan               | —              | —                                   | —                                | —          | —          | —         | —            | —          | —                     |
| 21 Cambodia                  | 707            | 87                                  | 4.2                              | 4.5        | 1.3        | 1.7       | 0.8          | 0.0        | 92 †                  |
| 22 Myanmar                   | 3 561          | 64                                  | 10                               | 8.3        | 4.8        | 8.9       | 3.7          | 0.0        | 74                    |
| <b>High-burden countries</b> | <b>153 427</b> | <b>68</b>                           | <b>6.3</b>                       | <b>6.5</b> | <b>4.5</b> | <b>11</b> | <b>3.4</b>   | <b>1.4</b> | <b>74</b>             |
| AFR                          | 40 286         | 49                                  | 13                               | 9.3        | 2.4        | 13        | 10           | 2.9        | 62                    |
| AMR                          | 3 531          | 62                                  | 7.5                              | 6.5        | 3.9        | 11        | 4.0          | 5.6        | 69                    |
| EMR                          | 6 564          | 58                                  | 13                               | 4.9        | 5.2        | 10        | 4.0          | 5.8        | 70                    |
| EUR                          | 8 646          | 47                                  | 11                               | 10         | 14         | 10        | 2.8          | 4.5        | 58                    |
| SEAR                         | 82 626         | 65                                  | 4.4                              | 7.4        | 6.1        | 14        | 1.6          | 1.1        | 70                    |
| WPR                          | 44 627         | 85                                  | 5.8                              | 2.6        | 2.8        | 1.8       | 1.0          | 1.1        | 91 †                  |
| <b>Global</b>                | <b>186 280</b> | <b>65</b>                           | <b>7.3</b>                       | <b>6.7</b> | <b>4.8</b> | <b>11</b> | <b>3.4</b>   | <b>1.9</b> | <b>73</b>             |

—Indicates not available.

† Treatment success &gt; 85%.

<sup>a</sup> See notes for Table 8.

FIGURE 15

**DOTS status in 2002: countries close to targets**

63 countries reported treatment success rates for 2001 cohort over 70% and DOTS detection rates for 2002 over 50%. 18 countries (including Kiribati, Tonga, and Lebanon, out of range of graph) have reached targets.

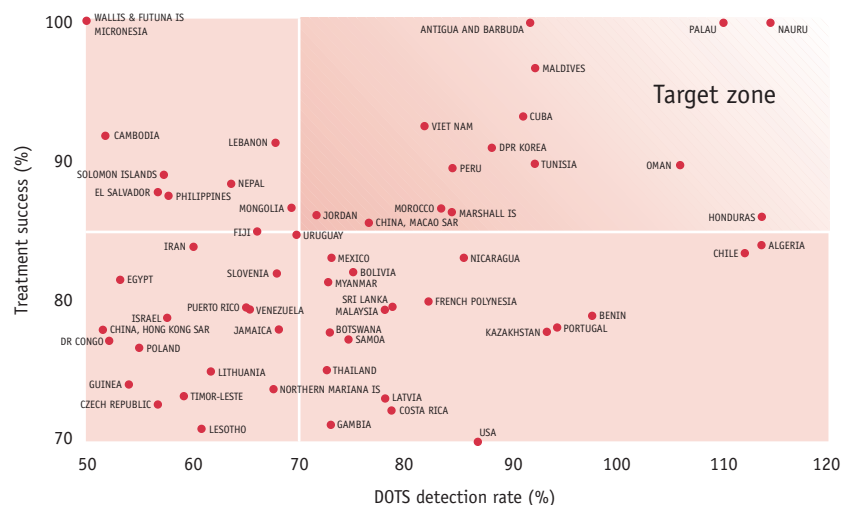




TABLE 12

### Progress in DOTS implementation: high-burden countries, 2001–2002

| LOW<br>TREATMENT<br>SUCCESS<br>(<70%)                  | DOTS  |   |  |
|--|---|---|--|
|  | HIGH TREATMENT SUCCESS (≥ 70%)                          |   |  |
|  | INTERMEDIATE CASE DETECTION <sup>a</sup><br>(10–49%)    | HIGH CASE DETECTION <sup>a</sup><br>(≥50%)  |  |
| Brazil<br>Russian Federation<br>South Africa<br>Uganda | Afghanistan<br>Bangladesh<br>China<br>Ethiopia<br>India | Indonesia<br>Kenya<br><u>Mozambique</u><br>Nigeria<br><b>Pakistan</b><br>UR Tanzania<br><b>Zimbabwe</b> | <b>Cambodia</b><br>DR Congo<br>Myanmar<br>Philippines<br><b>Thailand</b><br>Viet Nam |

<sup>a</sup> DOTS detection rate: proportion of estimated smear-positive cases notified through DOTS programmes.

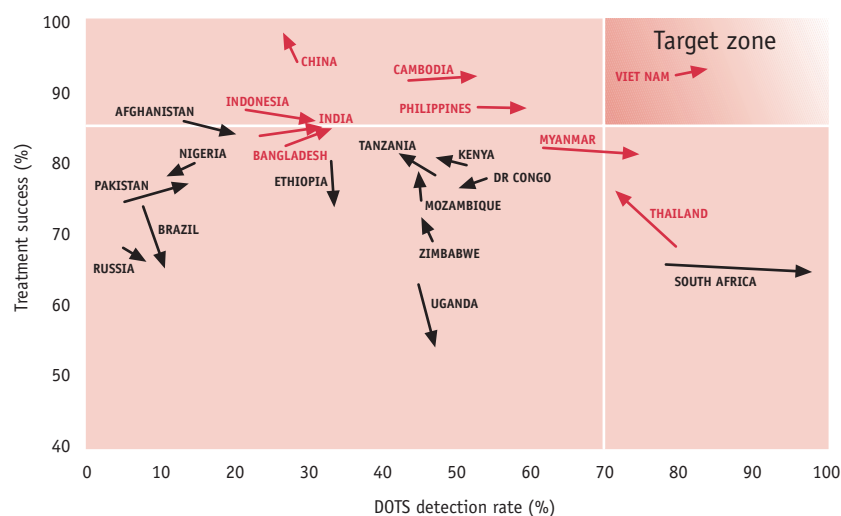
**Bold:** countries that moved one or more categories up since 2001.

Underline: countries that moved one or more categories down since 2001.

FIGURE 16

### DOTS progress in high-burden countries, 2001–2002

Treatment success refers to cohorts of patients registered in 2000 or 2001, and evaluated, respectively, by the end of 2001 or 2002.



(Figure 15). These countries appear to have reached ( $n = 18$ ), or are close to reaching, WHO targets, but together accounted for only 15% of all new smear-positive cases in 2001.

Viet Nam was still the only HBC to have reached targets for both case detection ( $>70\%$ ) and treatment success ( $>85\%$ ). However, case detection rates were over 50%, and treatment success rates over 70%, in DR Congo, Cambodia, Myanmar, Thailand, and the Philippines (Table 12, Figure 16). Three countries had low rates of both case detection ( $<50\%$ ) and treatment success ( $<70\%$ ): they

were Brazil, Russia, and Uganda. More details of progress in each of the 22 HBCs can be found in the profiles at Annex 1.

Of 145 countries that provided data for both 2000 and 2001 cohorts, 66 (46%) showed higher treatment success rates for the 2001 cohort, and 39 (27%) improved case detection by more than 5%. Annex 4 tabulates case detection and treatment success rates by country over the 8 years for which we have data.

### Planning and DOTS implementation Constraints and remedial actions

The country profiles in Annex 1 (objective 2) incorporate information from the summary planning tables (objective 1) that were prepared for the 2003 DEWG meeting. Thirteen major constraints to reaching the targets for case detection and treatment success were identified in the 22 HBCs (Table 13). Although TB control efforts in many countries are hampered by nearly all of these constraints, the table focuses on the principal obstacles in each country.

The 6 constraints most commonly identified were: lack of qualified staff; poor monitoring and evaluation; inadequate infrastructure; weak laboratories; insufficient engagement in DOTS of private practitioners and other health providers; and limited commitment to, and capacity for, implementing DOTS in peripheral health services:

1. Lack of qualified staff. As in 2003, the lack of qualified staff is considered to be the largest barrier to reaching the targets for case detection and cure. China, DR Congo, Ethiopia, India, Indonesia, Nigeria, Pakistan, South Africa, Tanzania, Uganda, and Zimbabwe report major deficiencies in staff at central level. Following decentralization, there has been inadequate planning for, and provision of, the technical support that



TABLE 13

**Constraints to reaching targets for case detection and cure; high-burden countries, 2003.**  
**Shaded columns indicate the 6 most important constraints**

|                       | FINANCING | INFRASTRUCTURE | ACCESS TO DOTS | LABORATORIES | HUMAN RESOURCES | HIV/AIDS | COMMUNITY AWARENESS | OTHER PROVIDERS | DRUGS OR DRUG POLICY | POLITICAL COMMITMENT | MONITORING | DECENTRALIZATION OF HEALTH SERVICES | ADMINISTRATIVE DYSFUNCTION OR POLICY BARRIERS |
|-----------------------|-----------|----------------|----------------|--------------|-----------------|----------|---------------------|-----------------|----------------------|----------------------|------------|-------------------------------------|---|
| 1 India               |           |                |                |              | X               |          | X                   | X               |                      |                      |            |                                     | X   |
| 2 China               |           | X              | X              |              | X               |          |                     |                 |                      | X                    | X          |                                     |   |
| 3 Indonesia           |           |                |                |              | X               |          |                     | X               |                      |                      | X          | X                                   |   |
| 4 Nigeria             | X         | X              | X              | X            | X               |          |                     |                 |                      | X                    | X          | X                                   | X   |
| 5 Bangladesh          |           |                |                |              | X               |          |                     | X               | X                    |                      | X          | X                                   | X   |
| 6 Pakistan            |           | X              |                | X            | X               |          | X                   | X               |                      |                      |            | X                                   |   |
| 7 Ethiopia            |           | X              |                | X            | X               |          |                     |                 |                      | X                    | X          | X                                   | X   |
| 8 Philippines         |           |                |                |              |                 |          | X                   | X               |                      |                      | X          |                                     |   |
| 9 South Africa        |           |                |                | X            | X               | X        |                     |                 |                      | X                    | X          | X                                   |   |
| 10 DR Congo           | X         | X              |                | X            | X               |          |                     |                 | X                    | X                    | X          |                                     |   |
| 11 Russian Federation | X         |                | X              |              |                 |          |                     |                 | X                    |                      | X          |                                     | X   |
| 12 Kenya              |           | X              |                |              | X               | X        |                     | X               |                      |                      |            |                                     |   |
| 13 Viet Nam           |           |                |                |              |                 |          |                     | X               | X                    |                      |            |                                     |   |
| 14 UR Tanzania        |           | X              |                | X            | X               | X        |                     | X               |                      |                      |            |                                     |   |
| 15 Brazil             |           |                |                |              |                 |          |                     |                 |                      |                      | X          | X                                   |   |
| 16 Uganda             |           | X              |                | X            | X               | X        |                     |                 |                      |                      |            |                                     |   |
| 17 Zimbabwe           | X         | X              | X              |              | X               | X        |                     |                 |                      | X                    | X          |                                     |   |
| 18 Mozambique         |           | X              |                | X            | X               | X        |                     |                 |                      | X                    |            | X                                   |   |
| 19 Thailand           |           |                |                |              | X               |          |                     |                 |                      | X                    | X          | X                                   |   |
| 20 Afghanistan        |           | X              | X              | X            | X               |          | X                   | X               |                      |                      | X          |                                     | X   |
| 21 Cambodia           |           |                | X              |              | X               | X        | X                   | X               |                      |                      |            |                                     |   |
| 22 Myanmar            |           | X              |                | X            | X               |          | X                   |                 |                      |                      |            |                                     |   |
| <b>Total</b>          | <b>4</b>  | <b>12</b>      | <b>6</b>       | <b>10</b>    | <b>18</b>       | <b>7</b> | <b>6</b>            | <b>10</b>       | <b>4</b>             | <b>8</b>             | <b>13</b>  | <b>9</b>                            | <b>6</b>                                      |

would enable staff at provincial and district levels to successfully assume the new responsibilities assigned to them. Afghanistan, Bangladesh, Cambodia, Kenya, Mozambique, Myanmar, and Pakistan have staff with inadequate qualifications working at the peripheral level.

2. Poor monitoring and evaluation. Recording and reporting remain weak in Afghanistan, Bangladesh, Brazil, China, DR Congo, Ethiopia, Indonesia, Nigeria, the Philippines, South Africa, Russian Federation, Thailand, and Zimbabwe. Timely and reliable data are essential for planning corrective actions and for monitoring trends.
3. Inadequate infrastructure. Lack of transportation infrastructure in the form of roads and vehicles,

poor communication networks, unreliable or non-existent electricity supplies, inadequate buildings and equipment, and weak primary health care systems all impede NTP efforts to control TB. The following countries suffer deficiencies in at least one of these areas: Afghanistan, China, DR Congo, Ethiopia, Kenya, Myanmar, Mozambique, Nigeria, Pakistan, Tanzania, Uganda, and Zimbabwe.

4. Weak laboratories. Progress in Afghanistan, DR Congo, Ethiopia, Mozambique, Myanmar, Nigeria, Pakistan, South Africa, Tanzania, and Uganda is constrained by poor laboratory quality control, the lack of a laboratory network, or limited access to laboratory services. Among possible solutions are systematic implementation of EQA

organized by reference laboratories, and involving laboratories that are currently used for other purposes in TB control. Myanmar plans to buy diagnostic equipment with funds from the GFATM.

5. Poor involvement in DOTS of private or non-NTP public providers. Many countries fail to make best use of existing health system capacity by not involving all clinicians and facilities, both public and private, in providing DOTS services. Inadequate partnership in TB control between the NTP and other bodies and institutions is a major obstacle to success in Afghanistan, Bangladesh, Cambodia, India (with exceptions), Indonesia, Kenya, Pakistan, the Philippines (with exceptions), Tanzania, and Viet Nam. PPM projects

(e.g. India, the Philippines) seek to involve private practitioners in DOTS delivery, with the goals of standardizing care and improving the reporting and monitoring of patients. Other projects are working to involve non-participating public health facilities, such as hospitals in major cities.

6. Limited commitment to, and capacity for, implementing DOTS in peripheral health services. Decentralization aims to improve access to primary care, and to DOTS. Although decentralization has been under way for years in many countries, it continues to be a major constraint to TB control because of the lack of capacity at the periphery to handle what were previously central level responsibilities. Bangladesh, Brazil, Ethiopia, Indonesia, Mozambique, Nigeria, Pakistan, South Africa, and Thailand are still working to develop peripheral health system infrastructure and capacity, to obtain local political commitment, and to ensure the proper distribution of funding for TB control programmes. Countries with systems that were recently decentralized, such as the Philippines, are still finding it hard to expand and strengthen DOTS because they lack local political support. Possible solutions include the strengthening of central and provincial teams, and the provision of technical support to local health authorities.

Seven further constraints have been identified. They are, in brief:

7. Wavering political commitment. Weak and unstable political commitment, either centrally or peripherally, continues to obstruct TB control efforts in several countries. China still faces a lack of political commitment in some provinces and counties, and DR Congo, 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 country-level advocacy for TB control in civil society, especially in support of patients infected with HIV.

8. Increasing TB/HIV co-infection. As in 2002, HIV was thought to be one of the main constraints to TB control in Cambodia, Kenya, South Africa, and Uganda. Three more countries joined that list in 2003: Mozambique, Tanzania, and Zimbabwe. NTPs are developing plans to collaborate more effectively with HIV/AIDS programmes. Although there are other countries with high rates of HIV infection, they have more pressing constraints that must be attended to first.
9. Limited access to DOTS. In Afghanistan, Cambodia, China, Nigeria, the Russian Federation, and Zimbabwe, some of the population has no or poor access to DOTS due to poor infrastructure, weak DOTS expansion, or lack of integration of DOTS into the primary health care system.
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 in Afghanistan, Cambodia, India, Myanmar, Pakistan, and the Philippines. The implementation of effective and adequately funded COMBI plans could help to overcome this obstacle, but only India among these countries currently has such a plan.
11. Administrative constraints and adverse policy. Afghanistan, Bangladesh, Ethiopia, India, Nigeria, and the Russian Federation suffer from administrative constraints, or have policies in-

consistent with the implementation of DOTS.

12. Unreliable drug supply or undeveloped drug policy. Nearly all HBCs had a secure supply of anti-TB drugs in 2003, thanks in large part to the GDF. The Russian Federation continues to have difficulties in controlling drug quality, Bangladesh does not have assured supply and distribution of drugs, DR Congo has problems with distribution of standard drugs throughout the country, and Viet Nam still lacks an effective drug policy.
13. Insufficient funds. A lack of money is no longer one of the top constraints identified by the majority of HBCs. However, there are 2 different reasons for this. On the one hand, governments (especially of richer countries) make large contributions to TB control, donors have increased their investments, and the GFATM began to disburse money in 2003. As a result, some NTPs genuinely have enough money. On the other hand, some NTPs perceive no shortfalls in funding because their budgets are incomplete, or because their plans for TB control are not sufficiently ambitious (see *Financing DOTS expansion* below). Eleven of the HBCs reported some level of funding gap in their 2003 budgets. Some of these countries report problems in distributing funds from local or central governments to programmes (e.g. Nigeria, the Russian Federation).

### Partnerships and coordination

Although coordination of partners' activities has been steadily improving through discussion within and among 3 working groups of the Stop TB Partnership (DOTS expansion, TB-HIV, and MDR-TB), there is still need for better coordination of country activities to reduce duplication of efforts. WHO and the Stop TB Partnership are working to identify overlaps, and to ensure better internal

coordination of country activities. All regions organize coordination among regional partners, to greater and lesser degrees, using mechanisms such as regional ICCs, task forces, and meetings of interested parties. NICCs have now been meeting regularly in all HBCs except Mozambique and South Africa. In countries applying to the GFATM, a well-established NICC serves as a model for organizing the Country Coordination Mechanism required by the Fund. In some countries, the NICC for TB remains a sub-committee of the CCM.

### Planning for MDR-TB control

Since publication of the 2nd WHO/IUATLD report<sup>23</sup> on anti-TB drug resistance in the world, new data on the prevalence of MDR-TB have been collected in 7 HBCs, or from parts of these countries, including 3 that were previously surveyed between 1996 and 1999. Surveys were repeated in Thailand, China (Henan province), and in the Russian Federation (Tomsk oblast). Drug resistance data have been reported for the first time by Cambodia, China (Hubei and Liaoning provinces), South Africa (national survey), DR Congo (Kinshasa), the Russian Federation (Orel oblast), and India (North Arcot, Raichur, and Wardha districts). There are no data on MDR-TB rates for Afghanistan, Bangladesh, Ethiopia, Indonesia, Nigeria, Pakistan, the Philippines, and Tanzania. The new data, where available at the time of writing, are summarized in the text of country profiles at Annex 1, along with estimates for other countries (in data tables). The results of the new surveys will be described in full in the 3rd WHO/IUATLD report, to be published in 2004.<sup>6</sup>

The DOTS-Plus initiative develops global policy on the management of MDR-TB and facilitates access to second-line drugs. As part of this proc-

ess, and under the continuous monitoring of the GLC, several DOTS-Plus pilot projects have been established to evaluate the feasibility and cost-effectiveness of using second-line drugs for managing MDR-TB in countries with limited resources. Projects approved by the GLC have access to quality-assured, second-line drugs at concessionary prices and benefit from technical support and monitoring. The Philippines and the Russian Federation have DOTS-Plus pilot projects approved by the GLC. India and Kenya have DOTS-Plus applications to the GLC under review, and Tanzania and Viet Nam are planning to apply.

The results of planning activities related to MDR-TB are reported in the individual country profiles for China, India, Kenya, Nigeria, the Russian Federation, South Africa, the Philippines, and Viet Nam.

### Collaborative TB/HIV activities

Collaborative TB/HIV activities in the 22 HBCs are detailed in each country profile in Annex 1, and summarized in Table 14. No country has yet implemented any collaborative activities on a national scale. However, 15 of the HBCs have TB/HIV coordinating bodies, and 12 carry out small-scale, joint TB/HIV planning activities. Three of the countries that have listed HIV as a constraint (Tanzania, Uganda, Zimbabwe) do not yet have a TB/HIV coordinating body, which makes planning more difficult. The majority of the HBCs neither routinely test TB patients for HIV, nor actively look for TB among people infected with HIV, and most do not have national surveillance systems for assessing the scale of the TB/HIV problem. The twin goals of testing TB patients for HIV infection, and testing HIV-infected persons for TB, have been achieved in Brazil, Cambodia, China, India, Indonesia, Myanmar, the Russian Federation, and South Africa, but only on a limited scale in each country. Most of the HBCs do not yet monitor and evaluate collaborative TB/HIV activities,

do not offer isoniazid preventive therapy, and do not routinely provide TB patients with the means to prevent HIV infection. The majority of HBCs do not provide ART, or offer little additional care and support for TB patients infected with HIV.

## Financing DOTS expansion

### Countries reporting to WHO

Financial data were received from 123 countries (58%; Table 15). Of the countries that reported, 77 (63%) provided complete budget data for 2003 including disaggregated budgets by line item and by funding source. Seventy-four (60%) submitted complete, disaggregated expenditure data for fiscal year 2002. A total of 113 countries (53%) provided estimates of the numbers of cases treated in 2003, the average number of clinic visits made by patients during TB treatment, and the average number of days patients were hospitalized for TB care.

Among the HBCs, only South Africa and Zimbabwe did not provide financial data (Table 16). Seventeen (77%) provided complete budget data for fiscal year 2003 and 15 (68%) submitted complete expenditure data from fiscal year 2002. Sixteen of the HBCs estimated the number of cases to be treated in 2003 and quantified the expected number of clinic visits and hospital days for these patients.

### NTP budgets, total costs of TB control, and government contributions among HBCs, 2002 and 2003

The NTP budgets of the HBCs for the fiscal year 2003 totalled US\$ 430 million, excluding South Africa and Zimbabwe, which provided no data (Table 17). This was lower than the 2003 budget estimate of US\$ 481 million for the HBCs reported in *Global Tuberculosis Control 2003*,<sup>5</sup> which included budget figures for Zimbabwe but not for South Africa. The difference is largely due to a change in

<sup>20</sup> WHO/IUATLD. Anti-tuberculosis Drug Resistance in the World. Report No. 2. Prevalence and Trends. Geneva, WHO/CDS/TB/2000.278

TABLE 14

**Status of collaborative TB/HIV activities; high-burden countries, October 2003<sup>a</sup>**

|                       | TB/HIV COORDINATING BODIES | HIV SURVEILLANCE IN TB PATIENTS | JOINT TB/HIV PLANNING | MONITORING & EVALUATION OF TB/HIV | INTENSIFIED TB CASE FINDING IN PLWHA | ISONIAZID PREVENTIVE THERAPY | TB CONTROL IN CONGREGATE SETTINGS <sup>b</sup> | HIV TESTING FOR TB PATIENTS | HIV PREVENTIVE METHODS TO TB PATIENTS | COTRIMOXAZOLE PREVENTIVE THERAPY | HIV CARE AND SUPPORT TO TB PATIENTS | ART FOR HIV-INFECTED TB PATIENTS |
|-----------------------|----------------------------|---------------------------------|-----------------------|-----------------------------------|--------------------------------------|------------------------------|--|-----------------------------|---------------------------------------|----------------------------------|-------------------------------------|----------------------------------|
| 1 India               | X                          |                                 | X                     | X                                 | X                                    |                              | X  | X                           |                                       | X                                | X                                   | X                                |
| 2 China               |                            |                                 |                       | X                                 | X                                    | X                            |  | X                           |                                       |                                  |                                     |                                  |
| 3 Indonesia           | X                          |                                 |                       |                                   | X                                    |                              |  | X                           | X                                     |                                  |                                     |                                  |
| 4 Nigeria             | X                          | X                               | X                     |                                   |                                      |                              | X  |                             |                                       |                                  |                                     |                                  |
| 5 Bangladesh          |                            |                                 |                       |                                   |                                      |                              |  |                             |                                       |                                  |                                     |                                  |
| 6 Pakistan            | X                          | X                               |                       |                                   |                                      |                              |  |                             |                                       |                                  |                                     |                                  |
| 7 Ethiopia            | X                          |                                 | X                     |                                   |                                      | X                            |  |                             |                                       |                                  |                                     |                                  |
| 8 Philippines         | X                          |                                 | X                     | X                                 | X                                    |                              |  |                             |                                       |                                  |                                     |                                  |
| 9 South Africa        | X                          |                                 | X                     | X                                 | X                                    |                              |  | X                           | X                                     |                                  | X                                   |                                  |
| 10 DR Congo           | X                          |                                 | X                     |                                   |                                      |                              | X  | X                           | X                                     | X                                | X                                   |                                  |
| 11 Russian Federation | X                          | X                               | X                     | X                                 | X                                    | X                            | X  | X                           | X                                     | X                                | X                                   | X                                |
| 12 Kenya              | X                          |                                 |                       |                                   |                                      |                              |  |                             |                                       |                                  |                                     |                                  |
| 13 Viet Nam           | X                          | X                               |                       |                                   |                                      |                              |  |                             |                                       |                                  |                                     |                                  |
| 14 UR Tanzania        |                            |                                 | X                     |                                   |                                      |                              |  |                             |                                       |                                  |                                     |                                  |
| 15 Brazil             | X                          | X                               | X                     | X                                 | X                                    | X                            | X  | X                           | X                                     |                                  | X                                   | X                                |
| 16 Uganda             |                            |                                 |                       |                                   | X                                    | X                            | X  |                             | X                                     | X                                |                                     |                                  |
| 17 Zimbabwe           |                            |                                 | X                     | X                                 |                                      | X                            | X  | X                           | X                                     |                                  | X                                   |                                  |
| 18 Mozambique         | X                          | X                               | X                     |                                   |                                      |                              |  | X                           | X                                     |                                  | X                                   |                                  |
| 19 Thailand           | X                          | X                               |                       |                                   |                                      | X                            | X  |                             |                                       |                                  |                                     | X                                |
| 20 Afghanistan        |                            |                                 |                       |                                   |                                      |                              |  |                             |                                       |                                  |                                     |                                  |
| 21 Cambodia           | X                          | X                               | X                     | X                                 | X                                    |                              | X  | X                           | X                                     | X                                |                                     |                                  |
| 22 Myanmar            |                            |                                 |                       | X                                 | X                                    |                              | X  | X                           | X                                     |                                  | X                                   |                                  |
| <b>Total</b>          | <b>15</b>                  | <b>8</b>                        | <b>12</b>             | <b>9</b>                          | <b>10</b>                            | <b>7</b>                     | <b>10</b>                                      | <b>11</b>                   | <b>10</b>                             | <b>5</b>                         | <b>8</b>                            | <b>4</b>                         |

<sup>a</sup> Any listed activities carried out by MoH, NGOs or research organizations are included in this table.<sup>b</sup> for example prisons, army barracks, homeless shelters.

TABLE 15

**Budget and expenditure data received: all countries, 2003**

|               | NUMBER OF COUNTRIES | REPORTS RECEIVED | BUDGET DATA |           |           | EXPENDITURE DATA |           |           | NO. PATIENTS TO BE TREATED QUANTIFIED |
|---------------|---------------------|------------------|-------------|-----------|-----------|------------------|-----------|-----------|---------------------------------------|
|               |                     |                  | COMPLETE    | PARTIAL   | NONE      | COMPLETE         | PARTIAL   | NONE      |                                       |
| AFR           | 46                  | 28               | 19          | 6         | 1         | 16               | 3         | 7         | 25                                    |
| AMR           | 44                  | 25               | 16          | 7         | 2         | 14               | 9         | 2         | 23                                    |
| EMR           | 23                  | 11               | 6           | 5         | 0         | 5                | 4         | 2         | 10                                    |
| EUR           | 53                  | 25               | 9           | 3         | 13        | 10               | 2         | 13        | 23                                    |
| SEAR          | 11                  | 11               | 9           | 2         | 0         | 9                | 2         | 0         | 11                                    |
| WPR           | 36                  | 23               | 18          | 5         | 0         | 20               | 3         | 0         | 21                                    |
| <b>Global</b> | <b>213</b>          | <b>123</b>       | <b>77</b>   | <b>28</b> | <b>16</b> | <b>74</b>        | <b>23</b> | <b>24</b> | <b>113</b>                            |

TABLE 16

**Budget and expenditure data received: high-burden countries, 2003**

|               | NUMBER OF COUNTRIES | REPORTS RECEIVED | BUDGET DATA |          |          | EXPENDITURE DATA |          |          | NO. PATIENTS TO BE TREATED QUANTIFIED |
|---------------|---------------------|------------------|-------------|----------|----------|------------------|----------|----------|---------------------------------------|
|               |                     |                  | COMPLETE    | PARTIAL  | NONE     | COMPLETE         | PARTIAL  | NONE     |                                       |
| AFR           | 9                   | 7                | 6           | 1        | 0        | 4                | 0        | 3        | 6                                     |
| AMR           | 1                   | 1                | 1           | 0        | 0        | 1                | 0        | 0        | 1                                     |
| EMR           | 2                   | 2                | 1           | 1        | 0        | 0                | 2        | 0        | 0                                     |
| EUR           | 1                   | 1                | 1           | 0        | 0        | 1                | 0        | 0        | 1                                     |
| SEAR          | 5                   | 5                | 4           | 1        | 0        | 5                | 0        | 0        | 4                                     |
| WPR           | 4                   | 4                | 4           | 0        | 0        | 4                | 0        | 0        | 4                                     |
| <b>Global</b> | <b>22</b>           | <b>20</b>        | <b>17</b>   | <b>3</b> | <b>0</b> | <b>15</b>        | <b>2</b> | <b>3</b> | <b>16</b>                             |

TABLE 17

**Total TB control costs and government contributions: high-burden countries, 2002 and 2003**

|                                    | TOTAL NTP COSTS<br>(US\$ MILLIONS) |                  | TOTAL TB CONTROL COST<br>(US\$ MILLIONS) |                   | TOTAL COST PER<br>PATIENT TREATED (US\$) |                        | GOVERNMENT CONTRIBUTION TO TOTAL TB CONTROL COST |                       |  |                      |
|------------------------------------|------------------------------------|------------------|--|-------------------|--|------------------------|--|-----------------------|--|----------------------|
|                                    | 2002<br>(EXPENDITURES)             | 2003<br>(BUDGET) | 2002<br>(ACTUAL)                         | 2003<br>(PLANNED) | 2002<br>(ACTUAL)                         | 2003<br>(PLANNED)      | AS % OF TOTAL<br>TB CONTROL COST                 |                       | AS % GOVERNMENT<br>HEALTH EXPENDITURES |                      |
|                                    |                                    |                  |  |                   |  |                        | 2002<br>(ACTUAL)                                 | 2003<br>(PLANNED)     | 2002<br>(ACTUAL)                       | 2003<br>(PLANNED)    |
| 1 India                            | 25                                 | 42               | 75                                       | 96                | 72                                       | 73                     | 93   | 88                    | 1                                      | 2                    |
| 2 China                            | 61                                 | 95               | 61                                       | 95                | 153                                      | 199                    | 95   | 77                    | 0.3                                    | 0.3                  |
| 3 Indonesia                        | 18                                 | 32               | 22                                       | 38                | 148                                      | 172                    | 92   | 67                    | 2                                      | 2                    |
| 4 Nigeria                          | NA                                 | 13               | NA                                       | 19                | NA                                       | 380                    | NA   | 55                    | NA                                     | 8                    |
| 5 Bangladesh                       | 7 <sup>d</sup>                     | 17               | 12                                       | 28                | 155                                      | 171                    | NA   | 62                    | 2                                      | 2                    |
| 6 Pakistan                         | NA                                 | 6                | 7 <sup>e,g</sup>                         | 8                 | NA                                       | 146                    | NA   | 59                    | NA                                     | 1                    |
| 7 Ethiopia                         | 5                                  | 11               | 8  | 14                | 76                                       | 129                    | 53   | 41                    | 4                                      | 5                    |
| 8 Philippines                      | 6                                  | 7                | 34                                       | 36                | 296                                      | 298                    | 99   | 93                    | 3                                      | 3                    |
| 9 South Africa <sup>a</sup>        | NA                                 | NA               | 300                                      | 300               | 1491                                     | 1491                   | 100  | 100                   | 6                                      | 6                    |
| 10 DR Congo                        | 7                                  | 10               | 17                                       | 23                | 251                                      | 288                    | 63   | 58                    | 3                                      | 4                    |
| 11 Russian Federation <sup>b</sup> | 124                                | 124              | 175–225                                  | 175–225           | 1419–1824                                | 1419–1824              | 99   | 99                    | 2                                      | 2                    |
| 12 Kenya                           | 4                                  | 11               | 5  | 14                | 71                                       | 125                    | 79   | 46                    | 2                                      | 4                    |
| 13 Vietnam                         | 4                                  | 7                | 14                                       | 17                | 158                                      | 172                    | 96   | 91                    | 3                                      | 4                    |
| 14 UR Tanzania                     | NA                                 | 5                | 14 <sup>e,h</sup>                        | 16                | NA                                       | 231                    | NA   | 75                    | NA                                     | 6                    |
| 15 Brazil                          | 13                                 | 16               | 39                                       | 41                | 669                                      | 704                    | 100  | 100                   | 0.2                                    | 0.2                  |
| 16 Uganda                          | 2                                  | 5                | 2  | 6                 | 70                                       | 115                    | 65   | 31                    | 2                                      | 2                    |
| 17 Zimbabwe                        | NA                                 | NA               | 22 <sup>e,i</sup>                        | 22 <sup>e,i</sup> | NA                                       | NA                     | NA   | NA                    | NA                                     | NA                   |
| 18 Mozambique                      | NA                                 | 8                | 10 <sup>e,j</sup>                        | 10 <sup>e,j</sup> | NA                                       | NA                     | NA   | NA                    | NA                                     | NA                   |
| 19 Thailand                        | 7                                  | 7 <sup>e,f</sup> | 9  | 9 <sup>e,f</sup>  | 198                                      | NA                     | 100  | 100                   | 0.3                                    | NA                   |
| 20 Afghanistan <sup>c</sup>        | 2                                  | 3                | 2  | 3                 | 174                                      | 280                    | 0  | 0                     | 0                                      | 0                    |
| 21 Cambodia                        | 3                                  | 6                | 5  | 9                 | 217                                      | 300                    | 78   | 46                    | 5                                      | 6                    |
| 22 Myanmar <sup>c</sup>            | 1                                  | 5                | 1  | 5                 | 21                                       | 65                     | 25   | 6                     | NA                                     | NA                   |
| <b>High-burden countries</b>       | <b>289</b>                         | <b>430</b>       | <b>834–884</b>                           | <b>984–1031</b>   | <b>158<sup>k</sup></b>                   | <b>199<sup>k</sup></b> | <b>95<sup>k</sup></b>                            | <b>75<sup>k</sup></b> | <b>2<sup>k</sup></b>                   | <b>2<sup>k</sup></b> |

NA Indicates not available.

<sup>a</sup> 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 2002 to give the estimated total cost.<sup>b</sup> Data were not provided for 2002; numbers for 2002 were assumed to be the same as those provided for 2003.<sup>c</sup> Reflects NTP budgets and expenditures only, insufficient data available to estimate costs not included in the NTP budget.<sup>d</sup> Estimate based on data provided in GFATM proposal.<sup>e</sup> Data not provided on WHO surveillance form.<sup>f</sup> Costs for 2003 assumed to be equal to those for 2002.<sup>g</sup> Cost per patient estimated using data submitted in previous years, and multiplied by the number of cases that were notified in 2002 to give estimate of total cost.<sup>h</sup> Total cost estimated by multiplying cost per patient for 2003 by number of cases notified in 2002.<sup>i</sup> Estimate based on previous costing analyses, with cost per patient multiplied by the number of cases notified in 2002.<sup>j</sup> Cost per patient estimated using budget data and by assuming that care is provided on an outpatient basis (as stated in GFATM proposal).<sup>k</sup> Total cost estimated by multiplying the cost per patient by number of cases notified in 2002.<sup>k</sup> Median value.

the budget for the Russian Federation. No data were provided by the Russian Federation MoH in 2002; instead, we used an estimate of US\$ 200 million based on recent costing studies.<sup>18</sup> For this report, the Russian Federation provided data for 2003 for all expenditures at federal level and for staff expenditures at oblast (regional) level, which totalled US\$ 125 million. The oblast data did not include all items funded locally. If these were included, the estimate would probably be similar to that in last year's report.

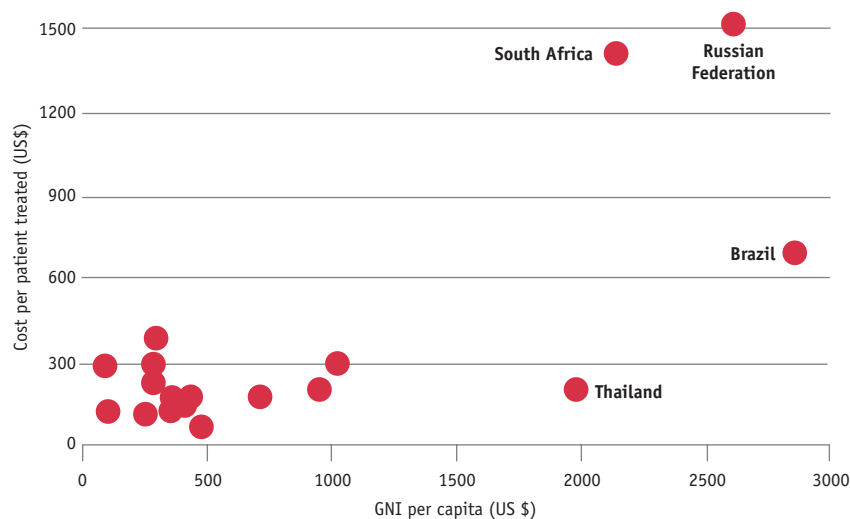
The total costs of TB control were

calculated for the HBCs by adding the 2003 NTP budgets to the costs associated with TB control that were not financed through the NTP (e.g. salaries of health workers and infrastructure costs). The total costs for the HBCs in 2003 were estimated at around US\$ 1 billion (Table 17). This is an increase of around US\$ 150 million (about 18%) from 2002 expenditures of US\$ 834–884 million.

The total expenditures for 2002 were lower than the estimates published in last year's report (US\$ 976 million).<sup>5</sup> This is primarily because the estimates in last year's report

assumed that the number of patients treated by NTPs would be consistent with the progress needed to reach 70% case detection in 2005. In practice, the 2002 notification data show that they treated fewer cases. There was no consistent association between the change in case load between 2002 and 2003 (cases detected by countries in 2002 compared with cases expected in 2003) and the change in costs (2002 expenditures compared with 2003 budgets). All countries that reported 2002 expenditures and 2003 budgets reported an increase in costs in 2003.

FIGURE 17

**Cost per patient treated by GNI per capita: high-burden countries, 2003**

The total cost per patient treated in the HBCs in 2003 ranged from US\$ 65 in Myanmar to US\$ 1419–1824 in the Russian Federation (Table 17). The median total cost per patient was US\$ 199 (China). Fourteen of the countries (74% of those providing data) had costs per patient between US\$ 125 and US\$ 380. Two countries had costs per patient below US\$ 100 (India and Myanmar). Three countries stand apart from the rest: in Brazil, the Russian Federation and South Africa, the costs per patient were above US\$ 700. Patient care is expensive in these countries partly because the prices of labour and capital are higher, linked to higher GNI (Figure 17). However, costs are also inflated by the heavy reliance on hospital treatment and expensive diagnostic techniques in South Africa and the Russian Federation. In Thailand, the cost per patient was low (US\$ 198) relative to GNI (US\$ 1980). One explanation is that patients make relatively few visits to clinics during treatment (12 on average).

Between 2002 and 2003, the costs per patient changed little in India and the Philippines (Table 17). This is because, while geographical expansion of DOTS has proceeded rapidly in India, the strategy for implementation has remained the same. The

Philippines was already close to full DOTS coverage in 2002.

In other countries, the cost per patient increased markedly between 2002 and 2003 for reasons that differed among countries. Costs have increased in Vietnam because a national prevalence survey was included in the 2003 budget, and because the NTP is expanding to remote areas where detecting and treating cases is more difficult. In Bangladesh, the budget for fiscal year 2003 includes substantial funding for new initiatives such as improvement in the quantity and quality of diagnostic services and training. In Myanmar, the increase is due to large planned investments in vehicles for supervision and in diagnostic equipment. This adds considerably to costs in the year in which these items are bought, though the benefits will be spread over several years.

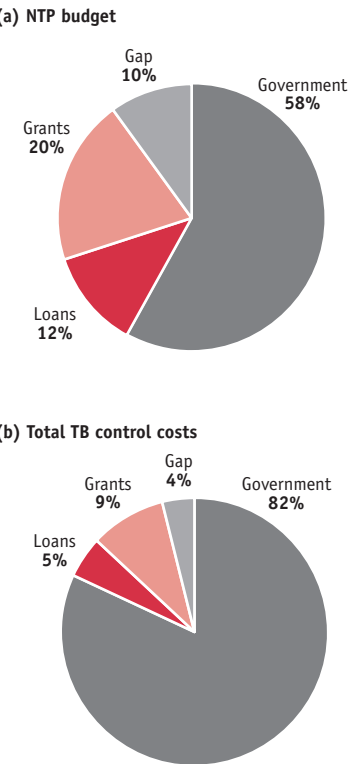
There will inevitably be delays between investments in TB control and the consequent increase in case detection. For example, where NTPs (e.g. Kenya) have introduced new initiatives to increase case detection – by involving, for example, the private sector, HIV/AIDS control programmes, or lay members of communities who can recognize TB symptoms and supervise treatment – the yield in new TB cases will not be immediate. Another possible explanation for increasing per patient costs is that the targets for case detection set by NTPs are not sufficiently ambitious relative to the large increases in their budgets.

### Funding sources and gaps for fiscal year 2003 in high-burden countries

The relative contributions of different funding sources to NTP budgets and total TB control costs in the HBCs are shown in Figures 18 and 19. Overall, the governments of the HBCs contributed 70% of money specified in NTP budgets, through loans (12%) and national funds (58%). Government contributions to the total cost



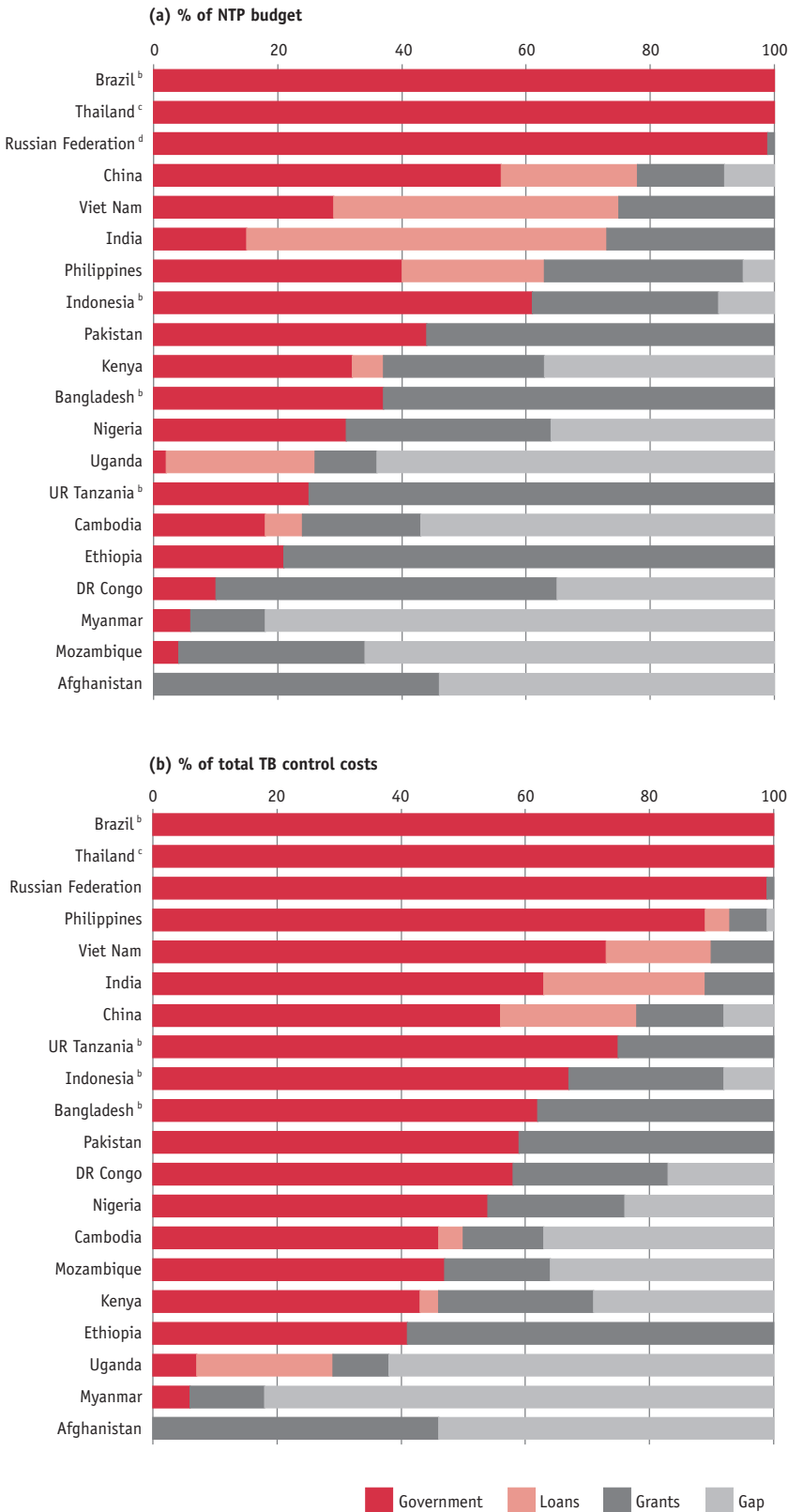
FIGURE 18  
**Funding sources: high-burden countries, 2003**



of TB control were higher, because governments typically fund all the general health care staff and infrastructure used by TB patients during treatment. In 2003, the government contribution to total costs in the HBCs was 87%, of which 5% came from loans and 82% from national funds. Grants contributed 20% of the funds for NTP budgets and 9% of total costs.

The funding gap for HBCs totalled US\$ 41 million, excluding South Africa and Zimbabwe, which did not provide data. This is a decline from the previous estimate of US\$ 52 million,<sup>5</sup> which excluded South Africa. Bangladesh, Brazil, China, DR Congo, Ethiopia, Nigeria, Pakistan and the Philippines reported a decrease in the funding gap since the publication of last year's report. Except for Nigeria, the decline reflects the availability of increased funding, largely from governments (including loans) and the GFATM. It is not clear why the funding gap was reduced in Nigeria.

FIGURE 19  
**Sources of funding for (a) NTP budgets and (b) total TB control costs; high-burden countries, 2003<sup>a</sup>**



<sup>a</sup> Data not available for South Africa and Zimbabwe.  
<sup>b</sup> Loan contributions may be underestimated because loans supporting the health sector as a whole may not have been included in the data submitted to WHO.  
<sup>c</sup> 2003 data not available; 2002 data are shown.  
<sup>d</sup> Expenditure rather than budget data shown.

FIGURE 20

### Government contribution to total TB control costs by GNI per capita; high-burden countries, 2003

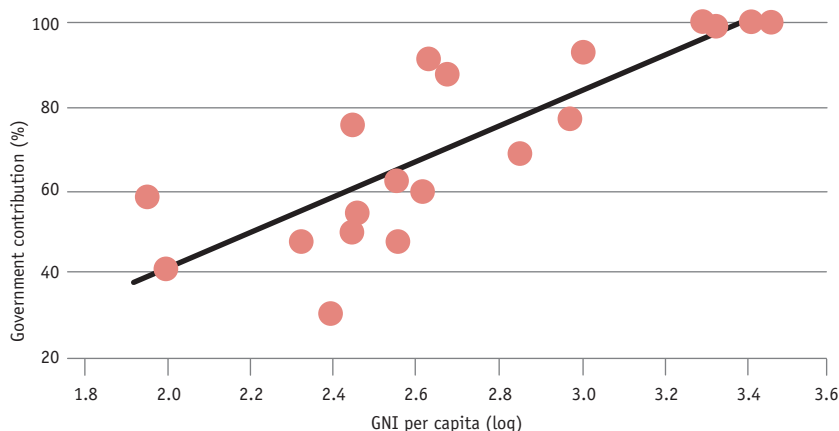


TABLE 18

### GNI per capita (US\$)

| % OF TOTAL TB<br>CONTROL COSTS<br>CONTRIBUTED BY<br>GOVERNMENT | GNI PER CAPITA   |                                |   |
|--|--|--------------------------------|---|
|  | < 400  | 400–800                        | > 800   |
| 0–50   | Afghanistan <sup>a</sup><br>Cambodia<br>Ethiopia<br>Kenya<br>Mozambique <sup>b</sup><br>Myanmar <sup>a</sup><br>Uganda |                                |   |
| 51–90  | Bangladesh<br>DR Congo<br>Nigeria<br>UR Tanzania<br>Zimbabwe <sup>a,b</sup>  | India<br>Indonesia<br>Pakistan | China   |
| 91–100   |  | Viet Nam                       | Brazil<br>Philippines<br>Russia<br>South Africa<br>Thailand |

<sup>a</sup> No GNI data available; classification based on estimates.

<sup>b</sup> No data available on government contribution to total TB control costs; classification based on estimates.

Other HBCs reported an increase in the funding gap, including Cambodia, Indonesia, Kenya, Myanmar and Uganda. The increased funding gap followed an increase in overall budget requirements, reflecting additional planned activities that support acceleration of DOTS expansion. The budgets for these countries suggest that they have been planning effectively to meet the targets for case detection and treatment success. The budget gap in Afghanistan increased due to a decline in external funding.

The importance of grant funding and funding gaps was greater in some countries than overall figures for the

HBCs suggest. Grant funding was large as a share of both the total NTP budget and total TB control costs in Ethiopia, Afghanistan, Bangladesh, Pakistan, and as a share of the NTP budget in Tanzania and DR Congo. Funding gaps that are large relative to total needs remain in Myanmar, Mozambique, Uganda, Afghanistan, Cambodia, Kenya, Nigeria and DR Congo.

Wealthier countries generally financed a larger proportion of their TB control costs (Figure 20, Table 18). The governments of all HBCs with a GNI per capita of more than US\$ 400 contributed more than half of the total costs of TB control in 2003. In 5 of the 6 middle-income countries with GNIs of more than US\$ 800 per capita, the governments covered more than 90% of all the costs in 2003. These included Brazil, the Philippines, the Russian Federation, South Africa, and Thailand. China had a GNI of US\$ 940 and contributed 77% to the total cost of TB control. Government contributions in China and the Philippines included loans. Among the countries with a GNI between US\$ 400 and US\$ 800, the percentage of total costs covered by governments ranged from 59% in Pakistan to 91% in Vietnam. India and Viet Nam included loans as part of the government contribution to TB control. Among the countries with a GNI of less than US\$ 400, the percentage of the total costs covered by governments ranged from 6% in Myanmar to 75% in Tanzania (the government contribution to TB control may be close to zero in Afghanistan, but no figure for non-NTP costs was available). The government contribution to total TB control costs was less than 10% in only 2 countries, Afghanistan and Myanmar. In all HBCs with some external funding, an increase in total TB control costs between 2002 and 2003 was accompanied by a decrease in the proportion of the costs covered by the government.

Government contributions to TB

control were also considered as a share of overall government spending on health (Table 17). Among the HBCs, TB control costs accounted for between 0% (Afghanistan) to 8% (Nigeria) of government spending on health. The median was 2% (Bangladesh, India, Indonesia, Russian Federation, and Uganda). The percentage of government spending on health that was used for TB control increased between 2002 and 2003 in 6 of the HBCs. It did not decrease in any of the countries where data were available for both years.

### GFATM contribution to TB control in 2003

The GFATM makes awards for TB control in 4 categories: TB, TB/HIV, HIV/AIDS, and integrated TB/HIV/malaria. By the end of 2003, the Fund had approved a total 5-year budget of US\$ 608 million for TB proposals and US\$ 319 million for TB/HIV proposals in 56 countries (Table 19). While TB/HIV proposals include both TB and HIV activities, it was not possible to disaggregate the contribution to TB control from the budgets provided, so the total of each award is included in Table 19. Additional funds were approved for collaborative TB/HIV activities within HIV/AIDS proposals, but since the amounts cannot be disaggregated from the total awards, and the contribution to TB control through HIV/AIDS proposals is expected to be low, no estimates are included in Table 19. Afghanistan submitted the only integrated TB/HIV/malaria proposal that was approved. The separate cost of TB control was not identified within the US\$ 3 million budget.

The total for the first 2 years for which grants have been or are expected to be signed is US\$ 294 million for TB proposals, and US\$ 90 million from TB/HIV proposals. Almost 70% of the total grant funding for TB and TB/HIV will benefit HBCs. Only 3 HBCs have not been awarded GFATM funds: Brazil did not apply because, with a high GNI per capita,

it has not been eligible for funding. Nigeria and Zimbabwe have so far been unsuccessful.

Among successful applicants, countries in the Africa Region will receive US\$ 463 million for up to 5 years, 50% of the total approved by the Fund (Figure 21). Countries in the South-East Asia Region will receive US\$ 206 million, 22% of the total. During 2003, US\$ 61 million or 16% of the total approved for the first 2 years was paid to countries for TB and TB/HIV activities.

The GFATM grants awarded in 2003 for TB and TB/HIV accounted for approximately 6% of total budget for TB control in the HBCs. The grants awarded to some HBCs will fill large funding gaps, when disbursed. Indonesia's approved proposal of US\$ 71 million over 5 years, for example, has an anticipated annual allocation of GFATM funding that accounts for approximately one-third of the total NTP budget. However, delays in the disbursement of GFATM funding held up progress in 2003. Between March and December 2003, Indonesia received only 17% of the budget specified in its initial 2-year grant agreement. Similarly, in Bangladesh, Ethiopia, and Myanmar, the planned disbursement by the GFATM accounts for an estimated 52%, 61% and 80% respectively of the NTP budgets in 2003–4. But only Ethiopia has so far received any money, amounting to US\$ 6.5 million (59% of the anticipated 2-year total).

### Resources required for TB control in high-burden countries, 2004 and 2005

The resources required in the 22 HBCs, if global targets are to be reached in 2005, and if countries make constant progress towards these targets from 2002 are, excluding the Russian Federation, US\$ 0.95 billion in 2004 and US\$ 1.1 billion in 2005 (Figure 22). This compares with an estimated expenditure of US\$ 0.65 billion in 2002 and a budget of US\$ 0.8 billion in 2003 (Table 17).

FIGURE 21  
Distribution of GFATM awards by WHO region

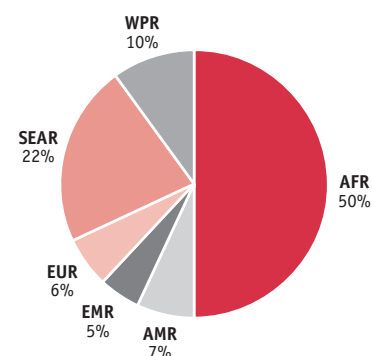
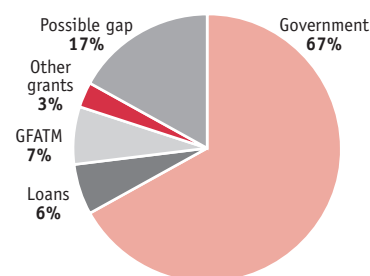


FIGURE 22  
Resources required for TB control: high-burden countries, (a) 2004 and (b) 2005 (excluding the Russian Federation)

(a) 2004. Total need US\$ 0.95 billion.



(b) 2005. Total need US\$ 1.1 billion.

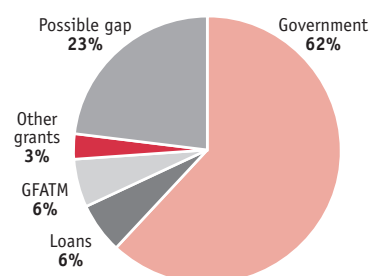


TABLE 19

**Recipients of GFATM grants for TB control; high-burden countries, end 2003**

|  | COMPONENT       | ROUND | GRANT STATUS <sup>a</sup> | TOTAL LIFETIME BUDGETS (US\$ MILLIONS) | FUNDS AWARDED FOR FIRST 2 YEARS (US\$ MILLIONS) | DATE OF FIRST DISBURSEMENT | DISBURSEMENT TO DATE (US\$ MILLIONS) |
|--|-----------------|-------|---------------------------|--|---|----------------------------|--------------------------------------|
| <b>AFRO</b>  |                 |       |                           |  |   |                            |                                      |
| High-burden countries  |                 |       |                           |  |   |                            |                                      |
| DR Congo   | TB              | 2     | G                         | 8.0                                    | 6.4   | Jul 03                     | 1.6                                  |
| Ethiopia   | TB              | 1     | G                         | 21.3                                   | 11  | Aug 03                     | 6.5                                  |
| Kenya  | TB              | 2     | G                         | 11.2                                   | 4.9   | Aug 03                     | 0.8                                  |
|  | TB              | 3     | B                         | 3.8                                    | 1.8   | —                          | —                                    |
| Mozambique   | TB              | 2     | T                         | 18.2                                   | 12.2  | —                          | —                                    |
| South Africa   | HIV/TB          | 1     | G                         | 93.3                                   | 14.4  | Aug 03                     | 3.9                                  |
|  | HIV/TB          | 1     | G                         | 72.0                                   | 26.7  | Aug 03                     | 12.9                                 |
|  | HIV/TB          | 2     | T                         | 25.1                                   | 8.4   | —                          | —                                    |
| UR Tanzania  | HIV/TB          | 3     | B                         | 87                                     | 24  | —                          | —                                    |
|  | TB              | 3     | T                         | 1.7                                    | 1.0   | —                          | —                                    |
| Uganda   | TB              | 2     | T                         | 9.1                                    | 6.8   | —                          | —                                    |
| Other countries (n=15)   |                 |       |                           | 112.5                                  | 50.5  |                            |                                      |
| <b>AMRO</b>  |                 |       |                           |  |   |                            |                                      |
| No grants to high-burden countries                                   |                 |       |                           |  |   |                            |                                      |
| Other countries (n=9)  |                 |       |                           | 64.9                                   | 41.9  |                            |                                      |
| <b>EMRO</b>  |                 |       |                           |  |   |                            |                                      |
| High-burden countries  |                 |       |                           |  |   |                            |                                      |
| Afghanistan  | TB/HIV/ Malaria | 1     | T                         | 3.1                                    | 3.1   | —                          | —                                    |
| Pakistan   | TB              | 2     | G                         | 4.0                                    | 2.3   | Dec 03                     | 0.5                                  |
|  | TB              | 3     | B                         | 13.1                                   | 6.8   | —                          | —                                    |
| Other countries (n=3)  |                 |       |                           | 33.1                                   | 13.9  |                            |                                      |
| <b>EURO</b>  |                 |       |                           |  |   |                            |                                      |
| High-burden countries  |                 |       |                           |  |   |                            |                                      |
| Russian Federation   | TB              | 3     | T                         | 10.8                                   | 6.3   | —                          | —                                    |
| Other countries (n=5)  |                 |       |                           | 41.8                                   | 27.3  |                            |                                      |
| <b>SEARO</b>   |                 |       |                           |  |   |                            |                                      |
| High-burden countries  |                 |       |                           |  |   |                            |                                      |
| Bangladesh   | TB              | 3     | B                         | 43.8                                   | 17.2  | —                          | —                                    |
| India  | TB              | 1     | G                         | 8.8                                    | 5.7   | Jul 03                     | 1.0                                  |
|  | TB              | 2     | T                         | 29.1                                   | 12.8  | —                          | —                                    |
|  | HIV/TB          | 3     | B                         | 14.8                                   | 2.7   | —                          | —                                    |
| Indonesia  | TB              | 1     | G                         | 70.7                                   | 21.6  | Mar 03                     | 3.7                                  |
| Myanmar  | TB              | 2     | T                         | 17.1                                   | 7.0   | —                          | —                                    |
| Thailand   | TB              | 1     | G                         | 13.5                                   | 7.0   | Jul 03                     | 0.7                                  |
| Other countries (n=2)  |                 |       |                           | 8.5                                    | 3.8   |                            |                                      |
| <b>WPRO</b>  |                 |       |                           |  |   |                            |                                      |
| High-burden countries  |                 |       |                           |  |   |                            |                                      |
| Cambodia   | TB              | 2     | G                         | 6.6                                    | 2.5   | Dec 03                     | 0.6                                  |
| China  | TB              | 1     | G                         | 48.1                                   | 25.4  | Apr 03                     | 12.7                                 |
| Philippines  | TB              | 2     | G                         | 11.4                                   | 3.4   | Jun 03                     | 0.9                                  |
| Viet Nam   | TB              | 1     | G                         | 10                                     | 2.5   | —                          | —                                    |
| Other countries (n=3, and 1 multi-country)                           |                 |       |                           | 13.2                                   | 6.2   |                            |                                      |
| Global (TB-specific)   |                 |       |                           | 608                                    | 294   |                            | 41                                   |
| Global (TB/HIV)  |                 |       |                           | 319                                    | 90  |                            | 20                                   |
| Global (integrated TB/HIV/malaria)                                   |                 |       |                           | 3                                      | 3   |                            | —                                    |
| <b>Global (19 high-burden countries, 37 others, 1 multi-country)</b> |                 |       |                           | <b>930</b>                             | <b>387</b>                                      |                            | <b>61</b>                            |

—Indicates no funds dispersed by end 2003.

<sup>a</sup> B indicates board approved budget, pending Technical Review Panel clarifications and grant negotiations; T, Technical Review Panel clarifications completed, budget pending grant negotiations; G, Final grant budget.

The Russian Federation is not shown in Figure 22 because the requirements and funding gaps for 2004 and 2005, as estimated in their 5-year plan, are large enough to distort the analysis for the other 21 HBCs. The 5-year plan (2003–7) indicates that total resources required for the country are more than US\$ 400 million per year, and the funding gap will be around US\$ 200 million in each year. For the 21 HBCs besides the Russian Federation, about 70% of the total resources required each year are met by governments, through either regular domestic budgets or loans. A further 10% of resources required comes from grants, of which about two-thirds are from the GFATM.

This leaves a possible funding gap equivalent to about 20% of total requirements in 2004 and 2005. Of this shortfall, most is accounted for by countries that need to make major strides in case detection, and which have not yet identified sufficient funding to fully meet their needs. Countries that have received some funds from the GFATM, but still have funding gaps, include Nigeria, Pakistan, Ethiopia, and China. Countries with smaller absolute funding gaps, but gaps that are large relative to their total resource requirements, include Afghanistan, Kenya, Tanzania and Cambodia.

### NTP budgets and funding gaps in other countries

In total, 99 countries provided information about their NTP budget requirements for fiscal year 2003. However, the quality of the data was variable, and uncertainties have not yet been resolved by further consultation with NTPs. A detailed analysis was not, therefore, carried out for this report. A summary table that provides the 2003 NTP budgets and funding gaps for all reporting countries can be found at [www.who.int/gtb/publications/globrep/](http://www.who.int/gtb/publications/globrep/)

# Discussion

## Detection and treatment of TB cases

Two hundred and one countries reported to WHO on the TB epidemic in 2002, more than in any previous year. The number of countries that had adopted the DOTS strategy increased to 180, and 69% of the world's population had access, in principle, to DOTS. Adding the 2002 case notifications to those of previous years, a total of 13.3 million TB patients, and 6.8 million smear-positive patients, were treated in DOTS programmes between 1995 and 2002.

The most critical markers of progress are case detection and treatment success rates. The smear-positive case detection rate increased to 37% globally, just over half way to the 70% target. Of 1.2 million smear-positive cases registered in the 2001 cohort, 82% were successfully treated, close to the 85% target, but no better than for the 2000 cohort. India reported the biggest gains in case detection among countries that provided data for both 2001 and 2002; the additional 59 858 smear-positive cases reported by the Indian DOTS programme represent 28% of the global improvement in case detection, in a country that has 20% of the world's case load. Other major increases in case detection were reported in South Africa, Indonesia, Pakistan, Bangladesh, and the Philippines.

Better case finding represents progress in TB control only when accompanied by high cure rates. Of the countries that have been most progressive on case detection, South Africa still reports a very low rate of treatment success (65%). If low treatment success means frequent treatment failure in this country, then drug resistance will be the outcome:

the 2001–2 survey of resistance across South African provinces found MDR-TB prevalence rates of up to 14% among previously treated patients.<sup>6</sup>

The six countries listed above were together responsible for over 60% of the increase in cases detected, and mostly responsible for the acceleration in case finding. An additional 214 656 cases were reported during 2002, as compared with 2001, which is 60% greater than the average increase between 1995 and 2000. The step-up in recruitment to DOTS programmes is even more pronounced in the numbers of all TB cases (smear-positive and smear-negative) reported. However, even with this acceleration, the 2002 data show that the world's TB control programmes are not yet on course, collectively, to meet the 70% target by 2005. That would require an annual increase of about 433 000 smear-positive cases in each of the years 2003–5.

Among the HBCs, only Viet Nam has reached both targets, though Cambodia, Myanmar and the Philippines appear to be close. By the end of 2002, 63 countries lay in the penumbra of the target zone (case detection > 50%, treatment success > 70%), but together accounted for only 15% of the smear-positive case load globally.

Some gains in case detection (as defined by WHO) could be made rapidly in countries and regions where many cases are already known to public health authorities (assuming they are really TB cases), but are not treated under DOTS. Data from the Americas and Europe indicate that the target for case detection could be met, or closely approached, just by ensuring that the diagnosis and treatment of known TB patients meets DOTS standards. Significant gains in case detection could be made in

South-East Asia for the same reason. Although there is little scope for making similar gains in Africa, the Eastern Mediterranean and Western Pacific regions (where most patients are already reported under DOTS), the combined total of all such patients would push global case detection from 37% up to around 50%, the same as the fraction of all TB cases found in 2002.

To go beyond 50% case detection will be challenging, if the pattern of DOTS expansion observed from 1995 to 2002 persists. The data in this report identify two obstacles en route to the 70% target. The first is the relatively sluggish increase in case notifications from all sources (DOTS and non-DOTS). The number of smear-positive cases notified to WHO by public health authorities increased by just 4% per year between 1996 and 2002, and the total number of TB cases has not increased at all. Consequently, the proportion of all notified smear-positive cases that come from DOTS programmes has been increasing since 1995. If this trend continues, all TB cases reported to WHO in 2005 will be notified and treated by DOTS programmes. This means that all TB patients reported in the public sector will, by 2005, receive the internationally recommended standard of care. But it also means that, to reach the 70% target by 2005, DOTS programmes must recruit cases that would not otherwise have been notified in the public sector. The rate of recruitment of TB cases to health programmes that participate in the public case notification system has hitherto been slow.

The second impediment is that the smear-positive case detection rate within DOTS areas, as measured by the ratio of case detection to population coverage, has remained roughly



constant since 1996, averaging 49%. That is, almost all of the gains in case detection made under DOTS have been made through geographical expansion, and not by improving case finding in established DOTS areas. If this continues to be true, the smear-positive case detection rate will still be roughly 50% even when, according to measures of population coverage, the whole world has access to DOTS. Some HBCs do show improvements in case finding within DOTS areas, especially India, Indonesia, Bangladesh, and the Philippines, but these are much slower than the improvements made by extending DOTS to new areas.

Among the 1.2 million smear-positive cases treated under DOTS in the 2001 cohort, 82% were reported to have successful outcomes. HIV co-infection is blamed for relatively poor results in Africa (71%), and HIV may indeed contribute to the high death rate (7%). However, African NTPs could do substantially better by cutting the proportion of patients lost from DOTS cohorts, which amounted to 21% of patients in 2001. In eastern Europe, relatively high rates of drug resistance could help to explain why 12% of patients failed treatment and 7% died. But these data need closer examination: it is possible that a proportion of the “failures” had not completed treatment after 6 months because, for example, longer regimens are used to treat patients with resistant bacilli. For these patients, the final outcome of treatment is not known.

In summary, the global, smear-positive case detection rate was 37% in 2002, over half way to the 70% target, and rising more quickly than at any time since 1995. Given recent trends, we expect the smear-positive case detection rate by DOTS programmes to be about 50% in 2005, by which time all TB patients notified and treated in the public sector will receive the internationally recommended standard of care. Case detection could be increased from

37% to 50% by ensuring that the diagnosis and treatment of known TB cases in the Americas, South-East Asia, and the Western Pacific Regions conforms with DOTS standards. To get above 50% case detection will be demanding because the notification rate of all TB cases by public health authorities has been stable at about this level for many years, and because DOTS programmes will probably have exhausted this supply of cases by 2005.

Two years ago, we forecast that the smear-positive case detection rate would accelerate after year 2000, and then saturate below 50% around 2005.<sup>24</sup> The latest data suggest a somewhat brighter future, but remain consistent with the notion that saturation will follow acceleration. To escape that future, DOTS programmes and public health authorities must now do something different. They must recruit patients from non-participating clinics and hospitals, notably in the private sector in Asia, and from beyond the present limits of public health systems in Africa. These are the regions of the world that account for the vast majority of cases that are not seen, and therefore not yet “detected”, by public health authorities.

### **Planning and DOTS implementation**

All 22 HBCs have strategic plans for DOTS expansion, though the plan for Thailand has still not been made available to WHO. However, the transition from planning to implementation, and from implementation to improvements in coverage and case detection has been slower than anticipated. The constraints described in this report are disappointingly similar to those identified in 2003,<sup>5</sup> though financial shortages have become a lesser concern for some countries. NTP staff interviewed for the present report listed 13 constraints in the HBCs. Dominant among them was the lack of adequately trained staff; followed by poor monitoring

and evaluation; inadequate infrastructure; weak laboratories; the failure of DOTS programmes to engage private practitioners and other public providers; and ineffective decentralization.

Short- and long-term strategic planning, with regular reviews of the plans and assessment of interventions, would help ensure commitment to a sustained course of action, even in the face of other crises that threaten to consume resources reserved for TB control. Viet Nam – the only HBC to have reached the targets – offers a good example of sustained commitment. Firm NTP leadership and careful planning, reinforced by strong political will, have guided the methodical expansion of DOTS.

NTPs will find it hard to act independently of other factors that influence TB control. The lack of qualified personnel needs to be addressed through Human Resource Development Plans, generated within the context of national plans to strengthen the health workforce. The plans must include mechanisms to improve staff recruitment, retention, and motivation, to ensure better in-service and pre-service training, and to make use of secondments of staff from academic institutions. PPM projects, and schemes to involve other public providers and facilities (NGOs, communities, hospitals, and workplace or corporate health care systems), should bring many more clinical staff and health facilities into the ambit of DOTS programmes. NTPs must also make the case for improved infrastructure – working with government outside the health sector – to help improve the access of patients to health services.

The decentralization of health systems has left some countries unable to improve the quality of TB control. Responsibility for planning and

<sup>21</sup> Dye C, Watt CJ, Bleed DM, Williams BG. What is the limit to case detection under the DOTS strategy for tuberculosis control? *Tuberculosis* 2003; 83: 35–43.

financing has been fully transferred to peripheral health services, but without sufficient technical capacity or political support to handle added responsibilities at the periphery.

While the DOTS strategy must remain at the heart of TB control policy, a wider range of interventions will be needed to reduce TB burden in the countries most affected by HIV/AIDS, especially those in eastern and southern Africa.<sup>16</sup> These interventions will need to be offered through better collaborations between TB and HIV/AIDS control programmes. Most collaborative TB/HIV activities are so far being implemented in districts or regions, rather than on a national scale. Some NTPs have determined that DOTS programmes must perform more effectively before attention is paid to the TB/HIV interaction. And yet the case detection targets for 2005 are unlikely to be met without, for example, the systematic referral of TB suspects from VCT centres, and from other facilities that provide services for HIV/AIDS patients. High cure rates will not be guaranteed for HIV-infected TB patients unless there is better access to ART and cotrimoxazole preventive therapy, and better treatment of other opportunistic infections.

Among other constraints to DOTS expansion are the failure of drug supplies, inconsistent drug quality, and undeveloped drug policies. Appropriate drug policy depends, in part, on the prevalence of drug resistance, and vice versa. The WHO/IUATLD global DRS project currently includes all or part of 14 HBCs.<sup>6</sup> It must be expanded to more areas within those countries, and to the remaining 8 HBCs, to obtain a true assessment of the magnitude of the problem worldwide. Poor laboratory networks remain a major obstacle to establishing high-quality surveillance systems. The control of MDR-TB will require the implementation of all components of the DOTS strategy, extended where appropriate as DOTS-Plus, to include the use of standardized regimens of second-line

drugs for patients with resistant strains. Ultimately DOTS-Plus and testing for drug sensitivity will become an integral part of the DOTS strategy, and planning for MDR-TB control will become a routine component of NTP programme activities.

### **Financing DOTS expansion**

The total cost of TB control in the HBCs was about US\$ 850 million in 2002, with a large increase in planned expenditure to US\$ 1 billion in 2003. In both years, funds came primarily from governments (through domestic revenues and loans), and to a lesser extent from grants. The funding shortfall reported by HBCs in 2003 was only US\$ 41million, about 4% of the total, and lower than in 2002.

But summary statistics of this kind conceal a diversity of financial needs among the countries that carry the largest burdens of TB. Our analysis of budgets and expenditures puts the 22 HBCs into broadly three groups. The first, most progressive group contains 10 countries that have planned to significantly increase spending from 2003 onwards, in order to meet the global targets for case detection and treatment success by 2005. Encouragingly, this group includes four of the countries with the most TB cases: India, China, Indonesia, and Bangladesh. India's projected budgetary growth should allow the rapid increase in patient recruitment to continue, while maintaining the same per patient expenditure that has yielded high cure rates under DOTS. China, Indonesia and Bangladesh aim to improve case detection while spending more on the management of each patient. In Ethiopia, Kenya, Cambodia, Uganda, and Myanmar, the total increases in planned costs are smaller but, as for the larger countries, they are linked to plans for scaling up and improving the quality of DOTS. The Russian Federation plans a major increase in activities and costs in 2004. All of these forward-looking countries, with the exception

of India, will need some extra money to put their plans into action. Kenya, Cambodia, Uganda, and Myanmar report the largest budgetary shortfalls relative to their needs. However, once approved funding from the GFATM is disbursed in full, the deficits in Myanmar and Uganda will be eliminated. Some of the country budgets are well-reasoned and consistent with recommended policy; others are less so. The Russian Federation errs towards the latter, where a large part of the need is generated by the purchase of X-ray equipment and by the costs of refurbishing hospitals.

In the second group of countries are Brazil, the Philippines, Thailand and Viet Nam, where a large proportion of patients are already treated in the public sector, either by DOTS or non-DOTS programmes. They probably do not require large budget increases to meet targets, and funding gaps are low or non-existent.

The remaining eight countries are in a third group, where NTPs are not yet close to reaching targets, and apparently have neither plans nor budgets that will get them to the targets by 2005. Some of these countries provided no data either for 2002 or 2003; for others the planned increase in costs was small. Some members of this group did plan budgetary increases, but without explanation. If the 13 constraints that emerged from our review of planning are genuinely obstacles to TB control, we would expect to see large and well-justified budgets to overcome them. In the absence of new sources of money, we would also expect to see larger funding gaps.

In general, the governments of richer countries pay a larger fraction of the costs of TB control. For the poorer countries that have identified greater needs, progress in TB control will be closely linked to the flow of funds from grants, especially those recently awarded by the GFATM. The GFATM has rapidly become a major donor for TB control, but our analysis raises difficulties of two kinds.

First, payments from the Fund have so far been small compared with the size of grants awarded. During 2003, only 16% of the total approved for TB and TB/HIV activities in the first 2 years was paid to countries. Second, it is questionable whether large influxes of new money can be immediately and effectively used in countries that have little experience of rapidly scaling up health interventions, and weak capacity for developing effective plans. The HBCs have together planned a sizeable 18% increase in expenditure for 2003. The GFATM grants to Bangladesh, Ethiopia and Myanmar would (at least) double the annual funding available for TB control in these countries in 2004. As external donors contribute more to TB control, filling the current holes in budgets, attention will turn to the absorption capacity of the poorest countries.

A strength of comparative, cross-country analysis is that it suggests various ways in which TB control in the HBCs could be improved. For example, the government contribution to funding is lower in China than in Viet Nam, even though China has a higher GNI. The comparatively high costs per patient treated in South Africa and the Russian Federation can be explained by their over-reliance on hospital care and expensive diagnostics. In other HBCs, a higher proportion of patients are successfully treated at lower cost outside hospitals and clinics. Although the Russian Federation has a relatively high GNI, the government foresees a large funding gap for 2004 and 2005. Some of these need could perhaps be met from domestic resources.

There remains much variation among HBCs in the way they report data on budgets and expenditures. Several countries, including India, Brazil, China, Viet Nam, and Indonesia, provided complete data and little or no follow-up was required from WHO. For others, much discussion with NTP managers and WHO country staff was needed to satisfac-

torily complete the questionnaire. During 2003, a large number of low-burden countries submitted data, but the poor quality of some of these data made them unusable. The reporting problems in high- and low-burden countries included the following: aggregate budget and expenditure totals were given with no breakdown by line item and funding source; information about GFATM proposals and awards was excluded, and data contained in GFATM proposals was inconsistent with data submitted to WHO; loans providing support to the health sector as a whole (e.g. from the World Bank in Brazil, Indonesia, and Tanzania) were not mentioned; the costs of dedicated NTP staff were not accurately calculated, or not calculated at all; and drug budgets were apparently inconsistent with the number of patients to be treated (often due to the existence or purchase of a drug buffer stock). The budgeting exercise has been made difficult in some countries with decentralized TB control, because funds for TB control are allocated at sub-national level and there is limited transparency or reporting of line items to national level.

While some of these complications are understandable, they raise questions about the capacity of NTPs to plan strategically, and to adequately fund and implement a DOTS programme. During 2004, WHO will address the difficulties that respondents faced in completing the financial questionnaire. The questionnaire itself will need revision: it is not yet clear, for example, what countries are budgeting for TB/HIV activities and for the treatment of MDR-TB cases, because they are not line items on the questionnaire. For the same reason, it is generally unclear what countries would wish to budget for external technical assistance. Technical assistance is needed to support a variety of activities, including the effective use of grants from the GFATM. Based on the observation that many proposals to the GFATM appear to be rich in financial data, there is

no doubt that it will be possible to gather more budgetary data of higher quality from more countries, and with greater efficiency.

As the WHO database grows, the investigative techniques applied to these data will need to be refined and developed. On refinement, the projections of costs for 2004 and 2005 in the 22 HBCs assume, among other things, that the cost per patient treated will remain constant as the number of cases detected increases. This would underestimate resource requirements if the cost per patient increases as additional cases become harder to find, or more difficult to treat. On development, there is no general procedure, as yet, for calculating the expected percentage of a country's total health spending that should be used for TB control. These are two examples of the analytical challenges facing the financial monitoring project.

In summary, the estimated cost of TB control in the HBCs was about US\$ 1 billion in 2003, and rising. Ten of the 22 HBCs project budgetary increases that are in line with plans for a major expansion of DOTS coverage. But some of these countries need to find significantly more money, and to find ways of efficiently disbursing this money, if they are to turn these plans into patients diagnosed, treated and cured. Four of the HBCs probably do not need much more money to reach the targets because most TB patients are already treated in the public sector, if not always under DOTS. The stated funding needs and funding gaps for the remaining Eight countries are almost certainly too low. These countries need sharply-focused strategic plans to overcome the constraints laid out in this report. For some of these countries, the planning and implementation of DOTS will come too late to reach the targets by 2005.

ANNEX I

# **Profiles of high-burden countries**



# Afghanistan

## Overview of TB control system

Twenty-three years of war has resulted in the steady collapse of the public health system and in low coverage of primary health care. This has led to poor access to TB treatment, and to frequent treatment failure. The huge influx of returnees from neighbouring countries could increase the prevalence of TB, but reliable data are not available to assess the scale of the problem. Political uncertainty and a lack of security continue to make TB control precarious. In the absence of a fully-functioning NTP, minimal TB control activities are carried out, mainly by WHO and NGOs. The DOTS strategy is an essential component of Afghanistan's redeveloping health services, and is included in the Basic Package of Health Services (BPHS), a group of interventions designed to reduce childhood and maternal mortality.

## Surveillance, planning, operations

Thirty-eight percent of the Afghan population was reported to have access to DOTS by the end of 2002, and an estimated 19% of all new smear-positive cases were detected. The increase in population coverage between 2001 and 2002 was considerably greater than the increase in case detection, perhaps because of the delay between establishing DOTS in a new area and finding cases. Like Iran, Afghanistan reports more women with TB than men, and the difference is greatest between young women and men. One possible explanation, yet to be tested, is that men seek treatment from non-DOTS private practitioners whereas women use DOTS public health facilities that report to the NTP. It is also possible that there really is more TB among

women. No TB cases were reported from outside the DOTS programme in 2002. Eighty-four percent of patients registered during 2001 were successfully treated, though only 53% were confirmed to be smear-negative at the end of treatment.

The draft strategic plan for TB control was finalized in 2003, and an operational plan for DOTS expansion was developed and partially implemented. The National Guidelines for TB Control were revised in October 2003, and will be introduced in 2004. Microscopes and reagents were procured in October 2003, but the development of a reference laboratory has been delayed until the NTP is further rehabilitated, and until a needs assessment can be undertaken with WHO's support in 2004.

Staff shortages remain at all levels. A staff training plan will be implemented in 2004, to include

training of master trainers in TB and fellowships in other countries. Regional centres that integrate training for TB, malaria, and other communicable diseases are part of the strategy to augment staff qualifications. Support from WHO human resource experts will be required to achieve these goals.

NGOs play a growing role in DOTS delivery. A MoU was signed in March 2003 between NGOs and the MoH for the provision of food rations to TB patients. The expansion of DOTS into the most difficult areas of the country will be facilitated by a massive education campaign, aimed at removing the stigma associated with TB. The successful expansion of DOTS will partly depend on security risks in new districts. Community-based DOTS is being explored to improve TB control activities in remote populations and for other people who

## PROGRESS IN TB CONTROL IN AFGHANISTAN

### Indicators

|  |     |
|--|-----|
| • Treatment success 2001 cohort  | 84% |
| • DOTS detection rate, 2002  | 19% |
| • NTP budget available, 2003   | 46% |
| • Government contribution to NTP budget, including loans, 2003             | 0%  |
| • Government contribution to total TB control costs, including loans, 2003 | NA  |
| • Government health spending used for TB, 2003                             | NA  |

### Constraints to achieving targets

- Weak health sector infrastructure, including insufficient personnel
- Weak NTP capacity due to staff shortages and poor training
- High stigma about TB resulting in unwillingness to seek early treatment
- Increasing private sector involvement in DOTS services
- PHC facilities not always implementing DOTS strategy

### Remedial actions needed

- Construct and rehabilitate physical infrastructure
- Develop plan for staff development that includes recruitment, retention, and training strategies for clinical and management staff
- Identify and implement best IEC practices to reduce stigma and raise TB awareness
- Involve private practitioners in DOTS; encourage use of standard drug regimens in the private sector
- Systematically introduce DOTS into PHC facilities, including community-based DOTS in the most inaccessible and under-served areas

NA indicates not available

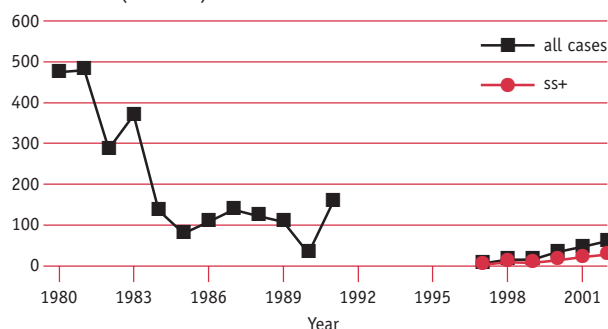


# AFGHANISTAN

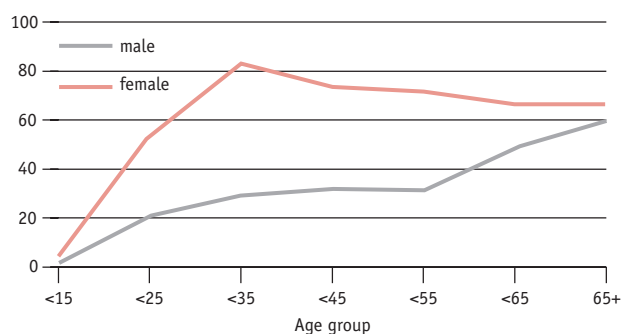
| LATEST ESTIMATES <sup>a</sup>         |                   | TRENDS                                    | 1999 | 2000 | 2001 | 2002 |
|---------------------------------------|-------------------|---|------|------|------|------|
| <b>Population</b>                     | <b>22 930 036</b> | DOTS population coverage (%)              | 14   | 15   | 12   | 38   |
| Global rank (by est. number of cases) | 20                | Notification rate (all cases/100 000 pop) | 16   | 33   | 46   | 60   |
| Incidence (all cases/100 000 pop)     | 333               | Notification rate (new ss+/100 000 pop)   | 8    | 14   | 21   | 28   |
| Incidence (new ss+/100 000 pop)       | 150               | Detection of all cases (%)                | 4.8  | 10   | 14   | 18   |
| Prevalence (ss+/100 000 pop)          | 302               | Detection of new ss+ cases (%)            | 5.3  | 9.0  | 14   | 19   |
| TB mortality per 100 000 pop          | 92                | DOTS detection of new ss+ (%)             | 5.3  | 9.0  | 14   | 19   |
| % of adult (15-49y) TB cases HIV+     | 0.0               | DOTS detection of new ss+/coverage(%)     | 39   | 60   | 117  | 50   |
| % of new cases multi-drug resistant   | 7.3               | DOTS treatment success (new ss+, %)       | 87   | 86   | 84   | —    |

## Notification rate (per 100 000 pop)

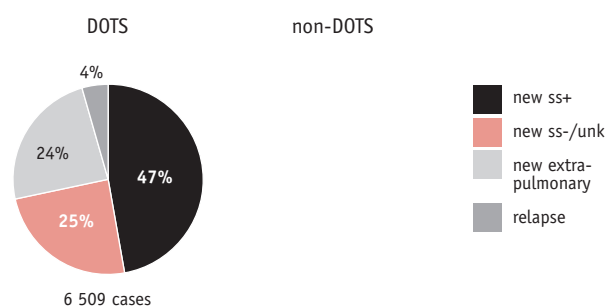
Notification (all cases) = 13 794 in 2002



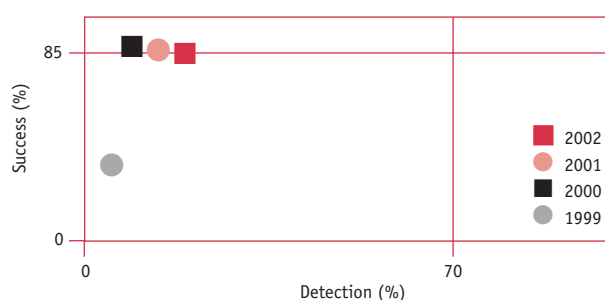
## Notification rate by age and sex (new ss+)<sup>b</sup>



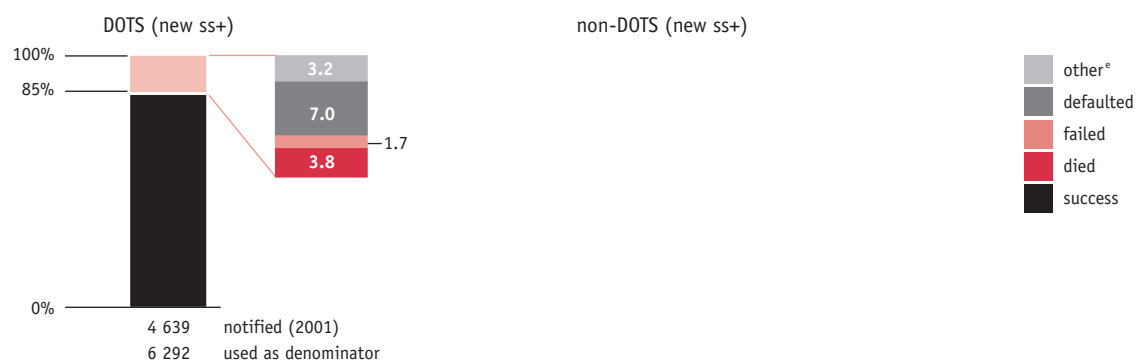
## Case types notified<sup>c</sup>



## DOTS progress towards targets<sup>d</sup>



## Treatment outcomes<sup>e</sup>



## Notes

ss+ Indicates smear-positive; ss-, smear-negative; pop, population; unk, unknown.

<sup>a</sup> See Methods for data sources.

<sup>b</sup> The sum of cases notified by age and sex is less than the number of new smear-positive cases notified for some countries.

<sup>c</sup> Non-DOTS is blank for countries which are 100% DOTS, or where no non-DOTS data were reported.

<sup>d</sup> DOTS progress towards targets: DOTS detection rate for given year, DOTS success rate for cohort registered in previous year.

<sup>e</sup> "Other" includes transfer out and not evaluated, still on treatment, and other unknown.

## Budget estimates, existing funding, and budget gaps for fiscal year 2003, US\$ millions

|   | REQUIRED FUNDING | EXPECTED FUNDING |          |            |          | FUNDING GAP |
|---|------------------|------------------|----------|------------|----------|-------------|
|   |                  | GOVERNMENT       | LOANS    | GRANTS     | OTHER    |             |
| <b>NTP budget</b>                                     |                  |                  |          |            |          |             |
| Drugs   | NA               | —                | —        | NA         | —        | —           |
| Dedicated staff working exclusively for TB control    | NA               | —                | —        | NA         | —        | —           |
| New activities to raise case detection and cure rates | NA               | —                | —        | NA         | —        | —           |
| Buildings, equipment, vehicles                        | NA               | —                | —        | NA         | —        | —           |
| All other line items                                  | NA               | —                | —        | NA         | —        | —           |
| <b>TOTAL NTP BUDGET</b>                               | <b>2.8</b>       | <b>—</b>         | <b>—</b> | <b>1.3</b> | <b>—</b> | <b>1.5</b>  |
| <b>Costs not covered by NTP budget <sup>a</sup></b>   |                  |                  |          |            |          |             |
| Hospital stay   | NA               | NA               | —        | —          | —        | —           |
| Clinic visits for DOT and monitoring                  | NA               | NA               | —        | —          | —        | —           |
| <b>TOTAL COSTS NOT COVERED BY NTP BUDGET</b>          | <b>NA</b>        | <b>NA</b>        | <b>—</b> | <b>—</b>   | <b>—</b> | <b>—</b>    |
| <b>TOTAL TB CONTROL COSTS</b>                         | <b>NA</b>        | <b>NA</b>        | <b>—</b> | <b>1.3</b> | <b>—</b> | <b>1.5</b>  |

— Indicates zero; NA, not available

<sup>a</sup> WHO estimates, data not provided by the NTP

do not have access to health services.

Programme monitoring and supervision have been strengthened through the recruitment of 18 national programme officers, and through the purchase of vehicles for supervision missions. However, half of the planned supervision missions did not take place either because the volatile security situation made travel unsafe, or because funds were not disbursed from the administratively weak NTP. As NTP capacity improves, so should monitoring and supervision.

There is no good national estimate of HIV prevalence among TB patients, in part because no system for HIV testing within the NTP has yet been established (the figure in the accompanying table is the estimated HIV infection rate in adults with TB). There are no TB/HIV collaborative activities at present, and no plan,

so far, to involve the NTP in ART delivery.

Anti-TB drugs were available throughout 2003, and an application for 2004 has been submitted to the GDF. Non-standard regimens are being used in private facilities which, together with the failure to observe patients throughout treatment, could lead to poor treatment outcomes and to the development of drug resistance. EMRO is planning to fund operational research aimed at fostering better practice in the private sector.

### Partnerships

WHO provides overall technical and financial assistance with the bulk of financial support coming from CIDA and the Government of Italy. JICA is funding the development of a TB laboratory network. GLRA, MEDAIR, GMS, LEPCO, ACD, and other NGOs provide TB diagnosis and treatment in their catchment areas. An appli-

cation to the GFATM was approved in February 2003. USAID has expressed interest in supporting TB control.

### Budgets and expenditures

The budget for the fiscal year 2003 (from 21 March) was US\$ 2.8 million. As in the 2002 fiscal year, funding for the NTP depended nearly exclusively on donor contributions. In 2002, the programme received a total of US\$ 2.3 million from CIDA and the Government of Italy. In 2003, a budget gap of US\$ 1.5 million was anticipated. It is currently impossible to make estimates of costs not covered by the NTP budget.

In 2003, Afghanistan was awarded a grant from the GFATM for strengthening communicable disease control, including TB control, at the central level and in 6 sub-regions. The funds have not yet been disbursed but the 2-year award total is US\$ 3.1 million.

# Bangladesh

## Overview of TB control system

Health care infrastructure is improving in Bangladesh but there are still major constraints to effective TB control. The population of one upazila (sub-district) is on average 270 000 and is served by 1 microscopy centre at the Upazila Health Complex (UHC). This is about 3 times the 100 000 population recommended by WHO and the IUATLD for 1 microscopy centre in high-burden countries. Prisons and medical college hospitals have introduced DOTS, and NGOs are major contributors to the TB control effort, providing DOTS to 55% of the population (40% from BRAC and DFB alone).

## Surveillance, planning, operations

Case notification rates have remained roughly stable for the past 4 years, and the estimated case detection rate by the DOTS programme was 32% in 2002. This is very low, given that DOTS population coverage was nominally 95%. In fact, the NTP believes that about half the population truly has access to the DOTS programme. Treatment success was close to the target level for the 2001 cohort (84%), but failed to reach it mainly because 7% of patients defaulted.

Since 2003 an international expert has been stationed in Bangladesh to assist the TB programme in planning and implementation. An external review of the programme was carried out in 2002 and formed the basis of the revised 5-year strategic plan. The review recommended changes in the previously inconsistent treatment regimens, and a revised protocol and 4-drug FDCs are now used throughout public health facilities, but not yet in all health facilities run by NGOs.

The implementation of DOTS in Dhaka and Chittagong cities is taking place through the city health services, and through a PPM partnership project being tested in Dhaka city that includes orientation to DOTS for private practitioners. Private chest physicians in part of Dhaka are now collaborating. A large portion of health services is delivered by private or informal practitioners, so implementation of DOTS within the private sector is paramount. However, in most urban areas there continues to be inadequate collaboration between the NTP, general hospitals, armed forces, academic institutions, private practitioners, and corporate health services, resulting in the uneven delivery of DOTS. The capacity of the central NTP level is insufficient to guide, coordinate, and train NGO staff, to revise NTP manuals, to intensify training of urban providers, and to procure and distribute drugs through the GDF.

Efforts to improve diagnosis and monitoring of treatment outcomes

include retraining of laboratory staff, preparation of an EQA manual, replacement of old microscopes, strengthening of the national reference laboratory, and establishment of district quality assurance laboratories.

Plans to develop guidelines for management of MDR-TB are underway, as is development of a protocol for a TB prevalence survey. A drug resistance survey will take place as soon as the National Reference Laboratory has acquired adequate capacity. The HIV prevalence among TB patients has not yet been measured. There are currently no collaborative activities between the TB and HIV/AIDS control programmes. However, there are plans to establish an HIV surveillance system among TB patients, and to involve the NTP in the provision of ART by the end of 2004.

## Partnerships

Partnerships between international agencies, NGOs operating in the country, and government are the key to success in Bangladesh. External

## PROGRESS IN TB CONTROL IN BANGLADESH

### Indicators

|  |      |
|--|------|
| • Treatment success 2001 cohort  | 84%  |
| • DOTS detection rate, 2002  | 32%  |
| • NTP budget available, 2003   | 100% |
| • Government contribution to NTP budget, including loans, 2003             | 37%  |
| • Government contribution to total TB control costs, including loans, 2003 | 62%  |
| • Government health spending used for TB, 2003                             | 2%   |

### Constraints to achieving targets

- Inadequate training, supervision, and monitoring due to incomplete health sector reform
- Too few skilled managers
- Private sector and academic institutions not compliant with DOTS strategy
- Interrupted drug supply

### Remedial actions needed

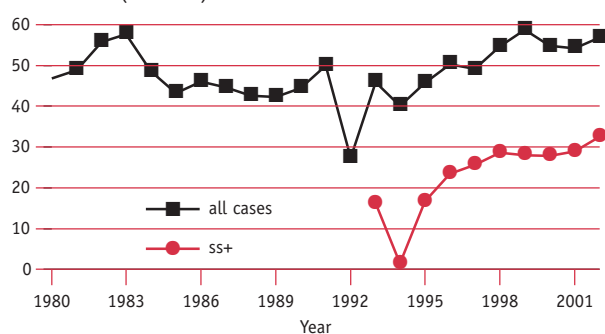
- Hire and train managerial staff
- Train and supervise staff to improve monitoring
- Improve collaboration with private and academic sectors through MoUs
- Develop an internal drug management plan in partnership with GDF and Stop TB to improve procurement, storage, and distribution

# BANGLADESH

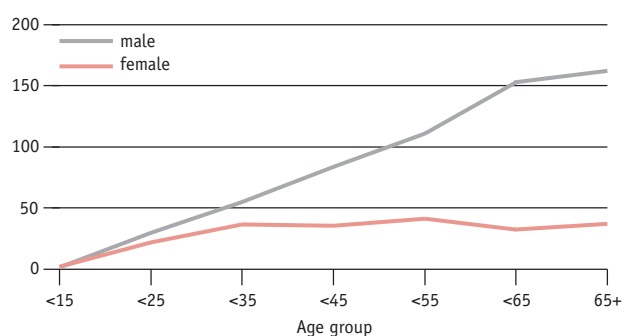
| LATEST ESTIMATES <sup>a</sup>         |                    | TRENDS                                    | 1999 | 2000 | 2001 | 2002 |
|---------------------------------------|--------------------|---|------|------|------|------|
| <b>Population</b>                     | <b>143 808 546</b> | DOTS population coverage (%)              | 90   | 92   | 95   | 95   |
| Global rank (by est. number of cases) | 5                  | Notification rate (all cases/100 000 pop) | 59   | 55   | 54   | 57   |
| Incidence (all cases/100 000 pop)     | 221                | Notification rate (new ss+/100 000 pop)   | 28   | 28   | 29   | 33   |
| Incidence (new ss+/100 000 pop)       | 99                 | Detection of all cases (%)                | 25   | 24   | 24   | 26   |
| Prevalence (ss+/100 000 pop)          | 188                | Detection of new ss+ cases (%)            | 26   | 27   | 28   | 33   |
| TB mortality per 10 000 pop           | 52                 | DOTS detection of new ss+ (%)             | 24   | 25   | 27   | 32   |
| % of adult (15-49y) TB cases HIV+     | 0.1                | DOTS detection of new ss+/coverage(%)     | 26   | 27   | 28   | 34   |
| % of new cases multi-drug resistant   | 1.4                | DOTS treatment success (new ss+, %)       | 81   | 83   | 84   | —    |

## Notification rate (per 100 000 pop)

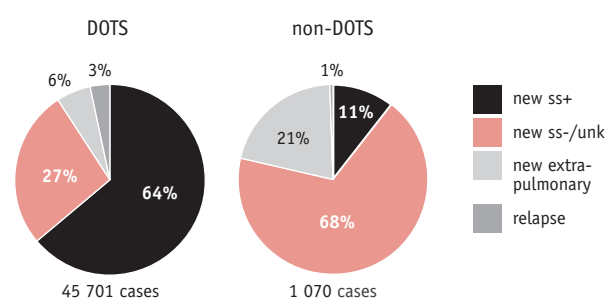
Notification (all cases) = 81 822 in 2002



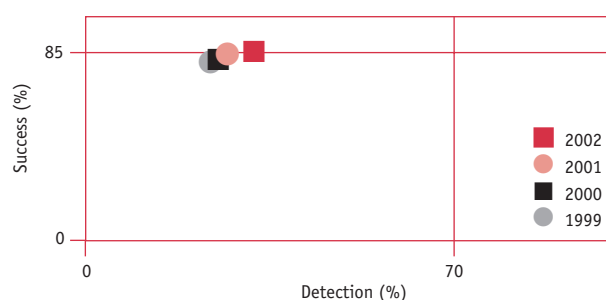
## Notification rate by age and sex (new ss+)<sup>b</sup>



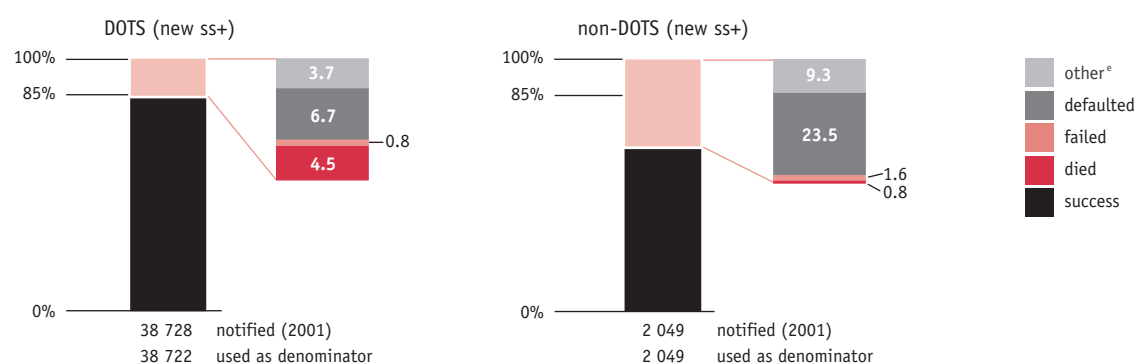
## Case types notified<sup>c</sup>



## DOTS progress towards targets<sup>d</sup>



## Treatment outcomes<sup>c</sup>



## Notes

ss+ Indicates smear-positive; ss-, smear-negative; pop, population; unk, unknown.

<sup>a</sup> See Methods for data sources.

<sup>b</sup> The sum of cases notified by age and sex is less than the number of new smear-positive cases notified for some countries.

<sup>c</sup> Non-DOTS is blank for countries which are 100% DOTS, or where no non-DOTS data were reported.

<sup>d</sup> DOTS progress towards targets: DOTS detection rate for given year, DOTS success rate for cohort registered in previous year.

<sup>e</sup> "Other" includes transfer out and not evaluated, still on treatment, and other unknown.

**Budget estimates, existing funding, and budget gaps for fiscal year 2003, US\$ millions**

|   | REQUIRED FUNDING | EXPECTED FUNDING |          |            |            | FUNDING GAP |
|---|------------------|------------------|----------|------------|------------|-------------|
|   |                  | GOVERNMENT       | LOANS    | GRANTS     | OTHER      |             |
| <b>NTP budget <sup>a</sup></b>                        |                  |                  |          |            |            |             |
| Drugs   | 2.8              | 1.1              | —        | 0.6        | 1.1        | —           |
| Dedicated staff working exclusively for TB control    | NA               | NA               | —        | NA         | 2.1        | —           |
| New activities to raise case detection and cure rates | NA               | NA               | —        | NA         | 2.0        | —           |
| Buildings, equipment, vehicles                        | NA               | NA               | —        | NA         | 2.0        | —           |
| All other line items                                  | NA               | NA               | —        | NA         | 1.6        | —           |
| <b>TOTAL NTP BUDGET</b>                               | <b>16.9</b>      | <b>6.2</b>       | <b>—</b> | <b>1.9</b> | <b>8.8</b> | <b>—</b>    |
| <b>Costs not covered by NTP budget <sup>b</sup></b>   |                  |                  |          |            |            |             |
| Hospital stay   | 1.1              | 1.1              | —        | —          | —          | —           |
| Clinic visits for DOT and monitoring                  | 9.8              | 9.8              | —        | —          | —          | —           |
| <b>TOTAL COSTS NOT COVERED BY NTP BUDGET</b>          | <b>10.9</b>      | <b>10.9</b>      | <b>—</b> | <b>—</b>   | <b>—</b>   | <b>—</b>    |
| <b>TOTAL TB CONTROL COSTS</b>                         | <b>27.8</b>      | <b>17.1</b>      | <b>—</b> | <b>1.9</b> | <b>8.8</b> | <b>—</b>    |

— Indicates zero; NA, not available

<sup>a</sup> Not all cells in the table can be filled because, among sources, only the GFATM provides a breakdown of funds for all line items

<sup>b</sup> WHO estimates, data not provided by the NTP

support for TB control has been provided by WHO, USAID, ADB, and the World Bank. The GDF provided drugs in 2002. A GFATM proposal was approved in 2003.

## Budgets and expenditures

The NTP budget data included in the last two reports in this series indicated an annual requirement of around US\$ 5–6 million. Data provided in the GFATM proposal show a higher figure of US\$ 9.7 million for fiscal year 2002 (from 1 July).<sup>1</sup> Data on expenditures are incomplete, but suggest spending of around US\$ 7 million in 2002.

The budget for 2003 is substantially (159%) higher than in previous years, at US\$ 16.9 million (the

total over the 5 years 2003 to 2007 is US\$ 85.9 million). This much higher budget was developed in the context of an application to the GFATM, and is linked to an ambitious target of detecting 155 724 new cases in 2003, almost double the number of cases notified in 2002. There are large budget increases for strengthening and scaling up diagnostic services (e.g. through purchase of microscopes and recruitment of laboratory technicians), for the improvement of management and supervision (e.g. through recruitment of new supervisors, consultants, and community health workers), for provision of training, and to enhance monitoring and evaluation. Following approval of the GFATM application, the budget is fully funded, not just for 2003, but

also for the 5-year period 2003 to 2007. In 2003, US\$ 8.8 million – more than half the budget – will be provided by the GFATM, with the remaining funding coming from the government (US\$ 6.2 million) and donors besides the GFATM (US\$ 1.9 million). Whether the substantial increase in funds can be efficiently absorbed and translated into achievement of the case detection target remains to be seen.

If the case detection target is met, the costs associated with TB control that are not funded from the NTP budget will amount to an estimated US\$ 10.9 million in 2003. Total TB control costs would be US\$ 27.8 million per year, equivalent to US\$ 171 per patient.

<sup>1</sup> The discrepancy appears to arise from the fact that the budget data included in the last two reports reflect government budgets only. The data in the GFATM proposal are more complete, including, for example, the funds required for NGO provision of services.

# Brazil

## Overview of TB control system

Political changes following the 2002 general election led to reorganization of the Ministry of Health, and to adjustments in policies and plans on health care. Decentralization of public health services has presented a challenge to the standardization and implementation of TB diagnosis, treatment, and evaluation. However, TB control was a priority under Brazil's Family Health Programme, and remains a priority now that the programme is overseen by the Vice-Ministry for Health Surveillance. DOTS programmes, where implemented, have demonstrated that TB control can be effectively integrated within the primary health care system.

## Surveillance, planning, operations

Despite the low coverage of DOTS, and the growing prevalence of HIV infection, case notification rates have been falling for many years in Brazil. This downward trend may reflect a real decline in incidence. DOTS population coverage increased to 32% in 2001, but appears to have fallen since, possibly because DOTS implementation in all states and municipalities was reviewed during 2002. Notwithstanding low population coverage, the large fraction of cases detected from all sources (84%) suggests that DOTS could expand rapidly, because the majority of cases are already found and reported by the public health system. However, as more patients have been treated under DOTS, the treatment success has fallen. It was 67% for the 2001 cohort, and smear conversion was recorded for only 36% of patients. Nine percent of patients defaulted, and 15% were not evaluated. Moreover, only 34% of all smear-positive

patients notified in 2001 were registered for treatment in the 2001 cohort; the fate of the remaining 66% is unknown.

The strategic plan for 2001–5 has been approved by the National TB Control Programme (PNCT) and by the Tripartite Intermanagerial Commission (CIT). Until August 2003, there was no clear implementation plan to guide DOTS expansion in the municipalities but, with the development of local action plans, municipal DOTS programmes should advance more quickly. A ministerial order concerning financial incentives for expansion of TB control activities within primary health care was issued at the same time, arising from a national meeting to evaluate TB control activities. A workshop to plan TB control throughout Brazil was held by the National Coordination for Endemic Diseases group in November 2003.

Efforts to improve diagnosis began in July 2003, and included training in smear microscopy, laboratory management, and epidemiological surveillance in the Amazon states.

Programme monitoring and supervision were strengthened through the creation of the National Group for Monitoring, Mobilization, and Intensification of Activities for Leprosy Elimination and TB Control. 102 supervisory visits were conducted in 19 states between December 2001 and October 2002, but the impact of these visits has not yet been measured. Efforts to strengthen human resource capacity by training staff in 329 municipalities were hampered by poor planning.

A national HIV surveillance system for TB patients is in place. The WHO estimate of HIV prevalence among adult TB patients is approximately 4%, though the true prevalence could be higher. TB/HIV coordinating bodies are organized at national, state, and municipal levels. All collaborative TB/HIV activities, except cotrimoxazole preventive therapy, are implemented exclusively by the MoH in all 27 states.

A drug resistance survey was completed in 1996, where MDR appeared to be of relatively low prevalence.

## PROGRESS IN TB CONTROL IN BRAZIL

### Indicators

|  |      |
|--|------|
| • Treatment success 2001 cohort  | 67%  |
| • DOTS detection rate, 2002  | 10%  |
| • NTP budget available, 2003   | 100% |
| • Government contribution to NTP budget, including loans, 2003             | 100% |
| • Government contribution to total TB control costs, including loans, 2003 | 100% |
| • Government health spending used for TB, 2003                             | 0.2% |

### Constraints to achieving targets

- Weak political commitment at state level as a result of rapid decentralization, leading to variable quality in DOTS services
- Inconsistent monitoring of treatment outcomes
- Poor planning for staff training

### Remedial actions needed

- Improve coordination among federal, state, and municipal health services to follow plans developed in November 2003
- Increase staff, training, and supervision to improve monitoring of treatment
- Develop staff training plan

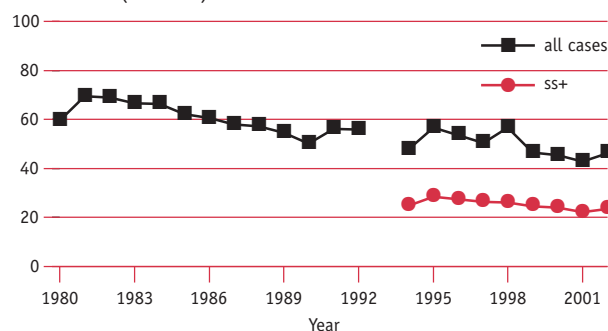


## BRAZIL

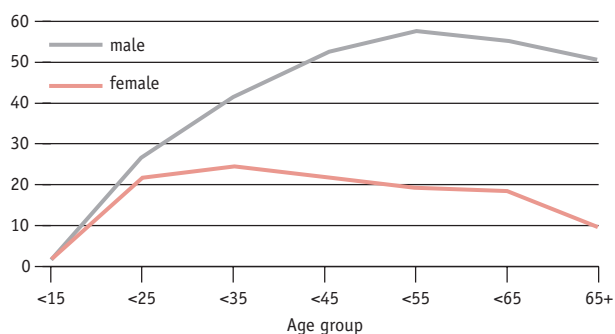
| LATEST ESTIMATES <sup>a</sup>         |                    | TRENDS                                    | 1999 | 2000 | 2001 | 2002 |
|---------------------------------------|--------------------|---|------|------|------|------|
| <b>Population</b>                     | <b>176 257 330</b> | DOTS population coverage (%)              | 7    | 7    | 32   | 25   |
| Global rank (by est. number of cases) | 15                 | Notification rate (all cases/100 000 pop) | 47   | 45   | 43   | 46   |
| Incidence (all cases/100 000 pop)     | 62                 | Notification rate (new ss+/100 000 pop)   | 25   | 24   | 22   | 23   |
| Incidence (new ss+/100 000 pop)       | 28                 | Detection of all cases (%)                | 67   | 67   | 66   | 74   |
| Prevalence (ss+/100 000 pop)          | 42                 | Detection of new ss+ cases (%)            | 79   | 80   | 76   | 84   |
| TB mortality per 100 000 pop          | 8                  | DOTS detection of new ss+ (%)             | 4.0  | 7.6  | 8.1  | 10   |
| % of adult (15-49y) TB cases HIV+     | 3.8                | DOTS detection of new ss+/coverage(%)     | 57   | 109  | 25   | 39   |
| % of new cases multi-drug resistant   | 0.9                | DOTS treatment success (new ss+, %)       | 89   | 73   | 67   | —    |

### Notification rate (per 100 000 pop)

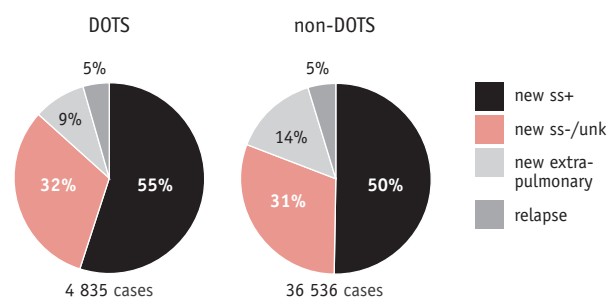
Notification (all cases) = 176 257 330 in 2002



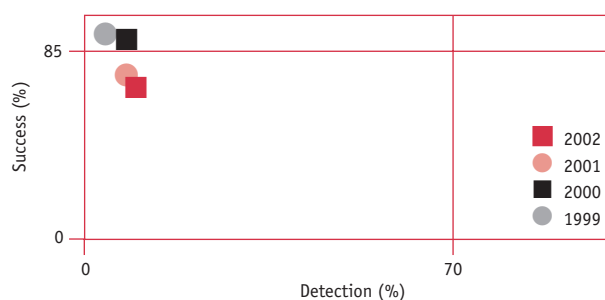
### Notification rate by age and sex (new ss+)<sup>b</sup>



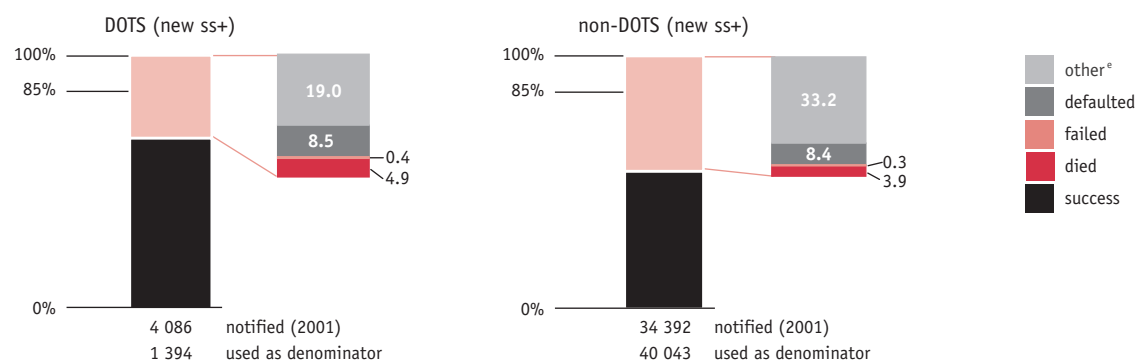
### Case types notified<sup>c</sup>



### DOTS progress towards targets<sup>d</sup>



### Treatment outcomes<sup>c</sup>



### Notes

ss+ Indicates smear-positive; ss-, smear-negative; pop, population; unk, unknown.

<sup>a</sup> See Methods for data sources.

<sup>b</sup> The sum of cases notified by age and sex is less than the number of new smear-positive cases notified for some countries.

<sup>c</sup> Non-DOTS is blank for countries which are 100% DOTS, or where no non-DOTS data were reported.

<sup>d</sup> DOTS progress towards targets: DOTS detection rate for given year, DOTS success rate for cohort registered in previous year.

<sup>e</sup> "Other" includes transfer out and not evaluated, still on treatment, and other unknown.

## BRAZIL

### Budget estimates, existing funding, and budget gaps for fiscal year 2003, US\$ millions

|   | REQUIRED FUNDING | EXPECTED FUNDING |          |          |          | FUNDING GAP |
|---|------------------|------------------|----------|----------|----------|-------------|
|   |                  | GOVERNMENT       | LOANS    | GRANTS   | OTHER    |             |
| <b>NTP budget</b>                                     |                  |                  |          |          |          |             |
| Drugs   | 4.0              | 4.0              | —        | —        | —        | —           |
| Dedicated staff working exclusively for TB control    | —                | —                | —        | —        | —        | —           |
| New activities to raise case detection and cure rates | —                | —                | —        | —        | —        | —           |
| Buildings, equipment, vehicles                        | —                | —                | —        | —        | —        | —           |
| All other line items                                  | 11.5             | 11.5             | —        | —        | —        | —           |
| <b>TOTAL NTP BUDGET</b>                               | <b>15.5</b>      | <b>15.5</b>      | <b>—</b> | <b>—</b> | <b>—</b> | <b>—</b>    |
| <b>Costs not covered by NTP budget <sup>a,b</sup></b> |                  |                  |          |          |          |             |
| Hospital stay   | 14.6             | 14.6             | —        | —        | —        | —           |
| Clinic visits for DOT and monitoring                  | 11.0             | 11.0             | —        | —        | —        | —           |
| <b>TOTAL COSTS NOT COVERED BY NTP BUDGET</b>          | <b>25.6</b>      | <b>25.6</b>      | <b>—</b> | <b>—</b> | <b>—</b> | <b>—</b>    |
| <b>TOTAL TB CONTROL COSTS</b>                         | <b>41.1</b>      | <b>41.1</b>      | <b>—</b> | <b>—</b> | <b>—</b> | <b>—</b>    |

— Indicates zero; NA, not available

<sup>a</sup> WHO estimates, data not provided by the NTP

<sup>b</sup> Assuming that the number of cases treated in 2003 will be the same as the number of notified in 2002. Estimates differ from those in the 2003 report due to a change in methods made possible by the availability of new data. See Methods section for full details.

Given the burden of disease in the country the absolute number of MDR cases is considerable. Brazil established a notification system for MDR in 2000. A second nationwide survey carried out by state is planned for 2004.

A guide on appropriate drug management has been further developed for states and municipalities. National and regional health promotion activities are improving public knowledge about TB. These activities include National TB Week, as well as participation of medical students in TB awareness and control efforts.

### Partnerships

An NICC was created in 2001 but only informal meetings with selected partners have taken place so far. A

formal meeting, with a structured agenda and the participation of all partners, is proposed for 2004. A national executive secretary was hired to intensify TB control actions and a technical advisory committee on TB was created.

WHO/PAHO is the technical organization of reference for the country. A new WHO/PAHO international adviser will be stationed in Brasilia after a gap of 1 year. IUATLD and CDC are providing technical support in specific projects. CDC also collaborates with local institutions, and contributes to strengthening country capacity through an exchange of knowledge. GLRA and DFB support selected states. Brazilian NGOs have helped to build national technical partnerships.

### Budgets and expenditures

NTP expenditures in fiscal year 2002 (from 1 January) were US\$ 13.5 million, of which US\$ 3.7 million was for drugs. All expenditures were funded by the government. For fiscal year 2003, the NTP budget was US\$ 15.5 million, also fully funded by the government. Costs associated with TB control that were not funded from the NTP budget amounted to an estimated US\$ 25.6 million, of which US\$ 14.6 million was for hospital admissions during treatment and US\$ 11 million was for clinic visits during treatment. Total TB control costs for 2003 can therefore be estimated at US\$ 41.1 million, about US\$ 704 per patient.

# Cambodia

## Overview of TB control system

Cambodia continues to focus on improving equity and accessibility to health services, including TB care. The National Committee Against Tuberculosis, a multisectoral partnership, is chaired by the prime minister, and the governor of each province is a member of this committee. The Director General for Health has endorsed the 5-year strategic plan of the NTP and the Minister of Health has endorsed the current policies and strategies for TB control. The NTP is coordinated from the National Centre for TB and Leprosy Control (CENAT) in Phnom Penh, and holds an annual TB conference attended by all provincial TB supervisors. Meetings are organized at provincial level for district supervisors. Taking advantage of recent health reforms, the NTP is providing services in a growing number of peripheral health centres. All such health centres should be involved in the DOTS programme by 2005.

## Surveillance, planning, operations

Although data from the 2002 national disease prevalence survey are yet to be published, it is clear that the TB prevalence, and possibly incidence, rates are lower than current WHO estimates. If so, the estimated smear-positive case detection rate by the DOTS programme of 52% for 2002 is too low. Recent rises in case notification rates are mostly due to improved case finding. The reported treatment success rate for the 2001 cohort was very high (92%), well above the 85% target.

By the end of 2003, at least 706 health centres (70%) offered DOTS. By the end of 2005, DOTS should be available through all 942 health centres, some of which are currently

being built, adding to the 75 national and referral hospitals. Activity budgets were also partially decentralized to improve the distribution and management of funds. In rural areas, community-based DOTS will be introduced where appropriate using a recent grant from the GFATM. Plans to use mass media for health education have not been fully implemented due to a lack of motivation among staff and a lack of funds. Strong political commitment for TB control has led to an increase in the national budget for anti-TB drugs, though drug procurement and supply need to be closely monitored through 2004. Commitment was further demonstrated through participation in World TB Day and by organization of an annual TB conference. Provinces and districts held regular meetings, and the national and provincial committees for TB control will be revived to increase

commitment and resources for DOTS.

The NTP is currently revising its TB recording and reporting system to ensure full compatibility with other recent changes to the health information system. As these changes are introduced, training and supervision will be essential to ensure high-quality services, including the consistent and accurate use of smear microscopy for diagnosis.

The new WHO EQA guidelines are being adapted for Cambodia, and implementation has begun in a few areas. Efforts to improve treatment outcomes include better tracing of defaulters (through per diem payments to staff), increased community participation, and strict enforcement of DOT.

Training for TB control will be included within the training package on essential health services. Training on the management of TB in chil-

## PROGRESS IN TB CONTROL IN CAMBODIA

### Indicators

|  |     |
|--|-----|
| • Treatment success 2001 cohort  | 92% |
| • DOTS detection rate, 2002  | 52% |
| • NTP budget available, 2003   | 43% |
| • Government contribution to NTP budget, including loans, 2003             | 16% |
| • Government contribution to total TB control costs, including loans, 2003 | 46% |
| • Government health spending used for TB, 2003                             | 6%  |

### Major constraints to achieving targets

- Limited knowledge, low motivation, and poor salary among health professionals
- Poor awareness of TB in the general population
- Low access to health services, including DOTS, in some areas
- TB/HIV epidemic threatens success of DOTS strategy
- Funding gap

### Remedial actions needed to overcome constraints

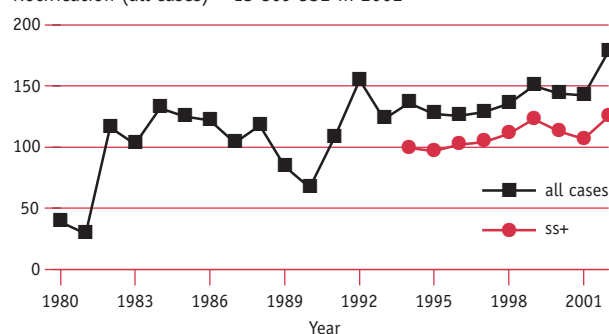
- Offer refresher courses to all TB staff to improve knowledge about TB treatment and control
- Create/revise HRDP to strengthen staffing
- Increase salaries to improve staff motivation
- Strengthen IEC to increase awareness about TB in the general population
- Use community-based DOTS to improve access to services in rural areas
- Screen for TB among people infected with HIV and strengthen collaboration between TB and HIV programmes
- Mobilization of more funding

# CAMBODIA

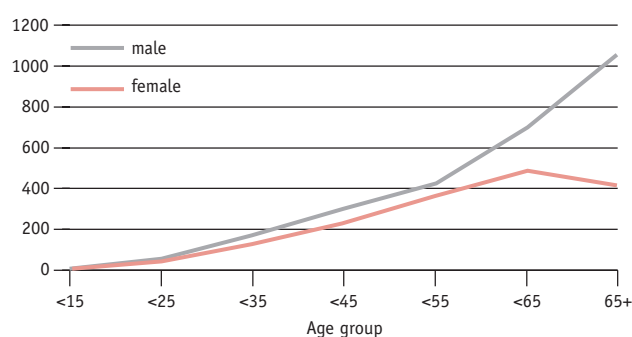
| LATEST ESTIMATES <sup>a</sup>         |                   | TRENDS                                    | 1999 | 2000 | 2001 | 2002 |
|---------------------------------------|-------------------|---|------|------|------|------|
| <b>Population</b>                     | <b>13 809 532</b> | DOTS population coverage (%)              | 100  | 99   | 100  | 100  |
| Global rank (by est. number of cases) | 21                | Notification rate (all cases/100 000 pop) | 150  | 144  | 142  | 178  |
| Incidence (all cases/100 000 pop)     | 549               | Notification rate (new ss+/100 000 pop)   | 123  | 113  | 107  | 125  |
| Incidence (new ss+/100 000 pop)       | 242               | Detection of all cases (%)                | 28   | 26   | 26   | 32   |
| Prevalence (ss+/100 000 pop)          | 311               | Detection of new ss+ cases (%)            | 51   | 47   | 44   | 52   |
| TB mortality per 100 000 pop          | 107               | DOTS detection of new ss+ (%)             | 51   | 47   | 44   | 52   |
| % of adult (15-49y) TB cases HIV+     | 14                | DOTS detection of new ss+/coverage(%)     | 51   | 47   | 44   | 52   |
| % of new cases multi-drug resistant   | 4.2               | DOTS treatment success (new ss+, %)       | 93   | 91   | 92   | —    |

## Notification rate (per 100 000 pop)

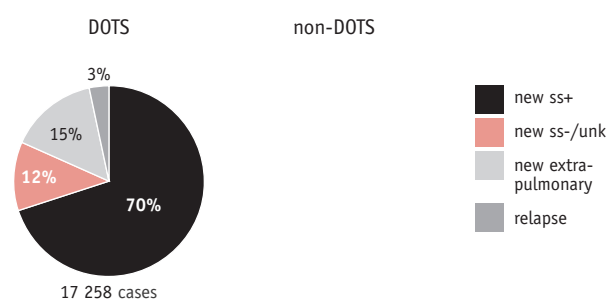
Notification (all cases) = 13 809 532 in 2002



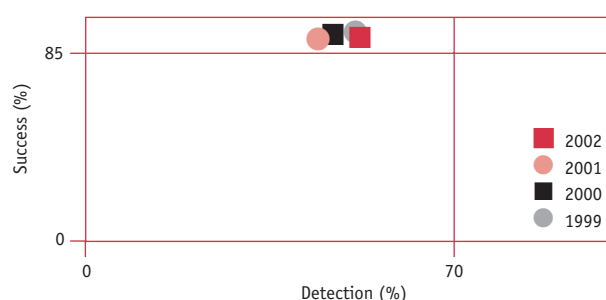
## Notification rate by age and sex (new ss+)<sup>b</sup>



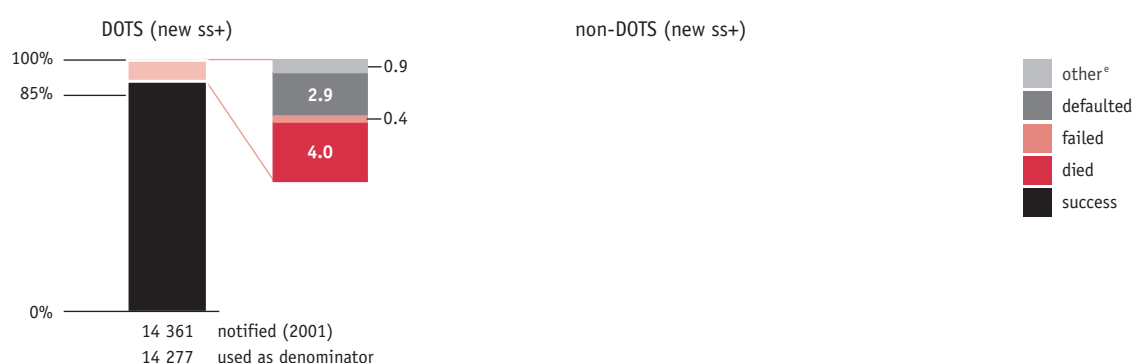
## Case types notified<sup>c</sup>



## DOTS progress towards targets<sup>d</sup>



## Treatment outcomes<sup>e</sup>



## Notes

ss+ Indicates smear-positive; ss-, smear-negative; pop, population; unk, unknown.

<sup>a</sup> See Methods for data sources.

<sup>b</sup> The sum of cases notified by age and sex is less than the number of new smear-positive cases notified for some countries.

<sup>c</sup> Non-DOTS is blank for countries which are 100% DOTS, or where no non-DOTS data were reported.

<sup>d</sup> DOTS progress towards targets: DOTS detection rate for given year, DOTS success rate for cohort registered in previous year.

<sup>e</sup> "Other" includes transfer out and not evaluated, still on treatment, and other unknown.

## Budget estimates, existing funding, and budget gaps for fiscal year 2003, US\$ millions

|   | REQUIRED FUNDING | EXPECTED FUNDING |             |             |          | FUNDING GAP |
|---|------------------|------------------|-------------|-------------|----------|-------------|
|   |                  | GOVERNMENT       | LOANS       | GRANTS      | OTHER    |             |
| <b>NTP budget</b>                                     |                  |                  |             |             |          |             |
| Drugs   | 1.2              | 0.2              | —           | 0.1         | —        | 0.9         |
| Dedicated staff working exclusively for TB control    | 0.9              | 0.1              | —           | —           | —        | 0.8         |
| New activities to raise case detection and cure rates | 1.0              | —                | 0.05        | 0.05        | —        | 0.9         |
| Buildings, equipment, vehicles                        | 0.8              | 0.1              | —           | 0.1         | —        | 0.6         |
| All other line items                                  | 2.0              | 0.65             | 0.3         | 0.9         | —        | 0.15        |
| <b>TOTAL NTP BUDGET</b>                               | <b>5.9</b>       | <b>1.05</b>      | <b>0.35</b> | <b>1.15</b> | <b>—</b> | <b>3.35</b> |
| <b>Costs not covered by NTP budget <sup>a</sup></b>   |                  |                  |             |             |          |             |
| Hospital stay   | 1.1              | 1.1              | —           | —           | —        | —           |
| Clinic visits for DOT and monitoring                  | 2.0              | 2.0              | —           | —           | —        | —           |
| <b>TOTAL COSTS NOT COVERED BY NTP BUDGET</b>          | <b>3.1</b>       | <b>3.1</b>       | <b>—</b>    | <b>—</b>    | <b>—</b> | <b>—</b>    |
| <b>TOTAL TB CONTROL COSTS</b>                         | <b>9.0</b>       | <b>4.15</b>      | <b>0.35</b> | <b>1.15</b> | <b>—</b> | <b>3.35</b> |

— Indicates zero; NA, not available

<sup>a</sup> WHO estimates, data not provided by the NTP

dren will begin after guidelines have been finalized and approved by the MoH. It is anticipated that staff in all TB units will be trained to treat pediatric patients within 2 years. Because overseas training opportunities have been limited to those who speak English, language lessons are planned, especially for staff in operational districts.

There is a TB/HIV coordinating body at national level only. Most collaborative activities are implemented either by the MoH, NGOs, or research organizations in 16 of 183 districts. There is a surveillance system for TB in HIV patients, and the national HIV prevalence in TB patients is estimated to be 20%. A pilot project on TB/HIV management began in 4 provinces that have relatively high rates of HIV infection. There are plans to involve the NTP in ART delivery in 2004. Cambodia has recently conducted a DRS survey within the framework of the WHO/IUATLD global project on anti-TB drug resistance surveillance, and the prevalence of MDR-TB among previously treated cases was only 3.1% (cf estimated 4.2% MDR-TB rate among new cases given in accompanying table).

Private practitioners treat an unknown proportion of TB cases, as their formal involvement in the NTP

has been limited. Non-adherence to DOTS in the private sector and in some large hospitals is being addressed through the development of a PPM project funded by the GFATM. This is expected to encourage prompt referral of TB suspects to the TB unit, and to support follow-up of patients in the community.

### Partnerships

WHO, JICA, and RIT lead external technical collaboration. The WFP provides a nutritional support scheme for TB patients. Principal financial partners are the World Bank, JICA, CIDA, and WHO, with additional support from the GoJ, USAID, and TBCTA. A recent, successful application to the GFATM will reduce the funding gap.

### Budgets and expenditures

Expenditures by the NTP in fiscal year 2002 (from 1 January) were US\$ 2.7 million, the same as the funding received. With nearly 24 000 patients treated, this was equivalent to US\$ 113 per patient. The majority of funding came from grants, while the government and a World Bank loan each provided almost 25% of available funding. Expenditures for items not covered by the NTP budget were about US\$ 2.5 million. Total TB con-

trol costs for 2002 were therefore around US\$ 5.2 million, or about US\$ 217 per patient.

The NTP budget for the fiscal year 2003 was more than double spending in 2002, at US\$ 5.9 million. This was to allow for accelerated DOTS expansion and increased case detection. The NTP estimated that they would treat 30 000 patients during 2003, implying a budget per patient of US\$ 197 – a 75% increase compared to 2002. However, only 43% of the required funding was available (US\$ 2.6 million, similar to actual spending in 2002), mostly from grants, with a large gap of US\$ 3.35 million for drugs, dedicated staff, new activities to increase case detection and cure rates, and buildings, equipment and vehicles. It will be interesting to see what level of case detection was achieved in 2003, given these funding problems. If the target of treating 30 000 patients was reached, then costs associated with TB control beyond those funded from the NTP budget would amount to around US\$ 3.1 million, implying total TB control costs of US\$ 9 million (or US\$ 300 per patient). Funding problems should ease in 2004, given a successful application to the GFATM in 2003 worth US\$ 6.7 million over 5 years.

# China

## Overview of TB control system

Under the direction of the MoH, China's CDC has the task of maintaining DOTS where it has already been introduced, of expanding DOTS to other parts of the country, and of supervising all TB dispensaries. Implementation of TB control is the responsibility of county TB dispensaries. In areas implementing the DOTS strategy patients suspected of TB should be referred by village doctors, township hospitals, or county hospitals to the local TB dispensary for diagnosis and treatment. Patients diagnosed with smear-positive disease in TB dispensaries are given free treatment under the supervision of a village doctor or township medical staff. In areas where DOTS has not yet been implemented, the majority of patients must pay for diagnosis and treatment of TB, as for all other conditions.

## Surveillance, planning, operations

There has been little progress in TB control in China since the mid 1990s, as judged from surveillance data collected to the end of 2002. The treatment success rate has remained high (96% reported for the 2001 cohort), but the case notification rate fell slightly in 2002, as did the smear-positive case detection rate by the DOTS programme. The ratio of case detection to DOTS population coverage – a measure of the case detection rate within DOTS areas – also dropped between 2001 (42%) and 2002 (35%). All these indices have changed little over the past 8 years. The fall between 2001 and 2002 could be due to the delay between the end of the first World Bank-funded project (1990–2000) and the start of the new World Bank/DFID and GFATM projects

(2003). However, with old and new projects scaling up in 27 provinces, it is expected that major improvements in case detection will be reported for 2003 and 2004.

The MoH, Ministry of Finance, and the National Development and Reform Commission (NDRC) are currently carrying out a national evaluation to assess progress in implementing the 10-year national TB control plan. This evaluation, due to be completed in January 2004, will measure government commitment at all levels to TB control. Despite strong commitment to, and solid planning for, TB control at the central level, barriers remain at lower government levels. The lack of properly functioning TB dispensaries in some counties and no

dispensaries at all in other counties; poor coordination between hospitals and the NTP; and a lack of staff resources to ensure proper diagnosis, treatment, and management of the TB programme are major barriers to case detection within designated DOTS areas. Many patients are not directed to TB dispensaries for diagnosis and treatment and remain in county hospitals with uncertain diagnoses and unsupervised treatment. Linking hospitals, dispensaries, and village doctors through PPM partnerships is, therefore, critical for the effective implementation of DOTS.

Following the recent SARS epidemic, the government strengthened public health services, and included TB among 4 priority diseases. As a

## PROGRESS IN TB CONTROL IN CHINA

### Indicators

|  |      |
|--|------|
| • Treatment success 2001 cohort  | 96%  |
| • DOTS detection rate, 2002  | 27%  |
| • NTP budget available, 2003   | 92%  |
| • Government contribution to NTP budget, including loans, 2003             | 77%  |
| • Government contribution to total TB control costs, including loans, 2003 | 77%  |
| • Government health spending used for TB, 2003                             | 0.3% |

### Constraints to achieving targets

- Insufficient political commitment by some provincial governments resulting in inadequate local funding for DOTS
- Insufficient staff to implement DOTS, especially at central and provincial levels
- Poor referral of TB patients and weak collaboration between hospitals and TB dispensaries
- Weak TB institutions in many impoverished areas
- Poor multisectoral response to TB control
- Weak monitoring and evaluation by NTP

### Remedial actions needed

- Strengthen political commitment locally and expand international support
- Central government to formally evaluate political commitment, degree to which national TB control plan is implemented, and funding needed and available at lower governmental levels
- Hire experienced staff and enhance training through proposed DOTS training site
- Revise/develop HRDP to strengthen staffing
- Test innovative approaches to strengthening collaboration between hospitals and TB dispensaries
- Provide essential equipment and vehicles in impoverished areas
- Develop strategies to strengthen multisectoral response to TB
- Strengthen monitoring and evaluation system of NTP

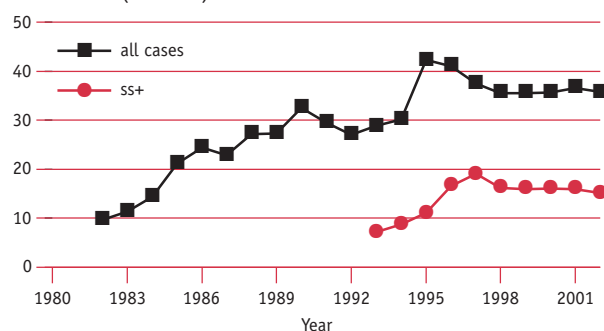


# CHINA

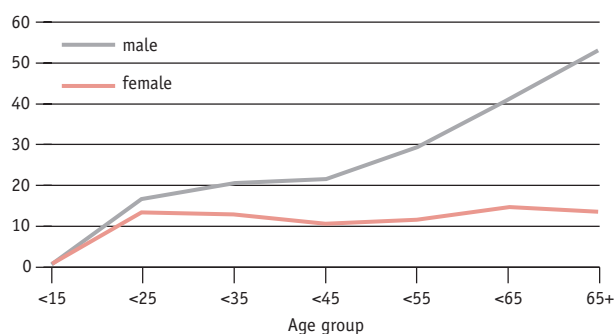
| LATEST ESTIMATES <sup>a</sup>         |                      | TRENDS                                    | 1999 | 2000 | 2001 | 2002 |
|---------------------------------------|----------------------|---|------|------|------|------|
| <b>Population</b>                     | <b>1 294 866 589</b> | DOTS population coverage (%)              | 64   | 68   | 68   | 78   |
| Global rank (by est. number of cases) | 2                    | Notification rate (all cases/100 000 pop) | 36   | 36   | 37   | 36   |
| Incidence (all cases/100 000 pop)     | 113                  | Notification rate (new ss+/100 000 pop)   | 16   | 16   | 16   | 15   |
| Incidence (new ss+/100 000 pop)       | 51                   | Detection of all cases (%)                | 32   | 32   | 32   | 32   |
| Prevalence (ss+/100 000 pop)          | 107                  | Detection of new ss+ cases (%)            | 31   | 32   | 31   | 30   |
| TB mortality per 100 000 pop          | 21                   | DOTS detection of new ss+ (%)             | 28   | 29   | 28   | 27   |
| % of adult (15-49y) TB cases HIV+     | 0.7                  | DOTS detection of new ss+/coverage(%)     | 43   | 42   | 42   | 35   |
| % of new cases multi-drug resistant   | 5.3                  | DOTS treatment success (new ss+, %)       | 96   | 95   | 96   | —    |

## Notification rate (per 100 000 pop)

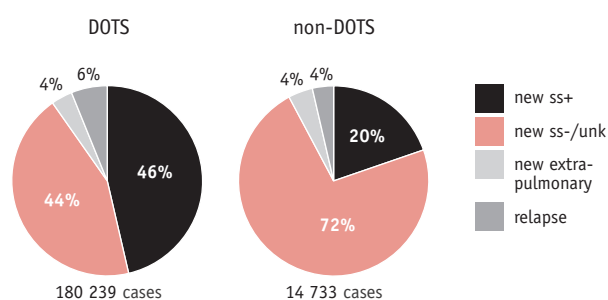
Notification (all cases) = 1 294 589 in 2002



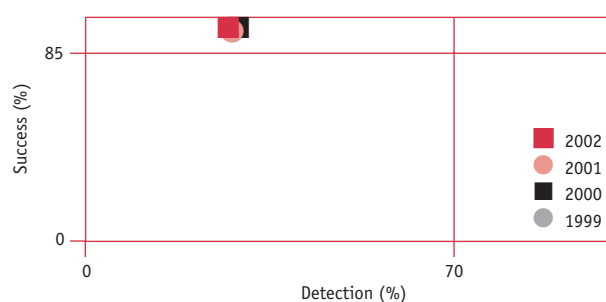
## Notification rate by age and sex (new ss+)<sup>b</sup>



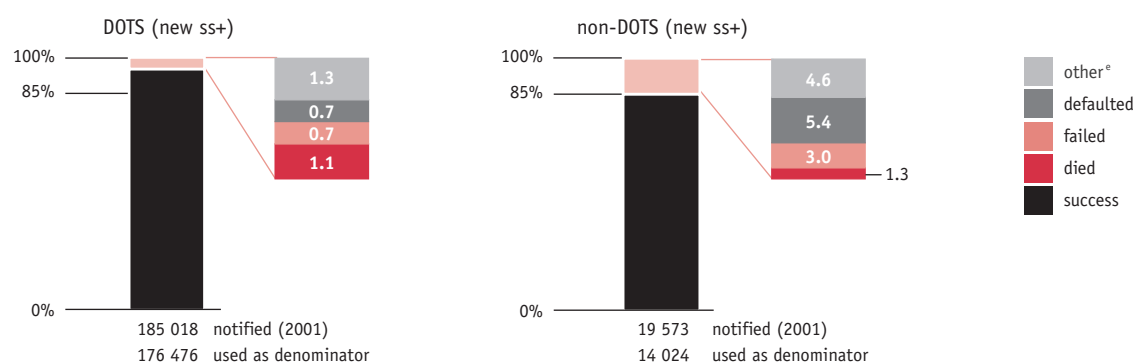
## Case types notified<sup>c</sup>



## DOTS progress towards targets<sup>d</sup>



## Treatment outcomes<sup>e</sup>



## Notes

ss+ Indicates smear-positive; ss-, smear-negative; pop, population; unk, unknown.

<sup>a</sup> See Methods for data sources.

<sup>b</sup> The sum of cases notified by age and sex is less than the number of new smear-positive cases notified for some countries.

<sup>c</sup> Non-DOTS is blank for countries which are 100% DOTS, or where no non-DOTS data were reported.

<sup>d</sup> DOTS progress towards targets: DOTS detection rate for given year, DOTS success rate for cohort registered in previous year.

<sup>e</sup> "Other" includes transfer out and not evaluated, still on treatment, and other unknown.

**Budget estimates, existing funding, and budget gaps for fiscal year 2003, US\$ millions**

|   | REQUIRED FUNDING | EXPECTED FUNDING |             |            |             | FUNDING GAP |
|---|------------------|------------------|-------------|------------|-------------|-------------|
|   |                  | GOVERNMENT       | LOANS       | GRANTS     | OTHER       |             |
| <b>NTP budget</b>                                     |                  |                  |             |            |             |             |
| Drugs   | 10.4             | 6.4              | 1.5         | 2.5        | —           | —           |
| Dedicated staff working exclusively for TB control    | 37.2             | 37.2             | —           | —          | —           | —           |
| New activities to raise case detection and cure rates | —                | —                | —           | —          | —           | —           |
| Buildings, equipment, vehicles                        | 11.5             | —                | 5.1         | —          | 4.8         | 1.6         |
| All other line items                                  | 35.7             | 9.2              | 14.0        | 1.1        | 5.3         | 6.1         |
| <b>TOTAL NTP BUDGET</b>                               | <b>94.8</b>      | <b>52.8</b>      | <b>20.6</b> | <b>3.6</b> | <b>10.1</b> | <b>7.7</b>  |
| <b>Costs not covered by NTP budget<sup>a</sup></b>    |                  |                  |             |            |             |             |
| Hospital stay   | —                | —                | —           | —          | —           | —           |
| Clinic visits for DOT and monitoring                  | —                | —                | —           | —          | —           | —           |
| <b>TOTAL COSTS NOT COVERED BY NTP BUDGET</b>          | <b>—</b>         | <b>—</b>         | <b>—</b>    | <b>—</b>   | <b>—</b>    | <b>—</b>    |
| <b>TOTAL TB CONTROL COSTS</b>                         | <b>94.8</b>      | <b>52.8</b>      | <b>20.6</b> | <b>3.6</b> | <b>10.1</b> | <b>7.7</b>  |

— Indicates zero; NA, not available

<sup>a</sup> WHO estimates, data not provided by the NTP

result, the government is considering further increases in funding for these and other diseases. In addition, the MoH is building a new disease surveillance system that will improve the reporting of infectious diseases, such as TB, from hospitals to the public health system.

The threat of MDR-TB is a further motivation for DOTS expansion. China has completed DRS surveys in 6 provinces, 3 more are under way, and 4 are planned for 2004. By the end of 2004, over 40% of the country will have been surveyed. Results to date show high MDR-TB rates in some areas, especially those without an effective DOTS programme. MDR-TB prevalence among new cases surveyed ranges from 2.1% in Hubei to 7.8% and 8% in Henan and Liaoning<sup>1</sup> provinces respectively. The NTP does not yet have a clear policy on MDR-TB management and does not treat MDR-TB cases; these patients only receive treatment within the hospital sector, though the NTP has plans to develop policies in the future that will allow for treatment. In view of the significant production of second-line anti-TB drugs in the country, a national

drug regulatory mechanism needs to be developed.

Additional projects to test new approaches for increasing case detection have started in 3 provinces. Planning for a pilot project to address TB among the mobile population is underway. EQA guidelines for sputum microscopy are under development and will be tested and implemented nationwide in 2004.

Some collaborative TB/HIV activities are carried out by the MoH and by research organizations but no national TB/HIV coordinating body exists. An HIV surveillance system for TB patients is planned. TB programmes are not involved in ART delivery, and do not yet plan to be involved.

With its vast territory and complexity, the NTP in mainland China resembles TB control programmes in 31 different countries ranging in size from 2 to 100 million people. Some of the provinces, autonomous regions, and municipalities have much experience in implementing DOTS and are doing well. Others are still in the early implementation phase and face many difficulties. For 2004, the MoH, CDC, and international partners will provide additional assistance to those high priority provinces that are performing relatively poorly.

## Partnerships

Funding for China's TB control programme has come from several sources including the central and local governments, a Government of Japan grant through JICA, a World Bank/DFID loan, the GFATM, and grants from CIDA and DFB. The first batches of anti-TB drugs financed through JICA and by China's central government arrived in February and June 2002, respectively, providing free anti-TB drugs for smear-positive cases in most parts of the country. The World Bank/DFID and the GFATM projects provide funding for a comprehensive DOTS programme in 24 provinces. By the end of September 2003, 1087 (70%) counties in 16 provinces had launched the new World Bank/DFID project, and 1044 counties in 24 provinces had started implementation using the recently received GFATM grant funds. A further 88 counties with a combined population of 64.2 million are now supported by CIDA/WHO, and the DFB covers Tibet, Inner Mongolia and Qinghai.

Technical partners include WHO and KNCV, with WHO being the primary technical agency for the MoH and partners. WHO has stationed one TB expert in the country since 1999, and a second joined in 2003. The MoH

<sup>1</sup> A suspected 25–30% of new drug-resistant cases were misclassified. Therefore, MDR among new cases is estimated at 8% rather than 10%.

has coordinated the new resources from various partners to support the comprehensive expansion of DOTS. The NICC met in January 2003 to review progress and to identify further challenges. Informal TB working group meetings were held so that partners and the MoH could discuss and resolve matters concerning coordination. Joint TB monitoring missions between MoH and international partners were held in 2002 and 2003, and produced comprehensive recommendations for the NTP.

### **Budgets and expenditures**

Expenditures by the NTP in fiscal year 2002 (from 1 January) are not known. However, funds of US\$ 61 million were provided for TB control nationwide, almost all of which came from the government. Total TB control costs for 2002 can therefore be estimated at US\$ 61 million, or about US\$ 153 per TB patient notified. The NTP budget for the fiscal year 2003 was much higher, at US\$ 94.8 million (given that TB control is delivered through a vertical TB dispensary system, all TB control costs, including clinic visits, are included in this

budget). The NTP estimated that it would treat nearly 480 000 patients (smear-positive cases and others) during 2003, implying a higher budget per patient (US\$ 199) than in 2002. The drug budget, at US\$ 10.4 million, was equivalent to US\$ 22 per patient. As in India, there was a substantial budget (US\$ 37.2 million, more than one third of the total budget) for dedicated staff. Almost all of the funding required for 2003 (92%) was available, with the vast majority provided by the government in the form of either domestically generated funds (US\$ 52.8 million) or loans (US\$ 20.6 million).

# Democratic Republic of the Congo

## Overview of TB control system

TB control in DR Congo has been decentralized to peripheral health centres in an effort to reach geographically remote or disadvantaged people. However, weak access to the under-developed primary care system, especially in the troubled eastern provinces, is a serious obstacle to improving TB control. Collaboration between public primary care services and the growing private sector remains limited.

## Surveillance, planning, operations

Case notifications (all forms and smear-positive) have been steadily rising in DR Congo since the early 1990s, probably due to the combined effects of improved case finding and the spread of HIV. Case notification rates are relatively high among young adults, a pattern that is characteristic of countries in which a high proportion of TB patients are infected with HIV (24% in DRC). Seventy per cent of the population had access, in principle, to DOTS by the end of 2002. Based on the current estimate of smear-positive incidence, the case detection rate in 2002 was 52%. These figures are surprisingly high, given that DR Congo has an under-developed primary care system, and contact with health services is often difficult, especially in the eastern provinces. Treatment success was 77% in the 2001 cohort, with a default rate over 10%.

The NTP is implementing the 2001–5 strategic plan for DOTS expansion that was endorsed by the government and distributed in 2002. The newly-formed NICC is now holding quarterly meetings at national level. Provincial interagency coordinating committees (each provincial

committee is locally called a TB task force) were created in some provinces, and quarterly meetings are being held in provincial coordination units. TB task forces are being established in the remaining 18 provincial coordination units. World TB Day 2003 was commemorated in 20 provinces and nationally DR Congo has had good planning, and committed TB leadership, but implementation has frequently been delayed because there have not even been enough funds to hold meetings aimed at increasing funding. Despite an influx of money from the GFATM, the TB programme is still not adequately funded.

Low salaries and low levels of expertise contribute to the central staffing problem, though new funds from the GFATM should help to improve staffing. Monitoring and super-

vision have shown only marginal improvements recently, aided by better internet and telephone connections as the overall telecommunications system is strengthened. Similarly, recording and reporting was improved through two internet connections in provincial coordination units. An electronic register for TB data is being installed.

Access to 7 coordination units in the eastern part of the country remains weak due to political instability. Diagnostic efforts were improved through development of new laboratory QA guidelines. GFATM funds will be used to replace 400 old or broken microscopes, laboratory reagents, and other laboratory supplies. There are plans to renovate 5 provincial reference laboratories using GFATM funds, and to train all 800 laboratory technicians.

## PROGRESS IN TB CONTROL IN DR CONGO

### Indicators

|  |     |
|--|-----|
| • Treatment success 2001 cohort  | 77% |
| • DOTS detection rate, 2002  | 52% |
| • NTP budget available, 2003   | 65% |
| • Government contribution to NTP budget, including loans, 2003             | 10% |
| • Government contribution to total TB control costs, including loans, 2003 | 58% |
| • Government health spending used for TB, 2003                             | 4%  |

### Constraints to achieving targets

- Funding gap of at least US\$ 3.7 million in 2003
- Ineffective drug distribution system leading to inadequate and late provision of drugs in provinces
- Lack of political commitment to TB at provincial level, coupled with instability resulting from war
- Poor quality of smear microscopy in some areas, due to insufficient training, supervision, and equipment
- Incomplete DOTS coverage
- High number of patients lost to follow-up (not evaluated, transferred, defaulted)

### Remedial actions needed to overcome constraints

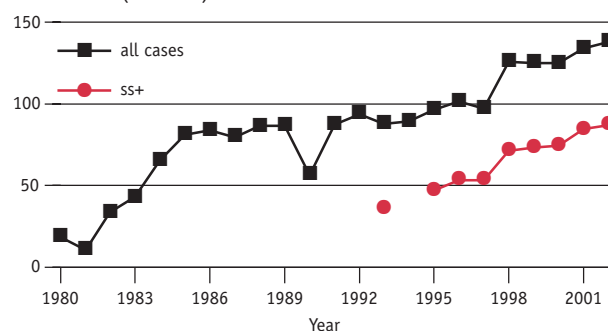
- Mobilize resources from donors
- Strengthen systems for drug management and distribution
- Continue advocacy for TB at provincial level
- Strengthen laboratory capacity by purchasing new microscopes, reagents, and laboratory materials for 400 laboratories
- Continue to expand DOTS even in areas where there is war
- Strengthen patient tracking system

# DEMOCRATIC REPUBLIC OF THE CONGO

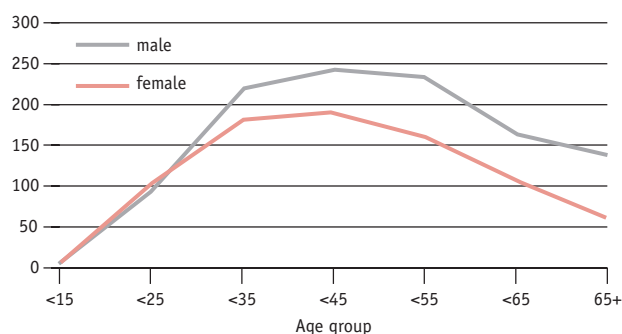
| LATEST ESTIMATES <sup>a</sup>         |                   | TRENDS                                    | 1999 | 2000 | 2001 | 2002 |
|---------------------------------------|-------------------|---|------|------|------|------|
| <b>Population</b>                     | <b>51 201 034</b> | DOTS population coverage (%)              | 62   | 70   | 70   | 70   |
| Global rank (by est. number of cases) | 10                | Notification rate (all cases/100 000 pop) | 125  | 125  | 134  | 138  |
| Incidence (all cases/100 000 pop)     | 383               | Notification rate (new ss+/100 000 pop)   | 73   | 74   | 84   | 87   |
| Incidence (new ss+/100 000 pop)       | 167               | Detection of all cases (%)                | 40   | 37   | 38   | 36   |
| Prevalence (ss+/100 000 pop)          | 247               | Detection of new ss+ cases (%)            | 54   | 51   | 54   | 52   |
| TB mortality per 100 000 pop          | 90                | DOTS detection of new ss+ (%)             | 54   | 51   | 54   | 52   |
| % of adult (15-49y) TB cases HIV+     | 24                | DOTS detection of new ss+/coverage(%)     | 88   | 73   | 78   | 75   |
| % of new cases multi-drug resistant   | 1.5               | DOTS treatment success (new ss+, %)       | 69   | 78   | 77   | —    |

## Notification rate (per 100 000 pop)

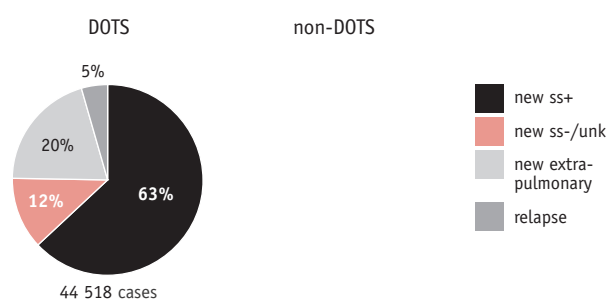
Notification (all cases) = 70 625 in 2002



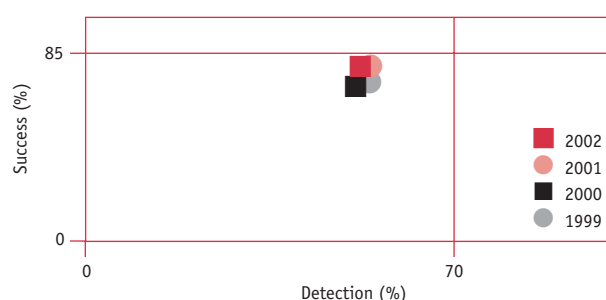
## Notification rate by age and sex (new ss+)<sup>b</sup>



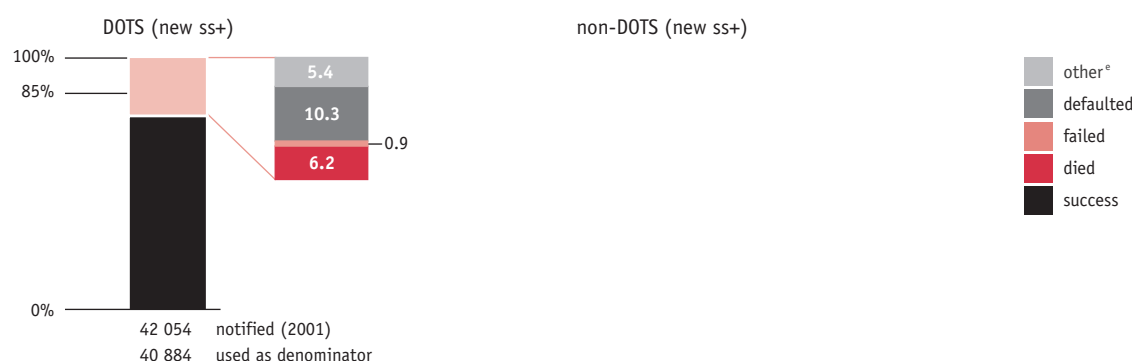
## Case types notified<sup>c</sup>



## DOTS progress towards targets<sup>d</sup>



## Treatment outcomes<sup>e</sup>



## Notes

ss+ Indicates smear-positive; ss-, smear-negative; pop, population; unk, unknown.

<sup>a</sup> See Methods for data sources.

<sup>b</sup> The sum of cases notified by age and sex is less than the number of new smear-positive cases notified for some countries.

<sup>c</sup> Non-DOTS is blank for countries which are 100% DOTS, or where no non-DOTS data were reported.

<sup>d</sup> DOTS progress towards targets: DOTS detection rate for given year, DOTS success rate for cohort registered in previous year.

<sup>e</sup> "Other" includes transfer out and not evaluated, still on treatment, and other unknown.

## DEMOCRATIC REPUBLIC OF THE CONGO

In response to provision of drugs by the GDF, new guidelines were produced for both drug management and laboratory QA. Although the GDF has provided drugs, supply throughout the country is hampered by the poor transportation infrastructure and security risks. Despite new guidelines, drug management also remains poor, and there are inadequate drug storage facilities. Plans to build or rehabilitate drug stores at central level and in 5 provinces have been delayed due to a lack of funds for training pharmacists. The drug management committee is developing an approach to overcome some of these obstacles.

Anti-TB radio and TV programmes, banners throughout the provinces, and other educational materials were used to boost social mobilization efforts. Community-based DOTS projects in the cities of Kinshasa, Matadi, and Boma have been unsuccessful due to the lack of money and staff, the low coverage of primary health care, poor links with the private sector, high social stigma associated with TB, and continuing war. WHO, USAID, and other partners are working with the NTP to develop

strategies for overcoming these obstacles. For example, PPM projects have recently begun to improve co-ordination between the NTP and private hospitals in the large cities of all provinces.

Collaborative TB/HIV activities are carried out by the MoH, by research organizations, and by NGOs in 3 of 306 districts. National and provincial TB/HIV coordinating bodies have been established. There are plans to test TB patients for HIV, and to involve TB programmes in ART in 2004. Pilot TB/HIV projects have been proposed for 2 health districts of Kinshasa city. The most recent survey of drug resistance was carried out in Kinshasa in 1999, and found MDR-TB in 5.8% of new and previously treated patients.

### Partnerships

Overall technical support is provided by WHO, DFB, and IUATLD. For the period 2000–2005, the Ministry of Health has entrusted programme monitoring to IUATLD, acting on behalf of the Stop TB Partnership. Various donors are providing financial support, advice on management, and

materials including drugs, reagents, and laboratory equipment. These donors include DFB, TLMI, ALM, and ALTI. Other partners provide support through NGOs already based in the country, including the European Union and Coopération Belge via DFB, and the Ligue Nationale Antituberculeuse et Antilepreux du Congo. Solidarité Protestante works through TLMI. USAID directs funds through IUATLD. Diagnostic and treatment centres that are part of the primary health care system are often supported by religious missions. The GDF provides drugs to cover part of the country.

### Budgets and expenditures

The NTP budget for the fiscal year 2003 (from 1 January) was US\$ 10.4 million. The NTP estimated that it would treat 79 272 patients during this period, implying a budget per patient of US\$ 131. The government provided US\$ 1 million of the required funding for the NTP, which represented an increase of US\$ 600 000 from 2002. The total government contribution to TB control covered

### Budget estimates, existing funding, and budget gaps for fiscal year 2003, US\$ millions

|   | REQUIRED FUNDING | EXPECTED FUNDING |          |            |          | FUNDING GAP |
|---|------------------|------------------|----------|------------|----------|-------------|
|   |                  | GOVERNMENT       | LOANS    | GRANTS     | OTHER    |             |
| <b>NTP budget</b>                                     |                  |                  |          |            |          |             |
| Drugs   | 2.1              | 0.6              | —        | 1.4        | —        | 0.1         |
| Dedicated staff working exclusively for TB control    | 0.7              | 0.01             | —        | 0.6        | —        | 0.1         |
| New activities to raise case detection and cure rates | 3.0              | —                | —        | 0.6        | —        | 2.4         |
| Buildings, equipment, vehicles                        | 2.9              | 0.4              | —        | 2.2        | —        | 0.3         |
| All other line items                                  | 1.7              | —                | —        | 0.9        | —        | 0.8         |
| <b>TOTAL NTP BUDGET</b>                               | <b>10.4</b>      | <b>1.0</b>       | <b>—</b> | <b>5.7</b> | <b>—</b> | <b>3.7</b>  |
| <b>Costs not covered by NTP budget <sup>a,b</sup></b> |                  |                  |          |            |          |             |
| Hospital stay   | 1.0              | 1.0              | —        | —          | —        | —           |
| Clinic visits for DOT and monitoring                  | 11.2             | 11.2             | —        | —          | —        | —           |
| <b>TOTAL COSTS NOT COVERED BY NTP BUDGET</b>          | <b>12.2</b>      | <b>12.2</b>      | <b>—</b> | <b>—</b>   | <b>—</b> | <b>—</b>    |
| <b>TOTAL TB CONTROL COSTS</b>                         | <b>22.6</b>      | <b>13.2</b>      | <b>—</b> | <b>5.7</b> | <b>—</b> | <b>3.7</b>  |

— Indicates zero; NA, not available

<sup>a</sup> WHO estimates, data not provided by the NTP

<sup>b</sup> Estimates differ from those in Global TB Control 2003 due to a change in methods made possible by the availability of new data. See Methods for full details.



## DEMOCRATIC REPUBLIC OF THE CONGO

58% of the costs in the public sector. TB control activities accounted for 4% of the government's spending on health.

In 2003, approximately US\$ 1.9 million was received from the GFATM, reducing the anticipated financing gap. However, a gap of US\$ 3.7 million remained. Compared to 2002

expenditures, there were large increases in the 2003 budget for new activities to expand DOTS as well as for buildings, equipment, and vehicles. The drug budget decreased by US\$ 341 000 between 2002 and 2003 as a large buffer stock was established in 2002.

Costs associated with TB control

that were not funded from the NTP budget amounted to an estimated US\$ 12.2 million, of which US\$ 1 million was for hospital admissions during treatment and US\$ 11.2 million was for clinic visits during treatment. These data imply total TB control costs of US\$ 22.8 million in 2003, and US\$ 288 per patient.

# Ethiopia

## Overview of TB control system

Health sector reform, carried out within the framework of the Health Sector Development Plan (HSDP), has integrated TB treatment into the general health services, and is progressively decentralizing service delivery to peripheral health units in woredas. However, more than half of the Ethiopian population lives farther than 10 km from the nearest health facility, usually in regions with poor transport.

## Surveillance, planning, operations

Case notification rates have increased rapidly since 1995, at about 16% per year both for smear-positive cases and all forms of TB. These increases can be attributed both to improved case finding under DOTS and to the spread of HIV. Notification rates are highest among young adults, which is characteristic of countries with high rates of HIV infection (an estimated 29% of adult TB patients are HIV-positive). Treatment success for the 2001 cohort was only 76%, mainly because 7% of patients died during treatment, 6% defaulted, and 7% were not evaluated. Both case detection and cure rates faltered between October 2002 and October 2003 as a result of weaknesses in management, mainly at the federal level.

Ethiopia has a 2002–6 Strategic Plan for TB Control that includes the DOTS strategy. A standardized planning process has contributed to rapid DOTS expansion. In October 2003, a joint TB and leprosy review was undertaken in partnership with WHO. The review confirmed that the NTP was fully integrated into the general health services, and operates within the framework of the HSDP. Although

cooperation between the NTP and the HSDP could be improved, it has already delivered a 5-fold increase in the number of patients notified between 1994 and 2002. The 2003 annual programme review, led by WHO, recommended a shift in focus of the TB and Leprosy Central Team to support, among other things, improved case detection in the regions through expanding health facility coverage, testing community-based DOTS strategies, implementing PPM projects, and intensifying case finding among people with HIV/AIDS.

DOTS expansion has been facilitated in some regions by decentralization of TB care, with peripheral health stations, rather than hospitals and health centres, now providing care. Of the 70 zones in the

country, 64 are now implementing DOTS in at least one facility. Of the 605 woredas, 522 or 86% have at least one DOTS facility. Of the 2552 government health facilities and NGOs in Ethiopia, half are implementing DOTS. Nearly all of the population (96%) lives in the DOTS woredas, but because woredas are so large, only about 40% of the people have true access to DOTS, meaning that they live within 10 km or 2 hours walk from a health facility offering DOTS treatment. Decentralization has stalled the expansion of DOTS in some regions due to a serious shortage of managerial staff, lack of timely disbursement of funds, lack of supervision, high turnover of trained staff, and insufficient awareness of TB on the part of high level officials and

## PROGRESS IN TB CONTROL IN ETHIOPIA

### Indicators

|  |      |
|--|------|
| • Treatment success 2001 cohort  | 76%  |
| • DOTS detection rate, 2002  | 33%  |
| • NTP budget available, 2003   | 100% |
| • Government contribution to NTP budget, including loans, 2003             | 19%  |
| • Government contribution to total TB control costs, including loans, 2003 | 41%  |
| • Government health spending used for TB, 2003                             | 5%   |

### Constraints to achieving targets

- Services have been decentralized to regions, zones, and woredas that do not yet have sufficient capacity to implement them; funds have flowed slowly from central to peripheral levels
- Poorly developed infrastructure (e.g. transport, communication, organization) means that access to TB services remains difficult in half the country
- Serious staffing problems include low morale, inadequate remuneration, migration of educated people to urban areas, and attraction to the private sector
- Deficiencies in management, supervision, training, equipment, and monitoring
- Irregular drug supply
- Weak laboratory quality assurance

### Remedial actions needed

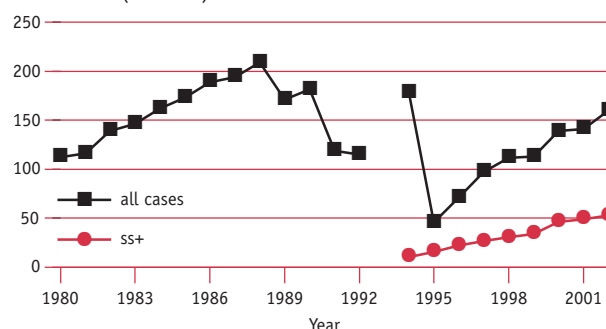
- Expand DOTS into all existing health facilities
- Develop community-based TB services in remote areas
- Strengthen public-private partnerships
- Design plan for recruitment, retention, and training of staff at all levels
- Strengthen capacity of Pharmaceutical Administration and Supply Service (PASS) to improve drug procurement and distribution
- Develop plan to strengthen laboratory component of NTP and improve quality of smear microscopy

# ETHIOPIA

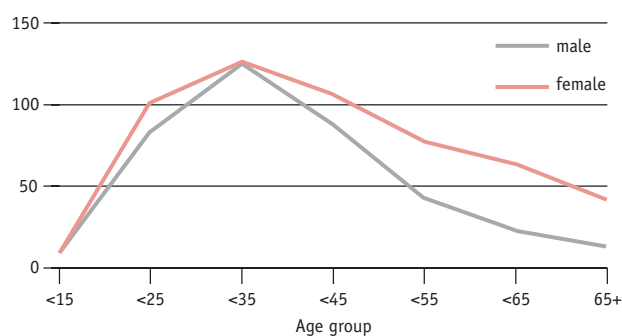
| LATEST ESTIMATES <sup>a</sup>         |                   | TRENDS                                    | 1999 | 2000 | 2001 | 2002 |
|---------------------------------------|-------------------|---|------|------|------|------|
| <b>Population</b>                     | <b>68 961 044</b> | DOTS population coverage (%)              | 63   | 85   | 70   | 95   |
| Global rank (by est. number of cases) | 7                 | Notification rate (all cases/100 000 pop) | 113  | 139  | 141  | 160  |
| Incidence (all cases/100 000 pop)     | 370               | Notification rate (new ss+/100 000 pop)   | 34   | 47   | 49   | 53   |
| Incidence (new ss+/100 000 pop)       | 159               | Detection of all cases (%)                | 38   | 43   | 41   | 43   |
| Prevalence (ss+/100 000 pop)          | 265               | Detection of new ss+ cases (%)            | 26   | 34   | 33   | 33   |
| TB mortality per 100 000 pop          | 88                | DOTS detection of new ss+ (%)             | 26   | 34   | 33   | 33   |
| % of adult (15-49y) TB cases HIV+     | 29                | DOTS detection of new ss+/coverage(%)     | 41   | 40   | 47   | 35   |
| % of new cases multi-drug resistant   | 2.3               | DOTS treatment success (new ss+, %)       | 76   | 80   | 76   | —    |

## Notification rate (per 100 000 pop)

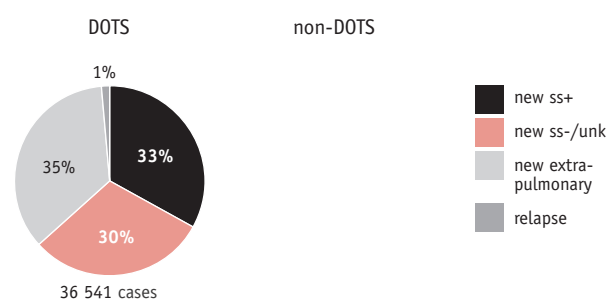
Notification (all cases) = 110 289 in 2002



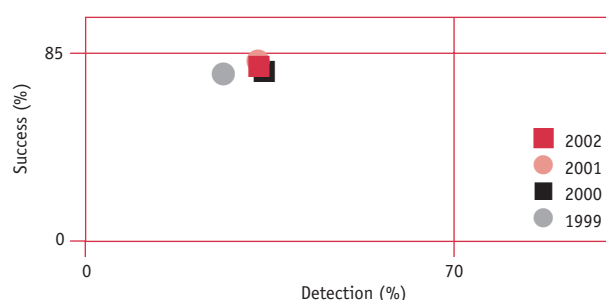
## Notification rate by age and sex (new ss+)<sup>b</sup>



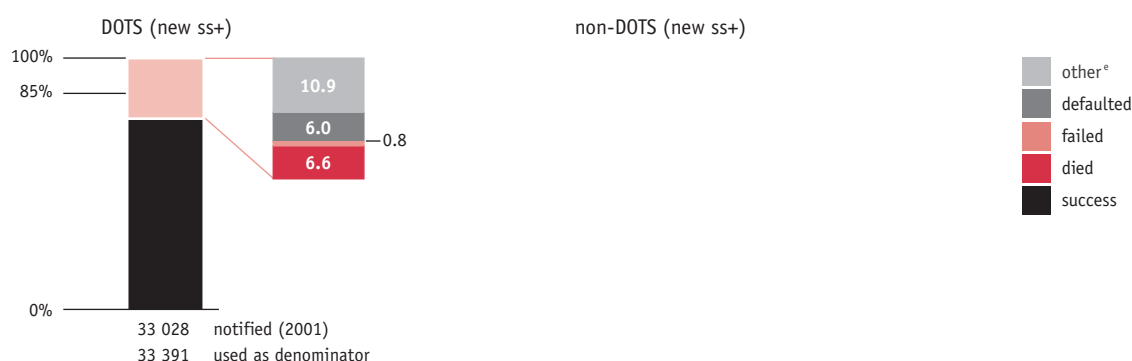
## Case types notified<sup>c</sup>



## DOTS progress towards targets<sup>d</sup>



## Treatment outcomes<sup>e</sup>



## Notes

ss+ Indicates smear-positive; ss-, smear-negative; pop, population; unk, unknown.

<sup>a</sup> See Methods for data sources.

<sup>b</sup> The sum of cases notified by age and sex is less than the number of new smear-positive cases notified for some countries.

<sup>c</sup> Non-DOTS is blank for countries which are 100% DOTS, or where no non-DOTS data were reported.

<sup>d</sup> DOTS progress towards targets: DOTS detection rate for given year, DOTS success rate for cohort registered in previous year.

<sup>e</sup> "Other" includes transfer out and not evaluated, still on treatment, and other unknown.

## ETHIOPIA

policy makers. Regular supervision and monitoring are needed to strengthen service delivery and DOTS expansion in woredas.

The recording and reporting system is becoming increasingly reliable. A programme to assure the quality of laboratory work has been established in 4 regions, and by Addis Ababa City Administration and Dire Dawa Administrative Council. Laboratory personnel were provided with refresher training, and NTP and laboratory manuals were distributed. Expansion of the laboratory network did not occur because of the delay in decentralization of care coupled with a shortage of trained staff. Of the 456 government-run diagnostic centres, 396 follow WHO recommendations but the quality of diagnosis needs improvement and continuous monitoring.

Very few of the new staff appointments needed in woredas have been made. A limit has been placed on recruitment within the government health sector, which means that it may not be possible to correct existing staff shortages with outside funding. There remains, therefore, a major concern about whether the NTP will have the capacity to perform the

necessary training, supervision, and monitoring.

A national TB/HIV coordinating body has been set up, but joint activities in TB/HIV control have not yet begun. The exception is a single research project on the treatment of latent TB infection. There is no systematic testing for HIV infection among TB patients, but the NTP plans to provide ART from 2004. The first nationwide survey of drug resistance is currently under way.

A delegation from Ethiopia attended a PPM workshop in Nairobi in June 2003 and drafted a proposal for pilot testing PPM in Addis Ababa, the capital city. There are 12 private hospitals and more than 450 private clinics in Addis Ababa. PPM implementation began in 2003.

Other plans for 2004 include staff training, the building of laboratory capacity, improved monitoring and evaluation through the revision of supervision guidelines, development of a comprehensive plan for IEC, establishment of a national TB association, and strengthening of financial management within the MoH and regional health bureaux.

## Partnerships

The HSDP facilitates international partnerships for TB control. A WHO expert posted at the central level provides technical assistance. The University of Brescia (Italy) and ALERT organize, with the NTP, regional programmes for the training of trainers. The Dutch government currently gives funds for anti-TB drugs and to cover some operational costs. GRLA provides funds for overall programme support and WHO contributes to some specific activities. MSF Belgium provides technical and financial support in the Somali Region. The GFATM has approved substantial funding. The dependence on donors is unavoidable in the short-term, and technical and financial partnerships will probably need to continue for some years.

## Budgets and expenditures

The NTP budget for the fiscal year 2003 (from 1 July) is US\$ 10.6 million. This is US\$ 5.8 million more than was received in 2002. The NTP estimates that it will treat 110 000 patients during 2003, implying a budget per patient of US\$ 97. The government will contribute US\$ 2.2

### Budget estimates, existing funding, and budget gaps for fiscal year 2003, US\$ millions

|   | REQUIRED FUNDING | EXPECTED FUNDING |          |            |          | FUNDING GAP |
|---|------------------|------------------|----------|------------|----------|-------------|
|   |                  | GOVERNMENT       | LOANS    | GRANTS     | OTHER    |             |
| <b>NTP budget</b>                                     |                  |                  |          |            |          |             |
| Drugs   | 3.0              | —                | —        | 3.0        | —        | —           |
| Dedicated staff working exclusively for TB control    | 0.2              | 0.2              | —        | —          | —        | —           |
| New activities to raise case detection and cure rates | —                | —                | —        | —          | —        | —           |
| Buildings, equipment, vehicles                        | 3.6              | 2.0              | —        | 1.6        | —        | —           |
| All other line items                                  | 3.8              | —                | —        | 3.8        | —        | —           |
| <b>TOTAL NTP BUDGET</b>                               | <b>10.6</b>      | <b>2.2</b>       | <b>—</b> | <b>8.4</b> | <b>—</b> | <b>—</b>    |
| <b>Costs not covered by NTP budget <sup>a</sup></b>   |                  |                  |          |            |          |             |
| Hospital stay   | 0.2              | 0.2              | —        | —          | —        | —           |
| Clinic visits for DOT and monitoring                  | 3.4              | 3.4              | —        | —          | —        | —           |
| <b>TOTAL COSTS NOT COVERED BY NTP BUDGET</b>          | <b>3.6</b>       | <b>3.6</b>       | <b>—</b> | <b>—</b>   | <b>—</b> | <b>—</b>    |
| <b>TOTAL TB CONTROL COSTS</b>                         | <b>14.2</b>      | <b>5.8</b>       | <b>—</b> | <b>8.4</b> | <b>—</b> | <b>—</b>    |

— Indicates zero; NA, not available

<sup>a</sup> WHO estimates, data not provided by the NTP

## ETHIOPIA

million to the 2003 budget, an increase of US\$ 1.1 million over 2002. The government will cover approximately 41% of total costs of TB control in the public sector. TB control activities account for 5% of the government's spending on health.

In August 2003, Ethiopia received US\$ 6.5 million from the GFATM for TB control activities. The grant from the GFATM eliminated the financing

gap previously anticipated for 2003. Compared to 2002, large increases for buildings, equipment, and vehicles are expected during 2003. Between 2002 and 2003, the drug budget increased by US\$ 200 000 which is in line with expectations for increased case detection. The drug budget, at US\$ 3 million, is equivalent to US\$ 27 per patient.

Costs associated with TB control

that are not funded from the NTP budget amount to an estimated US\$ 3.6 million, of which US\$ 0.2 million is for hospital admissions during treatment and US\$ 3.4 million is for clinic visits during treatment. These data imply total TB control costs of US\$ 14.2 million per year, and US\$ 129 per patient.

# India

## Overview of TB control system

Although state governments are legally responsible for health care, TB is one of several health programmes supported by central government funds. The Revised National TB Control Programme (locally RNTCP, hereafter NTP) designed by the Government of India was formally launched in 1997. All 35 states have a State TB Cell (STC) responsible for the planning, training, monitoring, and supervision of TB control activities. Each district has a District TB Centre (DTC) which is the nodal centre for TB control activities. Diagnosis and treatment services are provided at general health facilities, and each diagnostic centre (designated by the NTP) serves a population of approximately 100 000.

## Surveillance, planning, operations

The detection rate of smear-positive cases within DOTS areas increased from 52% in 2001 to an estimated 60% in 2002, and the national smear-positive detection rate by the DOTS programme increased from 23% to 31%. Detection within DOTS areas is calculated here (as for other countries) with reference to the population covered at the end of 2002. By making use of NTP data describing the rate at which DOTS coverage expanded during the course of 2002, it is possible to calculate the case detection rate, more accurately, with reference to the average population covered during that year. For India's rapidly expanding DOTS programme this gives an estimate of 68% case detection within DOTS areas (higher than the 60% in the accompanying table). The NTP has maintained high treatment success rates under DOTS, and appears to have reached the

target of 85% for the 2001 cohort.

A nationwide tuberculin survey to assess the prevalence of infection was completed during 2003. These data have already yielded a new national estimate of the annual incidence of smear-positive disease (75/100 000, close to the previous estimate), and will soon be used to provide separate estimates of TB incidence, and hence case detection, for each of 4 zones of India. The notification rate of all TB cases in India has been falling at an average of 2% per year for the past decade, which may reflect a real decline in TB incidence. However, the expected link between DOTS expansion and falling TB incidence has not yet been established.

Following recent rapid expansion at a rate of about 10 million people per month, 740 million people (al-

most 70% of the total population) in 397 districts from 25 states/union territories had access to DOTS services by August 2003. Expansion has been delayed in 3 states by slow progress in civil works and staff recruitment. In Bihar, progress has been hindered by a lack of training. Because of political unrest, implementation has not yet begun in Jammu and Kashmir. Nonetheless, with continued expansion and funding, India should be close to covering 100% of the population by 2005.

A national task force, and 7 zonal task force groups, were established in 2002 to involve medical colleges in NTP activities. Seven medical colleges have been designated zonal NTP centres. By the end of 2003, at least 128 of the 180 medical colleges in India were working with the NTP. The

## PROGRESS IN TB CONTROL IN INDIA

### Indicators

|  |      |
|--|------|
| • Treatment success 2001 cohort  | 85%  |
| • DOTS detection rate, 2002  | 31%  |
| • NTP budget available, 2003   | 100% |
| • Government contribution to NTP budget, including loans, 2003             | 73%  |
| • Government contribution to total TB control costs, including loans, 2003 | 88%  |
| • Government health spending used for TB, 2003                             | 2%   |

### Constraints to achieving targets

- Challenge to maintain quality of TB services during rapid expansion to remaining 300 million population
- Insufficient staff at central and state levels to effectively manage a rapidly expanding programme
- Lack of TB awareness in some parts of the community
- Decentralization without adequate local management, supervision, and monitoring at state and district levels
- Lack of awareness and support for NTP from wider health care community

### Remedial actions needed

- Central and state governments to create additional staff posts and provide management training for key NTP officers
- Strengthen (re-) training, monitoring, and supervision activities at all levels
- Strengthen public-private partnerships to standardize and facilitate the delivery of TB services
- Continue to improve community awareness through a sustained mass media campaign and targeted IEC
- Standardize and facilitate delivery of TB services by strengthening partnerships with other public sector groups

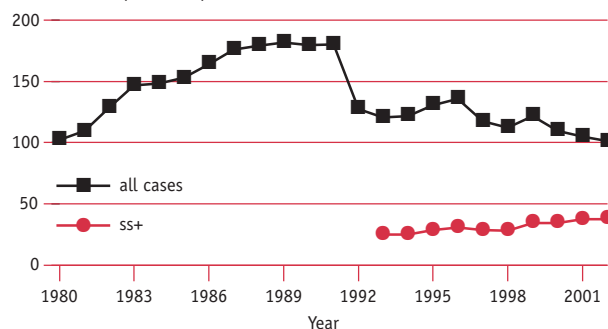


# INDIA

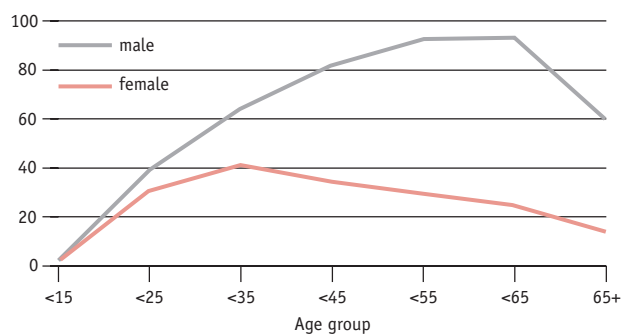
| LATEST ESTIMATES <sup>a</sup>         |               | TRENDS                                    | 1999 | 2000 | 2001 | 2002 |
|---------------------------------------|---------------|---|------|------|------|------|
| Population                            | 1 049 549 473 | DOTS population coverage (%)              | 14   | 30   | 45   | 52   |
| Global rank (by est. number of cases) | 1             | Notification rate (all cases/100 000 pop) | 122  | 110  | 105  | 101  |
| Incidence (all cases/100 000 pop)     | 168           | Notification rate (new ss+/100 000 pop)   | 35   | 34   | 37   | 38   |
| Incidence (new ss+/100 000 pop)       | 75            | Detection of all cases (%)                | 68   | 63   | 61   | 60   |
| Prevalence (ss+/100 000 pop)          | 156           | Detection of new ss+ cases (%)            | 43   | 44   | 49   | 50   |
| TB mortality per 100 000 pop          | 37            | DOTS detection of new ss+ (%)             | 6.6  | 12   | 23   | 31   |
| % of adult (15-49y) TB cases HIV+     | 4.6           | DOTS detection of new ss+/coverage(%)     | 49   | 40   | 52   | 60   |
| % of new cases multi-drug resistant   | 3.4           | DOTS treatment success (new ss+, %)       | 82   | 84   | 85   | —    |

## Notification rate (per 100 000 pop)

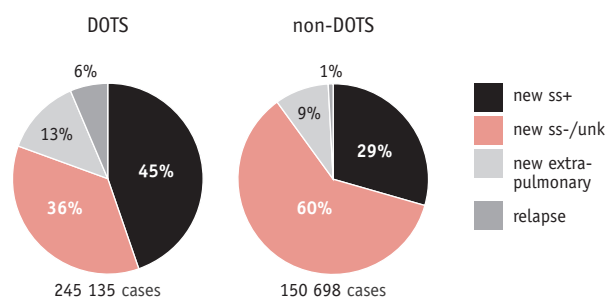
Notification (all cases) = 1 060 951 in 2002



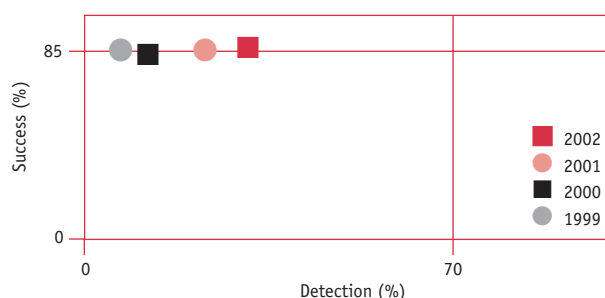
## Notification rate by age and sex (new ss+)<sup>b</sup>



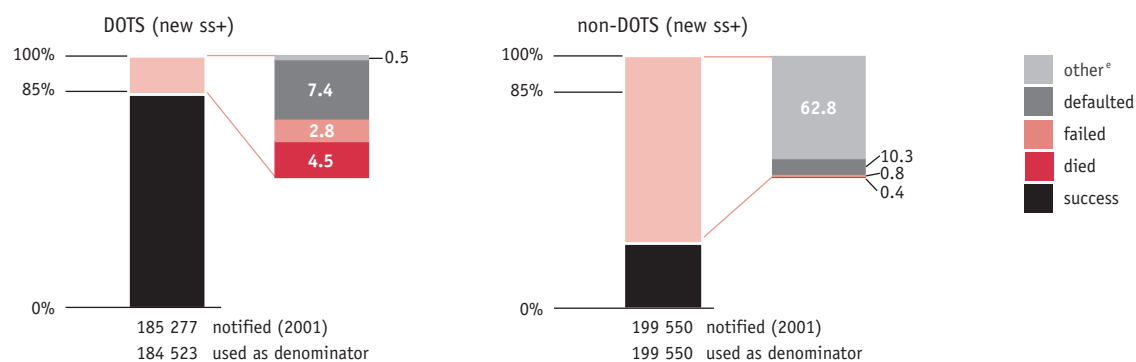
## Case types notified<sup>c</sup>



## DOTS progress towards targets<sup>d</sup>



## Treatment outcomes<sup>e</sup>



## Notes

ss+ Indicates smear-positive; ss-, smear-negative; pop, population; unk, unknown.

<sup>a</sup> See Methods for data sources.

<sup>b</sup> The sum of cases notified by age and sex is less than the number of new smear-positive cases notified for some countries.

<sup>c</sup> Non-DOTS is blank for countries which are 100% DOTS, or where no non-DOTS data were reported.

<sup>d</sup> DOTS progress towards targets: DOTS detection rate for given year, DOTS success rate for cohort registered in previous year.

<sup>e</sup> "Other" includes transfer out and not evaluated, still on treatment, and other unknown.

NTP published guidelines on involvement of NGOs and private practitioners in DOTS programmes. Over 550 NGOs and more than 2000 private practitioners are officially providing NTP services. With assistance from WHO, the GoI implemented 14 PPM DOTS projects in large urban areas throughout the country; results are promising and expected to increase case detection by about 20% over 3 years.

More than 50 corporate sector units, such as the tea gardens in the north-east and in West Bengal, are now working with the NTP. A collaboration between the NTP and the Indian Academy of Paediatricians will lead to revised guidelines on the management of TB in children. An NTP strategy for IEC was developed in 2002 and implemented in 2003 to spread the DOTS message even further. A mass media agency was hired to oversee the nationwide media campaign and to develop prototype IEC materials. IEC plans were developed for states. With support from the Stop TB Partnership, the NTP is also piloting the COMBI strategy.

The NTP conducts quarterly reviews of all districts at the state level and half-yearly reviews of all states at the central level. The central unit is working to strengthen technical skills of staff in STCs, so that responsibility for programme analysis and evaluation can be decentralized to the states. A joint GoI/WHO monitoring mission to review activities took place in 2003. Information on programme performance is widely disseminated through a quarterly NTP report and through an annual NTP status report, available both in hard copy and on the NTP website ([www.tbcindia.org](http://www.tbcindia.org)). The NTP is rapidly progressing toward complete electronic connectivity between district, state, and central levels: by the end of 2002, 55% of districts were submitting their quarterly reports electronically, and by mid-2003, 94% were doing so. The newly implemented web-based TB Programme

Information System (TPIS) enabled production of reports on case finding, treatment outcomes, and finances, all of which will improve forecasting for DOTS expansion activities.

The process of appointing staff in districts and states has been streamlined to help maintain momentum during DOTS expansion. For example, contractors may now be employed without prior central unit approval from New Delhi. Some states remain understaffed for assorted reasons including an unwillingness to fund existing posts and an inability to create new ones. More WHO consultants have been appointed to support DOTS expansion. However, the use of these consultants is a temporary solution; in the long run the NTP needs permanent staff. By the end of 2003, more than 300 000 health workers had been retrained by the NTP, though retraining needs to be strengthened at the central and intermediate levels.

A joint NTP/NACO (National AIDS Control Organization) action plan to develop TB/HIV collaborative activities has been implemented in 6 states (and 150 of 600 districts) that have high HIV prevalence. TB/HIV collaborating bodies have been established at both national and state levels. Pilot testing of a referral system is under way wherein HIV-positive patients who are TB suspects, and TB patients who are HIV suspects, will be cross-referred between HIV voluntary counselling and testing centres (VCTC) and designated TB microscopy centres (DMC). Plans are under way to develop an HIV surveillance system among TB patients. There is no plan to involve the NTP in delivery of ART.

India participates in the WHO/IUATLD project on anti-TB drug resistance surveillance. DRS surveys are under way in Rajasthan and Maharashtra but the results are not yet available. The country is currently holding a series of meetings to develop a national plan for drug resist-

ance surveillance and MDR-TB management. As part of the process of developing the state TB Training and Demonstration Centres, facilities for culturing mycobacteria and for testing drug sensitivity are being strengthened during 2003–4. The Lala Ram Sarup Institute of Tuberculosis and Allied Diseases in New Delhi has applied to the GLC for drugs to treat a cohort of MDR-TB patients.

A consulting agency was hired in 2003 to monitor drug quality. Efforts continue to create a buffer stock at all levels to ensure uninterrupted drug supply. Drug stores were established in large states and technical support will ensure effective management.

More microscopy centres were opened to strengthen diagnostic and laboratory capacity. More than 7000 laboratories were upgraded under the NTP. Alternative energy sources for microscopy illumination are being tested in areas outside the electrical grid.

To achieve case detection targets the programme will need to continue to involve all public and private health care facilities and practitioners, including NGOs and the corporate sector, and to patients who may have poor access to care such as homeless and migrants.

## Partnerships

A donor coordinating committee was formed in 1998, and an NICC will be established in 2004. Political commitment within India was demonstrated by sustained government funding, and by successful negotiations to amend the World Bank credit agreement to GoI. DFID continues to support NTP expansion in Andhra Pradesh. DANIDA will fund DOTS activities throughout Orissa, where the GDF is providing anti-TB drugs. USAID supports DOTS activities in Haryana state. Proposals were submitted to the GFATM in the 1st and 2nd rounds, winning approval to expand NTP coverage to 56 million people in Chattisgarh, Jharkhand, and Uttar-

**Budget estimates, existing funding, and budget gaps for fiscal year 2003, US\$ millions**

|   | REQUIRED FUNDING | EXPECTED FUNDING |             |             |          | FUNDING GAP |
|---|------------------|------------------|-------------|-------------|----------|-------------|
|   |                  | GOVERNMENT       | LOANS       | GRANTS      | OTHER    |             |
| <b>NTP budget</b>   |                  |                  |             |             |          |             |
| Drugs   | 9.7              | 1.4              | 5.7         | 2.6         | —        | —           |
| Dedicated staff working exclusively for TB control            | 13.2             | 2.0              | 7.6         | 3.6         | —        | —           |
| New activities to raise case detection and cure rates         | —                | —                | —           | —           | —        | —           |
| Buildings, equipment, vehicles                                | 2.2              | 0.3              | 1.3         | 0.6         | —        | —           |
| All other line items  | 16.7             | 2.4              | 9.8         | 4.5         | —        | —           |
| <b>TOTAL NTP BUDGET</b>                                       | <b>41.8</b>      | <b>6.1</b>       | <b>24.4</b> | <b>11.3</b> | <b>—</b> | <b>—</b>    |
| <b>Costs not covered by NTP budget <sup>a</sup></b>           |                  |                  |             |             |          |             |
| Treatment in non-DOTS areas                                   | 29.4             | 29.4             | —           | —           | —        | —           |
| Clinic visits for DOT and monitoring, DOTS areas <sup>b</sup> | 24.4             | 24.4             | —           | —           | —        | —           |
| <b>TOTAL COSTS NOT COVERED BY NTP BUDGET</b>                  | <b>53.8</b>      | <b>53.8</b>      | <b>—</b>    | <b>—</b>    | <b>—</b> | <b>—</b>    |
| <b>TOTAL TB CONTROL COSTS</b>                                 | <b>95.6</b>      | <b>59.9</b>      | <b>24.4</b> | <b>11.3</b> | <b>—</b> | <b>—</b>    |

— Indicates zero; NA, not available

<sup>a</sup> WHO estimates, data not provided by the NTP

<sup>b</sup> This is likely to be an overestimate as it assumes all DOT is undertaken at health facilities. In practice some patients have treatment observed at no cost to the health system by community workers or volunteers.

chal, and to 110 million people in Bihar and Uttar Pradesh. Technical support to India is provided by WHO and, with funding from CIDA and USAID, includes a network of 88 locally recruited WHO/NTP TB consultants who work at the state and district levels.

### Budgets and expenditures

Expenditures by the NTP central unit in fiscal year 2002 (from 1 April) were US\$ 24.5 million, the same as received funding. Most funding came from grants and a World Bank loan. The expenditure was primarily for areas implementing DOTS, and with 549 700 new cases notified in 2002 was equivalent to about US\$ 45 per patient. Expenditures for items not covered by the central level NTP budget in DOTS areas (i.e. clinic visits) are estimated at US\$ 14.9 million

(US\$ 27 per patient). The cost per patient in non-DOTS areas is not known; if it is similar to DOTS areas, total TB control costs for 2002 in both DOTS and non-DOTS areas can be estimated at US\$ 75 million.

In line with rapid programme expansion, the NTP budget at the central level for the fiscal year 2003 was much higher than expenditure in fiscal year 2002, at US\$ 41.8 million. Large increases in spending on dedicated staff were projected (US\$ 13.1 million in fiscal year 2003 vs. US\$ 4.8 million in fiscal year 2002). At sub-district level the budget allows one full-time staff member for overall supervision and one full-time staff member for laboratory supervision. This large budget for dedicated staff – about one third of the programme budget – is unusual among the high-burden countries. As in 2002, the central-level budget is

primarily for DOTS areas; if the NTP detects the approximately 900 000 cases anticipated in DOTS areas, the budget is around US\$ 46 per patient. Most of the budget – US\$ 24.5 million – is funded through the World Bank loan. The NTP has not identified any funding gap. Costs associated with TB control that are not funded from the NTP budget amount to an estimated US\$ 24.4 million in DOTS areas (US\$ 27 per patient). If the cost per patient is similar in non-DOTS areas and the nationwide total of 1.3 million cases needed to be on course to achieve targets in 2005 is treated (the central unit estimates they will treat at least 1.1 million), total TB control costs can be estimated at US\$ 95.6 million. Eighty-eight percent of the total cost is covered by the government (through either loans or domestic sources of revenue).

# Indonesia

## Overview of TB control system

The decentralization of health services in Indonesia has challenged the TB programme to make major changes to operational procedures. Responsibility and management now lie at the district level, and the district health manager decides on funding for TB control, among competing health concerns. Political commitment for TB control must now be obtained from local governments. GERDUNAS, Indonesia's National Integrated Movement to Control TB established in 1999, serves as the equivalent of the Stop TB Partnership, and the NTP manager acts as executive secretary. GERDUNAS is a cross-sector movement, promoting the acceleration of TB control measures through an integrated approach, involving hospitals, the private sector, and other stakeholders. Primary health care continues to be seen as the most appropriate path to achieving universal TB control.

## Surveillance, planning, operations

The steep rise in case notifications since 1996 can be attributed to improved case finding and better reporting: one third of the 62 396 additional cases notified in 2002 (compared to 2001) were detected by active surveillance in lung clinics that had not previously reported to the programme. Nonetheless, the estimated smear-positive case detection rate of the DOTS programme was still only 30% in 2002. This is very low, given that DOTS population coverage is nominally close to 100%. Treatment success increased markedly between 1999 and 2000 (because outcomes were evaluated for a much higher proportion of patients in 2000) and remained high in the 2001 cohort, exceeding the target value of 85%.

Indonesia's 5-year plan for 2002–6 continues to serve as the framework for TB control. The central unit for TB control was strengthened by the appointment of additional staff. However, more staff and training are needed in the provinces and districts so that newly-available funds will be used effectively.

GERDUNAS is well-established centrally, and plays a key role in national planning for TB control. Although GERDUNAS chapters were also established peripherally following high-level advocacy meetings held during 2002 in nearly all provinces, commitment has been variable since then. Management teams, in the form of provincial project officers and financial assistants, are being established in provinces to manage new donor funds. Over 900 management staff were trained at provincial and district levels to conduct training for

staff in health centres, though delay in receipt of donor funds and lack of district level plans slowed implementation in 2003.

DOTS expansion was delayed because GFATM funds, approved at the 1st round, were not disbursed until March 2003. Planned TBCTA activities in 7 provinces did not begin until late 2002 and early 2003. After a comprehensive external review of the NTP in January 2003, district work plans were prepared, taking into account the various projects supported by donors. 2003 was a productive year for DOTS expansion because of the additional funds and the development of these timely work plans.

Diagnostic capacity was improved by training laboratory technicians, through the purchase of microscopes and better quality reagents, and by strengthening quality control. Finalization, distribution, and implemen-

## PROGRESS IN TB CONTROL IN INDONESIA

### Indicator

|  |     |
|--|-----|
| • Treatment success 2001 cohort  | 86% |
| • DOTS detection rate, 2002  | 30% |
| • NTP budget available, 2003   | 91% |
| • Government contribution to NTP budget, including loans, 2003             | 61% |
| • Government contribution to total TB control costs, including loans, 2003 | 67% |
| • Government health spending used for TB, 2003                             | 2%  |

### Constraints to achieving targets

- Weak leadership and management capacity, inadequate financial management, and insufficient political commitment in some provinces and districts
- Interruptions in the supply of recommended drugs as a result of weak management and a lack of quality control
- Insufficient programme monitoring and surveillance due to weak reporting and supervision
- Limited involvement in DOTS outside health centres, with few public hospitals and private practitioners involved in TB control, and only 60% of staff trained in health units
- Slow disbursement of GFATM funds

### Remedial actions needed

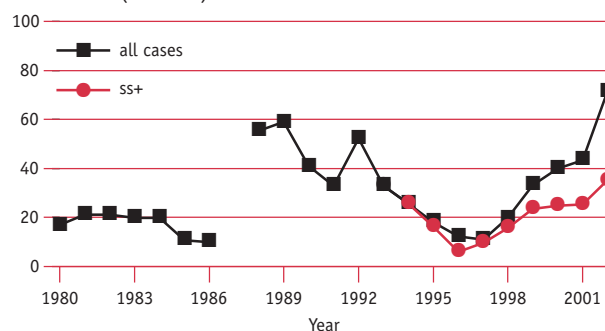
- Improve staffing, training, and quality of supervision at all levels
- Implement newly designed drug distribution and quality control system
- Increase the role of private practitioners and private facilities in TB control
- Train more health unit staff in DOTS treatment protocol

# INDONESIA

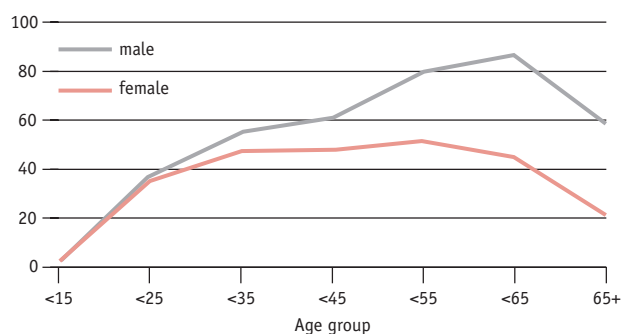
| LATEST ESTIMATES <sup>a</sup>         |                    | TRENDS                                    | 1999 | 2000 | 2001 | 2002 |
|---------------------------------------|--------------------|---|------|------|------|------|
| <b>Population</b>                     | <b>217 131 220</b> | DOTS population coverage (%)              | 90   | 98   | 98   | 98   |
| Global rank (by est. number of cases) | 3                  | Notification rate (all cases/100 000 pop) | 33   | 40   | 43   | 71   |
| Incidence (all cases/100 000 pop)     | 256                | Notification rate (new ss+/100 000 pop)   | 24   | 25   | 25   | 35   |
| Incidence (new ss+/100 000 pop)       | 115                | Detection of all cases (%)                | 12   | 15   | 17   | 28   |
| Prevalence (ss+/100 000 pop)          | 272                | Detection of new ss+ cases (%)            | 19   | 21   | 21   | 30   |
| TB mortality per 100 000 pop          | 59                 | DOTS detection of new ss+ (%)             | 19   | 20   | 21   | 30   |
| % of adult (15-49y) TB cases HIV+     | 0.6                | DOTS detection of new ss+/coverage(%)     | 21   | 20   | 22   | 31   |
| % of new cases multi-drug resistant   | 0.7                | DOTS treatment success (new ss+, %)       | 50   | 87   | 86   | —    |

## Notification rate (per 100 000 pop)

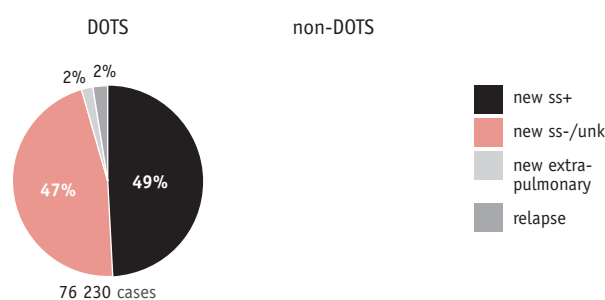
Notification (all cases) = 217 131 220 in 2002



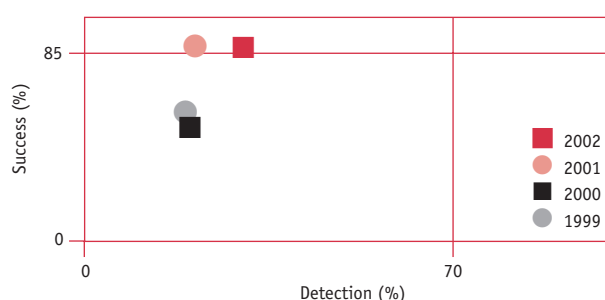
## Notification rate by age and sex (new ss+)<sup>b</sup>



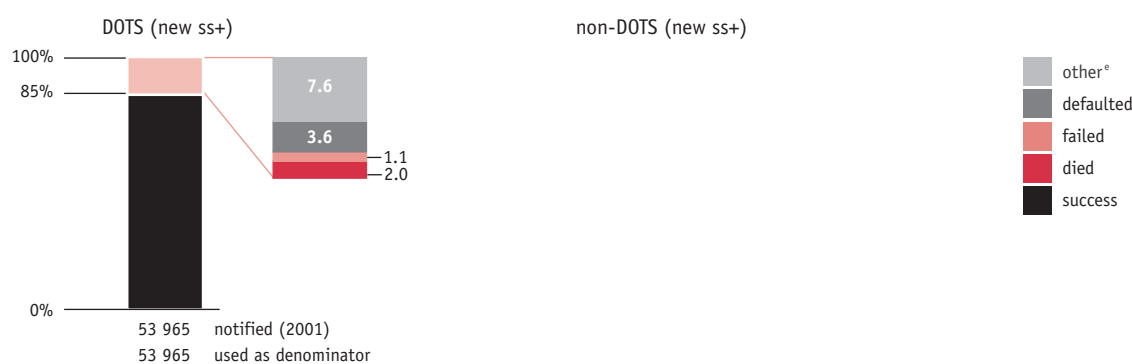
## Case types notified<sup>c</sup>



## DOTS progress towards targets<sup>d</sup>



## Treatment outcomes<sup>e</sup>



## Notes

ss+ Indicates smear-positive; ss-, smear-negative; pop, population; unk, unknown.

<sup>a</sup> See Methods for data sources.

<sup>b</sup> The sum of cases notified by age and sex is less than the number of new smear-positive cases notified for some countries.

<sup>c</sup> Non-DOTS is blank for countries which are 100% DOTS, or where no non-DOTS data were reported.

<sup>d</sup> DOTS progress towards targets: DOTS detection rate for given year, DOTS success rate for cohort registered in previous year.

<sup>e</sup> "Other" includes transfer out and not evaluated, still on treatment, and other unknown.

tation of EQA guidelines started in 2003.

A proposal was approved for GDF support to introduce 4-drug FDCs in 4 highly populated provinces and to create a buffer stock of drugs. The drugs arrived in May 2003. Treatment outcomes ought to improve as a result of better drug management in these areas. A protocol to carry out a DRS survey was finalized, and the survey will be carried out in the near future.

The NTP has developed a national policy on PPM, and a plan to scale up activities. An evaluation was held in March 2003. Over 40% of the population seeks medical care from private providers, and there are several PPM initiatives in place to ensure that this care follows recommended procedures. A project linking hospitals to DOTS in Yogyakarta, for example, showed marked improvement in case notification. The Indonesian Medical Association has recently begun PPM pilot projects in 3 provinces.

Other initiatives to strengthen TB control included a national TB/HIV workshop, where draft recommendations were developed for coordinating TB and HIV activities, and where a TB/HIV working group was established centrally. However, there is no HIV surveillance among TB patients,

and no immediate plans to begin HIV testing. TB/HIV collaborative activities were piloted in just 4 out of 400 districts. IEC materials were developed and several community awareness campaigns were launched in connection with the World TB Day. Pilot projects were initiated by NGOs to strengthen community participation in DOTS. In the area of surveillance and case-finding, data collection from the network of lung clinics will become a routine part of reporting under DOTS.

### Partnerships

WHO and KNCV are providing extensive technical support through 2 international staff based in the country and several national experts. In addition to the GFATM, Indonesia receives support from the Dutch government for staff training, from TBCTA and CIDA for DOTS expansion and strengthening of laboratories, from the ADB for overall strengthening of the health system, from the GDF for drugs, and from NLR for combined leprosy and TB control activities.

### Budgets and expenditures

Expenditures by the NTP in fiscal year 2002 (from 1 January) were US\$ 18.2

million, the same as funding received. Most funding came from the government. Expenditures for items not covered by the NTP budget (i.e. clinic visits) are estimated at US\$ 4.2 million. Total TB control costs for 2002 can therefore be estimated at US\$ 22.4 million, or US\$ 148 per patient.

The NTP aimed to treat 220 000 patients in 2003, a 45% increase over the number in 2002. The NTP budget for the fiscal year 2003 allowed for this; at US\$ 31.9 million it was 75% higher than spending in 2002, thus increasing the budget per patient as case detection increases. The budget for 2003 was equivalent to US\$ 145 per patient, compared to US\$ 120 in 2002. The drug budget, at US\$ 7.7 million, was equivalent to US\$ 35 per patient. Most of the budget – US\$ 19.5 million – was covered by government funds, but grants were also important at US\$ 9.5 million. A funding gap of US\$ 2.8 million was reported. If the target of treating 220 000 patients was reached, costs associated with TB control that were not funded from the NTP budget would have amounted to an estimated US\$ 6.1 million. Total TB control costs would have been US\$ 38.0 million, or around US\$ 172 per patient.

### Budget estimates, existing funding, and budget gaps for fiscal year 2003, US\$ millions

|   | REQUIRED FUNDING | EXPECTED FUNDING |            |            |          | FUNDING GAP |
|---|------------------|------------------|------------|------------|----------|-------------|
|   |                  | GOVERNMENT       | LOANS      | GRANTS     | OTHER    |             |
| <b>NTP budget</b>                                     |                  |                  |            |            |          |             |
| Drugs   | 7.7              | 6.2              | —          | 1.5        | —        | —           |
| Dedicated staff working exclusively for TB control    | 0.3              | —                | —          | 0.3        | —        | —           |
| New activities to raise case detection and cure rates | 3.2              | —                | —          | 3.2        | —        | —           |
| Buildings, equipment, vehicles                        | 1.4              | —                | —          | 1.4        | —        | —           |
| All other line items                                  | 19.3             | 13.3             | 0.1        | 3.1        | —        | 2.8         |
| <b>TOTAL NTP BUDGET</b>                               | <b>31.9</b>      | <b>19.5</b>      | <b>0.1</b> | <b>9.5</b> | <b>—</b> | <b>2.8</b>  |
| <b>Costs not covered by NTP budget <sup>a</sup></b>   |                  |                  |            |            |          |             |
| Hospital stay   | —                | —                | —          | —          | —        | —           |
| Clinic visits for DOT and monitoring                  | 6.1              | 6.1              | —          | —          | —        | —           |
| <b>TOTAL COSTS NOT COVERED BY NTP BUDGET</b>          | <b>6.1</b>       | <b>6.1</b>       | <b>—</b>   | <b>—</b>   | <b>—</b> | <b>—</b>    |
| <b>TOTAL TB CONTROL COSTS</b>                         | <b>38.0</b>      | <b>25.6</b>      | <b>0.1</b> | <b>9.5</b> | <b>—</b> | <b>2.8</b>  |

— Indicates zero; NA, not available

<sup>a</sup> WHO estimates, data not provided by the NTP



# Kenya

## Overview of TB control system

Health sector reform in Kenya has supported the decentralization of TB services with the goal of improving access to care and, in particular, reaching those most disadvantaged. Despite a policy of free TB treatment in the public sector, a study conducted in 2003 found that poverty is still a barrier to TB care as patients must share costs for medical consultations and medicines before being referred for TB diagnosis. This often results in diagnostic delays, or undiagnosed cases. The TB programme will begin addressing these issues in 2004. DOTS expansion efforts in 2003 focused on strengthening the decentralized laboratory network, on devolving DOTS delivery to public health centres and dispensaries, and on bringing more partners into TB control.

## Surveillance, planning, operations

While the case notification rate has increased approximately 5-fold over the past decade, the smear-positive case detection rate by the DOTS programme is thought to have remained fairly steady, between 45–60%. However, estimates of the case detection rate for the past few years have been based on an analysis of tuberculin survey data done before HIV had a major impact on TB in Kenya. The most recent estimate of the smear-positive case detection rate (49% in 2002) therefore needs to be verified, either through a fuller evaluation of the surveillance system, or via population-based surveys of TB incidence and prevalence. Case notification rates are highest among young adults, which is typical of countries with high rates of HIV infection. Treatment success among smear-

positive cases under DOTS was 80% in the 2001 cohort, but 13% completed treatment without documented smear conversion, 8% of patients defaulted, and 6% were transferred without follow-up. Despite high rates of HIV infection, the reported cohort death rate was no more than 5%, though some patients lost to follow-up would have died.

The NTP is implementing its 2001–5 strategic plan, with the goal of reaching targets for case detection and treatment success by 2005. Kenya is already beginning to develop a plan for 2005–9. The progressive integration of TB control into the general health services continues to facilitate the expansion of DOTS, though staff shortages hinder progress. There are 8 staff members

in the central unit, up from 4 in 2002. All provinces and districts have programme coordinators. The central unit provides supervision in all areas, though it is currently short-staffed. A national professional TB officer has been recruited by WHO to assist the NTP with development of staff capacity, and secondments of 3 more staff are planned. More professionals will be trained in TB control by restructuring the NICC to include members of training colleges. Despite a chronic lack of resources in some areas, strong managerial and operational structures are in place centrally, and these have helped to sustain effective TB services under increasingly difficult conditions. Though TB services are not always comprehensive, nationwide NTP cov-

## PROGRESS IN TB CONTROL IN KENYA

### Indicators

|  |     |
|--|-----|
| • Treatment success 2001 cohort  | 80% |
| • DOTS detection rate, 2002  | 49% |
| • NTP budget available, 2003   | 70% |
| • Government contribution to NTP budget, including loans, 2003             | 36% |
| • Government contribution to total TB control costs, including loans, 2003 | 46% |
| • Government health spending used for TB, 2003                             | 4%  |

### Major constraints to achieving targets

- Funding gap of US\$ 3.3 million in 2003
- Too few trained personnel at local level coupled with insufficient number of staff at central level
- Private sector not fully engaged in delivering DOTS treatment
- Insufficient public awareness about TB, including awareness that diagnosis and treatment can be obtained free of charge
- Rapid growth in the proportion of TB patients infected with HIV, yet poor collaboration between TB and HIV/AIDS programmes

### Remedial actions needed

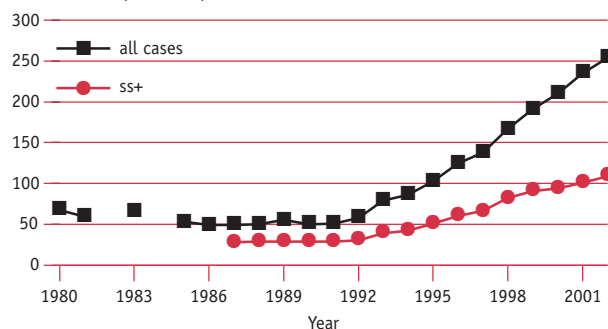
- Mobilize funding
- Improve recruitment and retention of local personnel
- Develop plan to strengthen health workforce
- Give incentives to attract private practitioners to provide DOTS services
- Strengthen public awareness through new COMBI plan, and through a strategy for urban TB control
- Provide technical assistance to strengthen programme evaluation, and to carry out research on service delivery
- Improve HIV testing and counselling, and strengthen collaboration between TB and HIV/AIDS programmes

# KENYA

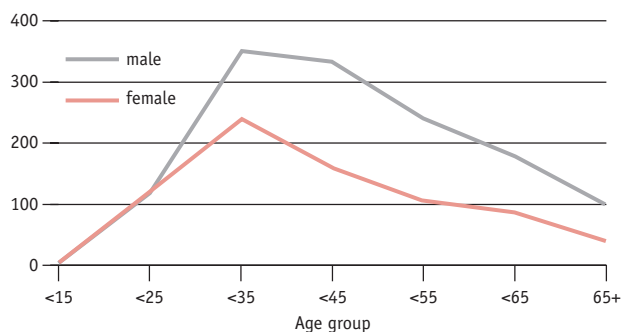
| LATEST ESTIMATES <sup>a</sup>         |                   | TRENDS                                    | 1999 | 2000 | 2001 | 2002 |
|---------------------------------------|-------------------|---|------|------|------|------|
| <b>Population</b>                     | <b>31 540 420</b> | DOTS population coverage (%)              | 100  | 100  | 100  | 100  |
| Global rank (by est. number of cases) | 12                | Notification rate (all cases/100 000 pop) | 191  | 210  | 235  | 254  |
| Incidence (all cases/100 000 pop)     | 540               | Notification rate (new ss+/100 000 pop)   | 91   | 94   | 101  | 109  |
| Incidence (new ss+/100 000 pop)       | 223               | Detection of all cases (%)                | 51   | 49   | 49   | 47   |
| Prevalence (ss+/100 000 pop)          | 296               | Detection of new ss+ cases (%)            | 58   | 54   | 51   | 49   |
| TB mortality per 100 000 pop          | 132               | DOTS detection of new ss+ (%)             | 58   | 49   | 51   | 49   |
| % of adult (15-49y) TB cases HIV+     | 51                | DOTS detection of new ss+/coverage(%)     | 58   | 49   | 51   | 49   |
| % of new cases multi-drug resistant   | 0.0               | DOTS treatment success (new ss+, %)       | 78   | 80   | 80   | —    |

## Notification rate (per 100 000 pop)

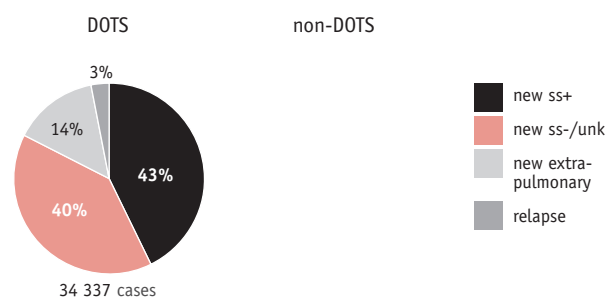
Notification (all cases) = 80 183 in 2002



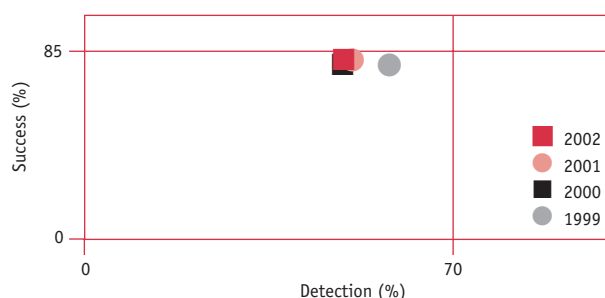
## Notification rate by age and sex (new ss+)<sup>b</sup>



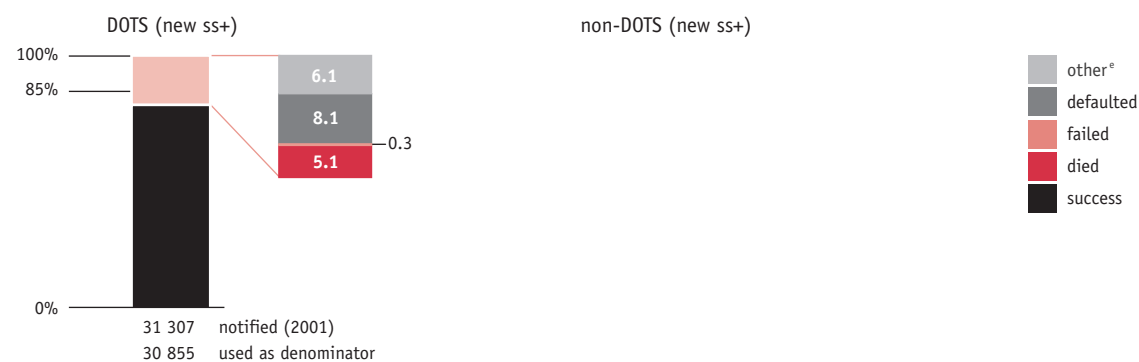
## Case types notified<sup>c</sup>



## DOTS progress towards targets<sup>d</sup>



## Treatment outcomes<sup>e</sup>



## Notes

ss+ Indicates smear-positive; ss-, smear-negative; pop, population; unk, unknown.

<sup>a</sup> See Methods for data sources.

<sup>b</sup> The sum of cases notified by age and sex is less than the number of new smear-positive cases notified for some countries.

<sup>c</sup> Non-DOTS is blank for countries which are 100% DOTS, or where no non-DOTS data were reported.

<sup>d</sup> DOTS progress towards targets: DOTS detection rate for given year, DOTS success rate for cohort registered in previous year.

<sup>e</sup> "Other" includes transfer out and not evaluated, still on treatment, and other unknown.

erage is supported through community participation in some districts, outreach to nomadic peoples, and wider use of the DOTS strategy in the private sector in Nairobi.

The central referral laboratory has been refurbished, resuming culture from sputum and drug sensitivity testing. Additional laboratory staff have been trained in sputum smear microscopy. Referral laboratories are planned for Mombasa and Eldoret.

Collaboration between the NTP and private providers has improved over the past 4 years, and there have been concerted efforts to expand the availability of DOTS through private providers to cities and large towns. Aventis Pharma has assisted the private sector by donating enough drugs to treat 1500 patients over 1 year. A prepaid system is in place, ensuring that patients receive a full course of treatment once enrolled. Between the 2nd quarter of 2002 and the 3rd quarter of 2003, about 1000 new TB patients were registered under this scheme. Training of private physicians is supported by the Kenyan Association for the Prevention of TB and Lung Diseases (KAPTLD) and by pharmaceutical companies. Data are collected in collaboration with the NTP.

Although there is not yet a system for TB/HIV surveillance, 51% of adult TB patients were estimated to be infected with HIV in 2002. Efforts are underway to establish a clear policy for collaboration between TB and HIV/AIDS control programmes. A TB/HIV coordinating body, has been appointed to spearhead this collaboration. Policies have been developed, though no collaborative activities have yet begun. There is also a proposal to test the feasibility of establishing similar task forces in districts, and to involve the NTP in ART delivery through WHO's "3 by 5" initiative.

In 2003 Kenya launched a community mobilization campaign to raise awareness of, and increase community commitment to, TB control. However, The National AIDS and STDs Control Programme (NASCO) and the NTP have very different objectives relating to community-based TB care, and have yet to agree on mutually beneficial guidelines. Now that funding is available, this impasse should be resolved.

Many people seek care from Nairobi's large private sector, and KAPTLD has expanded their PPM project to several hospitals and chest

physicians in Nairobi and Mombasa. Funds are being sought to sustain the initiative, and to work with private GPs serving slums.

Kenya collects data on drug resistance within the framework of the WHO/IUATLD global project. A 1995 DRS survey did not show MDR-TB to be a problem, as no MDR was found among 445 new TB cases and 46 previously treated cases. A second DRS survey was conducted in 2002, with 1200 samples drawn from 39 sites throughout the country. The results are awaited.

Other initiatives are designed to find and effectively treat patients living in urban slum areas, and to provide TB services in areas that are difficult to reach by working with resident NGOs. In 2003, a COMBI strategy was launched including the production of IEC materials and the training of provincial and district focal points for communications. Radio and television advertisements for TB awareness will begin in early 2004.

### Partnerships

KNCV and WHO lead technical support for the country, backed by CDC, USAID through the JSI Deliver Project

### Budget estimates, existing funding, and budget gaps for fiscal year 2003, US\$ millions

|   | REQUIRED FUNDING | EXPECTED FUNDING |            |            |            | FUNDING GAP |
|---|------------------|------------------|------------|------------|------------|-------------|
|   |                  | GOVERNMENT       | LOANS      | GRANTS     | OTHER      |             |
| <b>NTP budget</b>                                     |                  |                  |            |            |            |             |
| Drugs   | 2.2              | 1.3              | 0.5        | 0.4        | —          | —           |
| Dedicated staff working exclusively for TB control    | 5.1              | 1.0              | —          | 0.4        | 0.4        | 3.3         |
| New activities to raise case detection and cure rates | 2.5              | —                | —          | 2.5        | —          | —           |
| Buildings, equipment, vehicles                        | NA               | NA               | —          | NA         | —          | —           |
| All other line items                                  | 1.2              | 1.2              | —          | —          | —          | —           |
| <b>TOTAL NTP BUDGET</b>                               | <b>11.0</b>      | <b>3.5</b>       | <b>0.5</b> | <b>3.3</b> | <b>0.4</b> | <b>3.3</b>  |
| <b>Costs not covered by NTP budget <sup>a,b</sup></b> |                  |                  |            |            |            |             |
| Hospital stay   | 0.5              | 0.5              | —          | —          | —          | —           |
| Clinic visits for DOT and monitoring                  | 2.3              | 2.3              | —          | —          | —          | —           |
| <b>TOTAL COSTS NOT COVERED BY NTP BUDGET</b>          | <b>2.8</b>       | <b>2.8</b>       | <b>—</b>   | <b>—</b>   | <b>—</b>   | <b>—</b>    |
| <b>TOTAL TB CONTROL COSTS</b>                         | <b>13.8</b>      | <b>6.3</b>       | <b>0.5</b> | <b>3.3</b> | <b>0.4</b> | <b>3.3</b>  |

— Indicates zero; NA, not available

<sup>a</sup> WHO estimates, data not provided by the NTP

<sup>b</sup> Estimates differ from those in Global TB Control 2003 due to a change in methods made possible by the availability of new data. See Methods for full details.

## KENYA

and FHI, and CIDA (operating through KNCV). CDC and CIDA now support programme activities previously funded by the Dutch government, including logistics, training, and an external programme adviser. Drugs are purchased with a loan from the World Bank and a grant from the GDF. The TB and HIV/AIDS programmes have strengthened their partnership with the World Bank through the DARE project. FHI is supporting some laboratory and TB/HIV activities.

### **Budgets and expenditures**

The NTP budget for the fiscal year 2003 (from 1 July) is US\$ 11.0 million. The NTP estimates that they will treat 110 000 patients during this

period, implying a budget per patient of US\$ 100. The government will provide US\$ 3.5 million of the required funding, which represents an increase of US\$ 1.2 million from 2002. Approximately 50% of the total costs for TB control in the public sector in Kenya are borne by the government. TB control activities account for almost 4% of government spending on health.

In 2003, Kenya was awarded US\$ 4.9 million for tuberculosis control from the GFATM. In August 2003, US\$ 839 000 of this grant was disbursed thereby reducing the anticipated financing gap. However, a gap of US\$ 3.3 million remains meaning that approximately 30% of the required budget for the fiscal year 2003

is not available. Compared to 2002 expenditures, there are large increases in the 2003 budget for new activities to expand DOTS as well as for staff working on TB and TB/HIV. A slight increase in the drug budget reflects the anticipated increase in case detection. The drug budget, at US\$ 2.2 million, is equivalent to US\$ 20 per patient.

Costs associated with TB control that were not funded from the NTP budget amounted to an estimated US\$ 2.8 million, of which US\$ 0.5 million was for hospital admissions during treatment and US\$ 2.3 million was for clinic visits during treatment. These data imply total TB control costs of US\$ 13.8 million in 2003, and US\$ 125 per patient.

# Mozambique

## Overview of TB control system

The Mozambique National Tuberculosis Control Programme was launched in 1977, and tuberculosis and HIV/AIDS are among the government's health priorities. Mozambique's health services are inadequate in terms of coverage, access, and quality of care, mainly due to the lack of infrastructure and to limited managerial and staff capacity. Access to health care is defined in Mozambique as living within 20 km of a health facility, and much of the population lives outside this radius. The MoH (National Directorate of Health) has developed a plan to expand health services, with a component that is designed to ensure integration and coordination of supervision within provinces. At present, however, there remain serious imbalances among and within the 11 provinces because of the concentration of resources in the provincial capitals. The NTP has had strong political support, and is promoted by the MoH. The core functions of the NTP are to ensure effective treatment of all cases, provide manuals and guidelines, train new staff, conduct surveillance of TB drug resistance, and analyze statistics countrywide.

## Surveillance, planning, operations

Case notification rates have been rising in Mozambique since 1992, but less rapidly than in other countries of south-eastern Africa that also have high rates of HIV infection (the smear-positive rate has been increasing at 4% per year since 1996 in Mozambique). The case detection rate by the DOTS programme was estimated to be 45% for 2002 but, because the underlying TB incidence is uncertain (as for other countries in

the region), so too is the estimate of case detection. Treatment success was 77% for the 2001 cohort, lower than the target of 85%, mainly because 10% of patients died and 9% defaulted.

A comprehensive DOTS expansion plan was developed by February 2003. As yet there is no NICC, though a partner's meeting was organized in the interim. Mozambique faces serious challenges in TB control, including lack of staff, high HIV prevalence among TB cases, poor transport infrastructure that limits access to TB services, natural disasters that destroy health facilities and roads, and civil unrest that derails the political will to fund health programmes. As a consequence of decentralization, DOTS has been implemented in all district health units, but not yet in peripheral health posts. Treatment outcomes are, therefore, jeopardized by a lack of supervision

during the continuation phase that may contribute to higher death and default rates. The relatively simple measure of supplying transportation, in the form of bicycles and motor-bikes, could improve follow-up supervision and lead to improved treatment outcomes. Community-based DOTS at the peripheral level could also allow for better supervision of DOTS patients. There are 206 laboratories that perform direct smear microscopy, and not enough reference culture laboratories. Laboratory staff are overworked, which may affect quality of smear reading in the future, and there is a lack of functioning microscopes, trained technicians, and external quality control. DOTS is in place only in the district health centres where there are functioning microscopes. There are plans to train additional laboratory staff and coordinators, and expand DOTS into community health units or

## PROGRESS IN TB CONTROL IN MOZAMBIQUE

### Indicators

|  |      |
|--|------|
| • Treatment success 2001 cohort  | 77%  |
| • DOTS detection rate, 2002  | 45%  |
| • NTP budget available, 2003   | 100% |
| • Government contribution to NTP budget, including loans, 2003             | NA   |
| • Government contribution to total TB control costs, including loans, 2003 | NA   |
| • Government health spending used for TB, 2003                             | NA   |

### Major constraints to achieving targets

- DOTS expansion plan not completed until 2003
- Nearly 20% of health infrastructure destroyed by civil war
- Lack of trained staff at peripheral levels following decentralization and civil war
- Lack of laboratory facilities and equipment
- Irregular drug supplies due to poor roads

### Remedial actions needed

- On-going resource mobilization
- Immediately implement DOTS expansion plan
- MoH commitment to rehabilitate health infrastructure to 60% of previous capacity
- Increase funding and training for laboratory and peripheral staff
- Purchase new microscopes and spare parts, and refurbish laboratories
- Create buffer stock of properly stored drugs

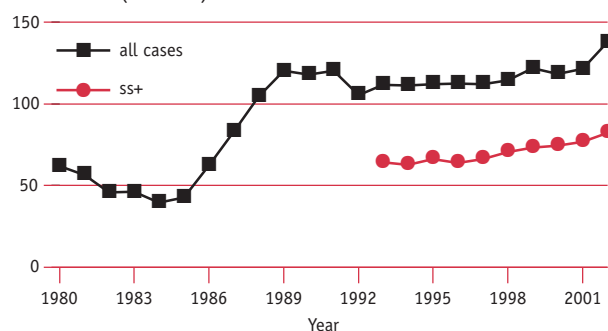
NA indicates not available

# MOZAMBIQUE

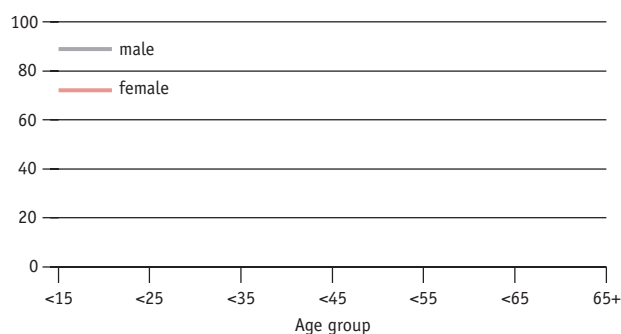
| LATEST ESTIMATES <sup>a</sup>         |                   | TRENDS                                    | 1999 | 2000 | 2001 | 2002 |
|---------------------------------------|-------------------|---|------|------|------|------|
| <b>Population</b>                     | <b>18 537 208</b> | DOTS population coverage (%)              | —    | 100  | 100  | 100  |
| Global rank (by est. number of cases) | 18                | Notification rate (all cases/100 000 pop) | 122  | 118  | 121  | 138  |
| Incidence (all cases/100 000 pop)     | 436               | Notification rate (new ss+/100 000 pop)   | 73   | 74   | 77   | 82   |
| Incidence (new ss+/100 000 pop)       | 182               | Detection of all cases (%)                | 34   | 31   | 30   | 32   |
| Prevalence (ss+/100 000 pop)          | 250               | Detection of new ss+ cases (%)            | 50   | 47   | 45   | 45   |
| TB mortality per 100 000 pop          | 124               | DOTS detection of new ss+ (%)             | —    | 47   | 45   | 45   |
| % of adult (15-49y) TB cases HIV+     | 47                | DOTS detection of new ss+/coverage(%)     | —    | 47   | 45   | 45   |
| % of new cases multi-drug resistant   | 3.5               | DOTS treatment success (new ss+, %)       | 71   | 75   | 77   | —    |

## Notification rate (per 100 000 pop)

Notification (all cases) = 25 544 in 2002



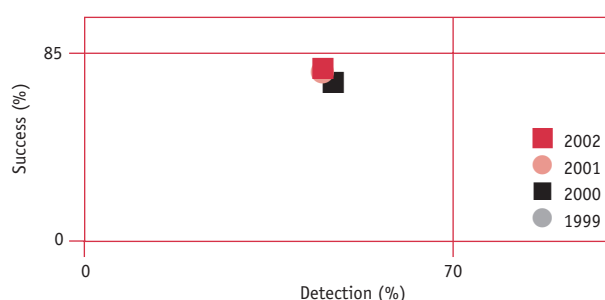
## Notification rate by age and sex (new ss+)<sup>b</sup>



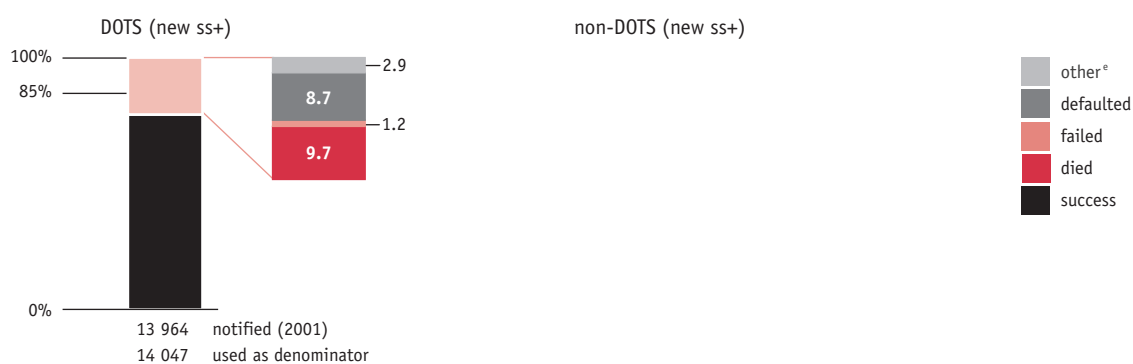
## Case types notified<sup>c</sup>



## DOTS progress towards targets<sup>d</sup>



## Treatment outcomes<sup>e</sup>



## Notes

ss+ Indicates smear-positive; ss-, smear-negative; pop, population; unk, unknown.

<sup>a</sup> See Methods for data sources.

<sup>b</sup> The sum of cases notified by age and sex is less than the number of new smear-positive cases notified for some countries.

<sup>c</sup> Non-DOTS is blank for countries which are 100% DOTS, or where no non-DOTS data were reported.

<sup>d</sup> DOTS progress towards targets: DOTS detection rate for given year, DOTS success rate for cohort registered in previous year.

<sup>e</sup> "Other" includes transfer out and not evaluated, still on treatment, and other unknown.



## Budget estimates, existing funding, and budget gaps for fiscal year 2003, US\$ millions

|   | REQUIRED FUNDING | EXPECTED FUNDING |       |        |       | FUNDING GAP |
|---|------------------|------------------|-------|--------|-------|-------------|
|   |                  | GOVERNMENT       | LOANS | GRANTS | OTHER |             |
| NTP budget  |                  |                  |       |        |       |             |
| Drugs   | NA               | NA               | —     | NA     | —     | NA          |
| Dedicated staff working exclusively for TB control    | NA               | 0.1              | —     | NA     | —     | NA          |
| New activities to raise case detection and cure rates | NA               | NA               | —     | NA     | —     | NA          |
| Buildings, equipment, vehicles                        | NA               | NA               | —     | NA     | —     | NA          |
| All other line items                                  | NA               | NA               | —     | NA     | —     | NA          |
| TOTAL NTP BUDGET                                      | 8.0 <sup>a</sup> | 0.3 <sup>a</sup> | 0     | 2.4    | 0     | 5.3         |
| Costs not covered by NTP budget <sup>b</sup>          |                  |                  |       |        |       |             |
| Hospital stay   | NA               | NA               | —     | —      | —     | —           |
| Clinic visits for DOT and monitoring                  | NA               | NA               | —     | —      | —     | —           |
| TOTAL COSTS NOT COVERED BY NTP BUDGET                 | NA               | NA               | —     | —      | —     | —           |
| TOTAL TB CONTROL COSTS                                | NA               | NA               | —     | —      | —     | —           |

— Indicates zero; NA, not available

<sup>a</sup> The government contribution is actually higher because drugs are also procured with government money. However the size of the drug budget is unknown.

<sup>b</sup> WHO estimates, data not provided by the NTP

villages, reaching at least 1 district per region.

The national TB/HIV coordinating body is developing a 5-year plan for joint TB and HIV control. Collaborative activities are implemented by the MoH, NGOs, and research organizations in 19 of 154 districts. There is an HIV surveillance system for TB patients, and the HIV infection rate among adult TB patients is estimated to be 47%. As yet, there is no plan to involve the NTP in the delivery of ART. A DRS survey was conducted within the framework of the WHO/IUATLD global project on anti-TB drug resistance surveillance, but the results are not yet available.

### Partnerships

The coordination of partnerships is led by the MoH. The aim is to direct partners to areas or populations that currently have limited access to health services in general and TB services in particular. Financial support is provided to the NTP by NORAD, the Association Italian Follereau (AIFO), NLR, TLMI, DFB, Lepira UK, and Spanish Centre for Investigations in Health (CISM). External technical support has been given by WHO, IUATLD, and GLRA for operations and TB staff development.

### Budgets and expenditures

Mozambique did not submit financial data for this report. For the 2003 report (covering calendar year 2003),

the NTP reported a budget of US\$ 8.0 million, implying a budget per patient of US\$ 320. The government contributed US\$ 0.3 million to the 2003 budget, a decrease of US\$ 1.3 million compared to 2002. The government also contributed to TB control costs through the purchase of anti-TB drugs although this budget cannot be disaggregated as the drugs are procured and financed as part of a package of essential drugs.

In 2003, Mozambique was awarded US\$ 18.2 million from the GFATM for TB control activities. While the funds have not been disbursed, over US\$ 5.4 million were budgeted for the first year of the project. If disbursed during the 2003 fiscal year, these funds will eliminate the estimated financing gap of US\$ 5.3 million.

# Myanmar

## Overview of TB control system

Myanmar is among the 22 high-burden countries that have strong health infrastructures. The Ministry of Health has identified TB as being second only to malaria as a health priority, and the minister himself chairs the central TB supervisory committee. The unit of management for TB control is the township, with an average population of 130 000. In some places, TB treatment is supervised by trained volunteers at rural health centres and in patients' homes.

## Surveillance, planning, operations

Case finding has improved greatly in Myanmar over the past 4 years: the estimated smear-positive case detection rate by the DOTS programme rose to 73% in 2002, in excess of the 70% target. Treatment success in the 2001 cohort was 81%, about the same as it has been since 1996. The principal obstacle to reaching the 85% target is the 10% default rate. An explanation of why so many patients fail to complete treatment has not been given.

Political commitment to TB remains high, as demonstrated recently by ministerial involvement in programme reviews and participation in World TB Day. Improved funding from international donors allowed the expansion of DOTS to 15 more townships in 2003. All 324 townships are now, or will soon be, implementing DOTS provided funds from the GFATM become available in 2004. All zones will have their own TB centres by 2005. About one quarter of the total NTP staff positions remain vacant, mostly in the districts. Training of NGO staff to deliver DOTS has improved treatment supervision, IEC, and referral capabilities.

The reliability of the drug supply has been improved through support from the GDF, and a grant from the GFATM will allow the purchase of drugs during 2004 to cover 80% of patients. Drug distribution and supervisory visits to facilities were made easier following the construction of a central drug store in 2002, and the purchase of vehicles in 2003. Laboratory infrastructure (buildings, microscopes, supply of laboratory consumables) and staff training at the township laboratories have been improved, though there is still a shortage of equipment. The central reference laboratory is faced with a heavy workload, and staffing remains inadequate to carry out the supervision, training, quality assurance, cul-

ture, and drug susceptibility testing that are required.

The collaboration between the public and private health providers was expanded through pilot projects with the Myanmar Medical Association in 2003. General practitioners and health facilities outside the NTP still do not fully comply with DOTS standards, although a number of non-DOTS public health facilities reported to the NTP for 2001, this was not the case for 2002. Some funding from the GFATM is devoted to social franchising to encourage private clinics to implement DOTS.

As yet, there is no TB/HIV coordinating body, nor is there a surveillance system to measure HIV prevalence among TB patients. Guide-

## PROGRESS IN TB CONTROL IN MYANMAR

### Indicators

|  |                  |
|--|------------------|
| • Treatment success 2001 cohort  | 81%              |
| • DOTS detection rate, 2002  | 73%              |
| • NTP budget available, 2003   | 18% <sup>a</sup> |
| • Government contribution to NTP budget, including loans, 2003             | 6%               |
| • Government contribution to total TB control costs, including loans, 2003 | NA               |
| • Government health spending used for TB, 2003                             | NA               |

### Constraints to achieving targets

- Delay in receipt of GFATM funds
- Shortage of TB clinics, laboratory equipment, microscopy centres, and vehicles at central and peripheral levels
- Insufficient numbers and training of technical, supervisory, and managerial staff, particularly with respect to quality assurance of laboratory services, logistics, supervision, data management, and epidemiology
- Lack of community awareness about TB and available services
- Poor access to diagnosis and treatment in remote areas

### Remedial actions needed

- Finalization of GFATM grant agreement
- Purchase vehicles and laboratory equipment, and refurbish clinics
- Appoint staff to suspended posts, and create new posts
- Train technical staff, supervisors, and managers
- Comprehensive IEC strategy to expand community awareness of TB
- Improve access to diagnosis in remote areas by opening new diagnostic centres; introduce mechanisms for sending sputum samples or slides to laboratories
- Scale-up successful initiatives with NGOs, private health care providers, and the HIV programme

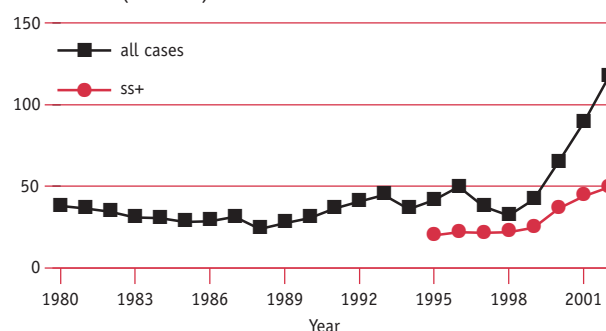
<sup>a</sup> Once the GFATM agreement is finalized, this will be 100%.

# MYANMAR

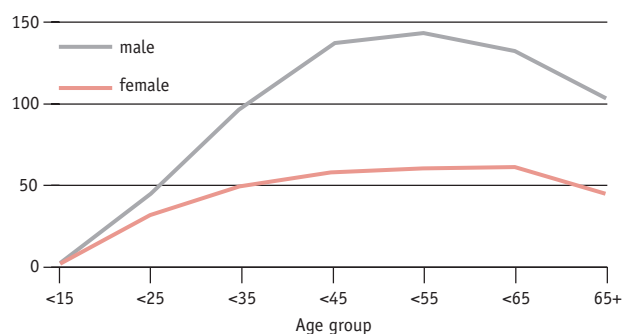
| LATEST ESTIMATES <sup>a</sup>         |                   | TRENDS                                    | 1999 | 2000 | 2001 | 2002 |
|---------------------------------------|-------------------|---|------|------|------|------|
| <b>Population</b>                     | <b>48 852 483</b> | DOTS population coverage (%)              | 64   | 77   | 84   | 88   |
| Global rank (by est. number of cases) | 22                | Notification rate (all cases/100 000 pop) | 42   | 65   | 89   | 117  |
| Incidence (all cases/100 000 pop)     | 154               | Notification rate (new ss+/100 000 pop)   | 24   | 36   | 44   | 49   |
| Incidence (new ss+/100 000 pop)       | 68                | Detection of all cases (%)                | 26   | 40   | 57   | 76   |
| Prevalence (ss+/100 000 pop)          | 83                | Detection of new ss+ cases (%)            | 34   | 51   | 63   | 73   |
| TB mortality per 100 000 pop          | 26                | DOTS detection of new ss+ (%)             | 34   | 51   | 62   | 73   |
| % of adult (15-49y) TB cases HIV+     | 11                | DOTS detection of new ss+/coverage(%)     | 53   | 66   | 74   | 82   |
| % of new cases multi-drug resistant   | 1.5               | DOTS treatment success (new ss+, %)       | 81   | 82   | 81   | —    |

## Notification rate (per 100 000 pop)

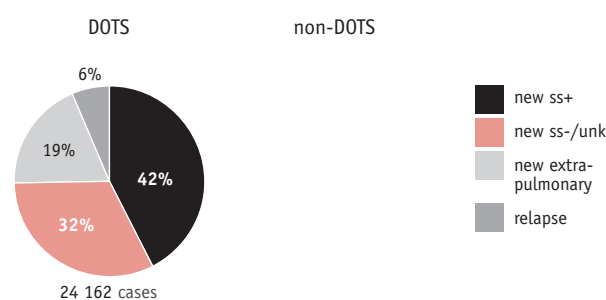
Notification (all cases) = 57 012 in 2002



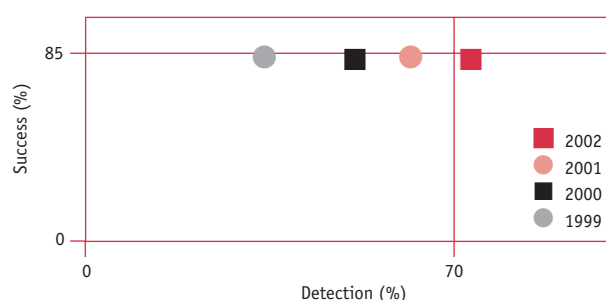
## Notification rate by age and sex (new ss+)<sup>b</sup>



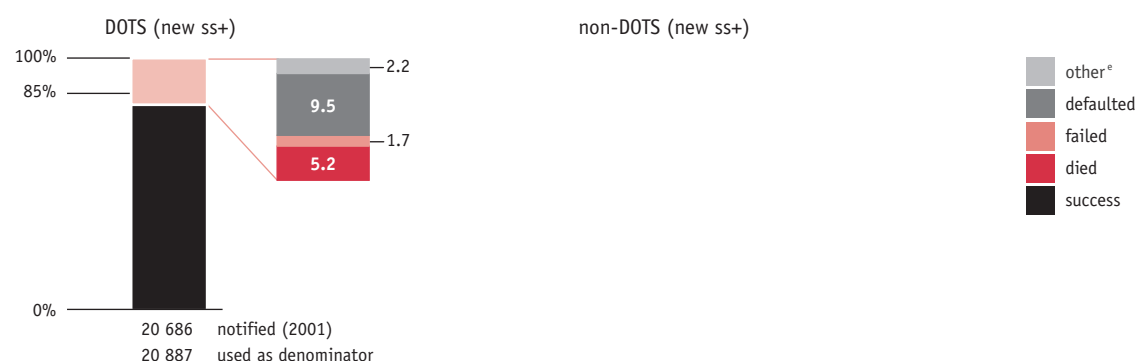
## Case types notified<sup>c</sup>



## DOTS progress towards targets<sup>d</sup>



## Treatment outcomes<sup>e</sup>



## Notes

ss+ Indicates smear-positive; ss-, smear-negative; pop, population; unk, unknown.

<sup>a</sup> See Methods for data sources.

<sup>b</sup> The sum of cases notified by age and sex is less than the number of new smear-positive cases notified for some countries.

<sup>c</sup> Non-DOTS is blank for countries which are 100% DOTS, or where no non-DOTS data were reported.

<sup>d</sup> DOTS progress towards targets: DOTS detection rate for given year, DOTS success rate for cohort registered in previous year.

<sup>e</sup> "Other" includes transfer out and not evaluated, still on treatment, and other unknown.

## Budget estimates, existing funding, and budget gaps for fiscal year 2003, US\$ millions

|   | REQUIRED FUNDING | EXPECTED FUNDING |          |            |          | FUNDING GAP |
|---|------------------|------------------|----------|------------|----------|-------------|
|   |                  | GOVERNMENT       | LOANS    | GRANTS     | OTHER    |             |
| <b>NTP budget</b>                                     |                  |                  |          |            |          |             |
| Drugs   | 0.5              | 0.05             | —        | 0.5        | —        | —           |
| Dedicated staff working exclusively for TB control    | 0.5              | 0.3              | —        | 0.2        | —        | —           |
| New activities to raise case detection and cure rates | 0.8              | —                | —        | 0.8        | —        | —           |
| Buildings, equipment, vehicles                        | 3.0              | —                | —        | 3.0        | —        | —           |
| All other line items                                  | 0.3              | —                | —        | 0.3        | —        | —           |
| <b>TOTAL NTP BUDGET</b>                               | <b>5.1</b>       | <b>0.3</b>       | <b>—</b> | <b>4.8</b> | <b>—</b> | <b>—</b>    |
| <b>Costs not covered by NTP budget <sup>a</sup></b>   |                  |                  |          |            |          |             |
| Hospital stay   | NA               | NA               | —        | —          | —        | —           |
| Clinic visits for DOT and monitoring                  | NA               | NA               | —        | —          | —        | —           |
| <b>TOTAL COSTS NOT COVERED BY NTP BUDGET</b>          | <b>NA</b>        | <b>NA</b>        | <b>—</b> | <b>—</b>   | <b>—</b> | <b>—</b>    |
| <b>TOTAL TB CONTROL COSTS</b>                         | <b>NA</b>        | <b>NA</b>        | <b>—</b> | <b>—</b>   | <b>—</b> | <b>—</b>    |

— Indicates zero; NA, not available

<sup>a</sup> WHO estimates, data not provided by the NTP

lines for treating TB patients infected with HIV have been developed, and efforts are being made to educate the private practitioners who treat these patients. Collaborative activities between TB and HIV/AIDS control programmes have been tested by the MoH in 1 of 52 districts, and the NTP will deliver ART therapy as soon as funds from the GFATM become available. Myanmar conducts DRS surveys within the framework of the WHO/IUATLD global project on anti-TB drug resistance surveillance.

### Partnerships

An NICC ensures coordination among donors, with IUATLD and WHO leading external technical support to the country. Three national NGOs – the Myanmar Maternal and Child Welfare Association, the Myanmar Red Cross Society, and the Myanmar Medical Association – provide direct obser-

vation of treatment for DOTS patients. Financial support is provided by the Myanmar government, WHO, UNDP, GDF, JICA, and JATA. Some additional bilateral donors are now providing financial support to the country, but not yet for TB control. A proposal to the GFATM for TB control has been approved and funding should begin in 2004.

### Budgets and expenditures

Total expenditure by the NTP in fiscal year (from April) 2002 was US\$ 1.2 million. Most of this expenditure was for drugs, with drugs worth US\$ 0.4 million supplied by the GDF and an additional US\$ 0.5 million contributed by various donors including JICA, IUATLD, and WHO.

The budget for 2003 was much higher, at US\$ 5.1 million, most of which was for purchase of vehicles

and laboratory equipment. While this budget was much higher than expenditures for 2002, it was anticipated that the budget would be fully funded following a successful application to the GFATM. Of the US\$ 5.1 million, US\$ 4.2 million was anticipated from the GFATM, US\$ 0.6 million from other donors, and US\$ 0.3 million from the government. However, as of January 2004, the grant agreement with the GFATM had not been finalized. The NTP therefore continued to rely on low levels of funding in 2003. If GFATM funds become available soon, the budget shown in the table should apply to fiscal year 2004. As in previous years, no reliable estimates could be made for TB control costs beyond the NTP budget, due to difficulties in converting costs from local currency to US\$ values.

# Nigeria

## Overview of TB control system

Nigeria is engaged in reforms to strengthen the primary health care infrastructure, and to build human resource and operational capacity throughout the country. The Federal Ministry of Health supports the 36 autonomous states through its technical and strategic planning functions. However, the planning and implementation of health services, including those for TB, are largely decentralized to the states and the Federal Capital Territory. Following the Abuja Declaration to Stop TB in 2001, which was endorsed by federal and state representatives and other partners, the federal government established a multisectoral committee to mount a concerted response to the worsening TB/HIV epidemic.

## Surveillance, planning, operations

Case notifications have been increasing since 1994, but with an unexplained increase above the general trend in 2001. Although there is uncertainty about the true burden of TB in Nigeria, it is clear that smear-positive case detection by the DOTS programme remains low (estimated to be 12% in 2002). Treatment success in the 2001 DOTS cohort was 79%. Eleven percent of patients completed treatment without documented smear conversion, and 12% defaulted. Treatment success under DOTS, like case detection, changed little between 1997 and 2002.

In 2001, Nigeria developed a 2001–5 plan for TB control and established an NICC in 2002. The plan was endorsed in 2002 by the federal MoH and by the NICC, paving the way for expansion of DOTS beyond the 45% of LGAs (350 out of 774) that were implementing DOTS in 2002. As

of October 2003, 432 LGAs (55%) were implementing DOTS. Introducing DOTS to all LGAs remains the most significant challenge, complicated by problems of infrastructure, funding, staffing, and political commitment. Nearly all states and LGAs have DOTS expansion plans, but those plans have not, by and large, been implemented. An application to the GFATM (2nd round) was submitted through Nigeria's Country Coordinating Committee (CCM), requesting US\$ 9.8 million over the first 2 years. It was approved by the GFATM technical review panel in February 2003. However, the government was unable to satisfactorily answer questions about fund allocation and management, so approval for the grant was withdrawn in August 2003. Despite these setbacks, DOTS

was extended to 10 more states during 2003, thereby increasing the number of states implementing DOTS from 26 in 2002 to 36 in 2003 (from 70% to 97%; only Zamfara state is yet to start implementing DOTS).

The major constraint for primary health care, and for the TB control programme, remains the withholding of government funds budgeted at all levels. This results from a low level of political commitment to health, to primary health care (despite being a stated priority of the government), and to TB control. TB control operations are carried out with external funding and national staff, with insufficient resources for operations, and often relying on patient payment for services. Where DOTS is being implemented now, it is due

## PROGRESS IN TB CONTROL IN NIGERIA

### Indicators

|  |                  |
|--|------------------|
| • Treatment success 2001 cohort  | 79%              |
| • DOTS detection rate, 2002  | 12%              |
| • NTP budget available, 2003   | 63% <sup>a</sup> |
| • Government contribution to NTP budget, including loans, 2003             | 31% <sup>b</sup> |
| • Government contribution to total TB control costs, including loans, 2003 | 55% <sup>b</sup> |
| • Government health spending used for TB, 2003                             | 8% <sup>b</sup>  |

### Constraints to achieving targets

- Funding gap of at least US\$ 4.6 million in 2003
- Insufficient federal and state commitment to, and funds for, primary health care infrastructure including health facilities and staff
- Low staff motivation and insufficient numbers of health workers trained in DOTS
- Weak laboratory network and diagnostic services

### Remedial actions needed

- Plan high level advocacy missions to strengthen political commitment
- Mobilise funds from external donors
- Strengthen political support at federal and local levels to increase funding
- Develop TB HR recruitment plan
- Review and strengthen supervision and monitoring plan to boost staff moral
- Incorporate DOTS into pre-service curricula for health workers, laboratory technicians, and medical officers
- Strengthen laboratory services with more equipment, supplies, and improved QA

<sup>a</sup> This includes the budget committed by the government. Taking into account the limited release of funds, 32% of the NTP budget was available.

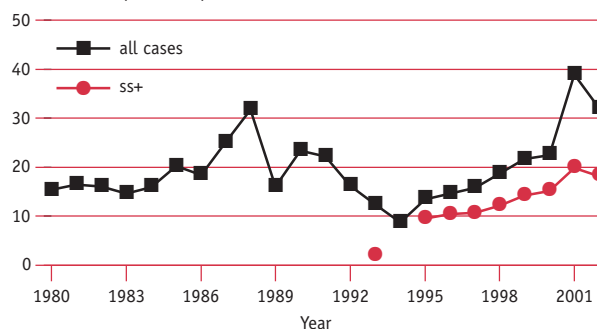
<sup>b</sup> This includes the budget committed by the government and does not take into account the limited release of funds.

# NIGERIA

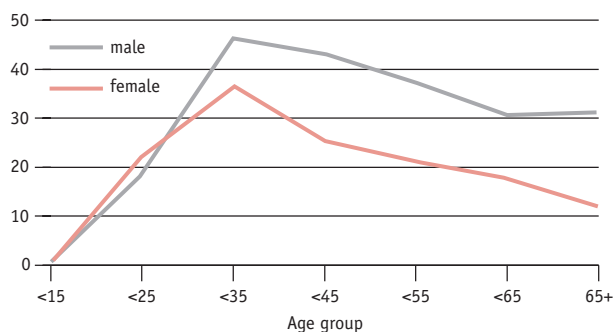
| LATEST ESTIMATES <sup>a</sup>         |                    | TRENDS                                    | 1999 | 2000 | 2001 | 2002 |
|---------------------------------------|--------------------|---|------|------|------|------|
| <b>Population</b>                     | <b>120 911 192</b> | DOTS population coverage (%)              | 45   | 47   | 55   | 55   |
| Global rank (by est. number of cases) | 4                  | Notification rate (all cases/100 000 pop) | 22   | 23   | 39   | 32   |
| Incidence (all cases/100 000 pop)     | 304                | Notification rate (new ss+/100 000 pop)   | 14   | 15   | 20   | 18   |
| Incidence (new ss+/100 000 pop)       | 132                | Detection of all cases (%)                | 8.8  | 8.5  | 14   | 11   |
| Prevalence (ss+/100 000 pop)          | 260                | Detection of new ss+ cases (%)            | 13   | 13   | 16   | 14   |
| TB mortality per 100 000 pop          | 89                 | DOTS detection of new ss+ (%)             | 13   | 13   | 13   | 12   |
| % of adult (15-49y) TB cases HIV+     | 27                 | DOTS detection of new ss+/coverage(%)     | 30   | 28   | 24   | 22   |
| % of new cases multi-drug resistant   | 1.7                | DOTS treatment success (new ss+, %)       | 75   | 79   | 79   | —    |

## Notification rate (per 100 000 pop)

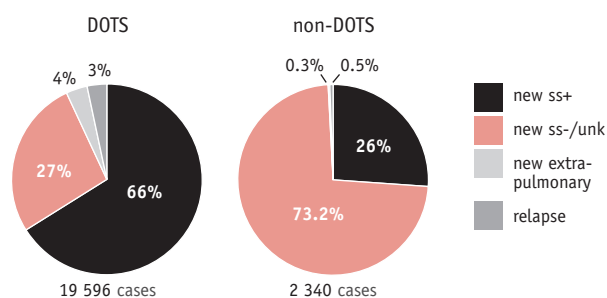
Notification (all cases) = 38 628 in 2002



## Notification rate by age and sex (new ss+)<sup>b</sup>



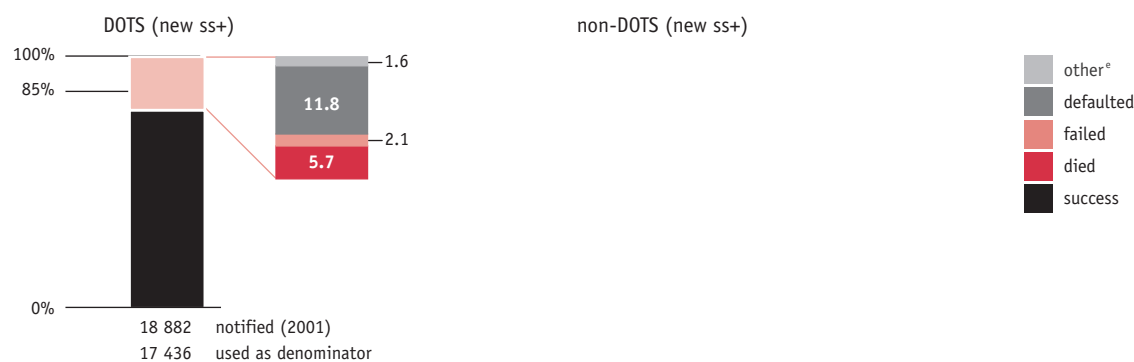
## Case types notified<sup>c</sup>



## DOTS progress towards targets<sup>d</sup>



## Treatment outcomes<sup>e</sup>



## Notes

ss+ Indicates smear-positive; ss-, smear-negative; pop, population; unk, unknown.

<sup>a</sup> See Methods for data sources.

<sup>b</sup> The sum of cases notified by age and sex is less than the number of new smear-positive cases notified for some countries.

<sup>c</sup> Non-DOTS is blank for countries which are 100% DOTS, or where no non-DOTS data were reported.

<sup>d</sup> DOTS progress towards targets: DOTS detection rate for given year, DOTS success rate for cohort registered in previous year.

<sup>e</sup> "Other" includes transfer out and not evaluated, still on treatment, and other unknown.



## NIGERIA

largely to the support of NGOs and donors, and the importance of partners in implementing DOTS cannot be overstated. Increased state ownership (and budget allocation) for TB control will be required if DOTS is to be expanded, and this objective has been captured in the strategic plan.

Laboratory facilities in primary health centres are in generally poor condition, lacking equipment and reagents for sputum smear microscopy. By October 2003, only 477 of the planned 615 microscopy centres were in operation. Efforts to improve diagnosis included the development of a QA programme, the updating and distribution of AFB microscopy guidelines, and supervision of peripheral laboratory activities by the national and state laboratory scientists. There remains a shortage of laboratory technicians. National and zonal reference laboratories are planned when funds become available.

Activities to improve treatment outcomes included the formation of an IEC committee, the provision of better transport to improve the capacity of LGA supervisors, and financial incentives for staff who are involved in locating absentee patients (at risk of defaulting). The network of treatment centres has been increased from

1605 to 2233. The introduction of community-based DOTS has been postponed until DOTS has been firmly established in all health facilities.

PHC clinics are staffed mainly by nurses, community health officers, and community health workers. There is an adequate number of government health workers to meet the need, with the exception of laboratory technicians. Three new zonal NPOs were recruited through WHO for the north-west, north-east and south-west zones. They are responsible for technical coordination of TB control activities in the states within each zone. The population per physician in the public PHC system varies from 1 : 160 000 to 1 : 400 000. Although the TB programme trains supervisors and key staff, very few general PHC and hospital staff have been trained in integrated TB control activities. The number of private and NGO hospitals delivering DOTS services could, with adequate funds, increase from 20 to 57 facilities, the target set for 2003. Staff capacity was strengthened using experienced facilitators at the national TBL training centre. The manual and guidelines for training general health workers and doctors about DOTS has been finalized, printed, and distributed. Education

on DOTS is now being incorporated into pre-service curricula for health workers, and into the medical school curriculum at the University of Lagos.

Monitoring and supervision have been hampered by a federal embargo on new appointments. The central unit had sufficient funds to purchase new 4WD vehicles enabling supervisory visits that involve travel over difficult terrain. There are plans to expand the reporting network to include hospitals (including those in academic settings), police, prisons, and the army.

The national HIV-infection rate among adult TB patients was estimated to be 27% in 2002, based on HIV infection rates among all adults. There is a surveillance system to measure HIV infection directly among TB patients, which should provide better estimates in future. There are national and provincial TB/HIV co-ordinating bodies, and meetings between TB and HIV staff have taken place to intensify collaboration, resulting in the development of a joint concept paper. Some collaborative activities were implemented in 6 of 774 districts during 2003. There are plans to involve the NTP in delivery of ART by 2004.

The private sector largely com-

### Budget estimates, existing funding, and budget gaps for fiscal year 2003, US\$ millions

|   | REQUIRED FUNDING | EXPECTED FUNDING |          |            |          | FUNDING GAP |
|---|------------------|------------------|----------|------------|----------|-------------|
|   |                  | GOVERNMENT       | LOANS    | GRANTS     | OTHER    |             |
| <b>NTP budget</b>                                     |                  |                  |          |            |          |             |
| Drugs   | 2.6              | 1.4              | —        | 1.2        | —        | —           |
| Dedicated staff working exclusively for TB control    | 1.8              | 1.7              | —        | —          | —        | 0.1         |
| New activities to raise case detection and cure rates | 5.7              | 0.4              | —        | 2.0        | —        | 3.3         |
| Buildings, equipment, vehicles                        | 2.4              | 0.4              | —        | 0.8        | —        | 1.2         |
| All other line items                                  | 0.1              | —                | —        | 0.1        | —        | —           |
| <b>TOTAL NTP BUDGET</b>                               | <b>12.6</b>      | <b>3.9</b>       | <b>—</b> | <b>4.1</b> | <b>—</b> | <b>4.6</b>  |
| <b>Costs not covered by NTP budget <sup>a</sup></b>   |                  |                  |          |            |          |             |
| Hospital stay   | 1.7              | 1.7              | —        | —          | —        | —           |
| Clinic visits for DOT and monitoring                  | 4.7              | 4.7              | —        | —          | —        | —           |
| <b>TOTAL COSTS NOT COVERED BY NTP BUDGET</b>          | <b>6.4</b>       | <b>6.4</b>       | <b>—</b> | <b>—</b>   | <b>—</b> | <b>—</b>    |
| <b>TOTAL TB CONTROL COSTS</b>                         | <b>19.0</b>      | <b>10.3</b>      | <b>—</b> | <b>4.1</b> | <b>—</b> | <b>4.6</b>  |

— Indicates zero; NA, not available

<sup>a</sup> WHO estimates, data not provided by the NTP

## NIGERIA

prises faith-based institutions, nursing homes, registered private practitioners, pharmacists, and traditional healers. A framework for PPM activities was developed during a workshop held in 2003, with plans to involve the private sector beginning in 1 site in each of 6 provinces.

The University of Nigeria teaching hospital in Enugu has applied to the GLC for treatment of MDR-TB, but the TB programme would have to be strengthened, and a further drug resistance survey carried out, before a DOTS-Plus project could begin.

### Partnerships

DOTS is largely delivered through NGOs, with public sector expansion of DOTS aiming to strengthen the network of NGOs and to increase access through public sector facilities. Overall technical guidance for the country is led by the government in collaboration with partners including WHO and NGOs. Most of the partners supporting TB activities were initially leprosy NGOs that have recently started to diversify. However, they do

not have enough capacity to support the planned DOTS expansion. Twenty-seven of the 37 states are receiving funding as follows: GLRA has been financially and technically supporting DOTS implementation in 272 LGAs in 14 states. TB drug procurement is organized by GLRA in these states. The NLR is involved in 100 LGAs in 4 states. The Damien Foundation has been fully supporting TB control in 2 states. DFID is funding DOTS implementation in 1 state, within the framework of a project developing PHC services. The IUATLD is providing technical assistance and covering some training costs in Lagos state. CIDA's donation through WHO has allowed for DOTS expansion into 6 additional states. The GDF provided drugs for 33 000 patients in 2002, plus buffer stock for 1 year.

### Budgets and expenditures

The NTP budget for the fiscal year 2003 (from 1 January) was US\$ 12.6 million. The NTP estimated that they would treat 50 000 patients during

this period, implying a budget per patient of US\$ 252. However, the drug budget, at US\$ 2.6 million, included the procurement of a buffer stock, so the actual cost per patient may have been lower. The government contribution was estimated at US\$ 3.9 million. However, no disbursement of federal funds occurred and limited information on state budgets was available. US\$ 4.1 million was provided through grants. In January 2003, Nigeria was awarded a grant from the GFATM for TB control activities. This grant was later retracted. A gap of US\$ 4.6 million was reported.

Costs associated with TB control that were not funded from the NTP budget amounted to an estimated US\$ 6.4 million, of which US\$ 1.7 million was for hospital admissions during treatment and US\$ 4.7 million was for clinic visits during treatment. These data imply total TB control costs of US\$ 19 million per year, and US\$ 380 per patient.

# Pakistan

## Overview of TB control system

Tuberculosis was declared a national emergency in 2001 through the Islamabad Declaration. The reduction of TB prevalence through countrywide implementation of DOTS services is a priority in the National Health Policy formulated in 2001. The National Strategic Plan envisions countrywide DOTS coverage by 2005 and steady progress is being made toward this goal. The government is implementing the DOTS programme mainly through the public sector infrastructure, though the national strategic framework considers the private sector to be a major partner in TB control. Since the national devolution plan was launched in August 2001, districts have begun to assume administrative responsibility for all public activities, including health care services. However, many districts still do not have the capacity to deliver care, and community health services remain weak.

## Surveillance, planning, operations

After years of erratic reporting, there are signs that case notifications are becoming more reliable under DOTS. Whilst the incidence of TB in Pakistan remains uncertain, it is clear that the smear-positive case detection rate under DOTS has increased rapidly, from a low value of 2% in 1999 to 13% in 2002. The treatment success rate under DOTS is also climbing, though more slowly, and reached 77% for the 2001 cohort. The main reason for low treatment success is the high default rate (13%).

The recent growth in numbers of patients recruited to the DOTS programme has been impressive, thanks in particular to Lady Health Workers operating in rural communities. DOTS

is already in operation in 79 districts, and is currently being extended to the 32 remaining districts. Balochistan and Sindh reported that DOTS covered all districts in these provinces during 2003, and Punjab is planning full coverage by 2005, though as the largest province, size alone is a barrier to expansion. However, weak health service infrastructure, the upheavals of decentralization, too few staff at district level, and poor coordination between districts are constraints to DOTS expansion, and to maintaining the quality of the DOTS programme.

Five national programme officers are now in place, 1 at the national level and 1 at each of the provincial headquarters. Additional training of doctors, laboratory personnel, and paramedics is underway. A laboratory referral network has been established

but the quality of laboratory work is not yet assured. In efforts to improve social mobilization, sociologists and a research officer have been recruited, and it is expected that now an effective mass awareness campaign in the community can be delivered. Non-standard generic drug regimens continue to be used, contributing to multidrug resistance.

About half of all TB cases in Pakistan are seen by private providers or by informal practitioners. PPM projects are planned for 2004 via the Fund for Innovative DOTS Expansion through Local Initiatives to Stop TB (FIDELIS). GFATM funds will be used to involve the private sector through social marketing and franchising schemes.

Pakistan has a national TB/HIV coordinating body, and there is an HIV surveillance system among TB

## PROGRESS IN TB CONTROL IN PAKISTAN

### Indicators

|  |      |
|--|------|
| • Treatment success 2001 cohort  | 77%  |
| • DOTS detection rate, 2002  | 13%  |
| • NTP budget available, 2003   | 100% |
| • Government contribution to NTP budget, including loans, 2003             | 44%  |
| • Government contribution to total TB control costs, including loans, 2003 | 59%  |
| • Government health spending used for TB, 2003                             | 1%   |

### Constraints to achieving targets

- Risk that TB will not remain a priority following the shift of TB planning authority to district level
- Weak management and supervision capacity at provincial and district levels
- Involvement of private sector without adequate training in DOTS patient management
- Inconsistent smear microscopy
- Use of non-standard drugs and interrupted drug supply

### Remedial actions needed

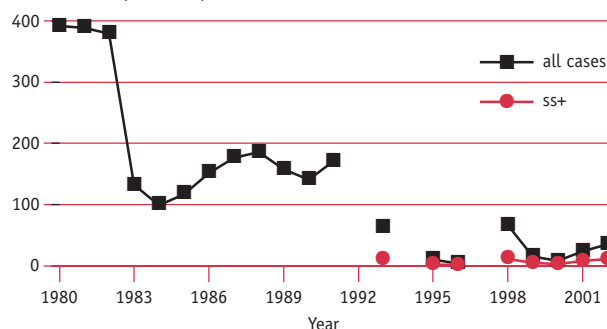
- Maintain political will, especially at district and community levels, during decentralization
- Recruit and retain staff who will be trained in management, supervision, and planning
- Train private sector practitioners through continuing education and in medical, nursing, and public health schools
- Use available funds to assess and strengthen internal drug management system in partnership with GDF and Stop TB drug management partners

# PAKISTAN

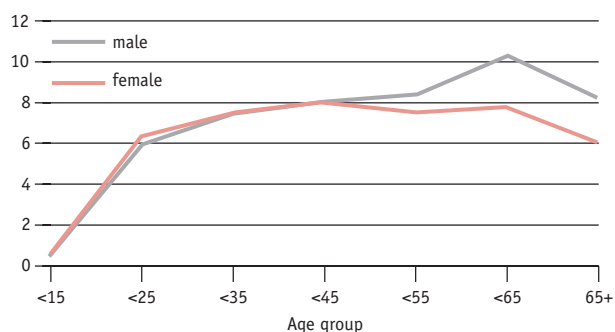
| LATEST ESTIMATES <sup>a</sup>         |                    | TRENDS                                    | 1999 | 2000 | 2001 | 2002 |
|---------------------------------------|--------------------|---|------|------|------|------|
| <b>Population</b>                     | <b>149 910 783</b> | DOTS population coverage (%)              | 8    | 9    | 24   | 45   |
| Global rank (by est. number of cases) | 6                  | Notification rate (all cases/100 000 pop) | 15   | 7.7  | 23   | 35   |
| Incidence (all cases/100 000 pop)     | 181                | Notification rate (new ss+/100 000 pop)   | 4.5  | 2.3  | 7.5  | 11   |
| Incidence (new ss+/100 000 pop)       | 81                 | Detection of all cases (%)                | 8.3  | 4.3  | 13   | 19   |
| Prevalence (ss+/100 000 pop)          | 178                | Detection of new ss+ cases (%)            | 2.0  | 2.8  | 5.2  | 13   |
| TB mortality per 100 000 pop          | 45                 | DOTS detection of new ss+ (%)             | 2    | 3    | 5    | 13   |
| % of adult (15-49y) TB cases HIV+     | 0.7                | DOTS detection of new ss+/coverage(%)     | 25   | 31   | 22   | 28   |
| % of new cases multi-drug resistant   | 9.6                | DOTS treatment success (new ss+, %)       | 70   | 74   | 77   | —    |

## Notification rate (per 100 000 pop)

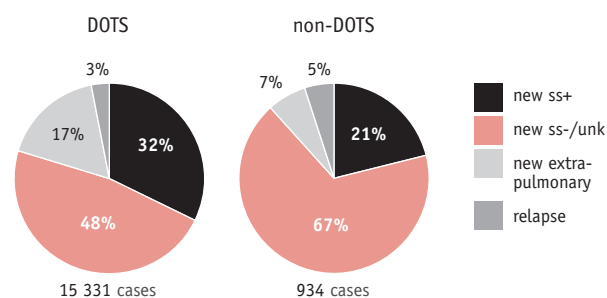
Notification (all cases) = 52 172 in 2002



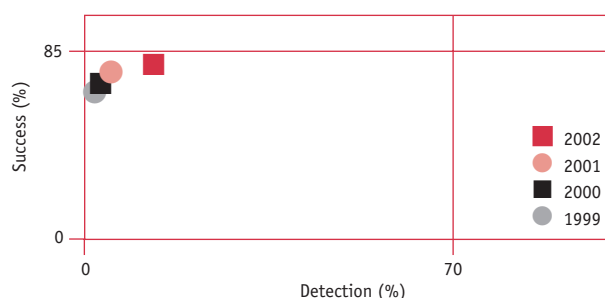
## Notification rate by age and sex (new ss+)<sup>b</sup>



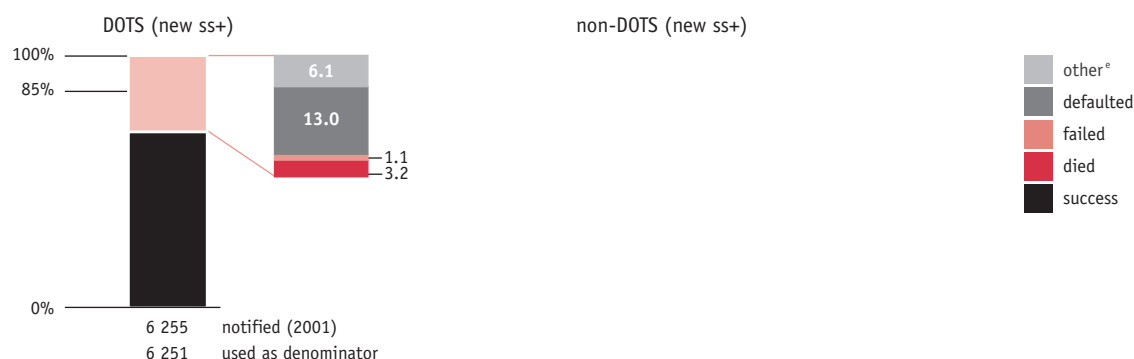
## Case types notified<sup>c</sup>



## DOTS progress towards targets<sup>d</sup>



## Treatment outcomes<sup>e</sup>



## Notes

ss+ Indicates smear-positive; ss-, smear-negative; pop, population; unk, unknown.

<sup>a</sup> See Methods for data sources.

<sup>b</sup> The sum of cases notified by age and sex is less than the number of new smear-positive cases notified for some countries.

<sup>c</sup> Non-DOTS is blank for countries which are 100% DOTS, or where no non-DOTS data were reported.

<sup>d</sup> DOTS progress towards targets: DOTS detection rate for given year, DOTS success rate for cohort registered in previous year.

<sup>e</sup> "Other" includes transfer out and not evaluated, still on treatment, and other unknown.

## Budget estimates, existing funding, and budget gaps for fiscal year 2003, US\$ millions

|   | REQUIRED FUNDING | EXPECTED FUNDING |          |            |          | FUNDING GAP |
|---|------------------|------------------|----------|------------|----------|-------------|
|   |                  | GOVERNMENT       | LOANS    | GRANTS     | OTHER    |             |
| <b>NTP budget</b>                                     |                  |                  |          |            |          |             |
| Drugs   | 3.5              | 1.6              | —        | 1.9        | —        | —           |
| Dedicated staff working exclusively for TB control    | 0.3              | 0.3              | —        | —          | —        | —           |
| New activities to raise case detection and cure rates | 0.5              | —                | —        | 0.5        | —        | —           |
| Buildings, equipment, vehicles                        | —                | —                | —        | —          | —        | —           |
| All other line items                                  | 1.6              | 0.7              | —        | 0.9        | —        | —           |
| <b>TOTAL NTP BUDGET</b>                               | <b>5.9</b>       | <b>2.6</b>       | <b>—</b> | <b>3.3</b> | <b>—</b> | <b>—</b>    |
| <b>Costs not covered by NTP budget <sup>a,b</sup></b> |                  |                  |          |            |          |             |
| Hospital stay   | —                | —                | —        | —          | —        | —           |
| Clinic visits for DOT and monitoring                  | 2.2              | 2.2              | —        | —          | —        | —           |
| <b>TOTAL COSTS NOT COVERED BY NTP BUDGET</b>          | <b>2.2</b>       | <b>2.2</b>       | <b>—</b> | <b>—</b>   | <b>—</b> | <b>—</b>    |
| <b>TOTAL TB CONTROL COSTS</b>                         | <b>8.1</b>       | <b>4.8</b>       | <b>—</b> | <b>3.3</b> | <b>—</b> | <b>—</b>    |

— Indicates zero; NA, not available

<sup>a</sup> Government expenditures on TB exclude costs not covered by the NTP budget because these were not available. This figure was estimated by assuming a 10% increase in the number of cases detected between 2002 and 2003 and assuming no hospitalisation of TB patients but 40 outpatient visits to clinics for DOT.

<sup>b</sup> WHO estimates, data not provided by the NTP

patients. There is no plan to involve the NTP in the delivery of ART.

The large numbers of refugees from the Afghan civil war are still affecting NTP activities in Pakistan. Health infrastructure in the border regions remains very weak, making services mostly unavailable to refugees living in camps near the border.

## Partnerships

The MoH has established an IACC (NICC) with WHO and IUATLD as principal technical collaborators. CIDA, DFID, GLRA, JICA, and the Aga Khan Foundation support DOTS implementation and expansion. Major international funding partners are the World Bank, DFID, CIDA, GLRA, JICA, USAID, EU, and others funding SAPP II. The GDF provides anti-TB drugs, and Pakistan has been awarded a GFATM grant to strengthen public-private partnerships.

## Budgets and expenditures

The NTP budget for the fiscal year 2003 (from 1 July) is US\$ 5.9 million. The government will provide US\$ 2.6 million of the required funding with additional support coming from USAID. The NTP does not expect a funding gap for 2003. The GDF continued its support to drug procurement during 2003, complementing funding available from provincial governments. However, GDF support for drug procurement will discontinue in 2004. Since it is unlikely that the drug budget from provincial governments can be substantially increased, the NTP will need to seek additional donor funding to secure its drug supply.

In 2003, Pakistan was awarded two grants from the GFATM for TB control activities. The first will support core DOTS expansion efforts coordinated

by the Ministry of Health. The second project is a NGO-led initiative designed to stimulate public-private collaboration for further DOTS expansion. While neither of these grants has been disbursed, the total budgets for the first 2 years are US\$ 2.3 million and US\$ 6.8 million respectively. Government contributions to TB control that are not included in the NTP budget are estimated at US\$ 2.2 million, bringing total TB control costs to US\$ 8.1 million. Fifty-nine percent of the total costs are funded by the government.

# The Philippines

## Overview of TB control system

The central, regional, and provincial governments in the Philippines each have clearly delineated roles in delivering health care. The central level of the NTP is responsible for overall programme management including the formulation of technical norms, provision of technical support, and drug procurement. Regional offices coordinate with, and provide technical support to, provincial governments. Following a national programme review conducted in 2002 by WHO and other partners, TB control in 2003 focused on maintaining quality, on expansion of DOTS to the remainder of the country, and on involving other sectors in TB control.

## Surveillance, planning, operations

The notification rates of smear-positive cases and of all TB cases have been falling at an average of 7% per year since 1993. This rate of decline is biologically plausible, but surprising in view of the fact that DOTS expansion began only in 1995. The apparent trend in case notifications therefore needs to be verified. The smear-positive case detection rate by the DOTS programme was 58% in 2002, but questions about the dynamics of TB in the Philippines – raised by observations on the notification series – cast doubt on the accuracy of this estimate. Treatment success in the 2001 cohort was 88%, but 13% of patients completed treatment without documented smear conversion, and 6% defaulted.

TB first became a priority for the national government in 2002, and the first Philippine TB summit culminated in the signing of the Comprehensive and Unified Policy for TB Control in the Philippines in 2003. As a result

of this policy, human resources for management at the central level of the NTP are sufficient. The number of managerial staff has increased from 8 to 12. Capacity was also increased regionally so that technical assistance can now be provided by the central level to provinces, and by provinces to local government units.

World TB Day and Lung Month were commemorated to increase political commitment. An advocacy campaign was launched in 2002, expanded in 2003, and will be continued in 2004 with new GFATM funding. The campaign promotes ownership of the TB problem by all sectors, including health care workers and the community, using social mobilization, community participation programmes, and a multi-media approach to increase local funding. Particular attention has been given to fostering ownership in the most peripheral administrative units, the *barrangays*. The broad goal is to increase demand for DOTS at all levels.

Implementation of an outpatient benefit package for TB control began in 2003, meaning that DOTS

treatment for TB is now a reimbursable benefit in a pilot public-private financing scheme under the national insurance plan (PHILHEALTH). A PPM DOTS framework was developed, implementation of PPM DOTS clinics began in 2003, and operational guidelines for both public-initiated and private-initiated PPM DOTS are expected to be finalized in the first quarter of 2004. Funding for PPM projects is through the GFATM and the GDF. The Comprehensive and Unified Policy for TB Control will help to ensure adherence to the DOTS strategy by other public sector organizations including the Social Insurance System, the Indigenous Commission, and the Departments of National Defence, Education, Interior, Social Welfare, Labour, and Justice. Medical education institutions began to include DOTS training in their curricula in 2003.

Following decentralization, and consistent with the expected shift in responsibilities, the provinces have begun to make TB control a priority. Training workshops that reinforced new DOTS treatment guidelines were

## PROGRESS IN TB CONTROL IN THE PHILIPPINES

### Indicators

|  |     |
|--|-----|
| • Treatment success 2001 cohort  | 88% |
| • DOTS detection rate, 2002  | 58% |
| • NTP budget available, 2003   | 95% |
| • Government contribution to NTP budget, including loans, 2003             | 62% |
| • Government contribution to total TB control costs, including loans, 2003 | 93% |
| • Government health spending used for TB, 2003                             | 3%  |

### Constraints to achieving targets

- Inadequate supervision and monitoring of TB programme
- Under-use of DOTS services in some areas due to low public awareness
- Under-development of private sector partnerships for DOTS delivery

### Remedial actions needed

- Establish supervision guidelines and reinforce central monitoring team
- Intensify advocacy for TB screening, diagnosis, and treatment
- Increase private sector involvement through widespread implementation of new DOTS treatment guidelines and PPM projects

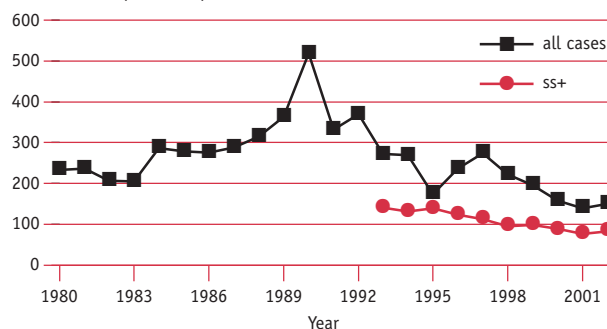


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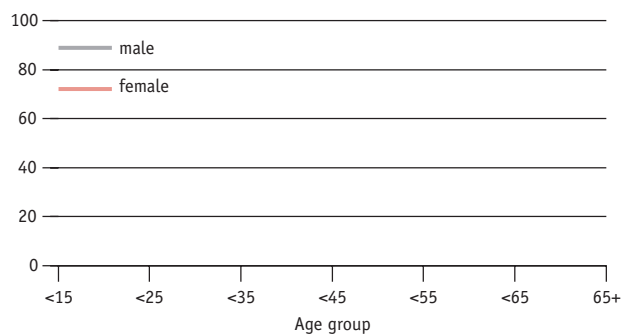
| LATEST ESTIMATES <sup>a</sup>         |                   | TRENDS                                    | 1999 | 2000 | 2001 | 2002 |
|---------------------------------------|-------------------|---|------|------|------|------|
| <b>Population</b>                     | <b>78 580 228</b> | DOTS population coverage (%)              | 43   | 90   | 95   | 98   |
| Global rank (by est. number of cases) | 8                 | Notification rate (all cases/100 000 pop) | 196  | 158  | 139  | 151  |
| Incidence (all cases/100 000 pop)     | 320               | Notification rate (new ss+/100 000 pop)   | 99   | 89   | 77   | 83   |
| Incidence (new ss+/100 000 pop)       | 144               | Detection of all cases (%)                | 62   | 50   | 44   | 47   |
| Prevalence (ss+/100 000 pop)          | 224               | Detection of new ss+ cases (%)            | 69   | 62   | 54   | 58   |
| TB mortality per 100 000 pop          | 57                | DOTS detection of new ss+ (%)             | 19   | 46   | 54   | 58   |
| % of adult (15-49y) TB cases HIV+     | 0.4               | DOTS detection of new ss+/coverage(%)     | 45   | 52   | 56   | 59   |
| % of new cases multi-drug resistant   | 3.2               | DOTS treatment success (new ss+, %)       | 87   | 88   | 88   | —    |

### Notification rate (per 100 000 pop)

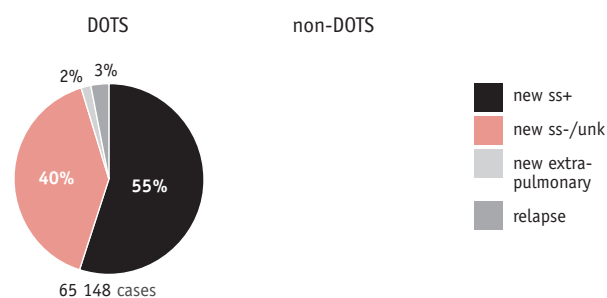
Notification (all cases) = 118 408 in 2002



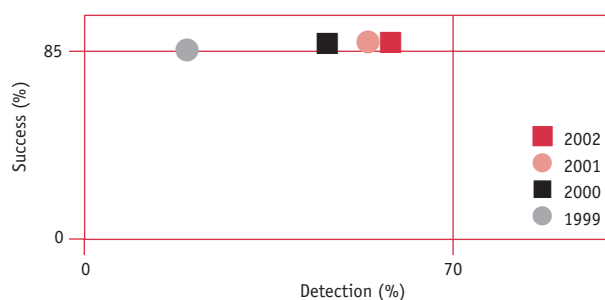
### Notification rate by age and sex (new ss+)<sup>b</sup>



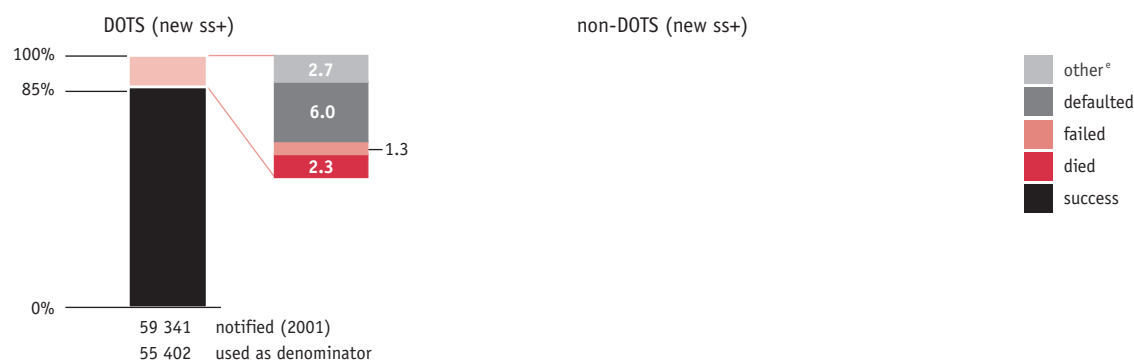
### Case types notified<sup>c</sup>



### DOTS progress towards targets<sup>d</sup>



### Treatment outcomes<sup>e</sup>



### Notes

ss+ Indicates smear-positive; ss-, smear-negative; pop, population; unk, unknown.

<sup>a</sup> See Methods for data sources.

<sup>b</sup> The sum of cases notified by age and sex is less than the number of new smear-positive cases notified for some countries.

<sup>c</sup> Non-DOTS is blank for countries which are 100% DOTS, or where no non-DOTS data were reported.

<sup>d</sup> DOTS progress towards targets: DOTS detection rate for given year, DOTS success rate for cohort registered in previous year.

<sup>e</sup> "Other" includes transfer out and not evaluated, still on treatment, and other unknown.

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### Budget estimates, existing funding and budget gaps for fiscal year 2003, US\$ millions

|   | REQUIRED FUNDING | EXPECTED FUNDING |            |            |          | FUNDING GAP |
|---|------------------|------------------|------------|------------|----------|-------------|
|   |                  | GOVERNMENT       | LOANS      | GRANTS     | OTHER    |             |
| <b>NTP budget</b>   |                  |                  |            |            |          |             |
| Drugs   | 4.2              | 2.0              | 1.5        | 0.7        | —        | —           |
| Dedicated staff working exclusively for TB control <sup>a</sup> | 0.2              | 0.2              | —          | —          | —        | —           |
| New activities to raise case detection and cure rates           | 1.9              | 0.2              | —          | 1.4        | —        | 0.3         |
| Buildings, equipment, vehicles                                  | NA               | NA               | —          | —          | —        | —           |
| All other line items  | 0.2              | 0.2              | —          | —          | —        | —           |
| <b>TOTAL NTP BUDGET</b>   | <b>6.5</b>       | <b>2.6</b>       | <b>1.5</b> | <b>2.1</b> | <b>—</b> | <b>0.3</b>  |
| <b>Costs not covered by NTP budget<sup>b,c</sup></b>            |                  |                  |            |            |          |             |
| Hospital stay   | —                | —                | —          | —          | —        | —           |
| Clinic visits for DOT and monitoring                            | 29.2             | 29.2             | —          | —          | —        | —           |
| <b>TOTAL COSTS NOT COVERED BY NTP BUDGET</b>                    | <b>29.2</b>      | <b>29.2</b>      | <b>—</b>   | <b>—</b>   | <b>—</b> | <b>—</b>    |
| <b>TOTAL TB CONTROL COSTS</b>                                   | <b>35.7</b>      | <b>31.8</b>      | <b>1.5</b> | <b>2.1</b> | <b>—</b> | <b>0.3</b>  |

— Indicates zero; NA, not available

<sup>a</sup> There are 10 dedicated NTP staff at central level. At other levels dedicated NTP staff do not exist.

<sup>b</sup> WHO estimates, data not provided by the NTP

<sup>c</sup> Estimates differ from those in Global Tuberculosis Control 2003 due to a change in methods made possible by the availability of new data. See Methods section for full details.

held at provincial level, though follow-up is needed to ensure that the training leads to better monitoring and supervision. So far, it appears that the guidelines have not been fully implemented, and that training for provincial and district staff has been insufficient. Changes in local government every 3 years have meant that commitment to DOTS is fragile at this level.

At provincial and municipal levels, despite some increase in capacity, the workforce remains inadequate with about 20% of staff positions unfilled. There is a high turnover of staff caused by low salaries, overwork, and frequent administrative changes that lead to staff reorganization. Given that salary standardization does not allow sector-specific raises, proposed solutions include travel incentives and improved recognition of staff accomplishments.

The budget for anti-TB drugs was recently shifted from the centre to the regions. A private company was to have implemented an efficient drug procurement and distribution system, but did not do so because of contractual delays. Instead, drugs are now being procured through a new GDF mechanism, which has improved

delivery of all drugs, including 4-drug FDCs.

A pilot survey to assess drug-resistance began in 2002 with support from WHO and JICA, and this survey was extended countrywide in 2003. New GFATM support that became available in 2003 is allowing continuation of a GLC-approved DOTS-Plus project that was first established in 2000 at the Makati Medical Centre in metropolitan Manila with a cohort of 200 patients. An additional 750 MDR-TB patients will be enrolled in the project between 2003 and 2007. The NTP is planning to expand DOTS-Plus to 2 more centres in 2004, in preparation for countrywide, community-based implementation as part of regular DOTS activities.

Diagnostic capacity is now supported by adequate staff. Partner support was mobilized in 2003 to enable expansion of the QA system and establishment of the laboratory network. JICA, in collaboration with WHO, is finalizing QA guidelines and a manual, with plans for implementation across the country by the end of 2005.

A national TB/HIV coordinating body has been established. Systematic testing of TB patients for HIV

does not occur yet, but there is a plan to establish a system and to intensify the implementation of TB/HIV collaborative activities. By 2004, the NTP will be involved in delivery of ART for HIV-infected TB patients.

### Partnerships

Through creative use of partnerships, the Philippines continues to be dynamic and flexible in adapting to the changing health system following decentralization, and in responding to fluctuations in financial and human resources. PACT (Project Assistance to Control TB) members, for example, have helped to monitor DOTS activities within, and outside of, their catchment areas. PACT contributed to establishment of the CCM that was required by the GFATM, enabling the Philippines more easily to manage new funds. Overall external technical collaborations are led by WHO, and it is through close collaboration between WHO and the Philippines government that support for partnership development has been fostered. During the expansion phase of DOTS now underway, technical quality of services has been maintained through support from JICA, USAID, the World Bank, World Vision

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Canada, Spain's Medicos del Mundo, KNCV, and CDC. In addition to the technical and other support that they provide, the main financial donors in the Philippines are the World Bank, CIDA, JICA, USAID, and the GFATM.

Partnerships within the country have been facilitated by the formation of the Philippines Coalition Against TB (PHILCAT), comprising more than 50 NGOs and private sector groups that have worked together to reach consensus on TB control, especially in the private sector, and to mobilize local resources. The DoH, being part of PHILCAT, will improve private sector involvement in the DOTS strategy by conducting a series

of training workshops for private physicians to educate them about DOTS, and to encourage referral of TB patients to public health centres and public-private mix DOTS (PPMD) centres. PHILCAT members will also be asked to participate in monitoring.

### **Budgets and expenditures**

NTP expenditure in fiscal year 2002 (from 1 January) was US\$ 6.1 million (US\$ 53 per patient). Total TB control costs (NTP expenditure plus the cost of clinic visits not covered by the NTP budget) can be estimated at US\$ 34.0 million, equivalent to US\$ 296 per patient. The NTP budget

for fiscal year 2003 was only slightly higher than the budget for 2002, at US\$ 6.5 million. The NTP estimated that they would treat 120 000 patients during this period, equivalent to US\$ 54 per patient. Most of the budget was for drugs and new activities to increase case detection and cure rates (primarily expansion of PPM-DOTS). Almost all of the required funding was available, mostly from the government, with only a small funding gap of US\$ 0.3 million. If the NTP succeeds in treating 120 000 patients, then total TB control costs would amount to around US\$ 35.7 million in 2003, equivalent to US\$ 298 per patient.

# The Russian Federation

## Overview of TB control system

The Russian Federation does not have a formally established NTP, and TB control is provided by a network of specialized TB dispensaries and hospitals that are not integrated into the general health care system. TB diagnosis and treatment are also provided in specialized medical institutions of the Ministry of Defence, Ministry of Interior, and Ministry of Railways, and in penitentiaries run by the Ministry of Justice. The MoH recognizes the need to reorganize and link the TB system with the primary health care network, though progress towards integration has been slow.

Five federal TB research institutions are located in different federal districts of the country. The role of the central unit is carried out partly by the Research Institute of Phthysio-pulmonology (RIPP) of the Sechenov Moscow Medical Academy. The Director of the RIPP has been nominated as Chief Phthysiologist of the Ministry of Health (equivalent to the NTP manager). A second research facility in Moscow, the Central Tuberculosis Research Institute of the Russian Academy of Medical Sciences, is a WHO collaborating centre for DOTS implementation and expansion.

Despite considerable progress in implementing DOTS, and growing political commitment, Russia's TB control system is hampered by the prevailing medical/clinical approach in TB control, as distinct from the public health model, by uneven support from Russian authorities, and by weak coordination among government departments.

## Surveillance, planning, operations

Although the case notification rate increased nearly 3-fold during the

1990s, it has remained more or less stable for the last 4 years, suggesting that the deterioration of population health and health services in Russia has been halted. DOTS population coverage was 25% by the end of 2002, but the case detection rate by the DOTS programme was estimated to be only 6%. Case notification rates were highest among men aged 35–64 years, and far higher than among women of the same age. Treatment success remained low at 67% for the 2001 cohort, mainly because 14% of patients failed treatment, 8% died, and 6% defaulted. Although the objective was to reach a DOTS coverage of 28% of the country (comprising 27 territories) by the end of 2003, DOTS has been expanding slowly in the Russian Federation. The reasons are that some donors reduced support prior to the start of the new

World Bank loan, and that DOTS expansion has not been the focus of TB control efforts until recently.

The organization of Russia's TB programme is complex and hierarchical, but well-defined. The MoH serves as the NICC, coordinating the work of national partners. The high-level working group (HLWG, comprising representatives from the Russian Ministry of Health, the Ministry of Justice, the Russian Academy of Medical Sciences, the Council of Europe, and WHO) provides support for coordination at both national and international levels and assisted with development of the DOTS expansion plan. An International Interagency Coordination Committee, formed in September 2002 under the umbrella of the HLWG, now provides better coordination between the MoH and international partners. A second

## PROGRESS IN TB CONTROL IN THE RUSSIAN FEDERATION

### Indicators

|  |        |
|--|--------|
| • Treatment success 2001 cohort  | 67%    |
| • DOTS detection rate, 2002  | 6%     |
| • NTP budget available, 2003   | 47%    |
| • Government contribution to budget, including loans, 2003                 | 47%    |
| • Government contribution to total TB control costs, including loans, 2003 | 53–58% |
| • Government health spending used for TB, 2003                             | 2–3%   |

### Constraints to achieving targets

- Lack of national consensus on appropriate TB control strategy
- Poor treatment outcomes caused by MDR-TB
- Inadequate laboratory services and absence of TB reference laboratories
- Lack of training and education about modern TB control strategies
- Large funding gap

### Remedial actions needed

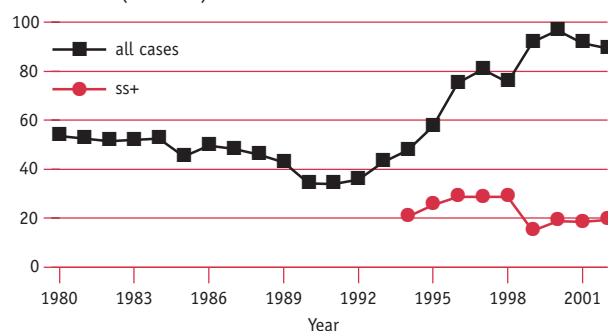
- Advocate at federal level for DOTS strategy, for the establishment of a central TB control unit, and for the development of national policy in compliance with WHO recommendations
- Improve case management by ensuring direct observation of treatment
- Develop national guidelines for MDR-TB control and management
- Mobilize resources to strengthen laboratory services and establish reference laboratory network
- Provide technical support to develop human resources at federal and regional levels
- Mobilize funding

## THE RUSSIAN FEDERATION

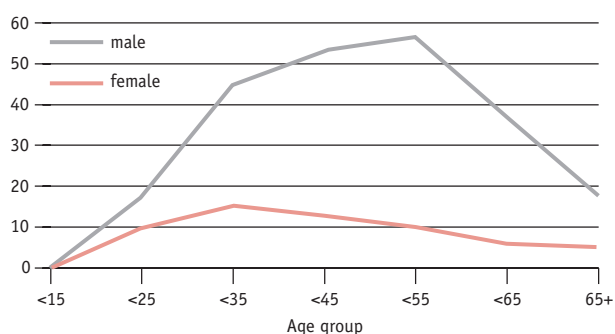
| LATEST ESTIMATES <sup>a</sup>         |                    | TRENDS                                    | 1999 | 2000 | 2001 | 2002 |
|---------------------------------------|--------------------|---|------|------|------|------|
| <b>Population</b>                     | <b>144 081 588</b> | DOTS population coverage (%)              | 5    | 12   | 16   | 25   |
| Global rank (by est. number of cases) | 11                 | Notification rate (all cases/100 000 pop) | 92   | 97   | 91   | 89   |
| Incidence (all cases/100 000 pop)     | 126                | Notification rate (new ss+/100 000 pop)   | 15   | 19   | 18   | 19   |
| Incidence (new ss+/100 000 pop)       | 56                 | Detection of all cases (%)                | 81   | 82   | 75   | 71   |
| Prevalence (ss+/100 000 pop)          | 85                 | Detection of new ss+ cases (%)            | 29   | 36   | 34   | 34   |
| TB mortality per 100 000 pop          | 23                 | DOTS detection of new ss+ (%)             | 1.7  | 4.8  | 5.2  | 6.4  |
| % of adult (15-49y) TB cases HIV+     | 5.1                | DOTS detection of new ss+/coverage(%)     | 34   | 40   | 32   | 25   |
| % of new cases multi-drug resistant   | 6.0                | DOTS treatment success (new ss+, %)       | 65   | 68   | 67   | —    |

### Notification rate (per 100 000 pop)

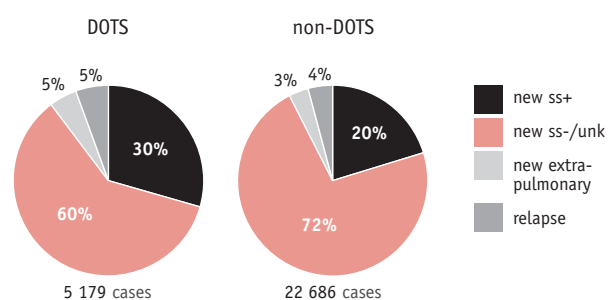
Notification (all cases) = 128 873 in 2002



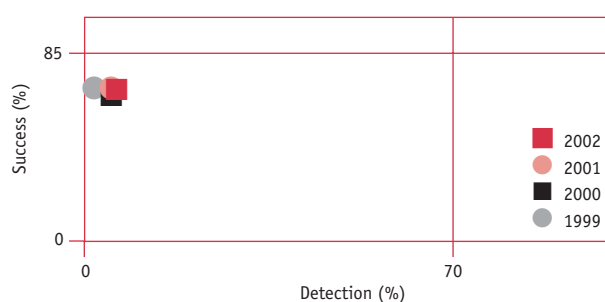
### Notification rate by age and sex (new ss+)<sup>b</sup>



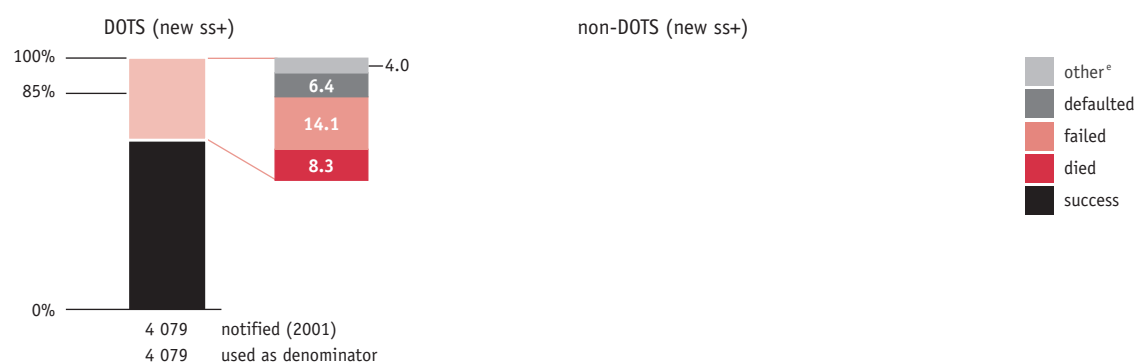
### Case types notified<sup>c</sup>



### DOTS progress towards targets<sup>d</sup>



### Treatment outcomes<sup>e</sup>



### Notes

ss+ Indicates smear-positive; ss-, smear-negative; pop, population; unk, unknown.

<sup>a</sup> See Methods for data sources.

<sup>b</sup> The sum of cases notified by age and sex is less than the number of new smear-positive cases notified for some countries.

<sup>c</sup> Non-DOTS is blank for countries which are 100% DOTS, or where no non-DOTS data were reported.

<sup>d</sup> DOTS progress towards targets: DOTS detection rate for given year, DOTS success rate for cohort registered in previous year.

<sup>e</sup> "Other" includes transfer out and not evaluated, still on treatment, and other unknown.

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meeting was held in November 2003.

Activities in 2003 focused on completion of the national guidelines for TB diagnosis, treatment, and laboratories, and the improvement of coordination mechanisms. Consensus was reached on a recording and reporting system complying with WHO recommendations for quarterly cohort analysis. This step will permit faster implementation of Russia's 5-year plan for expansion of the revised TB control strategy. However, there is not yet consensus among Russian TB authorities on the cost effectiveness of active versus passive case finding, of cohort analysis versus other non-DOTS forms of monitoring, and of sputum smear versus X-ray diagnosis. Cost-effectiveness studies of alternative TB control strategies began in 2000, and recommendations for the national strategy will be made based on those findings. Further discussion in 2003 took place during meetings of the HLWG.

Newly-developed and approved national standards for chemotherapy should ensure treatment effectiveness, and prevent and contain the drug resistance that continues to impede efforts to reach the target for treatment success (85%). Treatment outcomes are also expected to improve through a reduction in defaulting once recommendations are developed to guide implementation of a social support system for patients.

Seven regions in Russia (Ivanovo, Orel, Vladimir, Tomsk, Kemerovo, Samara, and Arkhangelsk) participate in DRS surveys within the framework of the WHO/IUATLD global project on anti-TB drug resistance surveillance. Surveys carried out between 1995 and 2002 show that MDR-TB occurs in 3–14% of new cases, and in 26–44% of previously treated cases. National data on MDR are difficult to interpret due to the lack of standardized laboratory methods. GLC-approved DOTS-Plus pilot projects have been implemented in 2 regions (Tomsk and Orel), and will begin in 2 more regions in 2004 (Ivanovo and Arkhangelsk). As of October 2003, 412 MDR-TB patients were enrolled in Tomsk. Preliminary results for 166 patients suggest that the treatment success rate will be between 70% and 80%. No patients in Orel had completed treatment at the time of writing. A working group on management of MDR-TB was established to bring treatment guidelines into compliance with international recommendations. The MoH is planning to establish MDR-TB centres of excellence throughout the country, as set forth in the 5-year strategic plan.

Staff capacity was strengthened through the training of federal-level trainers, though a lack of funds prevented the training programme from being carried out on a large scale. Mobilization of funds to support development of the health work-

force is critical for reaching targets.

There is no national TB reference laboratory, there are insufficient resources to support a countrywide network of TB laboratories, and there is a lack of quality control. The development of a laboratory network was started in 2003, including the production of guidelines and the designation of reference laboratories. Large-scale activities will be implemented within the new World Bank project.

Although the data on TB-associated HIV are poor, a framework for TB/HIV control is being prepared by the HLWG and will be tested in selected regions. TB patients are tested for HIV infection. TB/HIV collaborative activities currently include ART delivery for HIV-infected TB patients. Activities will also be supported by the new World Bank project.

### Partnerships

Russia has attracted many donors and partners to support TB control over the last 7 years. WHO plays a coordinating role between agencies, and an important part in fundraising. From 1999 to 2003, policy revision and strategic development by the HLWG were supported by DFID. Recently DFID decided to terminate its support to the HLWG, endangering progress in DOTS expansion and possibly slowing changes in TB control policy. DFID will continue to support analysis of cost-effectiveness in

### Budget estimates, existing funding, and budget gaps for fiscal year 2004, US\$ millions

| Budget item  | REQUIRED FUNDING | EXPECTED FUNDING |            |            |          | FUNDING GAP  |
|--|------------------|------------------|------------|------------|----------|--------------|
|  |                  | GOVERNMENT       | LOANS      | GRANTS     | OTHER    |              |
| Drugs  | 50.8             | 38.3             | —          | 0.5        | —        | 12.0         |
| Dedicated staff working exclusively for TB control                 | 113.1            | 113.1            | —          | —          | —        | —            |
| New activities to raise case detection and cure rates <sup>a</sup> | 146.6            | 10.6             | 8.3        | 0.5        | —        | 127.2        |
| Buildings, equipment, vehicles                                     | 60.0             | 5.5              | —          | 0.01       | —        | 54.5         |
| All other line items   | 5.0              | 0.1              | —          | 0.5        | —        | 4.4          |
| <b>TOTAL BUDGET</b>  | <b>375.5</b>     | <b>167.6</b>     | <b>8.3</b> | <b>1.5</b> | <b>—</b> | <b>198.1</b> |

— Indicates zero; NA, not available

<sup>a</sup> Includes US\$ 100 million for improvement of detection and diagnostics through use of X-rays, US\$ 21 million for improvement of microbiological diagnostics and US\$ 20 million for provision of social support to patients.



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2004. WHO supports DOTS implementation in several regions using funds from USAID, Finland, Sweden, CIDA, and DFID. International NGOs such as MSF, Merlin, FILHA, LHL, and agencies like IFRC/The Russian Red Cross Society, are all actively working in both the civilian and prison populations. Other major donors and partners include the World Bank, GTZ, PIH, KNCV, Soros Foundation, Gates Foundation, PHRI, KIL TB Consortium, and Gorgas/University of Alabama. Russia is one of the only countries with the foresight to develop regional exit plans describing how TB control will be sustained when funding from external donors is no longer available.

### **Budgets and expenditures**

Following the development of a 5-year plan for TB control, budget estimates for the period 2003–7 are now available. Excluding dedicated TB control staff (approximately US\$ 113 million per year based on

figures for 2004), the total is US\$ 972 million, or around US\$ 200 million per year.

For the fiscal year 2004 (from 1 January), the total budget is US\$ 375 million. The largest items are dedicated staff (US\$ 113 million), the improvement of TB detection and diagnosis through X-ray methods (US\$ 100 million), the construction, repair and renovation of TB facilities (US\$ 60 million), and first and second-line drugs (US\$ 51 million). The budget for TB detection and diagnosis is particularly large in 2004; for the period of the 5-year plan, the average is US\$ 36 million per year.

Funding for 2004 falls far short (by US\$ 198 million) of the needs identified. Currently, US\$ 167.6 million is available from the federal government, US\$ 8.3 million from the World Bank loan, and US\$ 1.5 million from grants. Most of these funds are for dedicated TB control staff and drugs, suggesting that the purchase of new diagnostic equipment and the im-

provement of existing facilities will not occur unless new sources of funding are identified soon. The MoH has submitted an application to the GFATM, which will be reviewed in the next funding round. The amount requested is not in the public domain.

Beyond the budget shown in the table, there are further costs (e.g. food for patients, utilities) associated with operating the country's extensive network of 81 425 TB beds. Recent costing studies indicate that these are in the region of US\$ 50–100 million per year. When this cost is added to the budget in the plan, the total is around US\$ 400–500 million per year. This is enormous in comparison with other high-burden countries, and is principally due to the extensive reliance on inpatient care, to much higher proposed expenditures on X-ray equipment, and to the greater need for second-line drugs to address the problem of MDR-TB.

# South Africa

## Overview of TB control system

TB control is said to be a priority for the DoH in South Africa. The DoH provides most of the TB services, having determined that diagnosis and treatment for TB should be free, helping to ensure access for all patients.

## Surveillance, planning, operations

South Africa has an uncertain burden of TB and an erratic notification system. The case detection rate is unknown, but it is very unlikely to be 96% (see accompanying table). It is known that patients have been double-counted in quarterly reports because of the way in which transfers between treatment centres have been recorded, and because retreatment cases have been included among relapses. These problems have recently been remedied by procedural changes and re-training. A closer, retrospective analysis of suspects examined, and of notifications by province and by year could help to reconstruct a more reliable picture of the epidemic. Unfortunately, data on the number of suspects examined are not routinely collected to monitor case detection effort. The age distribution of smear-positive cases is characteristic of a population with a high rate of HIV infection among adults. Treatment success in the 2001 DOTS cohort was low (65%) because of the high rates of default (12%), death (7%), and transfer without follow-up (12%). Ten percent of patients completed treatment without evidence of smear conversion. More patients were registered for treatment in 2001 than were previously notified. A study to investigate the reasons why so many patients are lost to follow-up was reportedly underway in 2003.

The revised national TB control programme incorporating the DOTS strategy was first established in 1996, with the goal of extending TB control services to the whole country. To this end, a strategic plan for TB control from 2001–5 was developed and launched by the Minister of Health in 2002, and provincial plans were developed and signed by 7 of the 9 provinces. Provinces allocate funds to the districts, with TB funding as part of the overall primary care budget. Funding may be insufficient for some programme activities because budget allocation is not informed by the district plans. An NICC does not yet exist. A programme review took place in 2003.

TB control has been complicated

by the lack of political commitment in provinces following decentralization. However, the rapid increase in TB notification rates, coupled with high rates of HIV infection and the emergence of MDR-TB, have led central and provincial governments to identify joint TB and HIV/AIDS control as a priority.

A strategy for TB/HIV collaborative activities has been developed and implemented in 13 out of 183 sub-districts, and training programmes for joint control activities have been established in each province. There is no HIV surveillance system for TB patients (though an estimated 60% of adult TB patients are infected with HIV), and there are no plans to establish one, though

## PROGRESS IN TB CONTROL IN SOUTH AFRICA

### Indicators

|  |     |
|--|-----|
| • Treatment success 2001 cohort  | 65% |
| • DOTS detection rate, 2002  | 96% |
| • NTP budget available, 2003   | NA  |
| • Government contribution to NTP funding, including loans, 2003            | NA  |
| • Government contribution to total TB control costs, including loans, 2003 | NA  |
| • Government health spending used for TB, 2003                             | NA  |

### Constraints to achieving targets

- Lack of sustained commitment to quality DOTS at some levels
- Insufficient staff and TB managers in districts and provinces
- Unequal access to laboratory services and poor quality data
- Failure to establish a uniform national recording and reporting system
- Poor coordination between TB/HIV activities
- Lack of private sector involvement in TB

### Remedial actions needed

- Advocate to ensure political commitment
- Implement and closely monitor provincial TB plans, and provide support to poorly performing provinces
- Establish uniform recording and reporting system, and link resource distribution to requirements
- Improve staff capacity through management and supervision in districts and provinces
- Strengthen laboratory services through improved contractual arrangements
- Expand use of the Electronic TB Register to improve data quality at district level
- Strengthen coordination between TB and HIV/AIDS control and develop ART plan
- Develop PPM-DOTS plan

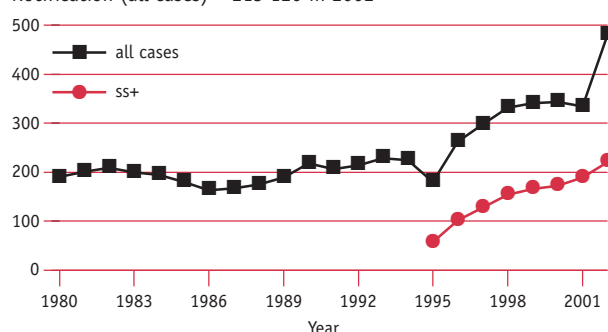
NA indicates not available

## SOUTH AFRICA

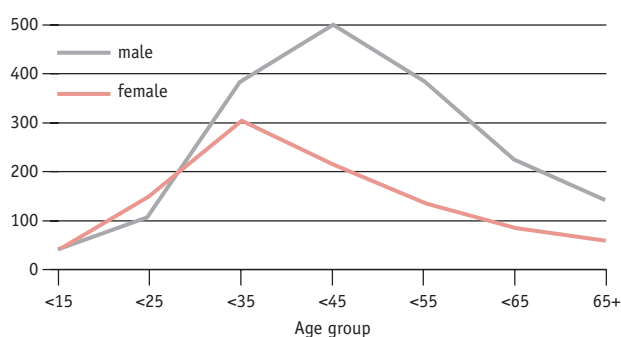
| LATEST ESTIMATES <sup>a</sup>         |                   | TRENDS                                    | 1999 | 2000 | 2001 | 2002 |
|---------------------------------------|-------------------|---|------|------|------|------|
| <b>Population</b>                     | <b>44 759 187</b> | DOTS population coverage (%)              | 66   | 77   | 77   | 98   |
| Global rank (by est. number of cases) | 9                 | Notification rate (all cases/100 000 pop) | 341  | 344  | 334  | 481  |
| Incidence (all cases/100 000 pop)     | 558               | Notification rate (new ss+/100 000 pop)   | 166  | 173  | 189  | 221  |
| Incidence (new ss+/100 000 pop)       | 227               | Detection of all cases (%)                | 75   | 71   | 64   | 86   |
| Prevalence (ss+/100 000 pop)          | 192               | Detection of new ss+ cases (%)            | 90   | 88   | 89   | 97   |
| TB mortality per 100 000 pop          | 79                | DOTS detection of new ss+ (%)             | 68   | 72   | 76   | 96   |
| % of adult (15-49y) TB cases HIV+     | 60                | DOTS detection of new ss+/coverage(%)     | 103  | 93   | 99   | 98   |
| % of new cases multi-drug resistant   | 1.5               | DOTS treatment success (new ss+, %)       | 60   | 66   | 65   | —    |

### Notification rate (per 100 000 pop)

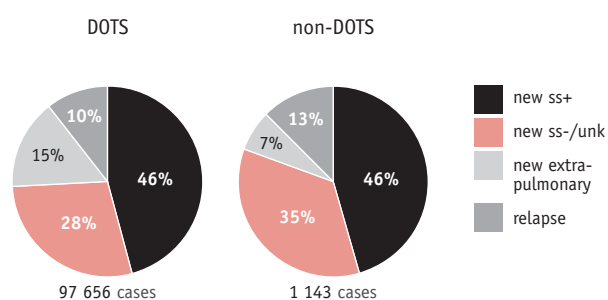
Notification (all cases) = 215 120 in 2002



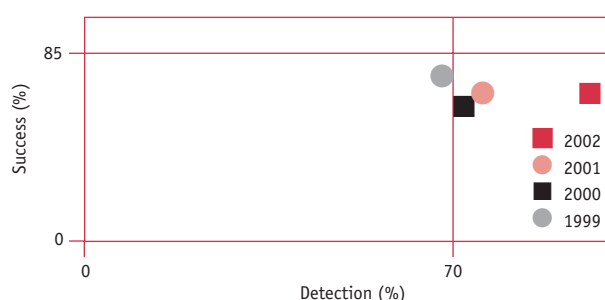
### Notification rate by age and sex (new ss+)<sup>b</sup>



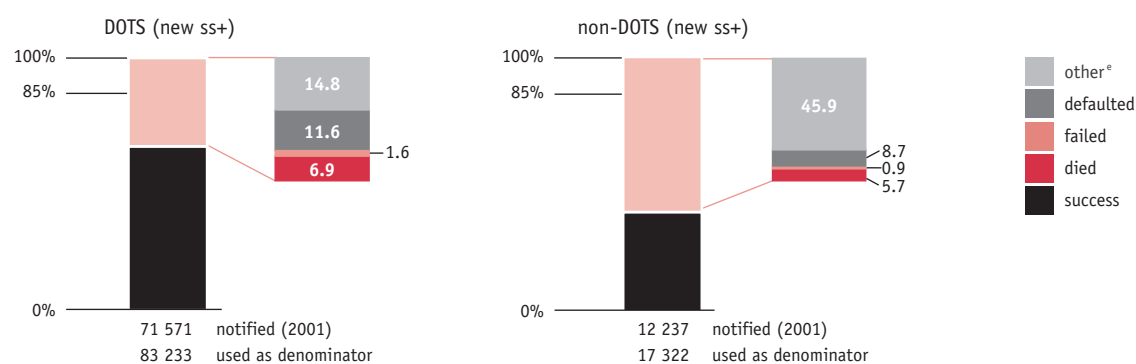
### Case types notified<sup>c</sup>



### DOTS progress towards targets<sup>d</sup>



### Treatment outcomes<sup>e</sup>



### Notes

ss+ Indicates smear-positive; ss-, smear-negative; pop, population; unk, unknown.

<sup>a</sup> See Methods for data sources.

<sup>b</sup> The sum of cases notified by age and sex is less than the number of new smear-positive cases notified for some countries.

<sup>c</sup> Non-DOTS is blank for countries which are 100% DOTS, or where no non-DOTS data were reported.

<sup>d</sup> DOTS progress towards targets: DOTS detection rate for given year, DOTS success rate for cohort registered in previous year.

<sup>e</sup> "Other" includes transfer out and not evaluated, still on treatment, and other unknown.

## SOUTH AFRICA

voluntary counselling and testing are offered to TB patients. There is no plan, as yet, to involve the NTP in ART delivery.

Data on MDR-TB are collected within the framework of the WHO/IUATLD global project on anti-TB drug resistance surveillance. Drug susceptibility testing is routinely carried out for all retreatment cases, and a standardized treatment regimen is provided. Provincial surveys done in 2001–2 show MDR-TB rates of 0.9–2.6% among new patients, and 1.7–13.7% among previously treated patients. Each province has an MDR-TB treatment centre. As of October 2003, there were about 4000 MDR-TB patients on treatment with drugs costing an average of US\$ 3400 per patient. An application has not been made to the GLC for concessionally priced second-line drugs. The laboratory network is still underdeveloped in South Africa. A laboratory manual has been developed but not finalized.

Although DOTS now reaches 180 districts (98%), the quality of DOTS has deteriorated in some of the districts. Staff will be trained in management and supervision to improve performance. Health care workers in facilities are leaving their posts due to high work loads caused by understaffing or inequitable distribution of staff in some areas, and due to an increase in the number of TB patients infected with HIV. The deaths of health care workers from AIDS have

also reduced the work force. Salaried home-based caregivers are now being trained to provide treatment, and community health workers are being trained in the management of both TB and HIV patients. Plans for staff development were drawn up by some provincial departments of health. An inpatient care unit has been established at national level. Service agreements between the NHLS and the provinces have been developed, which should help to improve service provision.

The goals of the NTP now are to complete the expansion of DOTS, monitor the quality of DOTS, increase access to laboratory services, increase collaboration with NGO hospitals through the development of service agreements, and expand joint TB/HIV activities using funds from the GFATM.

### Partnerships

National technical partnerships have been established through collaborations with NGOs, the university research community, and other government departments. IUATLD, KNCV, and WHO provide external technical support for TB control. DFID is assisting the programme with operational research and with strengthening services at the district level. CDC has helped to implement standard recording and reporting through development of the Electronic TB Register. KNCV helped develop the

2001–5 national plan for TB control. USAID, DFID, and the Government of Belgium provide financial support for NGOs involved in TB activities, training, research, and for collaboration between TB and HIV/AIDS programmes.

### Budgets and expenditures

South Africa did not report financial data. The total budget for TB control is difficult to attain as budgets are largely decentralized and data are not available from all districts and provinces. Based on a recent costing analysis,<sup>1</sup> the total costs of TB control in South Africa were estimated at around US\$ 300 million in 2003.

While there is no dedicated national TB budget, the National Treasury provides funds for TB control along with several other health care programmes directly to Provincial Departments of Health through the Equity Share Grant for Health. Provincial Departments of Health generally make allocations to TB control based on financial data from the previous year and manage the overall health budgets that are accessed by district health management teams.

In 2003, the GFATM awarded US\$ 25.1 million for TB/HIV activities in South Africa, to be implemented primarily through NGOs. The budget for the first year is US\$ 1.5 million. However, funds have not yet been disbursed.

<sup>1</sup> Floyd K, Blanc L, Raviglione M, Lee J-W. Resources required for global tuberculosis control. *Science* 2002; 295:2040–2041

# United Republic of Tanzania

## Overview of TB control system

Tanzania has a well-developed system for providing basic health care. There are 4961 government health facilities and 1926 facilities owned by NGOs, para-statal organizations, voluntary agencies, and the private sector. The Government of Tanzania (regional administration and local government) provides most health services: approximately 70% of the health workforce is in the public sector, and about 64% of the recurrent public sector health budget is spent on staff. Health reforms have aimed to maintain and increase the effectiveness of health care through alternative financing mechanisms (cost-sharing and community health funds), through reorganization of the structure of health services (integration of vertical programmes), by capacity-building at all levels (including training), and by encouraging participation of the private sector. TB (and leprosy) control services are accessible to the majority of people through the primary health care system, and the DOTS strategy has been implemented by the NTP throughout the country since 1986. The NTP has two arms, one to carry out diagnosis and treatment in primary health centres, the other to provide expertise in management, capacity building, monitoring, and evaluation.

## Surveillance, planning, operations

The notification rate of all forms of TB has continued to increase since 1996 (except for a small drop between 2001 and 2002), almost certainly reflecting the impact of the HIV epidemic. The smear-positive notification rate, by contrast, has been roughly stable since 1996.

Because the estimated number of smear-positive cases is linked to the trend in the total number of TB cases, the estimated case detection rate has declined (to 43% in 2002). It is unclear whether the proportion of cases found to be smear-positive is falling because there are genuinely fewer cases (e.g. because HIV infection rates are increasing among TB cases and HIV-positive cases are less likely to be smear-positive), or because the diagnostic service is failing. These possibilities could perhaps be distinguished with a closer examination of surveillance data. Treatment success in the 2001 cohort was 81%, a few points higher than in previous years, but with a noticeably high death rate of 10%.

Tanzania has had 100% DOTS coverage for many years, and the national strategic plan aims to reach the targets for case detection (70%)

and treatment success (85%) by 2004. An NICC has been established to aid the process. In the past, patients have been charged for sputum examination, but fees are now waived in public health facilities. Treatment is also free in public health facilities. 144 new diagnostic centres were opened in 2003 to improve patient recruitment.

The continuing decentralization of TB services means that local capacity and infrastructure for DOTS implementation need to be strengthened. To this end Tanzania trained around 300 district health care workers and 500 clinicians, and introduced the Electronic TB Register (devised by CDC) to improve recording and reporting in 2002. The NTP also distributed simplified TB control manuals for general health workers and for district health planning. Funding for TB control in districts was made more

## PROGRESS IN TB CONTROL IN TANZANIA

### Indicators

|  |      |
|--|------|
| • Treatment success 2001 cohort  | 81%  |
| • DOTS detection rate, 2002  | 43%  |
| • NTP budget available, 2003   | 100% |
| • Government contribution to NTP budget, including loans, 2003             | 25%  |
| • Government contribution to total TB control costs, including loans, 2003 | 75%  |
| • Government health spending used for TB, 2003                             | 6%   |

### Constraints to achieving targets

- Shortage of staff at national level, coupled with high turnover of district coordinators
- Lack of diagnostic centres and shortage of qualified laboratory personnel at district level
- Non-adherence to DOTS guidelines by some private hospitals
- Fees for patients attending private facilities hinder access to care

### Remedial actions needed

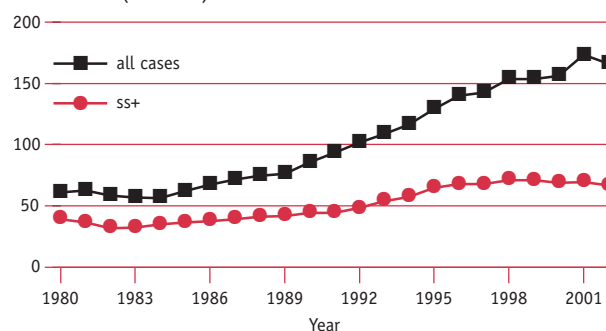
- Improve advocacy to put NTP higher on the political agenda for resource allocation
- Increase salaries and other incentives to improve staff recruitment and retention at district and national levels
- Strengthen diagnostic services in 2003 at new testing centres with well-trained staff
- Provide collaboration and training workshops in private hospitals to improve adherence to DOTS strategy
- Eliminate fees for private sector patients to ensure better access to care, and hence improved case detection rate

# UNITED REPUBLIC OF TANZANIA

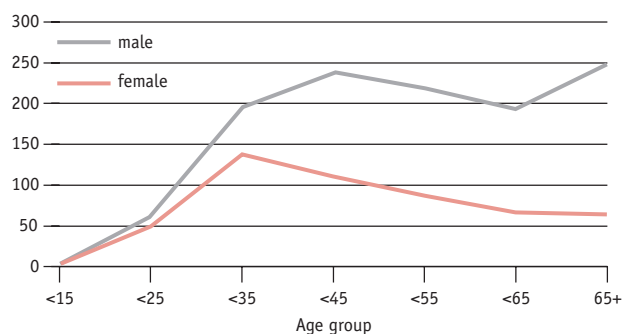
| LATEST ESTIMATES <sup>a</sup>         |                   | TRENDS                                    | 1999 | 2000 | 2001 | 2002 |
|---------------------------------------|-------------------|---|------|------|------|------|
| <b>Population</b>                     | <b>62 193 347</b> | DOTS population coverage (%)              | 59   | 70   | 82   | 100  |
| Global rank (by est. number of cases) | 19                | Notification rate (all cases/100 000 pop) | 49   | 56   | 81   | 80   |
| Incidence (all cases/100 000 pop)     | 128               | Notification rate (new ss+/100 000 pop)   | 25   | 29   | 46   | 41   |
| Incidence (new ss+/100 000 pop)       | 57                | Detection of all cases (%)                | 36   | 42   | 62   | 62   |
| Prevalence (ss+/100 000 pop)          | 75                | Detection of new ss+ cases (%)            | 41   | 49   | 80   | 73   |
| TB mortality per 100 000 pop          | 17                | DOTS detection of new ss+ (%)             | 41   | 49   | 80   | 73   |
| % of adult (15-49y) TB cases HIV+     | 9.9               | DOTS detection of new ss+/coverage(%)     | 69   | 70   | 97   | 73   |
| % of new cases multi-drug resistant   | 2.1               | DOTS treatment success (new ss+, %)       | 77   | 69   | 75   | —    |

## Notification rate (per 100 000 pop)

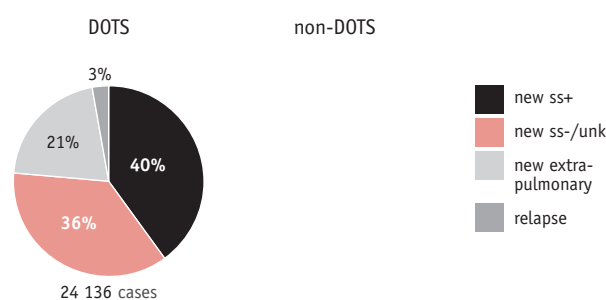
Notification (all cases) = 60 306 in 2002



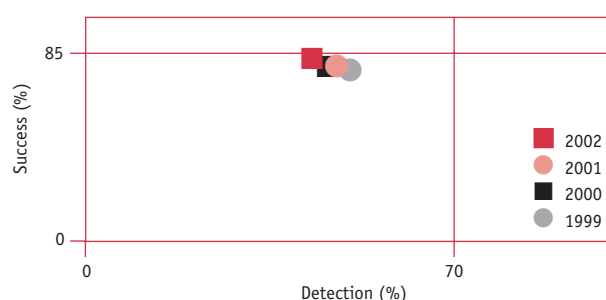
## Notification rate by age and sex (new ss+)<sup>b</sup>



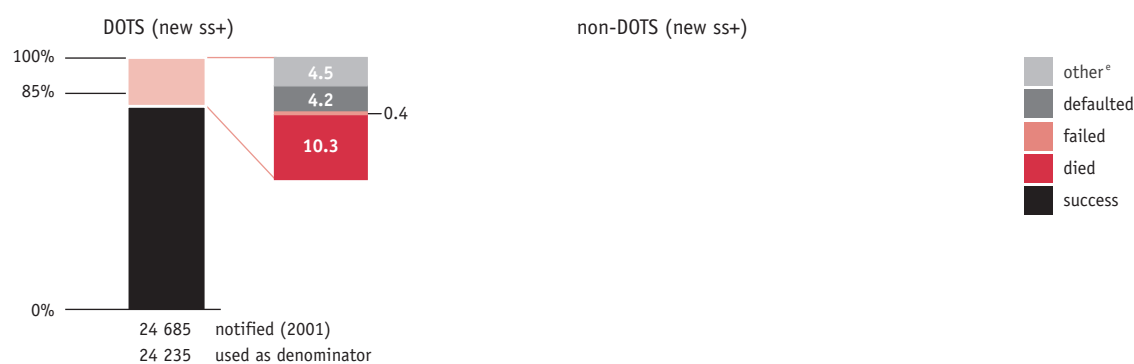
## Case types notified<sup>c</sup>



## DOTS progress towards targets<sup>d</sup>



## Treatment outcomes<sup>e</sup>



## Notes

ss+ Indicates smear-positive; ss-, smear-negative; pop, population; unk, unknown.

<sup>a</sup> See Methods for data sources.

<sup>b</sup> The sum of cases notified by age and sex is less than the number of new smear-positive cases notified for some countries.

<sup>c</sup> Non-DOTS is blank for countries which are 100% DOTS, or where no non-DOTS data were reported.

<sup>d</sup> DOTS progress towards targets: DOTS detection rate for given year, DOTS success rate for cohort registered in previous year.

<sup>e</sup> "Other" includes transfer out and not evaluated, still on treatment, and other unknown.



## Budget estimates, existing funding, and budget gaps for fiscal year 2003, US\$ millions

|   | REQUIRED FUNDING | EXPECTED FUNDING |          |            |          | FUNDING GAP |
|---|------------------|------------------|----------|------------|----------|-------------|
|   |                  | GOVERNMENT       | LOANS    | GRANTS     | OTHER    |             |
| <b>NTP budget</b>                                     |                  |                  |          |            |          |             |
| Drugs   | 1.8              | NA               | —        | NA         | —        | —           |
| Dedicated staff working exclusively for TB control    | 0.3              | 0.3              | —        | NA         | —        | —           |
| New activities to raise case detection and cure rates | 1.6              | NA               | —        | NA         | —        | —           |
| Buildings, equipment, vehicles                        | 0.6              | NA               | —        | NA         | —        | —           |
| All other line items                                  | 1.0              | NA               | —        | NA         | —        | —           |
| <b>TOTAL NTP BUDGET</b>                               | <b>5.3</b>       | <b>1.3</b>       | <b>—</b> | <b>4.0</b> | <b>—</b> | <b>—</b>    |
| <b>Costs not covered by NTP budget <sup>a</sup></b>   |                  |                  |          |            |          |             |
| Hospital stay   | 1.3              | 1.3              | —        | —          | —        | —           |
| Clinic visits for DOT and monitoring                  | 9.6              | 9.6              | —        | —          | —        | —           |
| <b>TOTAL COSTS NOT COVERED BY NTP BUDGET</b>          | <b>10.9</b>      | <b>10.9</b>      | <b>—</b> | <b>—</b>   | <b>—</b> | <b>—</b>    |
| <b>TOTAL TB CONTROL COSTS</b>                         | <b>16.2</b>      | <b>12.2</b>      | <b>—</b> | <b>4.0</b> | <b>—</b> | <b>—</b>    |

— Indicates zero; NA, not available

<sup>a</sup> WHO estimates, data not provided by the NTP

direct through the transfer of funds to the NTP from the MoH. However, there is no information about further progress made during 2003. A comprehensive IEC strategy has not yet been developed.

The HIV/AIDS epidemic continues to stretch the capacity of Tanzania's health system. Although no formal TB/HIV coordinating body yet exists, a national TB/HIV coordinator has been appointed and joint planning activities are anticipated, including the development of a surveillance system. Tanzania was awarded a grant from the GFATM in 2003 to carry out the following TB/HIV activities: (1) increase testing for HIV by opening 90 new VCT centres; (2) provide comprehensive care and support at all VCT centres and health facilities to people who have HIV/AIDS or TB; (3) increase the number of community care and support groups for people who have HIV/AIDS or TB; (4) strengthen the capacity of the MoH and linked institutions to coordinate, plan, monitor, and evaluate the ex-

ecution of the programme. There are also plans to involve the NTP in delivery of ART by 2004.

The links between public and private provision of TB diagnosis and treatment are not well developed, though some private hospitals in Dar-es-Salam have been involved in DOTS implementation. Traditional healers see TB suspects, which leads to delays in referrals to health facilities.

### Partnerships

Partnerships with the IUATLD, GLRA, WHO, and KNCV, coordinated overall by KNCV, have helped to maintain the national programme for more than 20 years. Principal financial supporters are the governments of the Netherlands, Switzerland, Germany, and Ireland.

### Budgets and expenditures

The NTP budget for the fiscal year 2003–4 (from 1 July) is US\$ 5.3 million. The NTP estimates that it will treat 70 000 patients during this

period, implying a budget per patient of US\$ 76. The drug budget, at US\$ 1.8 million, is equivalent to US\$ 26 per patient. The government will contribute US\$ 1.3 million to the NTP with another US\$ 4 million anticipated from grants. Since almost all government and donor funding is pooled, it is not possible to disaggregate funding by line item.

The GFATM grant for TB/HIV activities was not disbursed by the end of 2003, but the total for the first 2 years of the grant is US\$ 23.9 million. These funds are not included in the 2003–4 budget.

Costs associated with TB control that are not funded from the NTP budget amount to an estimated US\$ 10.9 million, of which US\$ 1.3 million is for hospital admissions during treatment and US\$ 9.6 million is for clinic visits during treatment. These data imply total TB control costs of US\$ 16.2 million per year, and US\$ 231 per patient.

# Thailand

## Overview of TB control system

The health infrastructure of Thailand is well developed with a strong network of more than 8000 health centres offering primary health care services, and more than 900 provincial and district hospitals that provide services including TB treatment. Private practitioners play an important role in urban centres. Challenges for the government health services include the recent introduction of a comprehensive health insurance system and the decentralization of administrative responsibilities as part of health care reforms.

## Surveillance, planning, operations

Although the case notification rate under DOTS increased each year from 1998 to 2001, Thailand reported a small drop in the case notification rate for 2002. The estimated case detection rate by the DOTS programme also therefore fell from 80% in 2001 to 73% in 2002. It is unclear whether the fall in the number of cases reported reflects a lapse in programme performance (as discussed below), or a real decline in TB incidence. Treatment success was 75% in the 2001 cohort. Among the 25% of unsuccessful outcomes, 10% of patients died and 9% defaulted.

In response to the threat posed by TB to economic and social development, there is strong political commitment within the MoPH to implement the DOTS strategy. The previous 5-year plan for TB control in Thailand covered the period 1997–2002. A DOTS expansion plan that would account for the administrative changes following health sector reform has yet to be finalized. An NICC is led by the Disease Control Department of the MoPH. DOTS has

now been expanded to cover, in principle, 100% of districts, with integration into the general health system at all levels. The DOTS strategy has also been introduced in prisons, and in cross-border health projects.

Although hospitals in cities manage a large proportion of TB suspects and confirmed cases, only a small number of private hospitals in Bangkok and other large cities have started to implement the DOTS strategy. Several initiatives are in place to raise interest in DOTS, including those funded by the GFATM to address urban TB control through PPM.

The Urban TB Control Project in Bangkok promotes collaboration with private hospitals and practitioners by providing drugs in exchange for compliance with NTP recording and reporting standards.

Thailand has made significant progress towards addressing the problem of TB linked to HIV by establishing, through the MoPH, collaborative TB/HIV programmes in provinces with high HIV prevalence. There is a national TB/HIV coordinating body and an HIV surveillance system for TB patients. ART is delivered to HIV-infected TB patients by the MoPH. Some districts report an extremely

## PROGRESS IN TB CONTROL IN THAILAND

### Indicators

|  |     |
|--|-----|
| • Treatment success 2001 cohort  | 75% |
| • DOTS detection rate, 2002  | 73% |
| • NTP budget available, 2003   | NA  |
| • Government contribution to NTP budget, including loans, 2003             | NA  |
| • Government contribution to total TB control costs, including loans, 2003 | NA  |
| • Government health spending used for TB, 2003                             | NA  |

### Major constraints to achieving targets

- Problems with programme management including insufficient training, weak supervision and monitoring, insecure drug supply
- Loss of central budgetary control through decentralization under health sector reform has made national planning more difficult
- Uncertain provincial commitment to financing, reporting, and to meeting WHO targets
- Inconsistent quality of DOTS programmes
- Limited scope of academic/private sector partnership with NTP

### Remedial actions needed

- Create a special project for TB control within the MoPH to preserve the programme's performance during the introductory phase of health sector reform
- Assess staffing requirements at all levels and develop HR plan
- Develop updated strategic plan to address changes associated with health sector reform
- Advocate in provinces to maintain high profile for TB control and commitment to WHO targets, and to ensure financial contributions from provinces and completeness of reporting
- Central TB division must monitor and evaluate the accuracy of provincial reporting, and be given authority to do so
- Strengthen DOTS quality through training more treatment observers
- Strengthen urban networks for TB control through revision of referral system and through intensified supervision, monitoring, and evaluation

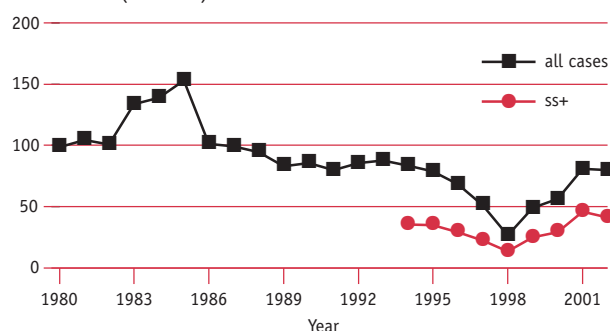
NA indicates not available

# THAILAND

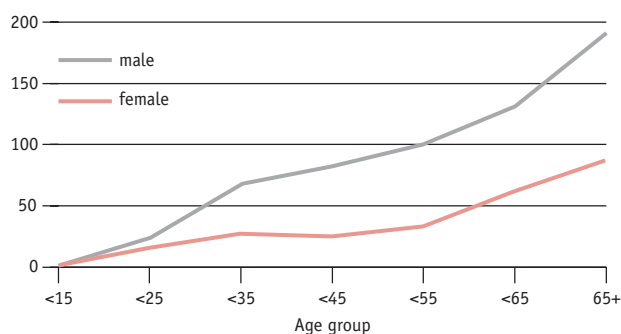
| LATEST ESTIMATES <sup>a</sup>         |                   | TRENDS                                    | 1999 | 2000 | 2001 | 2002 |
|---------------------------------------|-------------------|---|------|------|------|------|
| <b>Population</b>                     | <b>25 003 513</b> | DOTS population coverage (%)              | 100  | 100  | 100  | 100  |
| Global rank (by est. number of cases) | 16                | Notification rate (all cases/100 000 pop) | 139  | 129  | 152  | 163  |
| Incidence (all cases/100 000 pop)     | 377               | Notification rate (new ss+/100 000 pop)   | 81   | 73   | 71   | 76   |
| Incidence (new ss+/100 000 pop)       | 164               | Detection of all cases (%)                | 41   | 37   | 42   | 43   |
| Prevalence (ss+/100 000 pop)          | 254               | Detection of new ss+ cases (%)            | 55   | 48   | 45   | 47   |
| TB mortality per 100 000 pop          | 86                | DOTS detection of new ss+ (%)             | 54   | 48   | 45   | 47   |
| % of adult (15-49y) TB cases HIV+     | 24                | DOTS detection of new ss+/coverage(%)     | 54   | 48   | 45   | 47   |
| % of new cases multi-drug resistant   | 0.5               | DOTS treatment success (new ss+, %)       | 61   | 63   | 56   | —    |

## Notification rate (per 100 000 pop)

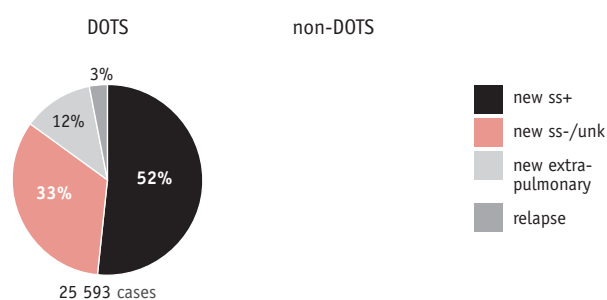
Notification (all cases) = 49 581 in 2002



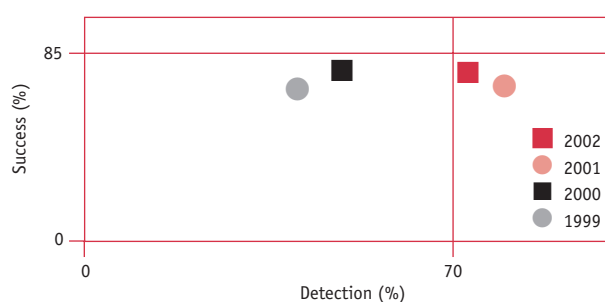
## Notification rate by age and sex (new ss+)<sup>b</sup>



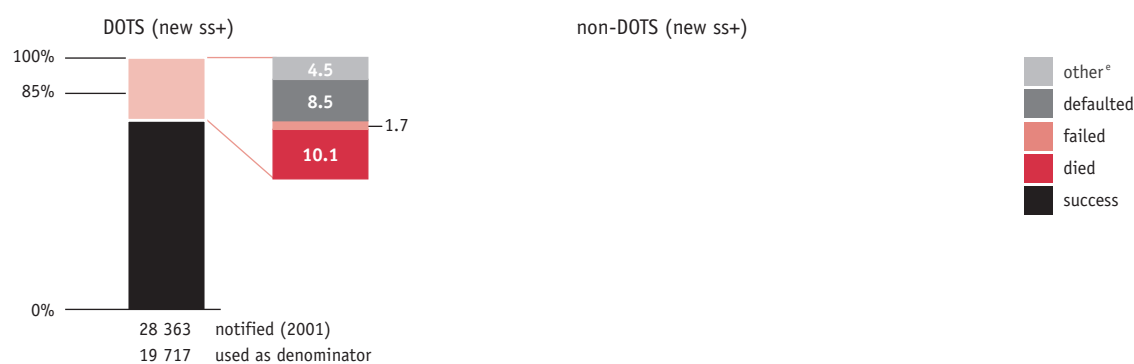
## Case types notified<sup>c</sup>



## DOTS progress towards targets<sup>d</sup>



## Treatment outcomes<sup>e</sup>



## Notes

ss+ Indicates smear-positive; ss-, smear-negative; pop, population; unk, unknown.

<sup>a</sup> See Methods for data sources.

<sup>b</sup> The sum of cases notified by age and sex is less than the number of new smear-positive cases notified for some countries.

<sup>c</sup> Non-DOTS is blank for countries which are 100% DOTS, or where no non-DOTS data were reported.

<sup>d</sup> DOTS progress towards targets: DOTS detection rate for given year, DOTS success rate for cohort registered in previous year.

<sup>e</sup> "Other" includes transfer out and not evaluated, still on treatment, and other unknown.

## THAILAND

high death rate in HIV-infected TB patients, and operational research will be carried out to determine the factors responsible. Surveys of drug resistance are conducted within the framework of the WHO/IUATLD global project on anti-TB drug resistance surveillance.

Despite strong support for the DOTS strategy at the central level of the MoPH, political commitment is weak in a number of provinces and districts. As a result of health sector reform, staff at the central level and some regional disease control offices have been reduced, and staff at provincial and district health offices often have to perform additional duties. In general, planning, implementation, and monitoring of NTP activities appear to have weakened and several key activities such as the organization of training courses and monitoring meetings have not been performed during the past year. There is now evidence of a decline in NTP performance in several areas of the country. Laboratory diagnosis and patient supervision are often not carried out according to the standards prescribed by NTP policy. Reporting is generally poor – outcome reports

often reach the central level with considerable delay or not at all. Discussions are now underway to create a special project for TB control in the MoPH, which would preserve the performance of the TB control programme during the introductory phase of health sector reform and enable the country to reach the global targets by 2005.

### Partnerships

Thailand is collaborating with IUATLD for training, with WHO for operational research, and with CDC USA for TB control in Bangkok.

### Budgets and expenditures

For the fiscal year 2002, the NTP was fully financed through funds available at the central MoPH level. Expenditures were US\$ 6.8 million. The cost of items not covered by the NTP budget (i.e. hospital admissions and clinic visits) was estimated at US\$ 1.8 million. Total TB control costs for 2002 can therefore be estimated at US\$ 8.6 million, or US\$ 198 per patient.

NTP financing has substantially changed in 2003, following the in-

troduction of the new health sector reform policies. All clinical services are now financed through a “universal coverage” (UC) health insurance scheme. Under this scheme, provincial and district hospitals receive lump sums to provide a package of care, calculated on the basis of fixed per capita rates. The UC budget will cover procurement of anti-TB drugs, laboratory supplies, and clinical care. However, the current perception is that it will not cover programme support functions and, as a result, the financial situation of the NTP for fiscal year 2004 appears precarious. It is likely that many training, supervision, and monitoring activities required according to NTP policy will not be carried out. The budget decentralization also means that no figures are available on total budget needs and available funding. The development of national budgets for future fiscal years will depend on the NTPs ability to implement a comprehensive financial monitoring mechanism allowing budgets and available funding to be reported by all provinces and districts.

# Uganda

## Overview of TB control system

TB control is well integrated into Uganda's health care system. A central TB team has enabled the provision of technical support, managerial guidance, quality assurance, and advice to districts on the development of health policy. The main advance in TB control in Uganda is the development of community-based DOTS, where the responsibility for direct observation of treatment is given to members of the public, usually neighbours of patients.

## Surveillance, planning, operations

Uganda has claimed 100% DOTS coverage since 1997. As in Tanzania, the notification rate of all TB cases has been increasing, by and large, since 1995 (probably consequent, in part, upon the earlier spread of HIV), but the reported rate of smear-positive TB has been roughly stable. As a result, the smear-positive case detection rate by the DOTS programme has been falling. It is unclear whether this decline reflects a miscalculation of the true smear-positive incidence rate (estimates are linked to the overall trend in TB cases), or a failure of diagnosis. As in Tanzania, the explanation might be found by closer scrutiny of the surveillance data. Treatment success was very low in the 2001 cohort, as it has been since 1996: only 28% of patients were cured and a further 28% completed treatment without documented smear conversion. These poor results are mostly explained by the failure to evaluate outcomes (15%), and by the high rates of default (17%) and death (6%).

Flexible management has stimulated various innovations to provide equitable access to public health

services, community-based DOTS among them. As part of the overall Health Sector Strategic Plan 2001–4, Uganda has developed a strategic plan to expand community-based TB care. As a result of this expansion, 36 of Uganda's 56 districts now have a fully-functioning, community-based approach to TB care, 14 more are about to implement the system, and the remaining 6 districts are preparing to implement in 2004. Districts not yet using a community-based approach are providing in-patient DOTS, with patients remaining in a facility for approximately 2 months (as compared to 1–2 weeks of in-patient care in districts with community-based DOTS). An increasing number of clients seek care in the private sector; in general the quality of that care is poor. The NTP is seeking funds to start a PPM initiative in Kampala.

Notwithstanding the poor record on TB treatment, Uganda's experience

in providing care and support for TB patients in the community could be used to develop programmes of TB preventive therapy for HIV-infected individuals, and to guide the provision of ART planned for 2004–5. A proposal to do both is being developed by the NTP in conjunction with the national HIV/AIDS programme, with technical support from WHO and IUATLD. There is not yet a surveillance system for assessing HIV infection among TB patients, but there are plans to develop such a system. A number of NGOs have valuable experience in the care of people with HIV infection or AIDS, though coordination is needed among them to avoid duplication of efforts. At the moment there is no TB/HIV coordinating body. Plans to increase case detection and cure rates in 2004 include the coordination of TB/HIV care in 2 major hospitals and in selected districts, and the establishment of home-based care in towns and

## PROGRESS IN TB CONTROL IN UGANDA

### Indicators

|  |     |
|--|-----|
| • Treatment success 2001 cohort  | 56% |
| • DOTS detection rate, 2002  | 47% |
| • NTP budget available, 2003   | 37% |
| • Government contribution to NTP budget, including loans, 2003             | 26% |
| • Government contribution to total TB control costs, including loans, 2003 | 31% |
| • Government health spending used for TB, 2003                             | 2%  |

### Constraints to achieving targets

- As a result of government hiring quotas, staffing at central level is limited
- Shortage of clinical and field staff
- Weak quality control in central laboratories, lack of equipment in diagnostic units, and insufficient training of staff, especially microscopists
- Poor TB control in urban areas
- Increasing prevalence of HIV infection in TB patients

### Remedial actions needed

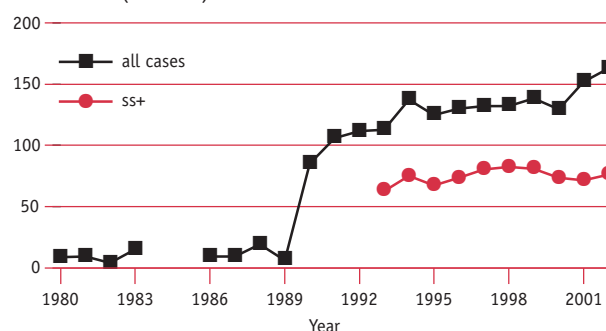
- Second staff from other institutions and from international partners
- Hire 2 more NPOs to be deployed at regional level
- Train laboratory personnel, technical assistants for districts and regions, and supervisors for the supranational reference laboratory
- Develop home-based care for TB in towns and cities
- Strengthen collaboration between the NTP and the national AIDS programme

# UGANDA

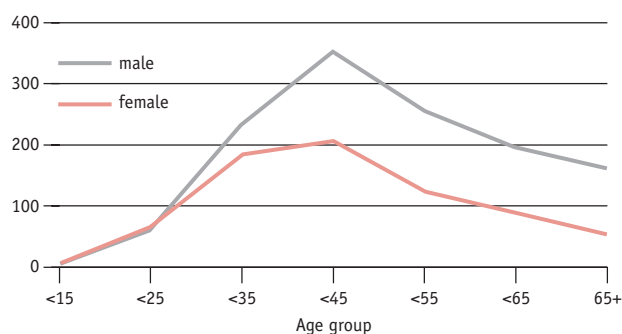
| LATEST ESTIMATES <sup>a</sup>         |                   | TRENDS                                    | 1999 | 2000 | 2001 | 2002 |
|---------------------------------------|-------------------|---|------|------|------|------|
| <b>Population</b>                     | <b>36 276 402</b> | DOTS population coverage (%)              | 100  | 100  | 100  | 100  |
| Global rank (by est. number of cases) | 14                | Notification rate (all cases/100 000 pop) | 154  | 156  | 173  | 166  |
| Incidence (all cases/100 000 pop)     | 363               | Notification rate (new ss+/100 000 pop)   | 71   | 69   | 69   | 67   |
| Incidence (new ss+/100 000 pop)       | 155               | Detection of all cases (%)                | 47   | 46   | 49   | 46   |
| Prevalence (ss+/100 000 pop)          | 236               | Detection of new ss+ cases (%)            | 51   | 48   | 46   | 43   |
| TB mortality per 100 000 pop          | 82                | DOTS detection of new ss+ (%)             | 51   | 48   | 46   | 43   |
| % of adult (15-49y) TB cases HIV+     | 34                | DOTS detection of new ss+/coverage(%)     | 51   | 48   | 46   | 43   |
| % of new cases multi-drug resistant   | 1.2               | DOTS treatment success (new ss+, %)       | 78   | 78   | 81   | —    |

## Notification rate (per 100 000 pop)

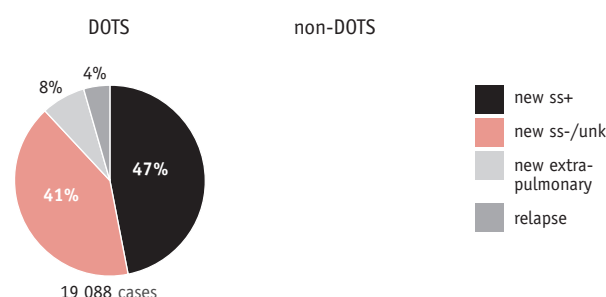
Notification (all cases) = 40 695 in 2002



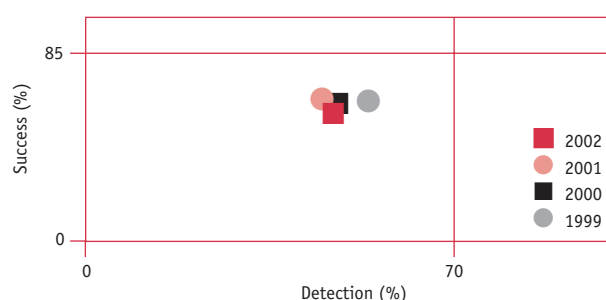
## Notification rate by age and sex (new ss+)<sup>b</sup>



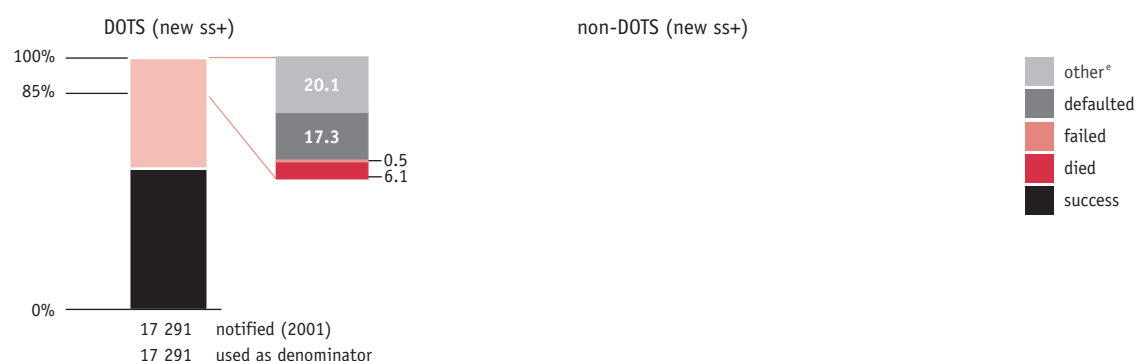
## Case types notified<sup>c</sup>



## DOTS progress towards targets<sup>d</sup>



## Treatment outcomes<sup>e</sup>



## Notes

ss+ Indicates smear-positive; ss-, smear-negative; pop, population; unk, unknown.

<sup>a</sup> See Methods for data sources.

<sup>b</sup> The sum of cases notified by age and sex is less than the number of new smear-positive cases notified for some countries.

<sup>c</sup> Non-DOTS is blank for countries which are 100% DOTS, or where no non-DOTS data were reported.

<sup>d</sup> DOTS progress towards targets: DOTS detection rate for given year, DOTS success rate for cohort registered in previous year.

<sup>e</sup> "Other" includes transfer out and not evaluated, still on treatment, and other unknown.



## Budget estimates, existing funding, and budget gaps for fiscal year 2003, US\$ millions

|   | REQUIRED FUNDING | EXPECTED FUNDING |            |            |            | FUNDING GAP |
|---|------------------|------------------|------------|------------|------------|-------------|
|   |                  | GOVERNMENT       | LOANS      | GRANTS     | OTHER      |             |
| <b>NTP budget</b>                                     |                  |                  |            |            |            |             |
| Drugs   | 2.2              | —                | 1.2        | 0.4        | —          | 0.6         |
| Dedicated staff working exclusively for TB control    | 0.3              | 0.1              | —          | 0.1        | —          | .1          |
| New activities to raise case detection and cure rates | 0.6              | —                | —          | —          | —          | 0.6         |
| Buildings, equipment, vehicles                        | 1.4              | —                | —          | —          | —          | 1.4         |
| All other line items                                  | 0.7              | 0.04             | —          | —          | 0.1        | 0.6         |
| <b>TOTAL NTP BUDGET</b>                               | <b>5.3</b>       | <b>0.1</b>       | <b>1.2</b> | <b>0.5</b> | <b>0.1</b> | <b>3.3</b>  |
| <b>Costs not covered by NTP budget <sup>a</sup></b>   |                  |                  |            |            |            |             |
| Hospital stay   | 0.2              | 0.2              | —          | —          | —          | —           |
| Clinic visits for DOT and monitoring                  | 0.1              | 0.1              | —          | —          | —          | —           |
| <b>TOTAL COSTS NOT COVERED BY NTP BUDGET</b>          | <b>0.3</b>       | <b>0.3</b>       | <b>—</b>   | <b>—</b>   | <b>—</b>   | <b>—</b>    |
| <b>TOTAL TB CONTROL COSTS</b>                         | <b>5.6</b>       | <b>0.4</b>       | <b>1.2</b> | <b>0.5</b> | <b>0.1</b> | <b>3.3</b>  |

— Indicates zero; NA, not available

<sup>a</sup> WHO estimates, data not provided by the NTP

cities. Uganda participates in drug resistance surveys within the framework of the WHO/IUATLD global surveillance project, though only a small fraction of the population is included. The 1996–7 surveys found MDR-TB among 0.5% of new patients and among 4.4% of previously-treated patients.

Insufficient staffing at central level has meant that only 7 (of 9) posts for zonal supervisors are funded. Efforts to lobby the ministries of health and of public service will continue. Monitoring and supervision have been improved through the appointment of a new regional supervisor, and secondments of staff will be sought from international organizations. A medical officer for Kampala has been trained, though more medical officers are needed at the zonal level. On-the-job training took place in other parts of the country. Following decentralization, there remains a need for better understanding of the roles of central and local government, because this affects resource allocation. Newly-elected political, administrative, and health leaders in districts must be informed about TB control to maintain commitment and funding despite scarce resources.

A severe countrywide shortage of laboratory staff and equipment has been improved by training microscopists, by providing reagents, and by purchasing new microscopes to keep pace with expanding demand. 100 microscopes were procured by the IUATLD in 2003 with funding from CIDA. The introduction of a uniform TB recording and reporting form should standardize data. There were plans to reorganize the reference laboratory in 2002, but without a leading microbiologist at the central level, this was delayed until 2003. A previous shortage of district and regional staff has been rectified by hiring 10 regional laboratory coordinators; 44 of 56 districts now have an officer responsible for the management of laboratory services (with responsibilities beyond TB).

### Partnerships

An NICC has been formally established to coordinate partner support. Overall external technical support for the country is provided by IUATLD and WHO, with further technical assistance provided by GLRA, LMI, and the Italian Cooperation. External financial support is provided by WHO, GLRA, and the Italian Cooperation for programme operating costs and technical assistance, and by DFID and the

GDF for drugs. Through IUATLD, CIDA has provided funds for operations since the beginning of October 2002. The Government of Italy provides support for a WHO staff member to serve as country adviser. CDC GAP supports TB staff and activities. There are plans to launch a Uganda Stop TB Partnership in 2004.

### Budgets and expenditures

The NTP budget for the fiscal year 2003 (from 1 July) is US\$ 5.2 million. This is an increase of US\$ 3.2 million from 2002. Increased spending is planned for staff working for TB control, new activities to increase case detection and cure rates, and buildings and equipment. The NTP estimates that it will treat 48 000 patients during the 2003 fiscal year, implying a budget per patient of US\$ 109. The drug budget, at US\$ 2.2 million, is equivalent to US\$ 46 per patient.

The government will provide US\$ 0.1 million of the required funding in 2003, 69% less than in the 2002 fiscal year. The government contribution covers approximately 31% of the total costs for TB control. TB control accounts for slightly under 2% of government health spending in Uganda.

## UGANDA

An additional US\$ 0.5 million is expected from grants and US\$ 1.2 from loans. A gap of US\$ 3.3 million is anticipated. In 2003, Uganda was awarded a grant of slightly over US\$ 9 million for TB control activities from the GFATM. While none of this award has been disbursed to date and is not

included in the 2003 budget, the estimated disbursements in the first two years total US\$ 6.8 million. These funds will likely close the 2003 financing gap.

Costs associated with TB control that are not funded from the NTP budget amount to an estimated

US\$ 0.3 million, of which US\$ 0.2 million is for hospital admissions during treatment and US\$ 0.1 million is for clinic visits during treatment. These data imply total TB control costs of US\$ 5.5 million per year, and US\$ 115 per patient.

# Viet Nam

## Overview of TB control system

Viet Nam's TB control programme is often cited by WHO as a model in terms of organizational infrastructure and programme results. The programme is fully integrated in the general health system at district and commune level. In remote areas where primary health care access is limited, the programme works through village health workers and links with commune health posts. Viet Nam is one of the best examples of the successful combination of DOTS, political commitment, adequate resources, and good strategic planning.

## Surveillance, planning, operations

Case notification rates (for smear-positive and all TB cases) have been more or less steady since 1998. Despite persistently high smear-positive case detection rates (estimated to be 82% in 2001), there is no evidence of a fall in TB incidence in the nationally aggregated data. However, the notification rates of smear-positive disease are higher among older men and women, implying that TB incidence has been higher in the past. Treatment success in the 2001 cohort was reported to be 93% (including 91% of patients cured). Viet Nam is still the only high-burden country to have met targets for both case detection (70%) and treatment success (85%); both indicators have exceeded target levels in each of the 6 most recent years of data.

A national disease prevalence survey was planned for 2002 with the intent to reassess TB burden in the country, to provide a baseline for measuring the impact of TB control, and to check on estimates of the case detection rate. However, the cost of

buying vehicles outfitted with X-ray equipment was higher than anticipated so this activity has been delayed until 2004.

Planning is conducted and coordinated mainly by the central level, although further efforts are being made to strengthen planning in the provinces. The central unit handles the procurement and distribution of all drug and laboratory supplies. All levels maintain buffer stocks and monitor and replenish stocks on a quarterly basis.

Health care workers at all levels, but especially those in the private sector, received TB training in an attempt to ensure the consistent delivery of DOTS. Staff supervision of TB activities was increased at all levels of the NTP, but particularly in districts, communes, and sub-communes, to reduce the high turnover of TB staff. In 2002 a total

quality management (TQM) training course was held in cooperation with CDC to strengthen management, supervision, and research capacity of the TB staff, and this approach to management was widely implemented in 2003. A 3-month training course was held to orient new provincial and district TB staff to the NTP, which has helped to solidify knowledge about TB control. Programme monitoring was strengthened through the introduction in some large provinces of new patient management software. A comprehensive review of all activities was carried out in 2003, and the workplan updated.

Laboratory technicians in provinces and districts attended a 3-week training course in 2002 on direct sputum microscopy, and on blinded quality controls. Nationwide implementation of new quality assurance guidelines began to improve accuracy

## PROGRESS IN TB CONTROL IN VIET NAM

### Indicators

|  |      |
|--|------|
| • Treatment success 2001 cohort  | 93%  |
| • DOTS detection rate, 2002  | 82%  |
| • NTP budget available, 2003   | 100% |
| • Government contribution to NTP budget, including loans, 2003             | 75%  |
| • Government contribution to total TB control costs, including loans, 2003 | 91%  |
| • Government health spending used for TB, 2003                             | 4%   |

### Challenges

- Too few qualified intermediate-level staff in some provinces
- Poor access to DOTS services in remote, mountainous, and border regions, and among the homeless, prisoners, and illegal residents
- Rapidly developing private sector service provision without adequate training in DOTS
- Unregulated drug market and use of non-standard anti-TB drugs
- Growing TB/HIV co-epidemic

### Remedial actions needed

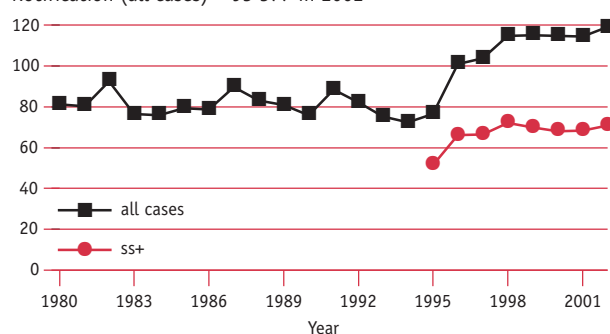
- Strengthen management capacity through training, operational research, and use of Total Quality Management practices
- Revise/develop HDRP to ensure sustainable core of health care staff at all levels
- Educate population through primary health care units and community outreach, involving the People's Committee and the Women's Union
- Train private providers and develop regulations to ensure adherence to DOTS
- Legislate drug inspection to ensure use of WHO-recommended drugs

## VIET NAM

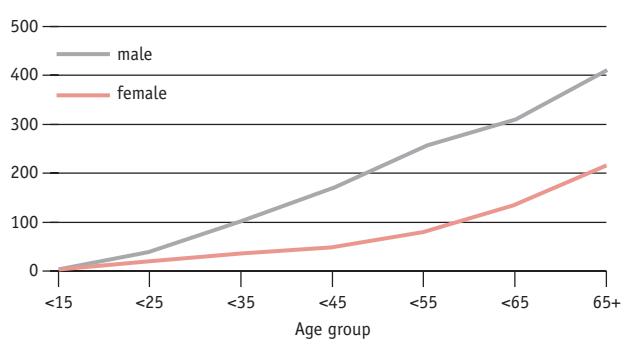
| LATEST ESTIMATES <sup>a</sup>         |                   | TRENDS                                    | 1999 | 2000 | 2001 | 2002 |
|---------------------------------------|-------------------|---|------|------|------|------|
| <b>Population</b>                     | <b>80 278 208</b> | DOTS population coverage (%)              | 99   | 100  | 100  | 100  |
| Global rank (by est. number of cases) | 13                | Notification rate (all cases/100 000 pop) | 115  | 115  | 115  | 119  |
| Incidence (all cases/100 000 pop)     | 192               | Notification rate (new ss+/100 000 pop)   | 70   | 68   | 68   | 71   |
| Incidence (new ss+/100 000 pop)       | 86                | Detection of all cases (%)                | 61   | 60   | 60   | 62   |
| Prevalence (ss+/100 000 pop)          | 102               | Detection of new ss+ cases (%)            | 82   | 79   | 80   | 82   |
| TB mortality per 100 000 pop          | 25                | DOTS detection of new ss+ (%)             | 81   | 79   | 80   | 82   |
| % of adult (15-49y) TB cases HIV+     | 1.8               | DOTS detection of new ss+/coverage(%)     | 83   | 80   | 80   | 82   |
| % of new cases multi-drug resistant   | 2.3               | DOTS treatment success (new ss+, %)       | 92   | 92   | 93   | —    |

### Notification rate (per 100 000 pop)

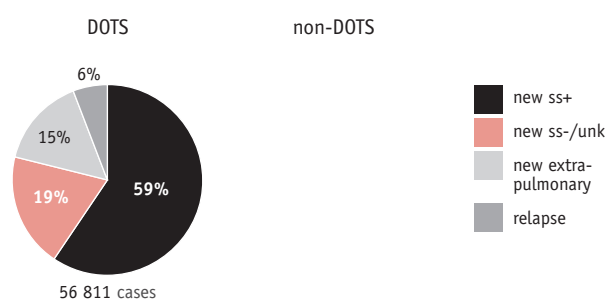
Notification (all cases) = 95 577 in 2002



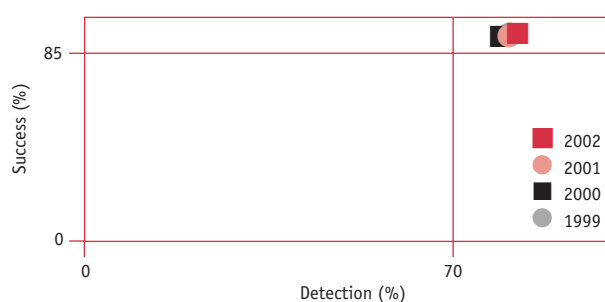
### Notification rate by age and sex (new ss+)<sup>b</sup>



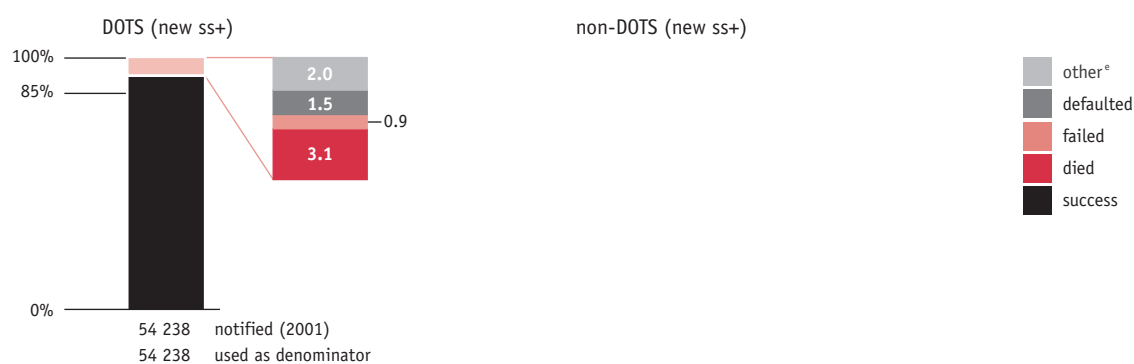
### Case types notified<sup>c</sup>



### DOTS progress towards targets<sup>d</sup>



### Treatment outcomes<sup>e</sup>



### Notes

ss+ Indicates smear-positive; ss-, smear-negative; pop, population; unk, unknown.

<sup>a</sup> See Methods for data sources.

<sup>b</sup> The sum of cases notified by age and sex is less than the number of new smear-positive cases notified for some countries.

<sup>c</sup> Non-DOTS is blank for countries which are 100% DOTS, or where no non-DOTS data were reported.

<sup>d</sup> DOTS progress towards targets: DOTS detection rate for given year, DOTS success rate for cohort registered in previous year.

<sup>e</sup> "Other" includes transfer out and not evaluated, still on treatment, and other unknown.

## Budget estimates, existing funding and budget gaps for fiscal year 2003, US\$ millions

|   | REQUIRED FUNDING | EXPECTED FUNDING |            |            |          | FUNDING GAP |
|---|------------------|------------------|------------|------------|----------|-------------|
|   |                  | GOVERNMENT       | LOANS      | GRANTS     | OTHER    |             |
| <b>NTP budget</b>                                     |                  |                  |            |            |          |             |
| Drugs   | 2.2              | —                | 2.2        | —          | —        | —           |
| Dedicated staff working exclusively for TB control    | 1.0              | 0.8              | 0.01       | 0.2        | —        | —           |
| New activities to raise case detection and cure rates | 1.2              | 0.5              | 0.2        | 0.5        | —        | —           |
| Buildings, equipment, vehicles                        | 1.1              | 0.1              | 0.3        | 0.7        | —        | —           |
| All other line items                                  | 1.0              | 0.5              | 0.3        | 0.2        | —        | —           |
| <b>TOTAL NTP BUDGET</b>                               | <b>6.5</b>       | <b>1.9</b>       | <b>3.0</b> | <b>1.6</b> | <b>—</b> | <b>—</b>    |
| <b>Costs not covered by NTP budget <sup>a</sup></b>   |                  |                  |            |            |          |             |
| Hospital stay <sup>b</sup>                            | 6.2              | 6.2              | —          | —          | —        | —           |
| Clinic visits for DOT and monitoring                  | 4.5              | 4.5              | —          | —          | —        | —           |
| <b>TOTAL COSTS NOT COVERED BY NTP BUDGET</b>          | <b>10.7</b>      | <b>10.7</b>      | <b>—</b>   | <b>—</b>   | <b>—</b> | <b>—</b>    |
| <b>TOTAL TB CONTROL COSTS</b>                         | <b>17.2</b>      | <b>12.6</b>      | <b>3.0</b> | <b>1.6</b> | <b>—</b> | <b>—</b>    |

— Indicates zero; NA, not available

<sup>a</sup> WHO estimates, data not provided by the NTP

<sup>b</sup> Cost estimate based on 8500 dedicated TB beds at US\$ 2 per day

of sputum microscopy in 2003. Technical assistance from KNCV and WHO helped to evaluate the quality of TB diagnosis. Treatment was strengthened by offering DOTS in both hospital and ambulatory settings, by better supervision of treatment activities, and by guaranteeing drugs and laboratory materials.

Viet Nam's solid strategic planning for TB control, facilitated by the NICC, has helped turn the country into one of the success stories in global TB control. Nonetheless, further efforts are being made to improve access to TB treatment in the remote parts of the country. Continued implementation of PHC projects has ensured the provision of equipment, health education materials, transport for supervision, and staff training in these special areas. Additional strategies for expanding DOTS included the development of a TB curriculum for secondary schools, and a training course on NTP activities for the private sector.

There have been 2 surveys of drug resistance in Viet Nam, the first in 1996–7, and a second analysis, just completed, for which results are not

yet available. Currently, MDR-TB and chronic TB cases do not receive any special treatment, though a workshop is planned in 2004 to develop activities for the management of drug-resistant disease. There is HIV testing for TB patients; an estimated 1.8% of adult TB cases were infected with HIV in 2002. There are also TB/HIV coordinating bodies at national and provincial levels, and a plan to involve the NTP in ART after 2005.

Other challenges in Viet Nam are to modernize and rehabilitate the health infrastructure in all districts, to regulate the thriving private sector through the creation of PPM partnerships, and to control the quality of anti-TB drugs.

### Partnerships

Overall external technical collaboration is led by KNCV, WHO, and MCNV. CDC has a special interest in research and management training. Financial support from the Dutch government and a World Bank loan have helped to establish a model TB control programme. The GFATM funds approved in 2002 became available for implementation in the 4th quarter of 2003.

### Budgets and expenditures

NTP expenditure in fiscal year 2002 (from 1 January) was US\$ 4.2 million (equivalent to US\$ 43 per patient) and total TB control costs were around US\$ 14 million (US\$ 158 per patient). The NTP budget for the fiscal year 2003 was 56% higher, at US\$ 6.5 million (US\$ 65 per patient). This higher budget was to enable funding of a national prevalence survey as well as some expansion (around 10%) in the number of cases treated. The drug budget, at US\$ 2.2 million, was equivalent to US\$ 22 per patient. There was a budget of US\$ 0.8 million for dedicated staff, as well as US\$ 0.5 million for new activities to increase case detection and cure rates. Funding was mostly from the government (US\$ 4.9 million including loans), with the remainder provided by grants. There was no funding gap. If the projected 100 000 patients were treated in 2003, total TB control costs would have been around US\$ 17.2 million, or US\$ 172 per patient.

# Zimbabwe

## Overview of TB control system

Primary health care is seen as the route to affordable universal coverage. Health sector reforms undertaken in the 1990s aimed to improve equity and access to essential health services, including TB diagnosis and treatment. At present, treatment is free to TB patients. More recent health reforms facilitated the process of decentralization, stimulated health financing schemes, regulated the private sector, and strengthened management. In the past, up to 80% of the rural population lived within 5km of a health centre, but access is now lower because changes in land ownership have led to resettlement in areas with no clinics.

## Surveillance, planning, operations

The notification rate of all TB cases increased 8-fold between 1988 and 2002, driven by the spread of HIV. An estimated two thirds of adult TB cases were infected with HIV in 2002. The age-structure of smear-positive TB cases, showing very high rates among young adults, is typical of populations that have been severely affected by HIV/AIDS. As in some other countries in the region, such as Tanzania, the reported rate of smear-positive disease has remained roughly stable over the past 5 years while the overall case rate has continued to increase. This may reflect the fact that HIV-infected patients are less likely to be smear-positive, or that diagnosis has become less reliable under pressure of a mounting case load. The estimated smear-positive case detection rate by the DOTS programme was 46% in 2002, but the underlying incidence of TB in Zimbabwe is not accurately known. Treatment success in the 2001 cohort

was only 71%, principally because 12% of patients died, and 17% either defaulted or were transferred without follow-up.

A draft strategic plan for DOTS expansion now exists but has yet to be approved by the government. An NICC does not yet exist. Decentralization has been accepted in principle, and TB programmes are being run and financed by the provinces, though funding is insufficient. Funding for TB is now a separate line item in the national, regional, and district health budgets, which may help to protect funding in future.

Provincial and district TB coordinators are in place, though there is still no national TB programme coordinator, and there are no central staff to support a national coordinator. There are too few nurses in health centres and too few doctors in hospitals, especially in rural areas. Staff attrition is high because salaries are low. A WHO national programme of-

ficer is likely to be appointed during 2004, and further support will be provided through secondments from the Institute of Public Health. An intensive 18-month long training course for public health nurses will increase postings in rural health centres.

Better public information about TB, in the form of radio and TV programmes and IEC materials, is expected to lead to improved case detection in populations living near rural health centres. All 8 provinces and the 3 main cities have held DOTS expansion training workshops, which include training for STI coordinators. Neighbours and relatives of TB patients have been trained as TB treatment observers.

Every district now has a laboratory that is adequately supplied. Some laboratories were refurbished in 2003, laboratory staff were trained, and a system was developed to ensure a consistent supply of reagents. A national workshop was held for top

## PROGRESS IN TB CONTROL IN ZIMBABWE

### Indicators

|  |     |
|--|-----|
| • Treatment success 2001 cohort  | 71% |
| • DOTS detection rate, 2002  | 46% |
| • NTP budget available, 2003   | NA  |
| • Government contribution to NTP budget, including loans, 2003             | NA  |
| • Government contribution to total TB control costs, including loans, 2003 | NA  |
| • Government health spending used for TB, 2003                             | NA  |

### Major constraints to achieving targets

- Improving, but still weak political commitment to TB control
- Insufficient staffing of central unit
- Low access to treatment due to poor infrastructure in new settlements
- Limited involvement of communities in TB control

### Remedial actions needed to overcome constraints

- Failing support from the GFATM and GDF, funds will need to be sought elsewhere
- Strengthen advocacy for TB control, with the particular aim of establishing more managerial and staff positions in the NTP
- Introduce PHC services and subsequently community-based DOTS in new settlements where there is no health infrastructure, and home-based DOTS in large cities where there is weak participation in existing TB control activities

NA indicates not available

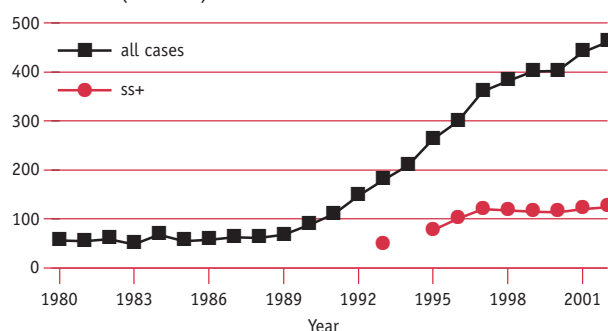


# ZIMBABWE

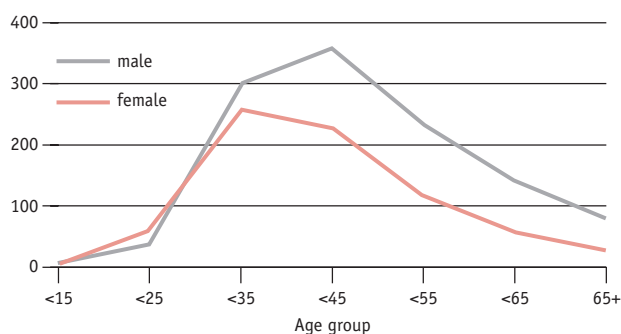
| LATEST ESTIMATES <sup>a</sup>         |                   | TRENDS                                    | 1999 | 2000 | 2001 | 2002 |
|---------------------------------------|-------------------|---|------|------|------|------|
| <b>Population</b>                     | <b>12 835 125</b> | DOTS population coverage (%)              | 12   | 100  | 100  | 100  |
| Global rank (by est. number of cases) | 17                | Notification rate (all cases/100 000 pop) | 401  | 402  | 441  | 461  |
| Incidence (all cases/100 000 pop)     | 683               | Notification rate (new ss+/100 000 pop)   | 115  | 114  | 120  | 124  |
| Incidence (new ss+/100 000 pop)       | 271               | Detection of all cases (%)                | 68   | 65   | 68   | 68   |
| Prevalence (ss+/100 000 pop)          | 309               | Detection of new ss+ cases (%)            | 49   | 46   | 47   | 46   |
| TB mortality per 100 000 pop          | 150               | DOTS detection of new ss+ (%)             | 49   | 46   | 47   | 46   |
| % of adult (15-49y) TB cases HIV+     | 75                | DOTS detection of new ss+/coverage(%)     | 423  | 46   | 47   | 46   |
| % of new cases multi-drug resistant   | 1.9               | DOTS treatment success (new ss+, %)       | 73   | 69   | 71   | —    |

## Notification rate (per 100 000 pop)

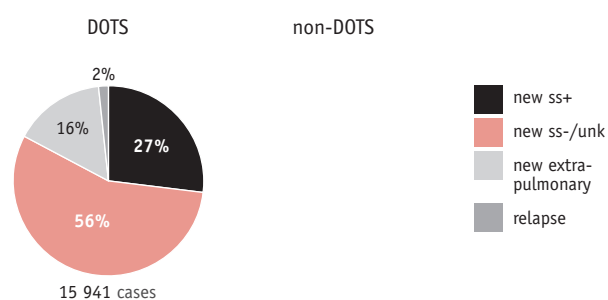
Notification (all cases) = 59 170 in 2002



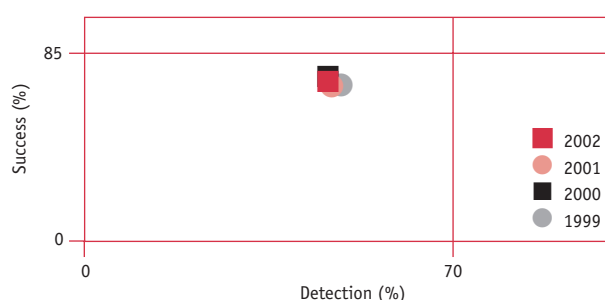
## Notification rate by age and sex (new ss+)<sup>b</sup>



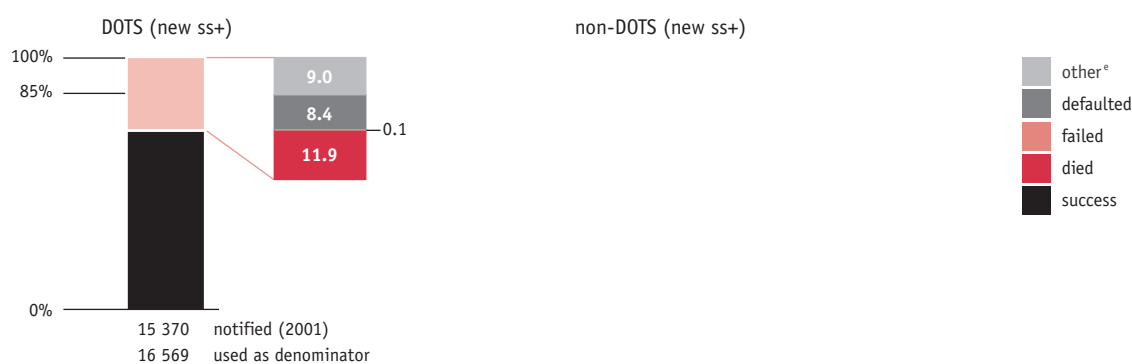
## Case types notified<sup>c</sup>



## DOTS progress towards targets<sup>d</sup>



## Treatment outcomes<sup>c</sup>



## Notes

ss+ Indicates smear-positive; ss-, smear-negative; pop, population; unk, unknown.

<sup>a</sup> See Methods for data sources.

<sup>b</sup> The sum of cases notified by age and sex is less than the number of new smear-positive cases notified for some countries.

<sup>c</sup> Non-DOTS is blank for countries which are 100% DOTS, or where no non-DOTS data were reported.

<sup>d</sup> DOTS progress towards targets: DOTS detection rate for given year, DOTS success rate for cohort registered in previous year.

<sup>e</sup> "Other" includes transfer out and not evaluated, still on treatment, and other unknown.

## ZIMBABWE

managers from the public and private sectors in order to improve case detection and laboratory efficiency.

Although the NTP has a system for tracking drug stocks and funds, drugs are not always available. However, the EU will provide a grant for drugs over 2.5 years starting in 2003. A liaison is now being developed with the National Pharmaceutical Company (Natpharm) and the national drug coordinator, with formal links to be established. FDCs will be introduced in 2004.

A national DOTS supervision checklist has been developed but remains untested. NTP supervisory visits have been conducted in several provinces and cities, though others have had

no supervision because of fuel shortages. TB coordinators meet on a quarterly basis, and quarterly reports for epidemiological surveillance are available from all districts and provinces.

There is no TB/HIV coordinating body, but the CCM (at national level) and AIDS action committees (at provincial and district levels) do play a coordinating role. The MoH has established a special TB/HIV/AIDS/STI unit to jointly develop an awareness campaign. There is no surveillance system for assessing HIV infection among TB patients. The NTP is introducing a comprehensive TB/HIV care package, including ART delivery. Zimbabwe participates in DRS surveys

within the framework of the WHO/IUATLD framework.

### Partnerships

WHO leads external technical support for the country, and IUATLD may contribute in the future. CDC LIFE is planning to support some activities to control TB. WHO provides technical support, and DANIDA supports laboratories. Because some external partners have withdrawn support, an application to the GFATM was submitted in 2002.

### Budgets and expenditures

Zimbabwe did not submit financial information to WHO.



ANNEX 2

# **Country data by region**

Africa

The Americas

Eastern Mediterranean

Europe

South-East Asia

The Western Pacific

# Explanatory notes

Country-specific data are grouped by WHO region. For each country we present:

- 2002 notification, detection, and coverage data – for the whole country, and separately for DOTS and non-DOTS programmes.
- Treatment outcomes for 2001 cohorts – both the new smear-positive and the retreatment cohorts from DOTS programmes, and the new smear-positive treatment outcomes (where available) from non-DOTS programmes.
- New smear-positive notifications (numbers) by age and sex – from DOTS and from non-DOTS programmes.
- New smear-positive notification rates by age and sex for the whole country.
- Notification numbers and rates since 1980, all forms of TB.
- Notification numbers and rates since 1993, new smear-positive cases.
- Country notes: remarks that may help to explain data reported by selected countries.

## Notation for 1st table

(Country data...notification, detection and DOTS coverage)

- a The population expressed in thousands (source: United Nations Population Division, World Population Prospects, 2002 revision).
- b' The total number of tuberculosis cases notified (European definition, includes all new, retreatment, and recurrent cases).
- b The total number of tuberculosis cases notified to WHO (WHO definition, includes new and relapse cases and, for Europe only, cases with previous history unknown).
- c The case notification rate (per 100 000 population),  $b/a * 100$ .
- d The number of new smear-positive cases notified to WHO.
- e The new smear-positive case notification rate (per 100 000 population),  $d/a * 100$ .
- f The number of new pulmonary laboratory-confirmed cases notified to WHO (includes smear-positive and/or culture-positive cases).
- g The new pulmonary laboratory-confirmed case notification rate (per 100 000 population),  $f/a * 100$ . These data are not required by WHO, but are provided by some countries, particularly those in the European region.
- h WHO estimate of the number of new cases (all forms of TB) in 2002.
- i The estimated incidence rate, all forms of TB, per 100 000 population),  $h/a * 100$ .
- j WHO estimate of the number of new sputum smear-positive cases in 2002.
- k The estimated incidence rate, smear-positive cases (per 100 000 population),  $j/a * 100$ .
- l The proportion of estimated cases (all forms) that were notified,  $b/h * 100$ .
- m The case detection rate: the proportion of estimated new smear-positive cases that were notified,  $d/j * 100$ .

- n The percentage of the population living in geographic areas nominally serviced by health facilities implementing DOTS.
- o The number of notifications (all forms of TB) from DOTS programmes in 2002.
- p The case notification rate (all forms of TB, per 100 000 population) from DOTS programmes,  $o/a * 100$ .
- q The number of new smear-positive cases notified by DOTS programmes in 2002.
- r The new smear-positive case notification rate (per 100 000 population) from DOTS programmes,  $q/a * 100$ .
- s DOTS detection rate: the proportion of estimated new smear-positive cases (countrywide) notified by DOTS programmes,  $q/j * 100$ .
- t The proportion of all new pulmonary cases that were smear-positive under DOTS.
- u, v and w: as in o, q and t, above, but from non-DOTS programmes.

## **Notation for 2nd table**

### **(Country data...treatment outcomes)**

- a The number of new smear-positive cases registered for treatment under DOTS in 2001.
- b–g The proportion of cases having treatment outcomes as defined in Table 2 (cured, completed, died, failed, defaulted, transferred) in the DOTS 2001 cohort of new smear-positive cases.
- h The proportion of cases not evaluated in the DOTS 2001 cohort of new smear-positive cases.
- i Treatment success in the DOTS 2001 cohort of new smear-positive cases (see Table 2).
- j–r: as in a–i, above, but for the DOTS 2001 cohort of retreatment cases (all types of retreatment combined).
- s–aa: as in a–i, above, but for the non-DOTS 2001 cohort of new smear-positive cases.



**A F R I C A**

## Africa: Summary of TB control policies

| COUNTRY                  | STATUS <sup>a</sup> | MANUAL <sup>b</sup> | MICROSCOPY <sup>c</sup> | MONITORING OF TB SUSPECTS <sup>d</sup> | SCC <sup>e</sup> | DOT <sup>f</sup> | OUTCOME MONITORING <sup>g</sup> |
|--------------------------|---------------------|---------------------|-------------------------|--|------------------|------------------|---------------------------------|
| ALGERIA                  | DOTS                | YES                 |                         |  |                  |                  |                                 |
| ANGOLA                   | DOTS                |                     |                         |  |                  |                  |                                 |
| BENIN                    | DOTS                | YES                 |                         |  |                  |                  |                                 |
| BOTSWANA                 | DOTS                |                     |                         |  |                  |                  |                                 |
| BURKINA FASO             | DOTS                | YES                 |                         |  |                  |                  |                                 |
| BURUNDI                  | DOTS                |                     |                         |  |                  |                  |                                 |
| CAMEROON                 | DOTS                | YES                 |                         |  |                  |                  |                                 |
| CAPE VERDE               | DOTS                | YES                 |                         |  |                  |                  |                                 |
| CENTRAL AFRICAN REPUBLIC | DOTS                | YES                 |                         |  |                  |                  |                                 |
| CHAD                     | DOTS                | YES                 |                         |  |                  |                  |                                 |
| COMOROS                  |                     |                     |                         |  |                  |                  |                                 |
| CONGO                    | DOTS                |                     |                         |  |                  |                  |                                 |
| CÔTE D'IVOIRE            | DOTS                | YES                 |                         |  |                  |                  |                                 |
| DR CONGO                 | DOTS                | YES                 |                         |  |                  |                  |                                 |
| EQUATORIAL GUINEA        |                     |                     |                         |  |                  |                  |                                 |
| ERITREA                  | DOTS                |                     |                         |  |                  |                  |                                 |
| ETHIOPIA                 | DOTS                | YES                 |                         |  |                  |                  |                                 |
| GABON                    | <b>DOTS</b>         | YES                 |                         |  |                  |                  |                                 |
| GAMBIA                   | DOTS                |                     |                         |  |                  |                  |                                 |
| GHANA                    | DOTS                | YES                 |                         |  |                  |                  |                                 |
| GUINEA                   | DOTS                | YES                 |                         |  |                  |                  |                                 |
| GUINEA-BISSAU            | DOTS                | YES                 |                         |  |                  |                  |                                 |
| KENYA                    | DOTS                | YES                 |                         |  |                  |                  |                                 |
| LESOTHO                  | DOTS                | NO                  |                         |  |                  |                  |                                 |
| LIBERIA                  |                     |                     |                         |  |                  |                  |                                 |
| MADAGASCAR               | DOTS                |                     |                         |  |                  |                  |                                 |
| MALAWI                   | DOTS                |                     |                         |  |                  |                  |                                 |
| MALI                     | DOTS                | YES                 |                         |  |                  |                  |                                 |
| MAURITANIA               |                     |                     |                         |  |                  |                  |                                 |
| MAURITIUS                | DOTS                | NO                  |                         |  |                  |                  |                                 |
| MOZAMBIQUE               | DOTS                | YES                 |                         |  |                  |                  |                                 |
| NAMIBIA                  | DOTS                | YES                 |                         |  |                  |                  |                                 |
| NIGER                    |                     |                     |                         |  |                  |                  |                                 |
| NIGERIA                  | DOTS                | YES                 |                         |  |                  |                  |                                 |
| RWANDA                   | DOTS                | YES                 |                         |  |                  |                  |                                 |
| SAO TOME AND PRINCIPE    |                     | YES                 |                         |  |                  |                  |                                 |
| SENEGAL                  | DOTS                | YES                 |                         |  |                  |                  |                                 |
| SEYCHELLES               | DOTS                | YES                 |                         |  |                  |                  |                                 |
| SIERRA LEONE             | DOTS                | YES                 |                         |  |                  |                  |                                 |
| SOUTH AFRICA             | DOTS                | YES                 |                         |  |                  |                  |                                 |
| SWAZILAND                | <b>DOTS</b>         | YES                 |                         |  |                  |                  |                                 |
| TOGO                     | DOTS                |                     |                         |  |                  |                  |                                 |
| UGANDA                   | DOTS                | YES                 |                         |  |                  |                  |                                 |
| UR TANZANIA              | DOTS                | YES                 |                         |  |                  |                  |                                 |
| ZAMBIA                   | <b>DOTS</b>         | YES                 |                         |  |                  |                  |                                 |
| ZIMBABWE                 | DOTS                | YES                 |                         |  |                  |                  |                                 |

|  |                                 |
|--|---------------------------------|
|  | Implemented in all units/areas  |
|  | Implemented in some units/areas |
|  | Not implemented                 |
|  | Unknown                         |

- a Status: DOTS status (**bold** indicates DOTS introduced in 2002)  
b Manual: National TB control manual (recommended)  
c Microscopy: Use of smear microscopy for diagnosis (core component of DOTS)  
d Monitoring of TB Suspects: Register of TB suspects (e.g. patients with cough ≥ 3 weeks) kept at DOTS facilities (recommended)  
e SCC: Short course chemotherapy (core component of DOTS)  
f DOT: Directly observed treatment (core component of DOTS)  
g Outcome monitoring: Monitoring of treatment outcomes by cohort analysis (core component of DOTS)

Country data for Africa: notification, detection and DOTS coverage, 2002

|                          | Country information |         |        |         |        |         |               |           |        |           |              |        |         |        |         |           |         |         |      |     |                |  |
|--------------------------|---------------------|---------|--------|---------|--------|---------|---------------|-----------|--------|-----------|--------------|--------|---------|--------|---------|-----------|---------|---------|------|-----|----------------|--|
|                          | Notified TB         |         |        |         |        |         |               |           |        |           | Estimated TB |        |         |        |         |           |         |         |      |     | Detection rate |  |
|                          | All cases           |         |        | New ss+ |        |         | New confirmed |           |        | All cases |              |        | New ss+ |        |         | All cases |         | New ss+ |      |     |                |  |
|                          | Pop<br>thousands    | a       | b      | c       | d      | e       | f             | g         | h      | i         | j            | k      | l       | m      | n       | o         | p       | q       | r    | s   | t              |  |
|                          | number              | rate    | number | rate    | number | rate    | number        | rate      | number | rate      | number       | rate   | %       | %      | pop     | number    | rate    | number  | rate | %   | %              |  |
| Algeria                  | 31 266              | 18 934  | 61     | 8 246   | 26     | 16 137  | 27            | 8 506     | 27     | 52        | 7 256        | 23     | 117     | 114    | 100     | 18 934    | 61      | 8 246   | 26   | 114 | 86             |  |
| Angola                   | 13 184              | 29 996  | 228    | 18 087  | 137    | 44 226  | 335           | 19 162    | 145    | 68        | 94           | 28 544 | 217     | 17 345 | 132     | 91        | 70      | 1 452   | 742  | 55  |                |  |
| Benin                    | 6 558               | 2 830   | 43     | 2 415   | 37     | 2 499   | 38            | 5 644     | 86     | 2 473     | 38           | 50     | 98      | 100    | 2 521   | 38        | 2 415   | 37      | 98   | 100 |                |  |
| Botswana                 | 1 770               | 10 204  | 577    | 3 334   | 188    | 11 622  | 657           | 4 577     | 259    | 88        | 73           | 100    | 10 204  | 577    | 3 334   | 188       | 73      | 39      |      |     |                |  |
| Burkina Faso             | 12 624              | 2 376   | 19     | 1 544   | 12     | 1 544   | 12            | 1 544     | 12     | 18        | 18           | 100    | 2 376   | 19     | 1 544   | 12        | 18      | 88      |      |     |                |  |
| Burundi                  | 6 602               | 6 371   | 97     | 2 791   | 42     | 23 721  | 359           | 10 082    | 153    | 27        | 28           | 91     | 6 371   | 97     | 2 791   | 42        | 28      | 69      |      |     |                |  |
| Cameroon                 | 15 729              | 11 057  | 70     | 7 921   | 50     | 29 520  | 188           | 12 350    | 79     | 37        | 64           | 90     | 10 341  | 66     | 7 365   | 47        | 60      | 81      |      |     |                |  |
| Cape Verde               | 454                 | 195     | 43     | 111     | 24     | 111     | 24            | 111       | 24     | 31        | 69           | 40     | 195     | 43     | 111     | 24        | 31      | 69      |      |     |                |  |
| Central African Republic | 3 819               | 4 837   | 127    | 2 758   | 72     | 12 903  | 338           | 5 376     | 141    | 37        | 51           | 75     | 3 519   | 92     | 2 657   | 70        | 49      | 90      |      |     |                |  |
| Chad                     | 8 348               | 5 077   | 61     | 3 519   | 42     | 18 565  | 222           | 8 134     | 97     | 27        | 43           | 98     | 4 828   | 58     | 3 417   | 41        | 42      | 77      |      |     |                |  |
| Comoros                  | 747                 |         |        |         |        | 453     | 61            | 204       | 27     |           |              |        |         |        |         |           |         |         |      |     |                |  |
| Congo                    | 3 633               | 9 076   | 250    | 4 207   | 116    | 14 339  | 395           | 6 131     | 169    | 63        | 69           | 20     | 9 076   | 250    | 4 207   | 116       | 69      | 67      |      |     |                |  |
| Côte d'Ivoire            | 16 365              | 14 367  | 88     | 9 667   | 59     | 67 376  | 412           | 28 453    | 174    | 21        | 34           | 74     | 10 560  | 65     | 7 105   | 43        | 25      | 86      |      |     |                |  |
| DR Congo                 | 51 201              | 70 625  | 138    | 44 518  | 87     | 196 352 | 383           | 85 363    | 167    | 36        | 52           | 70     | 70 625  | 138    | 44 518  | 87        | 52      | 84      |      |     |                |  |
| Equatorial Guinea        | 481                 |         |        |         |        | 917     | 191           | 402       | 84     |           |              |        |         |        |         |           |         |         |      |     |                |  |
| Eritrea                  | 3 991               | 2 805   | 70     | 646     | 16     | 10 678  | 268           | 4 703     | 118    | 26        | 14           | 60     | 2 805   | 70     | 646     | 16        | 14      | 33      |      |     |                |  |
| Ethiopia                 | 68 961              | 110 289 | 160    | 36 541  | 53     | 255 345 | 370           | 109 630   | 159    | 43        | 33           | 95     | 110 289 | 160    | 36 541  | 53        | 33      | 52      |      |     |                |  |
| Gabon                    | 1 306               | 2 034   | 156    | 1 033   | 79     | 3 244   | 248           | 1 417     | 108    | 63        | 73           | 22     | 2 034   | 156    | 1 033   | 79        | 73      | 57      |      |     |                |  |
| Gambia                   | 1 388               | 1 859   | 134    | 1 035   | 75     | 3 194   | 230           | 1 419     | 102    | 58        | 73           | 100    | 1 859   | 134    | 1 035   | 75        | 73      | 59      |      |     |                |  |
| Ghana                    | 20 471              | 11 723  | 57     | 7 732   | 38     | 43 104  | 211           | 18 961    | 93     | 27        | 41           | 100    | 11 723  | 57     | 7 732   | 38        | 41      | 74      |      |     |                |  |
| Guinea                   | 8 359               | 6 199   | 74     | 4 300   | 51     | 17 932  | 215           | 7 970     | 95     | 35        | 54           | 100    | 6 199   | 74     | 4 300   | 51        | 54      | 88      |      |     |                |  |
| Guinea-Bissau            | 1 449               | 1 566   | 108    | 899     | 62     | 2 836   | 196           | 1 249     | 86     | 55        | 72           | 20     | 1 113   | 77     | 532     | 37        | 43      | 53      |      |     |                |  |
| Kenya                    | 31 540              | 80 183  | 254    | 34 337  | 109    | 170 213 | 540           | 70 384    | 223    | 47        | 49           | 100    | 80 183  | 254    | 34 337  | 109       | 49      | 52      |      |     |                |  |
| Lesotho                  | 1 800               | 10 111  | 562    | 3 167   | 176    | 13 059  | 726           | 5 201     | 289    | 77        | 61           | 100    | 10 111  | 562    | 3 167   | 176       | 61      | 42      |      |     |                |  |
| Liberia                  | 3 239               |         |        |         |        | 7 993   | 247           | 3 521     | 109    |           |              |        |         |        |         |           |         |         |      |     |                |  |
| Madagascar               | 16 916              | 16 082  | 95     | 10 940  | 65     | 39 553  | 234           | 17 755    | 105    | 41        | 62           | 100    | 16 082  | 95     | 10 940  | 65        | 62      | 87      |      |     |                |  |
| Malawi                   | 11 871              | 24 595  | 207    | 7 686   | 65     | 51 202  | 431           | 21 173    | 178    | 48        | 36           | 100    | 24 595  | 207    | 7 686   | 65        | 36      | 42      |      |     |                |  |
| Mali                     | 12 623              | 4 457   | 35     | 2 757   | 22     | 42 118  | 334           | 18 704    | 148    | 11        | 15           | 68     | 4 457   | 35     | 2 757   | 22        | 15      | 76      |      |     |                |  |
| Mauritania               | 2 807               |         |        |         |        | 5 271   | 188           | 2 362     | 84     |           |              |        |         |        |         |           |         |         |      |     |                |  |
| Mauritius                | 1 210               | 139     | 11     | 86      | 7      | 780     | 64            | 351       | 29     | 18        | 25           | 100    | 139     | 11     | 86      | 7         | 25      | 75      |      |     |                |  |
| Mozambique               | 18 537              | 25 544  | 138    | 15 236  | 82     | 80 893  | 436           | 33 690    | 182    | 32        | 45           | 100    | 25 544  | 138    | 15 236  | 82        | 45      | 71      |      |     |                |  |
| Namibia                  | 1 961               | 12 698  | 647    | 4 535   | 231    | 14 724  | 751           | 5 962     | 304    | 86        | 76           | 60     | 12 698  | 647    | 4 535   | 231       | 76      | 43      |      |     |                |  |
| Niger                    | 11 544              |         |        |         |        | 22 332  | 193           | 9 940     | 86     |           |              |        |         |        |         |           |         |         |      |     |                |  |
| Nigeria                  | 120 911             | 38 628  | 32     | 21 936  | 18     | 21 936  | 18            | 367 836   | 304    | 159 116   | 132          | 11     | 14      | 55     | 29 645  | 25        | 19 596  | 16      | 12   | 71  |                |  |
| Rwanda                   | 8 272               | 6 011   | 73     | 3 956   | 48     | 32 155  | 389           | 13 628    | 165    | 19        | 29           | 100    | 6 011   | 73     | 3 956   | 48        | 29      | 81      |      |     |                |  |
| Sao Tome & Principe      | 157                 | 94      | 60     | 42      | 27     | 204     | 130           | 92        | 58     | 46        | 46           |        |         |        |         |           |         |         |      |     |                |  |
| Senegal                  | 9 855               | 8 366   | 85     | 5 796   | 59     | 23 824  | 242           | 10 676    | 108    | 35        | 54           | 100    | 8 366   | 85     | 5 796   | 59        | 54      | 82      |      |     |                |  |
| Seychelles               | 80                  | 29      | 36     | 9       | 11     | 33      | 42            | 15        | 19     | 87        | 60           | 100    | 29      | 36     | 9       | 11        | 60      | 31      |      |     |                |  |
| Sierra Leone             | 4 764               | 4 793   | 101    | 2 938   | 62     | 19 275  | 405           | 8 248     | 173    | 25        | 36           | 93     | 4 793   | 101    | 2 938   | 62        | 36      | 69      |      |     |                |  |
| South Africa             | 44 759              | 215 120 | 481    | 98 799  | 221    | 249 660 | 558           | 101 696   | 227    | 86        | 97           | 98     | 212 616 | 475    | 97 656  | 218       | 96      | 62      |      |     |                |  |
| Swaziland                | 1 069               | 6 748   | 631    | 1 410   | 132    | 1 410   | 132           | 1 410     | 132    | 59        | 31           | 100    | 6 748   | 631    | 1 410   | 132       | 31      | 24      |      |     |                |  |
| Togo                     | 4 801               | 1 645   | 34     | 1 203   | 25     | 1 203   | 25            | 1 203     | 25     | 9         | 16           | 35     | 574     | 12     | 421     | 9         | 6       | 93      |      |     |                |  |
| Uganda                   | 25 004              | 40 695  | 163    | 19 088  | 76     | 94 362  | 377           | 41 000    | 164    | 43        | 47           | 100    | 40 695  | 163    | 19 088  | 76        | 47      | 53      |      |     |                |  |
| UR Tanzania              | 36 276              | 60 306  | 166    | 24 136  | 67     | 131 566 | 363           | 56 054    | 155    | 46        | 43           | 100    | 60 306  | 166    | 24 136  | 67        | 43      | 52      |      |     |                |  |
| Zambia                   | 10 698              | 54 220  | 507    | 16 351  | 153    | 16 351  | 153           | 71 509    | 668    | 29 024    | 271          | 76     | 56      | 55     | 41 487  | 388       | 11 694  | 109     | 40   | 31  |                |  |
| Zimbabwe                 | 12 835              | 59 170  | 461    | 15 941  | 124    | 16 506  | 129           | 87 649    | 683    | 34 759    | 271          | 68     | 46      | 100    | 59 170  | 461       | 15 941  | 124     | 46   | 33  |                |  |
| Region                   | 672 237 984         | 992 054 | 148    | 451 653 | 67     | 226 588 | 34            | 2 353 702 | 350    | 999 551   | 149          | 42     | 45      | 81     | 958 365 | 143       | 438 259 | 65      | 44   | 59  | 44             |  |

See explanatory notes, page 129.

Country data for Africa, cont'd: treatment outcomes for cases registered in 2001 - DOTS and non-DOTS

|  | New smear-positive cases - DOTS |        |        |        |        |        |        |        |        |        | Retreatment cases - DOTS |        |        |        |        |        |        |        |        |        | New smear-positive cases - non-DOTS |        |        |        |        |        |        |        |        |         |    |
|--|---------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-------------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|---------|----|
|  | Regist-<br>ered                 | %<br>a | %<br>b | %<br>c | %<br>d | %<br>e | %<br>f | %<br>g | %<br>h | %<br>i | Regist-<br>ered          | %<br>j | %<br>k | %<br>l | %<br>m | %<br>n | %<br>o | %<br>p | %<br>q | %<br>r | Regist-<br>ered                     | %<br>s | %<br>t | %<br>u | %<br>v | %<br>w | %<br>x | %<br>y | %<br>z | %<br>aa |    |
| Algeria<br>Angola<br>Benin                                 | 8 361                           | 55     | 29     | 2      | 1      | 5      | 5      | 4      | 84     | 84     | 425                      | 56     | 16     | 4      | 1      | 5      | 4      | 13     | 72     |        | 119                                 | 75     | 13     | 6      |        |        |        |        |        | 6       | 88 |
|  | 2 298                           | 55     | 24     | 6      | 2      | 12     | 1      | 0      | 79     |        | 289                      | 53     | 24     | 7      | 5      | 10     | 2      | 0      | 77     |        |                                     |        |        |        |        |        |        |        |        |         |    |
|  | 4 296                           | 24     | 53     | 7      | 1      | 6      | 9      | 0      | 78     |        | 448                      | 23     | 51     | 10     | 0      | 9      | 7      | 0      | 73     |        |                                     |        |        |        |        |        |        |        |        |         |    |
|  | 1 537                           | 57     | 8      | 13     | 3      | 12     | 7      | 0      | 65     |        | 141                      | 59     | 9      | 13     | 5      | 11     | 3      | 0      | 68     |        |                                     |        |        |        |        |        |        |        |        |         |    |
|  | 3 465                           | 42     | 39     | 4      | 0      | 13     | 1      | 0      | 80     |        | 92                       | 50     | 13     | 15     | 3      | 17     | 1      | 0      | 63     |        |                                     |        |        |        |        |        |        |        |        |         |    |
| Cameroon<br>Cape Verde<br>Central African Republic<br>Chad | 4 695                           | 55     | 7      | 5      | 1      | 13     | 1      | 18     | 62     | 62     | 291                      | 49     | 8      | 8      | 3      | 30     | 1      | 0      | 57     |        |                                     |        |        |        |        |        |        |        |        |         |    |
|  | 12 42                           | 0      | 0      | 0      | 58     | 0      | 0      | 42     |        |        | 250                      | 28     | 35     | 10     | 3      | 10     | 14     | 0      | 63     |        | 867                                 | 18     | 18     | 3      | 9      | 37     | 14     | 0      | 36     |         |    |
|  | 2 633                           | 30     | 31     | 5      | 3      | 15     | 17     | 0      | 61     |        |                          |        |        |        |        |        |        |        |        |        |                                     |        |        |        |        |        |        |        |        |         |    |
| Comoros  | 4 319                           | 53     | 13     | 2      | 0      | 20     | 4      | 8      | 66     |        |                          |        |        |        |        |        |        |        |        |        |                                     |        |        |        |        |        |        |        |        |         |    |
| Congo<br>Côte d'Ivoire<br>DR Congo<br>Equatorial Guinea    | 6 510                           | 61     | 13     | 4      | 2      | 11     | 9      | 0      | 73     | 73     | 354                      | 45     | 12     | 6      | 8      | 22     | 6      | 0      | 57     |        | 2 347                               | 56     | 13     | 4      | 2      | 15     | 9      | 0      | 69     |         |    |
|  | 40 884                          | 66     | 12     | 6      | 1      | 10     | 5      | 1      | 77     |        |                          |        |        |        |        |        |        |        |        |        |                                     |        |        |        |        |        |        |        |        |         |    |
|  | 860                             | 71     | 9      | 7      | 1      | 7      | 4      | 1      | 80     |        | 1 505                    | 55     | 9      | 7      | 3      | 6      | 2      | 18     | 64     |        |                                     |        |        |        |        |        |        |        |        |         |    |
|  | 32 391                          | 61     | 15     | 7      | 1      | 6      | 4      | 7      | 76     |        | 208                      | 11     | 23     | 6      | 2      | 27     | 1      | 29     | 34     |        |                                     |        |        |        |        |        |        |        |        |         |    |
|  | 849                             | 43     | 6      | 4      | 0      | 43     | 4      | 0      | 49     |        | 87                       | 71     | 2      | 13     | 1      | 8      | 5      | 0      | 74     |        |                                     |        |        |        |        |        |        |        |        |         |    |
| Gambia<br>Ghana<br>Guinea<br>Guinea-Bissau                 | 861                             | 65     | 6      | 6      | 2      | 16     | 5      | 0      | 71     |        | 350                      | 59     | 6      | 9      | 4      | 14     | 9      | 0      | 65     |        |                                     |        |        |        |        |        |        |        |        |         |    |
|  | 7 712                           | 37     | 5      | 5      | 1      | 12     | 3      | 37     | 42     |        | 156                      | 9      | 10     | 7      | 1      | 27     | 46     | 0      | 19     |        | 340                                 | 41     | 22     | 9      | 0      | 21     | 6      | 0      | 64     |         |    |
|  | 4 090                           | 66     | 8      | 7      | 1      | 9      | 9      | 0      | 74     |        | 2 635                    | 68     | 10     | 10     | 1      | 7      | 6      | 0      | 77     |        |                                     |        |        |        |        |        |        |        |        |         |    |
|  | 513                             | 33     | 19     | 3      | 0      | 25     | 21     | 0      | 51     |        | 313                      | 64     | 19     | 1      | 4      | 4      | 8      | 64     |        |        |                                     |        |        |        |        |        |        |        |        |         |    |
|  | 30 855                          | 67     | 13     | 5      | 0      | 8      | 6      | 0      | 80     |        | 948                      | 59     | 8      | 9      | 2      | 15     | 7      | 0      | 67     |        | 78                                  | 27     | 17     | 6      | 0      | 47     | 3      | 0      | 44     |         |    |
| Kenya<br>Lesotho<br>Liberia<br>Madagascar<br>Malawi        | 2 977                           | 71     | 11     | 1      | 5      | 6      | 6      | 71     |        | 854    | 65                       | 4      | 23     | 1      | 5      | 2      | 0      | 69     |        |        |                                     |        |        |        |        |        |        |        |        |         |    |
|  | 9 228                           | 60     | 9      | 6      | 1      | 18     | 5      | 0      | 69     |        | 322                      | 44     | 11     | 7      | 2      | 21     | 6      | 8      | 56     |        |                                     |        |        |        |        |        |        |        |        |         |    |
|  | 8 274                           | 67     | 3      | 19     | 2      | 6      | 3      | 0      | 70     |        |                          |        |        |        |        |        |        |        |        |        |                                     |        |        |        |        |        |        |        |        |         |    |
|  | 2 797                           | 36     | 14     | 6      | 1      | 25     | 4      | 13     | 50     |        |                          |        |        |        |        |        |        |        |        |        |                                     |        |        |        |        |        |        |        |        |         |    |
|  |                                 |        |        |        |        |        |        |        |        |        |                          |        |        |        |        |        |        |        |        |        |                                     |        |        |        |        |        |        |        |        |         |    |
| Mali<br>Mauritania<br>Mauritius<br>Mozambique<br>Namibia   | 123                             | 86     | 7      | 2      | 2      | 3      | 0      | 0      | 93     |        | 2                        | 50     |        |        |        | 50     |        | 0      | 50     |        |                                     |        |        |        |        |        |        |        |        |         |    |
|  | 14 047                          | 75     | 2      | 10     | 1      | 9      | 3      | 0      | 77     |        | 1 470                    | 70     | 1      | 12     | 2      | 12     | 3      | 0      | 71     |        |                                     |        |        |        |        |        |        |        |        |         |    |
|  | 4 238                           | 44     | 24     | 8      | 2      | 15     | 8      | 0      | 68     |        | 776                      | 40     | 25     | 12     | 5      | 12     | 6      | 0      | 65     |        |                                     |        |        |        |        |        |        |        |        |         |    |
|  |                                 |        |        |        |        |        |        |        |        |        |                          |        |        |        |        |        |        |        |        |        |                                     |        |        |        |        |        |        |        |        |         |    |
|  |                                 |        |        |        |        |        |        |        |        |        |                          |        |        |        |        |        |        |        |        |        |                                     |        |        |        |        |        |        |        |        |         |    |
| Niger<br>Nigeria<br>Rwanda<br>Sao Tome & Principe          | 17 436                          | 68     | 11     | 6      | 2      | 12     | 2      | 0      | 79     |        | 1 847                    | 62     | 9      | 9      | 6      | 12     | 2      | 0      | 71     |        | 94                                  | 24     | 30     | 13     | 0      | 16     | 0      | 17     | 54     |         |    |
|  |                                 |        |        |        |        |        |        |        |        |        |                          |        |        |        |        |        |        |        |        |        |                                     |        |        |        |        |        |        |        |        |         |    |
|  |                                 |        |        |        |        |        |        |        |        |        |                          |        |        |        |        |        |        |        |        |        |                                     |        |        |        |        |        |        |        |        |         |    |
|  |                                 |        |        |        |        |        |        |        |        |        |                          |        |        |        |        |        |        |        |        |        |                                     |        |        |        |        |        |        |        |        |         |    |
|  |                                 |        |        |        |        |        |        |        |        |        |                          |        |        |        |        |        |        |        |        |        |                                     |        |        |        |        |        |        |        |        |         |    |
| Senegal<br>Seychelles<br>Sierra Leone<br>South Africa      | 6 094                           | 43     | 9      | 3      | 1      | 20     | 5      | 18     | 53     |        | 959                      | 37     | 6      | 4      | 2      | 23     | 7      | 22     | 43     |        |                                     |        |        |        |        |        |        |        |        |         |    |
|  | 12 67                           | 0      | 17     | 0      | 0      | 17     | 0      | 67     |        |        |                          |        |        |        |        |        |        |        |        |        |                                     |        |        |        |        |        |        |        |        |         |    |
|  | 2 683                           | 68     | 11     | 5      | 1      | 13     | 1      | 0      | 80     |        | 74                       | 73     | 4      | 8      | 7      | 8      | 0      | 0      | 77     |        |                                     |        |        |        |        |        |        |        |        |         |    |
|  | 83 233                          | 55     | 10     | 7      | 2      | 12     | 12     | 2      | 65     |        | 17 869                   | 43     | 10     | 9      | 2      | 17     | 16     | 2      | 53     |        | 17 322                              | 24     | 15     | 6      | 1      | 9      | 14     | 32     | 39     |         |    |
|  | 1 586                           | 14     | 22     | 10     | 0      | 8      | 9      | 37     | 36     |        | 104                      | 6      | 29     | 20     | 1      | 7      | 3      | 35     | 35     |        | 247                                 | 71     | 2      | 12     | 2      | 10     | 3      | 0      | 73     |         |    |
| Swaziland<br>Togo<br>Uganda<br>UR Tanzania<br>Zambia       | 982                             | 54     | 1      | 9      | 1      | 7      | 2      | 25     | 55     |        | 88                       | 49     | 0      | 8      | 3      | 13     | 1      | 26     | 49     |        |                                     |        |        |        |        |        |        |        |        |         |    |
|  | 17 291                          | 28     | 28     | 6      | 1      | 17     | 5      | 15     | 56     |        | 1 249                    | 36     | 27     | 11     | 0      | 16     | 6      | 4      | 63     |        |                                     |        |        |        |        |        |        |        |        |         |    |
|  | 24 235                          | 76     | 4      | 10     | 0      | 4      | 4      | 0      | 81     |        | 3 847                    | 46     | 30     | 14     | 1      | 5      | 4      | 0      | 76     |        | 4 177                               | 49     | 24     | 9      | 1      | 6      | 3      | 7      | 72     |         |    |
|  | 8 847                           | 59     | 16     | 12     | 0      | 6      | 7      | 0      | 75     |        | 1 249                    | 86     | 9      | 0      | 1      | 2      | 1      | 0      | 95     |        |                                     |        |        |        |        |        |        |        |        |         |    |
|  | 16 569                          | 63     | 7      | 12     | 0      | 8      | 9      | 0      | 71     |        | 1 084                    | 54     | 7      | 1      | 9      | 20     | 9      | 0      | 61     |        | 25 591                              | 32     | 16     | 6      | 1      | 10     | 11     | 23     | 48     |         |    |
| Region   | 378 984                         | 58     | 13     | 7      | 1      | 10     | 7      | 4      | 71     |        | 40 286                   | 49     | 13     | 9      | 2      | 13     | 10     | 3      | 62     |        |                                     |        |        |        |        |        |        |        |        |         |    |

See explanatory notes, page 129.

Country data for Africa, cont'd: age and sex distribution of smear-positive cases in DOTS areas, 2002 (absolute numbers)

|                          | MALE  |        |        |        |        |        |       | FEMALE |        |        |        |        |       |       | ALL    |        |         |        |        |        |        |
|--------------------------|-------|--------|--------|--------|--------|--------|-------|--------|--------|--------|--------|--------|-------|-------|--------|--------|---------|--------|--------|--------|--------|
|                          | 0-14  | 15-24  | 25-34  | 35-44  | 45-54  | 55-64  | 65+   | 0-14   | 15-24  | 25-34  | 35-44  | 45-54  | 55-64 | 65+   | 0-14   | 15-24  | 25-34   | 35-44  | 45-54  | 55-64  | 65+    |
| Algeria                  | 39    | 1 364  | 1 580  | 630    | 406    | 273    | 280   | 71     | 1 840  | 730    | 334    | 224    | 217   | 258   | 110    | 3 204  | 2 310   | 964    | 630    | 490    | 538    |
| Angola                   | 407   | 2 133  | 2 211  | 1 844  | 1 144  | 592    | 415   | 600    | 2 520  | 2 128  | 1 532  | 921    | 503   | 296   | 1 007  | 4 653  | 4 339   | 3 376  | 2 065  | 1 095  | 711    |
| Benin                    | 16    | 248    | 489    | 304    | 231    | 125    | 94    | 35     | 255    | 298    | 159    | 86     | 47    | 24    | 51     | 503    | 787     | 463    | 317    | 172    | 118    |
| Botswana                 | 17    | 226    | 595    | 517    | 244    | 136    | 84    | 45     | 393    | 566    | 290    | 144    | 54    | 26    | 62     | 619    | 1 161   | 807    | 388    | 190    | 110    |
| Burkina Faso             | 6     | 123    | 273    | 266    | 156    | 124    | 83    | 12     | 85     | 159    | 104    | 80     | 30    | 25    | 18     | 208    | 432     | 370    | 236    | 154    | 108    |
| Burundi                  | 16    | 310    | 470    | 520    | 270    | 97     | 52    | 48     | 243    | 242    | 324    | 152    | 24    | 23    | 64     | 553    | 712     | 844    | 422    | 121    | 75     |
| Cameroun                 | 66    | 818    | 1 335  | 1 117  | 619    | 258    | 125   | 59     | 950    | 1 053  | 545    | 236    | 140   | 44    | 125    | 1 768  | 2 388   | 1 662  | 855    | 398    | 169    |
| Cape Verde               | 3     | 9      | 29     | 20     | 14     | 1      | 2     | 2      | 11     | 11     | 12     | 3      | 4     | 4     | 5      | 20     | 40      | 32     | 17     | 5      | 6      |
| Central African Republic | 69    | 255    | 450    | 403    | 145    | 80     | 20    | 57     | 307    | 389    | 254    | 133    | 79    | 16    | 126    | 562    | 839     | 657    | 278    | 159    | 36     |
| Chad                     | 24    | 79     | 1 015  | 776    | 263    | 32     | 16    | 17     | 21     | 482    | 490    | 175    | 14    | 11    | 41     | 100    | 1 497   | 1 266  | 438    | 46     | 27     |
| Comoros                  |       |        |        |        |        |        |       |        |        |        |        |        |       |       |        |        |         |        |        |        |        |
| Congo                    |       |        |        |        |        |        |       |        |        |        |        |        |       |       |        |        |         |        |        |        |        |
| Côte d'Ivoire            | 69    | 826    | 1 402  | 968    | 532    | 251    | 200   | 91     | 744    | 1 013  | 535    | 237    | 141   | 96    | 160    | 1 570  | 2 415   | 1 503  | 769    | 392    | 296    |
| DR Congo                 | 649   | 4 965  | 7 414  | 4 994  | 3 065  | 1 388  | 791   | 874    | 5 378  | 6 230  | 3 939  | 2 262  | 1 055 | 476   | 1 523  | 10 343 | 13 644  | 8 933  | 5 327  | 2 443  | 1 267  |
| Equatorial Guinea        |       |        |        |        |        |        |       |        |        |        |        |        |       |       |        |        |         |        |        |        |        |
| Eritrea                  | 16    | 85     | 88     | 53     | 41     | 24     | 23    | 15     | 75     | 85     | 52     | 39     | 30    | 20    | 31     | 160    | 173     | 105    | 80     | 54     | 43     |
| Ethiopia                 | 1 251 | 6 764  | 5 669  | 3 128  | 1 544  | 821    | 372   | 1 614  | 5 607  | 5 692  | 2 685  | 935    | 323   | 136   | 2 865  | 12 371 | 11 361  | 5 813  | 2 479  | 1 144  | 508    |
| Gabon                    | 10    | 137    | 173    | 148    | 63     | 27     | 40    | 18     | 125    | 140    | 71     | 32     | 21    | 28    | 28     | 262    | 313     | 219    | 95     | 48     | 68     |
| Gambia                   | 2     | 135    | 240    | 160    | 100    | 60     | 37    | 5      | 71     | 112    | 42     | 40     | 21    | 10    | 7      | 206    | 352     | 202    | 140    | 81     | 47     |
| Ghana                    | 80    | 535    | 1 245  | 1 282  | 883    | 507    | 429   | 98     | 489    | 806    | 592    | 325    | 223   | 238   | 178    | 1 024  | 2 051   | 1 874  | 1 208  | 730    | 667    |
| Guinea                   | 24    | 413    | 958    | 634    | 336    | 139    | 149   | 42     | 399    | 439    | 259    | 109    | 77    | 50    | 66     | 812    | 1 397   | 893    | 445    | 216    | 199    |
| Guinea-Bissau            | 4     | 70     | 91     | 78     | 37     | 34     | 17    | 2      | 54     | 65     | 30     | 24     | 21    | 5     | 6      | 124    | 156     | 108    | 61     | 55     | 22     |
| Kenya                    | 299   | 4 445  | 7 708  | 4 306  | 2 023  | 807    | 433   | 392    | 4 542  | 5 465  | 2 267  | 996    | 445   | 190   | 691    | 8 987  | 13 173  | 6 573  | 3 019  | 1 252  | 623    |
| Lesotho                  | 10    | 218    | 547    | 535    | 347    | 211    | 80    | 14     | 304    | 447    | 207    | 125    | 41    | 17    | 24     | 522    | 994     | 742    | 472    | 252    | 97     |
| Liberia                  |       |        |        |        |        |        |       |        |        |        |        |        |       |       |        |        |         |        |        |        |        |
| Madagascar               | 94    | 1 023  | 1 594  | 1 563  | 1 174  | 609    | 398   | 163    | 983    | 1 372  | 1 000  | 598    | 234   | 135   | 257    | 2 006  | 2 966   | 2 563  | 1 772  | 843    | 533    |
| Malawi                   |       |        |        |        |        |        |       |        |        |        |        |        |       |       |        |        |         |        |        |        |        |
| Mali                     | 20    | 209    | 547    | 447    | 430    | 151    | 72    | 39     | 141    | 250    | 166    | 190    | 71    | 24    | 59     | 350    | 797     | 613    | 620    | 222    | 96     |
| Mauritania               |       |        |        |        |        |        |       |        |        |        |        |        |       |       |        |        |         |        |        |        |        |
| Mauritius                | 1     | 12     | 6      | 21     | 12     | 7      | 4     | 1      | 3      | 8      | 7      | 1      | 2     | 1     | 2      | 15     | 14      | 28     | 13     | 9      | 5      |
| Mozambique               |       |        |        |        |        |        |       |        |        |        |        |        |       |       |        |        |         |        |        |        |        |
| Namibia                  | 16    | 300    | 1 029  | 723    | 308    | 141    | 88    | 42     | 355    | 770    | 471    | 171    | 83    | 67    | 58     | 655    | 1 799   | 1 194  | 479    | 224    | 155    |
| Niger                    |       |        |        |        |        |        |       |        |        |        |        |        |       |       |        |        |         |        |        |        |        |
| Nigeria                  | 163   | 2 274  | 3 719  | 2 283  | 1 352  | 696    | 534   | 242    | 2 633  | 2 884  | 1 368  | 787    | 420   | 241   | 405    | 4 907  | 6 603   | 3 651  | 2 139  | 1 116  | 775    |
| Rwanda                   | 13    | 96     | 167    | 184    | 79     | 38     | 13    | 15     | 98     | 113    | 58     | 22     | 15    | 8     | 28     | 194    | 280     | 242    | 101    | 53     | 21     |
| Sao Tome & Principe      |       |        |        |        |        |        |       |        |        |        |        |        |       |       |        |        |         |        |        |        |        |
| Senegal                  | 58    | 815    | 1 271  | 813    | 488    | 279    | 212   | 61     | 545    | 523    | 317    | 210    | 118   | 86    | 119    | 1 360  | 1 794   | 1 130  | 698    | 397    | 298    |
| Seychelles               | 0     | 1      | 3      | 1      | 0      | 1      | 1     | 0      | 0      | 0      | 0      | 0      | 0     | 2     | 0      | 1      | 3       | 1      | 0      | 1      | 3      |
| Sierra Leone             | 23    | 317    | 561    | 427    | 246    | 102    | 58    | 31     | 300    | 382    | 284    | 133    | 48    | 26    | 54     | 617    | 943     | 711    | 379    | 150    | 84     |
| South Africa             | 3 080 | 5 122  | 13 634 | 13 177 | 7 009  | 2 333  | 936   | 3 257  | 7 052  | 11 266 | 6 061  | 2 603  | 1 070 | 600   | 6 337  | 12 174 | 24 900  | 19 238 | 9 612  | 3 403  | 1 536  |
| Swaziland                | 1     | 94     | 244    | 182    | 117    | 33     | 10    | 9      | 236    | 274    | 127    | 50     | 13    | 9     | 10     | 330    | 518     | 309    | 167    | 46     | 19     |
| Togo                     | 4     | 49     | 84     | 58     | 36     | 19     | 14    | 4      | 44     | 52     | 28     | 15     | 10    | 5     | 8      | 93     | 136     | 86     | 51     | 29     | 19     |
| Uganda                   | 259   | 1 503  | 3 783  | 2 865  | 1 399  | 723    | 465   | 371    | 1 689  | 3 011  | 1 708  | 765    | 374   | 184   | 630    | 3 192  | 6 794   | 4 573  | 2 164  | 1 097  | 649    |
| UR Tanzania              | 187   | 2 309  | 4 814  | 3 525  | 2 075  | 1 211  | 944   | 241    | 1 927  | 3 511  | 1 706  | 907    | 475   | 304   | 428    | 4 236  | 8 325   | 5 231  | 2 982  | 1 686  | 1 248  |
| Zambia                   | 739   | 737    | 2 447  | 1 502  | 578    | 41     | 250   | 662    | 967    | 1 950  | 1 060  | 447    | 187   | 127   | 1 401  | 1 704  | 4 397   | 2 562  | 1 025  | 228    | 377    |
| Zimbabwe                 | 191   | 600    | 2 548  | 1 662  | 744    | 315    | 159   | 222    | 914    | 2 185  | 1 095  | 421    | 140   | 65    | 413    | 1 514  | 4 733   | 2 757  | 1 165  | 455    | 224    |
| Region                   | 7 926 | 39 619 | 70 433 | 52 116 | 28 510 | 12 686 | 7 900 | 9 471  | 42 300 | 55 103 | 30 179 | 14 598 | 6 770 | 3 877 | 17 397 | 81 919 | 125 536 | 82 295 | 43 108 | 19 456 | 11 777 |

note: the sum of cases notified by age is less than the number of new smear-positive cases notified for some countries

Country data for Africa, cont'd: age and sex distribution of smear-positive cases in non-DOTS areas, 2002 (absolute numbers)

|                          | MALE |       |       |       |       |       |     | FEMALE |       |       |       |       |       |     | ALL   |       |       |       |       |       |     |
|--------------------------|------|-------|-------|-------|-------|-------|-----|--------|-------|-------|-------|-------|-------|-----|-------|-------|-------|-------|-------|-------|-----|
|                          | 0-14 | 15-24 | 25-34 | 35-44 | 45-54 | 55-64 | 65+ | 0-14   | 15-24 | 25-34 | 35-44 | 45-54 | 55-64 | 65+ | 0-14  | 15-24 | 25-34 | 35-44 | 45-54 | 55-64 | 65+ |
| Algeria                  | 28   | 90    | 81    | 71    | 43    | 32    | 29  | 40     | 90    | 80    | 68    | 51    | 30    | 9   | 68    | 180   | 161   | 139   | 94    | 62    | 38  |
| Angola                   |      |       |       |       |       |       |     |        |       |       |       |       |       |     |       |       |       |       |       |       |     |
| Benin                    |      |       |       |       |       |       |     |        |       |       |       |       |       |     |       |       |       |       |       |       |     |
| Botswana                 |      |       |       |       |       |       |     |        |       |       |       |       |       |     |       |       |       |       |       |       |     |
| Burkina Faso             |      |       |       |       |       |       |     |        |       |       |       |       |       |     |       |       |       |       |       |       |     |
| Burundi                  |      |       |       |       |       |       |     |        |       |       |       |       |       |     |       |       |       |       |       |       |     |
| Cameroun                 |      |       |       |       |       |       |     |        |       |       |       |       |       |     |       |       |       |       |       |       |     |
| Cape Verde               | 7    | 9     | 12    | 11    | 9     | 2     | 2   | 9      | 8     | 13    | 8     | 6     | 3     | 2   | 16    | 17    | 25    | 19    | 15    | 5     | 4   |
| Central African Republic | 0    | 11    | 14    | 18    | 6     | 5     | 1   | 1      | 7     | 13    | 10    | 12    | 4     | 0   | 1     | 18    | 27    | 28    | 18    | 9     | 1   |
| Chad                     |      |       |       |       |       |       |     |        |       |       |       |       |       |     |       |       |       |       |       |       |     |
| Comoros                  |      |       |       |       |       |       |     |        |       |       |       |       |       |     |       |       |       |       |       |       |     |
| Congo                    | 25   | 297   | 505   | 349   | 193   | 90    | 72  | 33     | 268   | 364   | 193   | 87    | 52    | 34  | 58    | 565   | 869   | 542   | 280   | 142   | 106 |
| Côte d'Ivoire            |      |       |       |       |       |       |     |        |       |       |       |       |       |     |       |       |       |       |       |       |     |
| DR Congo                 |      |       |       |       |       |       |     |        |       |       |       |       |       |     |       |       |       |       |       |       |     |
| Equatorial Guinea        |      |       |       |       |       |       |     |        |       |       |       |       |       |     |       |       |       |       |       |       |     |
| Eritrea                  |      |       |       |       |       |       |     |        |       |       |       |       |       |     |       |       |       |       |       |       |     |
| Ethiopia                 |      |       |       |       |       |       |     |        |       |       |       |       |       |     |       |       |       |       |       |       |     |
| Gabon                    |      |       |       |       |       |       |     |        |       |       |       |       |       |     |       |       |       |       |       |       |     |
| Gambia                   |      |       |       |       |       |       |     |        |       |       |       |       |       |     |       |       |       |       |       |       |     |
| Ghana                    |      |       |       |       |       |       |     |        |       |       |       |       |       |     |       |       |       |       |       |       |     |
| Guinea                   |      |       |       |       |       |       |     |        |       |       |       |       |       |     |       |       |       |       |       |       |     |
| Guinea-Bissau            | 3    | 31    | 55    | 50    | 33    | 18    | 17  | 7      | 26    | 43    | 36    | 25    | 16    | 7   | 10    | 57    | 98    | 86    | 58    | 34    | 24  |
| Kenya                    |      |       |       |       |       |       |     |        |       |       |       |       |       |     |       |       |       |       |       |       |     |
| Lesotho                  |      |       |       |       |       |       |     |        |       |       |       |       |       |     |       |       |       |       |       |       |     |
| Liberia                  |      |       |       |       |       |       |     |        |       |       |       |       |       |     |       |       |       |       |       |       |     |
| Madagascar               |      |       |       |       |       |       |     |        |       |       |       |       |       |     |       |       |       |       |       |       |     |
| Malawi                   |      |       |       |       |       |       |     |        |       |       |       |       |       |     |       |       |       |       |       |       |     |
| Mali                     |      |       |       |       |       |       |     |        |       |       |       |       |       |     |       |       |       |       |       |       |     |
| Mauritania               |      |       |       |       |       |       |     |        |       |       |       |       |       |     |       |       |       |       |       |       |     |
| Mauritius                |      |       |       |       |       |       |     |        |       |       |       |       |       |     |       |       |       |       |       |       |     |
| Mozambique               |      |       |       |       |       |       |     |        |       |       |       |       |       |     |       |       |       |       |       |       |     |
| Namibia                  |      |       |       |       |       |       |     |        |       |       |       |       |       |     |       |       |       |       |       |       |     |
| Niger                    |      |       |       |       |       |       |     |        |       |       |       |       |       |     |       |       |       |       |       |       |     |
| Nigeria                  |      |       |       |       |       |       |     |        |       |       |       |       |       |     |       |       |       |       |       |       |     |
| Rwanda                   | 1    | 7     | 6     | 2     | 2     | 2     | 2   | 0      | 6     | 5     | 2     | 3     | 2     | 2   | 1     | 13    | 11    | 4     | 5     | 4     | 4   |
| Sao Tome & Principe      |      |       |       |       |       |       |     |        |       |       |       |       |       |     |       |       |       |       |       |       |     |
| Senegal                  |      |       |       |       |       |       |     |        |       |       |       |       |       |     |       |       |       |       |       |       |     |
| Seychelles               |      |       |       |       |       |       |     |        |       |       |       |       |       |     |       |       |       |       |       |       |     |
| Sierra Leone             |      |       |       |       |       |       |     |        |       |       |       |       |       |     |       |       |       |       |       |       |     |
| South Africa             | 1    | 25    | 47    | 38    | 29    | 9     | 6   | 4      | 29    | 46    | 19    | 8     | 6     | 0   | 5     | 54    | 93    | 57    | 37    | 15    | 6   |
| Swaziland                |      |       |       |       |       |       |     |        |       |       |       |       |       |     |       |       |       |       |       |       |     |
| Togo                     | 6    | 91    | 155   | 108   | 68    | 36    | 26  | 8      | 81    | 96    | 51    | 28    | 19    | 8   | 14    | 172   | 251   | 159   | 96    | 55    | 34  |
| Uganda                   |      |       |       |       |       |       |     |        |       |       |       |       |       |     |       |       |       |       |       |       |     |
| UR Tanzania              | 396  | 276   | 604   | 498   | 210   | 121   | 155 | 437    | 416   | 780   | 374   | 210   | 110   | 70  | 833   | 692   | 1 384 | 872   | 420   | 231   | 225 |
| Zambia                   |      |       |       |       |       |       |     |        |       |       |       |       |       |     |       |       |       |       |       |       |     |
| Zimbabwe                 |      |       |       |       |       |       |     |        |       |       |       |       |       |     |       |       |       |       |       |       |     |
| Region                   | 467  | 837   | 1 479 | 1 145 | 593   | 315   | 310 | 539    | 931   | 1 440 | 761   | 430   | 242   | 132 | 1 006 | 1 768 | 2 919 | 1 906 | 1 023 | 557   | 442 |

note: the sum of cases notified by age is less than the number of new smear-positive cases notified for some countries



Country data for Africa, cont'd: smear-positive notification rates (per 100 000 population) by age and sex, 2002

|                          | MALE |       |       |       |       |       | FEMALE |      |       |       |       |       | ALL   |     |      |       |       |       |       |       |     |
|--------------------------|------|-------|-------|-------|-------|-------|--------|------|-------|-------|-------|-------|-------|-----|------|-------|-------|-------|-------|-------|-----|
|                          | 0-14 | 15-24 | 25-34 | 35-44 | 45-54 | 55-64 | 65+    | 0-14 | 15-24 | 25-34 | 35-44 | 45-54 | 55-64 | 65+ | 0-14 | 15-24 | 25-34 | 35-44 | 45-54 | 55-64 | 65+ |
| Nigeria                  | 1    | 39    | 60    | 33    | 33    | 44    | 48     | 1    | 55    | 29    | 18    | 19    | 33    | 35  | 1    | 47    | 45    | 25    | 26    | 38    | 41  |
| Angola                   | 14   | 177   | 279   | 354   | 327   | 268   | 282    | 20   | 205   | 261   | 282   | 246   | 201   | 153 | 17   | 191   | 270   | 317   | 284   | 232   | 210 |
| Benin                    | 1    | 36    | 122   | 110   | 128   | 121   | 111    | 2    | 37    | 72    | 48    | 42    | 42    | 26  | 2    | 37    | 96    | 76    | 83    | 80    | 67  |
| Botswana                 | 5    | 112   | 457   | 625   | 464   | 501   | 435    | 13   | 197   | 427   | 326   | 232   | 137   | 89  | 9    | 154   | 442   | 470   | 338   | 286   | 226 |
| Burkina Faso             | 0    | 9     | 33    | 61    | 70    | 80    | 66     | 0    | 7     | 19    | 21    | 26    | 13    | 12  | 0    | 8     | 26    | 40    | 45    | 41    | 32  |
| Burundi                  | 1    | 43    | 124   | 162   | 162   | 111   | 72     | 3    | 33    | 60    | 124   | 76    | 19    | 19  | 2    | 38    | 91    | 167   | 115   | 56    | 39  |
| Cameroun                 | 2    | 50    | 125   | 162   | 131   | 80    | 48     | 2    | 58    | 97    | 75    | 47    | 39    | 14  | 2    | 54    | 111   | 118   | 87    | 58    | 29  |
| Cape Verde               | 3    | 18    | 94    | 89    | 158   | 20    | 27     | 2    | 21    | 34    | 46    | 20    | 43    | 31  | 3    | 20    | 63    | 66    | 71    | 35    | 29  |
| Central African Republic | 9    | 70    | 188   | 261   | 136   | 108   | 34     | 8    | 80    | 157   | 151   | 104   | 87    | 20  | 9    | 75    | 172   | 204   | 119   | 96    | 26  |
| Chad                     | 1    | 11    | 192   | 231   | 116   | 24    | 15     | 1    | 3     | 91    | 140   | 74    | 11    | 8   | 1    | 7     | 141   | 184   | 94    | 17    | 11  |
| Comoros                  |      |       |       |       |       |       |        |      |       |       |       |       |       |     |      |       |       |       |       |       |     |
| Congo                    |      |       |       |       |       |       |        |      |       |       |       |       |       |     |      |       |       |       |       |       |     |
| Côte d'Ivoire            | 3    | 62    | 172   | 174   | 125   | 89    | 101    | 4    | 56    | 130   | 108   | 65    | 59    | 51  | 3    | 59    | 152   | 143   | 97    | 75    | 77  |
| DR Congo                 | 5    | 96    | 219   | 243   | 234   | 164   | 139    | 7    | 104   | 182   | 190   | 159   | 104   | 61  | 6    | 100   | 201   | 216   | 195   | 132   | 94  |
| Equatorial Guinea        |      |       |       |       |       |       |        |      |       |       |       |       |       |     |      |       |       |       |       |       |     |
| Eritrea                  | 2    | 21    | 32    | 29    | 36    | 36    | 70     | 2    | 19    | 31    | 28    | 32    | 39    | 40  | 2    | 20    | 32    | 29    | 34    | 38    | 52  |
| Ethiopia                 | 8    | 100   | 126   | 106   | 77    | 63    | 41     | 10   | 83    | 125   | 88    | 44    | 23    | 13  | 9    | 92    | 125   | 97    | 60    | 42    | 26  |
| Gabon                    | 4    | 104   | 192   | 236   | 144   | 103   | 156    | 7    | 94    | 149   | 114   | 73    | 80    | 87  | 5    | 99    | 170   | 175   | 109   | 91    | 118 |
| Gambia                   | 1    | 104   | 250   | 224   | 203   | 181   | 162    | 2    | 55    | 113   | 56    | 77    | 58    | 37  | 1    | 79    | 181   | 138   | 138   | 117   | 95  |
| Ghana                    | 2    | 24    | 84    | 132   | 136   | 123   | 138    | 2    | 22    | 54    | 59    | 47    | 50    | 64  | 2    | 23    | 69    | 95    | 91    | 85    | 98  |
| Guinea                   | 1    | 48    | 169   | 161   | 127   | 90    | 136    | 2    | 48    | 79    | 67    | 41    | 46    | 39  | 2    | 48    | 124   | 114   | 84    | 67    | 83  |
| Guinea-Bissau            | 2    | 75    | 157   | 217   | 173   | 195   | 167    | 3    | 59    | 113   | 106   | 112   | 125   | 48  | 2    | 67    | 134   | 160   | 141   | 158   | 101 |
| Kenya                    | 4    | 120   | 349   | 332   | 240   | 178   | 102    | 6    | 122   | 241   | 161   | 105   | 87    | 39  | 5    | 121   | 294   | 243   | 169   | 130   | 68  |
| Lesotho                  | 3    | 105   | 577   | 1014  | 746   | 591   | 210    | 4    | 140   | 341   | 231   | 178   | 81    | 37  | 3    | 123   | 440   | 521   | 404   | 292   | 115 |
| Liberia                  |      |       |       |       |       |       |        |      |       |       |       |       |       |     |      |       |       |       |       |       |     |
| Madagascar               | 2    | 63    | 140   | 195   | 223   | 199   | 171    | 4    | 61    | 119   | 124   | 111   | 70    | 49  | 3    | 62    | 130   | 159   | 166   | 131   | 105 |
| Malawi                   |      |       |       |       |       |       |        |      |       |       |       |       |       |     |      |       |       |       |       |       |     |
| Mali                     | 1    | 16    | 70    | 98    | 159   | 87    | 55     | 1    | 11    | 31    | 33    | 59    | 32    | 14  | 1    | 14    | 50    | 64    | 104   | 56    | 32  |
| Mauritania               |      |       |       |       |       |       |        |      |       |       |       |       |       |     |      |       |       |       |       |       |     |
| Mauritius                | 1    | 11    | 6     | 21    | 17    | 19    | 13     | 1    | 3     | 8     | 7     | 1     | 5     | 2   | 1    | 7     | 7     | 14    | 9     | 11    | 7   |
| Mozambique               |      |       |       |       |       |       |        |      |       |       |       |       |       |     |      |       |       |       |       |       |     |
| Namibia                  | 4    | 158   | 759   | 819   | 583   | 402   | 276    | 10   | 187   | 549   | 476   | 265   | 183   | 161 | 7    | 172   | 652   | 638   | 408   | 278   | 211 |
| Niger                    |      |       |       |       |       |       |        |      |       |       |       |       |       |     |      |       |       |       |       |       |     |
| Nigeria                  | 1    | 18    | 46    | 43    | 37    | 31    | 31     | 1    | 22    | 36    | 25    | 21    | 17    | 12  | 1    | 20    | 41    | 34    | 29    | 24    | 21  |
| Rwanda                   | 1    | 12    | 34    | 57    | 38    | 28    | 15     | 1    | 10    | 18    | 16    | 9     | 10    | 7   | 1    | 11    | 25    | 35    | 22    | 18    | 10  |
| Sao Tome & Principe      | 3    | 38    | 54    | 30    | 56    | 79    | 59     | 0    | 33    | 46    | 28    | 68    | 69    | 53  | 2    | 36    | 50    | 29    | 62    | 74    | 56  |
| Senegal                  | 3    | 80    | 187   | 177   | 162   | 160   | 217    | 3    | 54    | 76    | 67    | 66    | 59    | 62  | 3    | 67    | 131   | 121   | 113   | 106   | 127 |
| Seychelles               |      |       |       |       |       |       |        |      |       |       |       |       |       |     |      |       |       |       |       |       |     |
| Sierra Leone             | 2    | 70    | 175   | 197   | 167   | 110   | 97     | 3    | 65    | 115   | 124   | 82    | 45    | 34  | 3    | 67    | 144   | 160   | 123   | 75    | 61  |
| South Africa             | 41   | 110   | 384   | 498   | 384   | 224   | 143    | 44   | 151   | 307   | 218   | 135   | 84    | 55  | 43   | 131   | 345   | 354   | 256   | 147   | 89  |
| Swaziland                | 0    | 79    | 399   | 542   | 435   | 167   | 64     | 4    | 193   | 362   | 256   | 138   | 58    | 45  | 2    | 137   | 379   | 371   | 265   | 109   | 54  |
| Togo                     | 1    | 29    | 74    | 79    | 73    | 62    | 59     | 1    | 26    | 45    | 36    | 28    | 29    | 16  | 1    | 27    | 59    | 57    | 50    | 44    | 35  |
| Uganda                   | 4    | 60    | 236   | 354   | 256   | 196   | 161    | 6    | 67    | 188   | 205   | 125   | 88    | 53  | 5    | 63    | 212   | 279   | 187   | 138   | 102 |
| UR Tanzania              | 2    | 61    | 196   | 239   | 219   | 194   | 249    | 3    | 51    | 137   | 110   | 87    | 68    | 64  | 3    | 56    | 166   | 173   | 150   | 127   | 146 |
| Zambia                   | 45   | 89    | 425   | 549   | 302   | 87    | 286    | 44   | 121   | 386   | 384   | 224   | 138   | 111 | 45   | 105   | 405   | 465   | 261   | 115   | 188 |
| Zimbabwe                 | 7    | 39    | 298   | 356   | 235   | 142   | 79     | 8    | 60    | 260   | 224   | 117   | 57    | 27  | 7    | 49    | 279   | 289   | 172   | 97    | 51  |
| Region                   | 6    | 58    | 158   | 180   | 148   | 106   | 90     | 7    | 63    | 122   | 101   | 71    | 51    | 35  | 6    | 60    | 140   | 140   | 108   | 77    | 60  |

Rates are missing where data for smear-positive cases are missing, or where age- and sex-specific population data are not available.

Country data for Africa, cont'd: number of TB cases notified, 1980-2002

|                          | 1980    | 1981    | 1982    | 1983    | 1984    | 1985    | 1986    | 1987    | 1988    | 1989    | 1990    | 1991    | 1992    | 1993    | 1994    | 1995    | 1996    | 1997    | 1998    | 1999    | 2000    | 2001    | 2002    |
|--------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Algeria                  | 2 702   | 13 916  | 13 681  | 13 133  | 13 832  | 12 917  | 11 212  | 11 325  | 11 039  | 11 607  | 11 607  | 11 332  | 11 428  | 13 345  | 13 345  | 13 507  | 15 329  | 16 522  | 15 324  | 16 647  | 18 572  | 18 250  | 18 834  |
| Angola                   | 10 117  | 7 501   | 7 911   | 6 625   | 10 153  | 9 363   | 8 510   | 8 184   | 9 587   | 10 271  | 11 334  | 11 272  | 8 269   | 7 157   | 5 143   | 15 424  | 15 066  | 14 296  | 14 296  | 12 402  | 16 062  | 21 713  | 29 996  |
| Benin                    | 1 835   | 1 793   | 1 804   | 1 913   | 2 041   | 2 162   | 1 901   | 2 027   | 1 941   | 2 084   | 2 162   | 2 162   | 2 420   | 2 340   | 2 119   | 2 332   | 2 284   | 2 252   | 2 316   | 2 552   | 2 706   | 2 830   |         |
| Botswana                 | 2 662   | 2 605   | 2 705   | 2 883   | 3 101   | 2 706   | 2 627   | 3 173   | 2 740   | 2 532   | 2 938   | 3 274   | 4 179   | 4 654   | 4 756   | 5 665   | 6 636   | 7 287   | 7 960   | 8 647   | 9 292   | 9 618   | 10 204  |
| Burkina Faso             | 2 577   | 2 391   | 2 285   | 3 061   | 1 877   | 4 547   | 1 018   | 1 407   | 949     | 1 616   | 1 457   | 1 488   | 1 488   | 1 443   | 861     | 2 572   | 1 814   | 1 643   | 2 074   | 2 310   | 2 310   | 2 406   | 2 376   |
| Burundi                  | 789     | 643     | 951     | 1 053   | 1 904   | 2 317   | 2 569   | 2 739   | 3 745   | 4 608   | 4 575   | 4 883   | 4 464   | 4 677   | 3 840   | 3 326   | 3 796   | 5 335   | 6 546   | 6 365   | 6 478   | 6 371   |         |
| Cameroon                 | 2 434   | 2 236   | 3 765   | 3 445   | 3 338   | 3 393   | 2 138   | 3 878   | 4 982   | 5 521   | 5 892   | 6 814   | 6 803   | 7 064   | 7 312   | 3 292   | 3 049   | 3 962   | 5 022   | 7 660   | 5 251   | 11 307  | 11 057  |
| Cape Verde               | 516     | 344     | 393     | 230     | 285     | 259     | 285     | 276     | 210     | 221     |         |         |         |         |         | 303     | 179     | 196     | 205     |         | 291     | 195     |         |
| Central African Republic | 651     | 758     | 1 475   | 1 686   | 468     | 520     | 779     | 499     | 814     | 64      | 2 124   | 2 045   |         |         |         | 3 339   | 3 623   | 4 459   | 4 875   | 5 003   | 2 550   | 4 837   |         |
| Chad                     | 220     | 286     | 127     | 1 977   | 1 430   | 1 486   | 1 285   | 1 086   | 2 977   | 2 572   | 2 591   | 2 912   | 2 684   | 2 871   | 3 303   | 3 186   | 1 936   | 2 180   | 2 784   | 4 710   |         |         | 5 077   |
| Comoros                  |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |
| Congo                    | 742     | 1 214   | 3 716   | 4 156   | 2 776   | 2 648   | 3 120   | 3 473   | 2 12    | 139     | 140     | 119     | 108     | 129     | 115     | 123     | 138     | 134     | 132     | 153     | 120     |         |         |
| Côte d'Ivoire            | 4 197   | 4 418   | 5 000   | 6 000   | 6 062   | 5 729   | 6 072   | 6 422   | 6 556   | 6 982   | 7 841   | 8 021   | 9 093   | 9 563   | 14 000  | 11 988  | 13 104  | 13 802  | 14 841  | 15 056  | 12 943  | 16 533  | 14 367  |
| DR Congo                 | 5 122   | 3 051   | 9 905   | 13 021  | 20 415  | 26 082  | 27 665  | 27 096  | 30 272  | 31 321  | 21 131  | 33 782  | 37 660  | 36 647  | 38 477  | 42 819  | 45 999  | 44 783  | 58 917  | 59 531  | 60 627  | 66 748  | 70 625  |
| Equatorial Guinea        |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |
| Eritrea                  | 40 096  | 42 423  | 52 403  | 56 824  | 65 045  | 71 731  | 80 846  | 85 867  | 95 521  | 80 795  | 88 634  | 60 006  | 60 006  | 972     | 1 034   | 1 115   | 951     | 1 434   | 1 380   | 1 598   |         |         |         |
| Ethiopia                 | 885     | 796     | 761     | 752     | 654     | 855     | 769     | 864     | 721     | 912     | 917     | 906     | 926     |         |         |         |         |         |         |         |         |         |         |
| Gabon                    |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |
| Gambia                   | 239     | 58      |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |
| Ghana                    | 5 207   | 4 041   | 4 345   | 2 651   | 1 935   | 3 235   | 3 925   | 5 877   | 5 297   | 6 017   | 6 407   | 7 136   | 7 044   | 8 569   | 17 004  | 8 636   | 10 449  | 10 749  | 11 352  | 10 933  | 11 923  | 11 723  |         |
| Guinea                   | 1 884   | 1 469   | 832     | 1 203   | 1 317   | 1 128   | 1 214   | 1 740   | 1 869   | 1 988   | 2 267   | 2 941   | 3 167   | 3 300   | 3 523   | 4 357   | 4 439   | 4 768   | 5 171   | 5 440   | 5 874   | 6 199   |         |
| Guinea-Bissau            | 645     | 465     | 205     | 376     | 368     | 530     | 1 310   | 752     | 778     | 1 362   | 1 163   | 1 246   | 1 059   | 1 558   | 1 647   | 1 613   | 1 678   | 1 445   | 846     | 1 164   | 1 273   | 1 566   |         |
| Kenya                    | 11 049  | 10 027  | 11 966  | 11 966  | 10 460  | 10 022  | 10 515  | 10 957  | 12 592  | 11 788  | 12 320  | 14 599  | 20 451  | 22 930  | 28 142  | 34 980  | 39 738  | 48 936  | 57 266  | 64 159  | 73 017  | 80 183  |         |
| Lesotho                  | 4 082   | 3 830   | 4 932   | 3 443   | 2 923   | 2 927   | 21      | 225     | 2 346   | 2 463   | 2 525   | 2 994   | 3 327   | 3 384   | 4 334   | 5 181   | 5 598   | 6 447   | 7 806   | 8 552   | 9 746   | 10 111  |         |
| Liberia                  | 774     | 1 002   | 835     | 885     | 425     | 232     | 384     | 894     |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |
| Madagascar               | 9 082   | 7 464   | 3 573   | 3 588   | 8 673   | 3 220   | 3 717   | 4 007   | 4 393   | 5 417   | 6 261   | 6 015   | 8 126   | 9 855   | 10 671  | 21 616  | 12 718  | 14 661  |         |         | 16 447  | 16 082  |         |
| Malawi                   | 4 758   | 5 033   | 4 411   | 4 707   | 4 404   | 5 335   | 6 260   | 7 581   | 8 359   | 9 431   | 12 395  | 14 743  | 14 237  | 17 105  | 19 496  | 19 155  | 20 630  | 20 676  | 22 674  | 24 396  | 23 604  | 26 094  | 24 595  |
| Mali                     | 839     | 933     | 187     | 532     | 1 872   | 1 621   | 1 851   | 2 534   | 2 578   | 1 626   | 2 933   | 2 631   | 3 113   | 3 204   | 3 075   | 3 087   | 3 655   | 5 022   | 4 142   | 4 466   | 4 216   | 4 457   |         |
| Mauritania               | 7 576   | 9 427   | 2 327   | 2 333   | 3 977   | 4 406   | 2 257   | 3 722   | 3 928   | 4 040   | 5 284   | 3 064   | 4 316   | 3 996   |         |         |         |         |         |         |         |         |         |
| Mauritius                | 132     | 157     | 121     | 152     | 118     | 111     | 119     | 117     | 114     | 129     | 119     | 134     | 130     | 159     | 149     | 131     | 116     | 121     | 120     | 154     | 160     | 123     | 139     |
| Mozambique               | 7 457   | 6 984   | 5 787   | 5 937   | 5 204   | 5 645   | 8 263   | 10 996  | 13 863  | 15 899  | 16 609  | 15 085  | 16 588  | 17 158  | 17 882  | 18 443  | 18 443  | 18 842  | 19 672  | 21 329  | 21 158  | 22 094  | 25 544  |
| Namibia                  |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |
| Niger                    | 717     | 2 871   | 754     | 673     | 665     | 698     | 570     | 556     | 631     | 608     | 5200    | 2 500   | 1 756   | 5 500   | 3 784   | 1 980   | 9 625   | 9 950   | 11 142  | 10 026  | 10 653  | 12 898  |         |
| Nigeria                  | 9 877   | 10 838  | 10 949  | 10 212  | 11 439  | 14 937  | 14 071  | 19 723  | 25 700  | 13 342  | 20 122  | 19 626  | 14 802  | 11 601  | 8 449   | 13 423  | 15 020  | 16 660  | 20 249  | 24 157  | 25 821  | 45 842  | 38 628  |
| Rwanda                   | 1 495   | 1 386   | 1 364   | 1 419   | 1 327   | 2 460   | 3 287   | 4 145   | 4 741   | 6 387   | 3 200   |         |         |         |         |         |         |         |         |         |         |         |         |
| Sao Tome & Principe      | 131     | 37      | 40      | 59      | 49      | 40      | 8       | 55      | 13      |         |         |         |         |         |         |         |         |         |         |         |         |         |         |
| Senegal                  | 2 014   | 2 573   | 1 612   | 2 417   |         | 1 065   | 927     | 6 145   | 5 611   | 5 965   | 4 977   | 6 781   | 7 408   | 6 841   | 6 913   | 7 561   | 8 525   | 8 232   | 8 245   | 7 282   | 8 924   | 8 554   | 8 366   |
| Seychelles               | 16      | 0       | 16      | 16      | 10      | 10      | 24      | 14      | 10      | 6       | 41      |         |         | 5       |         | 8       | 15      | 18      | 11      | 21      | 20      | 19      | 29      |
| Sierra Leone             | 750     | 847     | 889     | 293     | 816     | 865     | 358     | 130     | 120     |         |         |         |         |         |         |         |         |         |         |         |         |         |         |
| South Africa             | 55 310  | 59 943  | 64 115  | 62 556  | 62 717  | 59 349  | 55 013  | 57 406  | 61 486  | 68 075  | 80 400  | 77 652  | 82 539  | 89 786  | 90 292  | 73 917  | 109 328 | 125 913 | 142 281 | 148 164 | 151 239 | 148 257 | 215 120 |
| Swaziland                | 143     | 3 059   | 1 955   |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |
| Togo                     | 208     | 126     | 204     | 174     | 343     | 745     | 596     | 1 184   | 1 071   | 940     | 1 324   | 1 243   | 1 223   | 1 005   | 1 137   | 1 520   | 1 654   | 1 623   | 1 250   | 1 249   | 1 409   | 1 645   |         |
| Uganda                   | 1 058   | 1 170   | 497     | 2 029   |         | 1 392   | 1 464   | 3 066   | 1 045   | 1 045   | 14 740  | 19 016  | 20 662  | 21 579  | 26 994  | 25 316  | 27 196  | 28 349  | 29 228  | 31 597  | 30 372  | 36 829  | 40 695  |
| UR Tanzania              | 11 483  | 12 122  | 11 748  | 11 753  | 12 092  | 13 698  | 15 452  | 16 920  | 18 206  | 19 262  | 22 249  | 25 210  | 28 462  | 31 460  | 34 799  | 39 847  | 44 416  | 46 433  | 51 231  | 52 437  | 54 442  | 61 603  | 60 306  |
| Zambia                   | 5 321   | 6 162   | 6 525   | 6 860   | 7 272   | 8 246   | 8 716   | 10 025  | 12 876  | 14 266  | 16 863  | 23 373  | 25 448  | 30 496  | 35 222  | 35 958  | 40 417  | 45 240  | 49 806  | 46 259  | 54 220  | 54 220  |         |
| Zimbabwe                 | 4 057   | 4 051   | 4 577   | 3 881   | 5 694   | 4 759   | 5 233   | 5 848   | 6 002   | 6 822   | 9 132   | 11 710  | 16 237  | 20 125  | 23 959  | 30 831  | 35 735  | 43 762  | 47 077  | 50 138  | 50 855  | 56 222  | 59 170  |
| Region                   | 219 802 | 224 102 | 240 263 | 258 842 | 264 928 | 296 627 | 301 687 | 333 842 | 373 550 | 365 432 | 418 532 | 412 414 | 432 997 | 418 995 | 550 183 | 504 309 | 585 773 | 598 024 | 687 391 | 748 947 | 782 291 | 851 782 | 992 054 |
| number reporting         | 40      | 41      | 39      | 41      | 37      | 41      | 41      | 43      | 44      | 41      | 43      | 40      | 40      | 37      | 41      | 38      | 45      | 44      | 42      | 45      | 41      | 37      | 41      |
| percent reporting        | 87      | 89      | 85      | 89      | 80      | 89      | 89      | 93      | 96      | 89      | 93      | 87      | 80      | 89      | 83      | 98      | 96      | 91      | 98      | 89      | 80      | 72      | 89      |

Country data for Africa, cont'd: case notification rates (per 100 000 population), 1980-2002

|                          | 1980 | 1981 | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Algeria                  | 14   | 70   | 66   | 62   | 63   | 57   | 48   | 48   | 48   | 45   | 46   | 44   | 44   | 50   | 49   | 48   | 54   | 57   | 52   | 56   | 61   | 59   | 61   |
| Angola                   | 144  | 103  | 105  | 85   | 126  | 104  | 110  | 98   | 92   | 105  | 110  | 116  | 114  | 81   | 68   | 47   | 138  | 132  | 122  | 103  | 130  | 170  | 228  |
| Benin                    | 53   | 52   | 49   | 48   | 49   | 51   | 52   | 45   | 46   | 43   | 45   | 45   | 46   | 49   | 46   | 40   | 43   | 41   | 39   | 39   | 42   | 43   | 43   |
| Botswana                 | 270  | 255  | 256  | 264  | 275  | 232  | 218  | 256  | 214  | 192  | 217  | 235  | 292  | 316  | 315  | 365  | 418  | 448  | 479  | 510  | 539  | 550  | 577  |
| Burkina Faso             | 38   | 34   | 32   | 42   | 12   | 59   | 13   | 17   | 11   | 19   | 17   | 16   | 15   | 9    | 25   | 17   | 15   | 18   | 20   | 19   | 20   | 19   |      |
| Burundi                  | 19   | 15   | 22   | 23   | 40   | 48   | 51   | 53   | 70   | 84   | 82   | 85   | 77   | 79   | 64   | 55   | 63   | 88   | 107  | 103  | 101  | 97   |      |
| Cameroon                 | 28   | 25   | 41   | 36   | 34   | 34   | 21   | 36   | 45   | 49   | 51   | 57   | 55   | 56   | 56   | 25   | 22   | 28   | 35   | 52   | 35   | 73   |      |
| Cape Verde               | 178  | 117  | 132  | 76   | 92   | 82   | 87   | 87   | 82   | 61   | 63   |      |      |      |      | 77   | 45   | 48   | 49   |      | 65   | 43   |      |
| Central African Republic | 28   | 32   | 61   | 67   | 18   | 20   | 29   | 18   | 29   | 2    | 72   | 68   |      |      |      | 100  | 105  | 127  | 136  | 137  | 68   | 127  |      |
| Chad                     | 5    | 6    | 3    | 41   | 29   | 30   | 25   | 20   | 54   | 46   | 45   | 49   | 44   | 45   | 51   | 47   | 28   | 30   | 38   | 62   |      | 61   |      |
| Comoros                  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| Congo                    | 41   | 65   | 193  | 209  | 136  | 125  | 143  | 154  | 166  | 181  | 24   | 24   | 44   | 72   | 105  | 123  | 147  | 109  | 119  | 150  | 268  | 275  |      |
| Côte d'Ivoire            | 50   | 50   | 54   | 62   | 60   | 55   | 56   | 57   | 56   | 58   | 63   | 62   | 68   | 70   | 100  | 83   | 89   | 92   | 97   | 82   | 103  | 88   |      |
| DR Congo                 | 18   | 11   | 34   | 43   | 65   | 81   | 84   | 80   | 86   | 87   | 57   | 87   | 94   | 88   | 89   | 96   | 101  | 97   | 126  | 125  | 134  | 138  |      |
| Equatorial Guinea        |      |      |      |      | 61   | 5    | 0    | 3    | 6    | 45   | 74   | 92   | 71   | 81   | 91   | 76   | 78   | 87   | 96   |      |      |      |      |
| Eritrea                  |      |      |      |      |      |      |      |      |      |      | 119  | 139  | 370  | 489  | 669  | 160  | 248  | 225  | 168  | 179  | 71   | 70   |      |
| Ethiopia                 | 112  | 116  | 139  | 146  | 162  | 173  | 189  | 194  | 209  | 171  | 181  | 119  | 115  | 178  | 45   | 71   | 97   | 112  | 113  | 139  | 141  | 160  |      |
| Gabon                    | 124  | 111  | 103  | 99   | 83   | 105  | 92   | 100  | 81   | 99   | 96   | 92   | 91   | 93   | 96   | 101  | 83   | 122  | 115  | 130  | 156  | 156  |      |
| Gambia                   | 37   | 9    |      |      |      |      |      |      |      |      |      |      |      |      |      | 92   | 108  | 114  | 126  | 119  | 134  | 134  |      |
| Ghana                    | 47   | 35   | 37   | 22   | 15   | 24   | 29   | 42   | 37   | 40   | 42   | 45   | 44   | 52   | 100  | 49   | 58   | 59   | 61   | 54   | 56   | 60   |      |
| Guinea                   | 39   | 30   | 16   | 23   | 25   | 21   | 22   | 30   | 32   | 32   | 36   | 45   | 46   | 46   | 46   | 48   | 58   | 61   | 65   | 67   | 71   | 74   |      |
| Guinea-Bissau            | 81   | 57   | 25   | 44   | 42   | 59   | 144  | 80   | 81   | 138  | 114  | 119  | 98   | 139  | 143  | 136  | 137  | 115  | 65   | 88   | 93   | 108  |      |
| Kenya                    | 68   | 59   | 65   | 65   | 53   | 49   | 49   | 50   | 55   | 50   | 51   | 58   | 79   | 86   | 103  | 125  | 138  | 166  | 191  | 210  | 235  | 254  |      |
| Lesotho                  | 320  | 293  | 367  | 250  | 207  | 203  | 1    | 15   | 154  | 159  | 161  | 188  | 206  | 207  | 261  | 308  | 328  | 373  | 446  | 483  | 546  | 562  |      |
| Liberia                  | 41   | 52   | 42   | 43   | 20   | 11   | 18   | 41   |      |      |      |      |      |      |      | 65   | 38   |      | 68   |      |      |      |      |
| Madagascar               | 100  | 80   | 37   | 36   | 86   | 31   | 35   | 36   | 39   | 47   | 52   | 49   | 64   | 76   | 80   | 157  | 90   | 97   |      |      | 100  | 95   |      |
| Malawi                   | 77   | 79   | 68   | 70   | 63   | 74   | 82   | 93   | 97   | 104  | 131  | 152  | 145  | 174  | 197  | 191  | 201  | 197  | 210  | 220  | 208  | 224  |      |
| Mali                     | 12   | 13   | 3    | 7    | 24   | 20   | 23   | 30   | 30   | 18   | 32   | 28   | 33   | 33   | 31   | 30   | 34   | 46   | 37   | 39   | 35   | 35   |      |
| Mauritania               | 471  | 572  | 138  | 135  | 225  | 243  | 122  | 196  | 203  | 204  | 260  | 147  | 203  | 183  |      | 167  | 162  | 156  | 145  | 142  | 116  |      |      |
| Mauritius                | 14   | 16   | 12   | 15   | 12   | 11   | 12   | 11   | 11   | 12   | 11   | 13   | 12   | 15   | 13   | 12   | 10   | 11   | 10   | 13   | 13   | 10   |      |
| Mozambique               | 62   | 56   | 46   | 46   | 40   | 43   | 62   | 83   | 105  | 120  | 118  | 120  | 106  | 112  | 111  | 112  | 112  | 112  | 115  | 122  | 118  | 121  |      |
| Namibia                  |      |      |      |      | 424  | 373  | 294  | 217  | 273  | 190  | 171  | 117  | 354  |      | 94   | 567  | 569  | 618  | 542  | 563  | 670  | 647  |      |
| Niger                    | 13   | 50   | 13   | 11   | 11   | 11   | 8    | 8    | 9    | 8    | 68   | 7    | 43   | 22   | 7    | 22   | 34   | 34   | 34   | 39   | 40   |      |      |
| Nigeria                  | 15   | 16   | 16   | 15   | 16   | 20   | 18   | 25   | 32   | 16   | 23   | 22   | 16   | 12   | 9    | 13   | 15   | 16   | 19   | 22   | 23   | 39   |      |
| Rwanda                   | 29   | 26   |      | 24   | 25   | 22   | 40   | 51   | 62   | 69   | 94   | 49   |      |      | 59   | 66   | 80   | 93   | 90   | 79   | 68   | 73   |      |
| Sao Tome & Principe      | 139  | 38   | 41   | 59   | 48   | 39   | 8    | 51   | 12   |      | 15   | 101  |      | 78   | 32   |      |      | 75   | 66   | 65   | 63   | 60   |      |
| Senegal                  | 36   | 45   | 28   | 40   | 17   | 14   | 91   | 81   | 81   | 83   | 68   | 90   | 96   | 86   | 85   | 91   | 100  | 94   | 92   | 79   | 95   | 89   |      |
| Seychelles               | 25   | 0    | 25   | 24   | 15   | 15   | 35   | 20   | 14   | 9    | 58   |      | 7    |      |      | 11   | 20   | 24   | 14   | 27   | 25   | 36   |      |
| Sierra Leone             | 23   | 26   | 26   | 9    | 23   | 24   | 10   | 3    | 3    |      | 16   | 36   | 41   | 66   | 63   | 48   | 79   | 76   | 78   | 85   | 102  | 101  |      |
| South Africa             | 190  | 201  | 209  | 199  | 195  | 180  | 163  | 166  | 174  | 189  | 218  | 206  | 214  | 228  | 225  | 181  | 262  | 297  | 331  | 341  | 344  | 334  |      |
| Swaziland                |      | 23   | 483  | 299  |      |      | 144  | 171  | 170  | 170  | 176  | 176  | 161  | 161  |      | 218  | 246  | 308  | 363  | 406  | 563  | 578  |      |
| Togo                     | 8    | 5    | 8    | 6    | 12   | 25   | 19   | 37   | 33   | 28   | 38   | 35   | 34   | 27   | 30   | 39   | 41   | 39   | 29   | 28   | 31   | 34   |      |
| Uganda                   | 8    | 9    | 4    | 15   |      |      | 9    | 9    | 19   | 6    | 85   | 106  | 112  | 113  | 137  | 125  | 130  | 132  | 139  | 129  | 152  | 163  |      |
| UR Tanzania              | 61   | 62   | 58   | 57   | 56   | 62   | 68   | 72   | 75   | 76   | 85   | 93   | 102  | 109  | 116  | 129  | 140  | 143  | 154  | 154  | 156  | 173  |      |
| Zambia                   | 89   | 100  | 102  | 104  | 107  | 117  | 120  | 134  | 167  | 179  | 206  | 277  | 293  | 342  | 385  | 384  | 421  |      | 442  | 478  | 438  | 507  |      |
| Zimbabwe                 | 56   | 54   | 59   | 48   | 67   | 54   | 57   | 62   | 61   | 67   | 87   | 109  | 147  | 179  | 208  | 263  | 299  | 360  | 381  | 401  | 402  | 441  |      |
| Region                   | 59   | 59   | 61   | 64   | 64   | 69   | 68   | 73   | 80   | 76   | 84   | 81   | 83   | 78   | 99   | 89   | 100  | 100  | 112  | 119  | 122  | 130  | 148  |

Country data for Africa, cont'd: new smear-positive cases, 1993-2002

|                          | Number of cases |         |         |         |         |         |         |         |         |         | Rate (per 100 000 population) |      |      |      |      |      |      |      |      |      |
|--------------------------|-----------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|-------------------------------|------|------|------|------|------|------|------|------|------|
|                          | 1993            | 1994    | 1995    | 1996    | 1997    | 1998    | 1999    | 2000    | 2001    | 2002    | 1993                          | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
| Nigeria                  |                 | 6 793   | 5 735   | 6 556   | 7 740   | 7 462   | 7 845   | 8 328   | 7 953   | 8 246   |                               |      |      |      |      |      |      |      |      |      |
| Angola                   | 4 874           | 4 337   | 3 804   | 8 016   | 8 246   | 7 333   | 7 379   | 9 053   | 11 923  | 18 087  | 48                            | 41   | 35   | 72   | 72   | 62   | 61   | 73   | 93   | 137  |
| Benin                    | 1 653           | 1 618   | 1 839   | 1 868   | 1 939   | 1 988   | 2 192   | 2 286   |         | 2 415   | 32                            | 30   | 34   | 33   | 34   | 34   | 36   | 37   |      | 37   |
| Botswana                 | 1 508           | 1 668   | 1 903   | 2 530   | 2 824   | 3 112   | 2 746   | 3 091   | 3 057   | 3 334   | 102                           | 110  | 123  | 159  | 174  | 187  | 162  | 179  | 175  | 188  |
| Burkina Faso             |                 | 561     | 1 028   | 1 381   | 1 126   | 1 331   | 1 411   | 1 560   | 1 522   | 1 544   |                               | 6    | 10   | 13   | 10   | 12   | 12   | 13   | 12   | 12   |
| Burundi                  | 1 861           | 1 527   | 1 121   | 1 533   | 2 022   | 2 782   | 2 924   |         | 3 040   | 2 791   | 32                            | 26   | 19   | 25   | 33   | 46   | 47   |      | 47   | 42   |
| Cameroon                 | 2 316           | 1 883   | 2 896   | 2 312   | 3 548   | 4 374   | 5 832   | 3 960   | 4 695   | 7 921   | 18                            | 14   | 22   | 17   | 25   | 30   | 39   | 26   | 30   | 50   |
| Cape Verde               |                 |         | 111     | 117     | 103     | 104     |         |         | 140     | 111     |                               |      |      |      |      |      |      |      | 31   | 24   |
| Central African Republic |                 | 1 794   | 1 992   | 1 992   | 2 267   | 2 637   | 2 725   |         | 1 382   | 2 758   |                               |      |      |      |      |      |      |      |      |      |
| Chad                     |                 | 2 002   | 870     |         |         |         | 2 920   |         |         | 3 519   |                               |      |      |      |      |      |      |      |      |      |
| Comoros                  |                 | 103     | 107     |         | 100     | 99      | 112     | 87      |         |         |                               |      |      |      |      |      |      |      |      |      |
| Congo                    |                 | 1 691   | 2 013   | 2 505   | 1 984   | 2 044   | 2 222   | 4 218   | 4 319   | 4 207   |                               |      |      |      |      |      |      |      |      |      |
| Côte d'Ivoire            | 7 012           | 8 254   | 8 927   | 9 093   | 9 850   | 10 047  | 8 497   | 10 920  | 9 667   |         | 51                            | 60   | 69   | 83   | 63   | 63   | 66   | 122  | 122  | 116  |
| DR Congo                 | 14 924          | 20 914  | 24 125  | 24 609  | 33 442  | 34 923  | 36 123  | 42 054  | 44 518  |         | 36                            |      |      |      |      |      |      |      |      |      |
| Equatorial Guinea        |                 | 219     | 209     | 226     | 284     |         |         |         |         |         |                               |      |      |      |      |      |      |      |      |      |
| Eritrea                  |                 |         | 120     | 135     | 527     | 135     | 527     | 590     | 702     | 646     |                               |      |      |      |      |      |      |      |      |      |
| Ethiopia                 | 5 752           | 9 040   | 13 160  | 15 957  | 18 864  | 21 597  | 30 510  | 33 028  | 36 541  |         | 10                            | 16   | 22   | 26   | 30   | 34   | 47   | 49   | 53   | 16   |
| Gabon                    | 395             | 486     | 263     | 577     | 889     | 916     |         |         | 1 033   |         | 37                            | 44   | 23   | 49   | 74   | 74   |      |      |      |      |
| Gambia                   |                 | 778     | 743     | 820     | 900     | 861     |         |         |         | 1 035   |                               |      |      |      |      |      |      |      |      |      |
| Ghana                    | 5 778           | 2 638   | 6 474   | 7 254   | 7 757   | 6 877   | 7 316   | 7 712   | 7 732   |         | 34                            | 15   | 36   | 40   | 41   | 36   | 37   | 39   | 38   | 75   |
| Guinea                   | 2 082           | 2 158   | 2 263   | 2 844   | 2 981   | 3 362   | 3 563   | 3 920   | 4 092   | 4 300   | 30                            | 30   | 31   | 38   | 39   | 43   | 45   | 48   | 50   | 51   |
| Guinea-Bissau            |                 |         | 956     | 922     | 855     | 541     | 704     | 526     |         | 899     |                               |      |      |      |      |      |      |      |      |      |
| Kenya                    | 10 149          | 11 324  | 13 934  | 16 978  | 19 040  | 24 029  | 27 197  | 28 773  | 31 307  | 34 337  | 39                            | 42   | 51   | 60   | 66   | 82   | 91   | 94   | 101  | 109  |
| Lesotho                  | 1 405           | 1 330   | 1 361   | 1 788   | 2 398   | 2 476   | 2 729   | 3 041   |         | 3 167   | 86                            | 80   | 81   | 105  | 139  | 141  | 154  | 170  |      | 176  |
| Liberia                  | 1 547           |         | 1 154   | 668     |         | 1 190   |         |         |         |         | 75                            |      |      |      |      |      |      |      |      |      |
| Madagascar               | 6 881           | 7 366   | 8 026   | 8 456   | 9 639   |         |         |         | 11 092  | 10 940  | 53                            | 55   | 58   | 60   | 64   |      |      | 67   | 65   |      |
| Malawi                   | 5 692           | 5 988   | 6 285   | 6 703   | 7 587   | 8 765   | 8 132   | 8 260   | 8 309   | 7 686   | 58                            | 60   | 63   | 65   | 72   | 81   | 73   | 73   | 71   | 65   |
| Mali                     |                 | 1 740   | 1 866   | 2 173   | 3 178   | 2 558   | 2 690   | 2 527   |         | 2 757   | 17                            | 18   | 20   | 29   | 23   | 23   | 23   | 21   | 22   |      |
| Mauritania               |                 | 2 074   |         |         | 2 519   |         | 2 051   | 1 583   |         |         |                               |      |      |      |      |      |      |      |      |      |
| Mauritius                |                 |         | 113     | 99      | 112     | 109     | 122     | 115     | 85      | 86      |                               |      |      |      |      |      |      |      |      |      |
| Mozambique               | 9 526           | 9 677   | 10 566  | 10 478  | 11 116  | 12 116  | 12 825  | 13 257  | 13 964  | 15 236  | 64                            | 63   | 66   | 64   | 66   | 71   | 73   | 74   | 77   | 82   |
| Namibia                  |                 | 697     | 2 849   | 3 223   | 3 593   | 3 751   | 3 911   | 4 378   | 4 535   |         |                               |      |      |      |      |      |      |      |      |      |
| Niger                    | 463             | 1 865   | 1 492   | 1 970   | 2 189   | 2 631   | 2 693   |         |         |         | 5                             | 21   | 17   | 20   | 22   | 25   | 25   | 25   | 207  | 231  |
| Nigeria                  | 1 723           | 9 476   | 10 662  | 11 235  | 13 161  | 15 903  | 17 423  | 23 410  | 21 936  |         | 2                             |      |      |      |      |      |      |      |      |      |
| Rwanda                   |                 | 1 840   | 2 034   | 2 820   | 4 417   | 4 298   | 3 681   | 3 252   | 3 956   |         |                               |      |      |      |      |      |      |      |      |      |
| Sao Tome & Principe      |                 |         |         |         |         |         | 30      | 30      | 41      | 42      |                               |      |      |      |      |      |      |      |      |      |
| Senegal                  |                 | 4 599   | 5 421   | 5 940   | 5 340   | 5 454   | 5 011   | 5 823   | 6 094   | 5 796   |                               | 57   | 65   | 70   | 61   | 61   | 55   | 62   | 63   | 59   |
| Seychelles               | 2               |         | 6       | 11      | 13      | 9       | 10      | 11      | 12      | 9       | 3                             |      |      |      |      |      |      |      |      |      |
| Sierra Leone             |                 | 1 408   | 1 454   | 2 234   | 2 296   | 2 262   |         | 2 472   | 2 692   | 2 938   |                               | 35   | 36   | 54   | 55   | 54   | 56   | 59   | 62   | 61   |
| South Africa             |                 |         | 23 112  | 42 163  | 54 073  | 66 047  | 72 098  | 75 967  | 83 808  | 98 799  |                               |      |      |      |      |      |      |      |      |      |
| Swaziland                |                 |         | 660     | 2 226   |         |         | 1 781   | 1 823   | 1 279   | 1 410   |                               |      |      |      |      |      |      |      |      |      |
| Togo                     | 545             |         | 887     | 913     | 935     | 904     | 904     | 984     |         | 1 203   | 15                            |      |      |      |      |      |      |      |      |      |
| Uganda                   | 11 949          | 14 763  | 13 631  | 15 312  | 17 254  | 18 222  | 18 463  | 17 246  | 17 291  | 19 088  | 63                            | 75   | 67   | 73   | 80   | 82   | 81   | 73   | 71   | 76   |
| Tanzania                 | 15 569          | 17 164  | 19 955  | 21 472  | 22 010  | 23 726  | 24 125  | 24 049  | 24 685  | 24 136  | 54                            | 57   | 65   | 68   | 68   | 71   | 71   | 69   | 67   | 76   |
| Zambia                   |                 | 9 620   | 10 038  | 12 072  |         |         | 11 645  | 12 927  | 13 024  | 16 351  |                               | 105  | 107  | 126  | 126  | 114  | 114  | 124  | 123  | 153  |
| Zimbabwe                 | 5 331           |         | 8 965   | 11 965  | 14 512  | 14 492  | 14 414  | 14 392  | 15 370  | 15 941  | 47                            |      |      |      |      |      |      |      |      |      |
| Region                   | 107 012         | 121 005 | 212 910 | 264 650 | 276 022 | 324 648 | 349 133 | 361 053 | 396 632 | 451 653 | 20                            | 22   | 37   | 45   | 46   | 53   | 56   | 56   | 60   | 67   |

# Notes

**ETHIOPIA** Annual data are from a July–June calendar.

**GABON** Treatment outcomes for new cases are reportedly for laboratory-confirmed (not necessarily smear-positive) cases.

**MAURITANIA** Data were received too late for inclusion in this report. Total notifications for 2002 were 3411 (of which, 1941 smear-positive cases). Among 1608 cases registered in 2001, the success rate was reported to be 53%.

**MOZAMBIQUE** Country offers additional information on “access” to DOTS services, which it estimates to be about 45% (versus 100% DOTS coverage).

**SOUTH AFRICA** Discrepancy between cases notified in 2001 and the number “registered” for treatment outcomes is due to late receipt of quarterly reports and also to double registration of cases referred from hospitals. Age and sex data are incomplete because some provinces did not use the age groupings requested by WHO in 2002.

**SWAZILAND** Four of 15 operational units are not reporting to the NTP on a regular basis.

**UR TANZANIA** Country offers additional information on “access” to DOTS services, which it measures in terms of distance from a health facility: 70% population live within 5 km and 90% within 10 km from a health unit.

**ZIMBABWE** Not all reporting units use the same age and sex breakdown of smear-positive cases.





## The Americas: Summary of TB control policies

| COUNTRY                 | STATUS <sup>a</sup> | MANUAL <sup>b</sup> | MICROSCOPY <sup>c</sup> | MONITORING OF TB SUSPECTS <sup>d</sup> | SCC <sup>e</sup> | DOT <sup>f</sup> | OUTCOME MONITORING <sup>g</sup> |
|-------------------------|---------------------|---------------------|-------------------------|--|------------------|------------------|---------------------------------|
| ANGUILLA                |                     | NO                  |                         |  |                  |                  |                                 |
| ANTIGUA AND BARBUDA     | DOTS                |                     |                         |  |                  |                  |                                 |
| ARGENTINA               | DOTS                | YES                 |                         |  |                  |                  |                                 |
| BAHAMAS                 | DOTS                | YES                 |                         |  |                  |                  |                                 |
| BARBADOS                | DOTS                | YES                 |                         |  |                  |                  |                                 |
| BELIZE                  | DOTS                | YES                 |                         |  |                  |                  |                                 |
| BERMUDA                 | <b>DOTS</b>         | NO                  |                         |  |                  |                  |                                 |
| BOLIVIA                 | DOTS                | YES                 |                         |  |                  |                  |                                 |
| BRAZIL                  | DOTS                | YES                 |                         |  |                  |                  |                                 |
| BRITISH VIRGIN ISLANDS  |                     | YES                 |                         |  |                  |                  |                                 |
| CANADA                  | DOTS                | YES                 |                         |  |                  |                  |                                 |
| CAYMAN ISLANDS          | DOTS                | NO                  |                         |  |                  |                  |                                 |
| CHILE                   | DOTS                | YES                 |                         |  |                  |                  |                                 |
| COLOMBIA                | DOTS                | YES                 |                         |  |                  |                  |                                 |
| COSTA RICA              | DOTS                | YES                 |                         |  |                  |                  |                                 |
| CUBA                    | DOTS                | YES                 |                         |  |                  |                  |                                 |
| DOMINICA                | DOTS                | YES                 |                         |  |                  |                  |                                 |
| DOMINICAN REPUBLIC      | DOTS                | YES                 |                         |  |                  |                  |                                 |
| ECUADOR                 | DOTS                | YES                 |                         |  |                  |                  |                                 |
| EL SALVADOR             | DOTS                | YES                 |                         |  |                  |                  |                                 |
| GRENADA                 |                     |                     |                         |  |                  |                  |                                 |
| GUATEMALA               | DOTS                | YES                 |                         |  |                  |                  |                                 |
| GUYANA                  | DOTS                | YES                 |                         |  |                  |                  |                                 |
| HAITI                   | DOTS                | YES                 |                         |  |                  |                  |                                 |
| HONDURAS                | DOTS                | YES                 |                         |  |                  |                  |                                 |
| JAMAICA                 | DOTS                |                     |                         |  |                  |                  |                                 |
| MEXICO                  | DOTS                | YES                 |                         |  |                  |                  |                                 |
| MONTSERRAT              | DOTS                | YES                 |                         |  |                  |                  |                                 |
| NETHERLANDS ANTILLES    |                     | NO                  |                         |  |                  |                  |                                 |
| NICARAGUA               | DOTS                | YES                 |                         |  |                  |                  |                                 |
| PANAMA                  | DOTS                | YES                 |                         |  |                  |                  |                                 |
| PARAGUAY                | DOTS                | YES                 |                         |  |                  |                  |                                 |
| PERU                    | DOTS                | YES                 |                         |  |                  |                  |                                 |
| PUERTO RICO             | DOTS                | YES                 |                         |  |                  |                  |                                 |
| SAINT KITTS AND NEVIS   | DOTS                | YES                 |                         |  |                  |                  |                                 |
| SAINT LUCIA             | DOTS                | YES                 |                         |  |                  |                  |                                 |
| ST VINCENT & GRENADINES | DOTS                | YES                 |                         |  |                  |                  |                                 |
| SURINAME                |                     | NO                  |                         |  |                  |                  |                                 |
| TRINIDAD AND TOBAGO     |                     | NO                  |                         |  |                  |                  |                                 |
| TURKS & CAICOS ISLANDS  |                     | NO                  |                         |  |                  |                  |                                 |
| URUGUAY                 | DOTS                | YES                 |                         |  |                  |                  |                                 |
| US VIRGIN ISLANDS       |                     |                     |                         |  |                  |                  |                                 |
| USA                     | DOTS                | YES                 |                         |  |                  |                  |                                 |
| VENEZUELA               | DOTS                | YES                 |                         |  |                  |                  |                                 |

|  |                                 |
|--|---------------------------------|
|  | Implemented in all units/areas  |
|  | Implemented in some units/areas |
|  | Not implemented                 |
|  | Unknown                         |

- a Status: DOTS status (**bold** indicates DOTS introduced in 2002)  
b Manual: National TB control manual (recommended)  
c Microscopy: Use of smear microscopy for diagnosis (core component of DOTS)  
d Monitoring of TB Suspects: Register of TB suspects (e.g. patients with cough  $\geq$  3 weeks) kept at DOTS facilities (recommended)  
e SCC: Short course chemotherapy (core component of DOTS)  
f DOT: Directly observed treatment (core component of DOTS)  
g Outcome monitoring: Monitoring of treatment outcomes by cohort analysis (core component of DOTS)

Country data for the Americas: notification, detection and DOTS coverage, 2002

|  | Country information |  |  |  |  |               |  |  |  |  |              |  |  |  |  |         |  |  |  |  | DOTs           |  |  |   |  |         | non-DOTs      |  |  |      |           |  |           |  |  |         |  |  |      |  |           |           |  |  |         |         |  |      |  |  |           |  |  |  |  |         |  |  |  |  |           |  |  |  |  |         |  |  |  |  |           |  |  |  |  |         |  |  |  |  |           |  |  |  |  |         |  |  |  |  |           |  |  |  |  |         |  |  |  |  |           |  |  |  |  |         |  |  |  |  |           |  |  |  |  |         |  |  |  |  |           |  |  |  |  |         |  |  |  |  |           |  |  |  |  |         |  |  |  |  |           |  |  |  |  |         |  |  |  |  |           |  |  |  |  |         |  |  |  |  |           |  |  |  |  |         |  |  |  |  |           |  |  |  |  |         |  |  |  |  |           |  |  |  |  |         |  |  |  |  |           |  |  |  |  |         |  |  |  |  |  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|  | Notified TB         |  |  |  |  |               |  |  |  |  | Estimated TB |  |  |  |  |         |  |  |  |  | Detection rate |  |  | % |  |         | Notifications |  |  | % of |           |  | All cases |  |  | New ss+ |  |  | % of |  |           | All cases |  |  | New ss+ |         |  | % of |  |  |           |  |  |  |  |         |  |  |  |  |           |  |  |  |  |         |  |  |  |  |           |  |  |  |  |         |  |  |  |  |           |  |  |  |  |         |  |  |  |  |           |  |  |  |  |         |  |  |  |  |           |  |  |  |  |         |  |  |  |  |           |  |  |  |  |         |  |  |  |  |           |  |  |  |  |         |  |  |  |  |           |  |  |  |  |         |  |  |  |  |           |  |  |  |  |         |  |  |  |  |           |  |  |  |  |         |  |  |  |  |           |  |  |  |  |         |  |  |  |  |           |  |  |  |  |         |  |  |  |  |           |  |  |  |  |         |  |  |  |  |           |  |  |  |  |         |  |  |  |  |  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|  | New ss+             |  |  |  |  | New confirmed |  |  |  |  | All cases    |  |  |  |  | New ss+ |  |  |  |  | All cases      |  |  |   |  | New ss+ |               |  |  |      | All cases |  |           |  |  | New ss+ |  |  |      |  | All cases |           |  |  |         | New ss+ |  |      |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  | All cases |  |  |  |  | New ss+ |  |  |  |  |

See explanatory notes, page 129.

Country data for the Americas, cont'd: treatment outcomes for cases registered in 2001 - DOTS and non-DOTS control strategies

|                         | New smear-positive cases - DOTS |     |     |    |                |   |    |   |                |    |    |   | Retreatment cases - DOTS |   |   |   |                |   |   |   |                |   |   |   | New smear-positive cases - non-DOTS |     |    |    |                |   |    |   |                |    |   |    |                  |  |  |  |                          |  |  |  |
|-------------------------|---------------------------------|-----|-----|----|----------------|---|----|---|----------------|----|----|---|--------------------------|---|---|---|----------------|---|---|---|----------------|---|---|---|-------------------------------------|-----|----|----|----------------|---|----|---|----------------|----|---|----|------------------|--|--|--|--------------------------|--|--|--|
|                         | Regist-<br>ered                 |     |     |    | comple-<br>ted |   |    |   | failed default |    |    |   | Regist-<br>ered          |   |   |   | comple-<br>ted |   |   |   | failed default |   |   |   | Regist-<br>ered                     |     |    |    | comple-<br>ted |   |    |   | failed default |    |   |    | trans-<br>ferred |  |  |  | not success-<br>ful eval |  |  |  |
|                         | a                               | b   | c   | d  | e              | f | g  | h | i              | %  | %  | % | j                        | k | l | m | n              | o | p | q | r              | % | % | % | s                                   | t   | u  | v  | w              | x | y  | z | %              | %  | % | aa |                  |  |  |  |                          |  |  |  |
| Anguilla                |                                 | 1   | 100 |    |                |   |    | 0 | 100            |    |    |   |                          |   |   |   |                |   |   |   |                |   |   |   |                                     |     |    |    |                |   |    |   |                |    |   |    |                  |  |  |  |                          |  |  |  |
| Antigua & Barbuda       |                                 | 3   | 068 | 34 | 30             | 7 | 0  | 6 | 5              | 17 | 64 |   |                          |   |   |   |                |   |   |   |                |   |   |   | 2                                   | 527 | 24 | 33 | 4              | 0 | 13 | 7 | 19             | 57 |   |    |                  |  |  |  |                          |  |  |  |
| Argentina               |                                 | 42  | 64  | 0  | 26             | 0 | 7  | 2 | 0              | 64 |    |   |                          |   |   |   |                |   |   |   |                |   |   |   |                                     |     |    |    |                |   |    |   |                |    |   |    |                  |  |  |  |                          |  |  |  |
| Bahamas                 |                                 |     |     |    |                |   |    |   |                |    |    |   |                          |   |   |   |                |   |   |   |                |   |   |   |                                     |     |    |    |                |   |    |   |                |    |   |    |                  |  |  |  |                          |  |  |  |
| Barbados                |                                 | 71  | 51  | 15 | 11             | 0 | 20 | 0 | 3              | 66 |    |   |                          |   |   |   |                |   |   |   |                |   |   |   |                                     |     |    |    |                |   |    |   |                |    |   |    |                  |  |  |  |                          |  |  |  |
| Belize                  |                                 | 0   | 0   | 0  | 0              | 0 | 0  | 0 | 0              | 0  |    |   |                          |   |   |   |                |   |   |   |                |   |   |   |                                     |     |    |    |                |   |    |   |                |    |   |    |                  |  |  |  |                          |  |  |  |
| Bermuda                 |                                 | 6   | 672 | 78 | 4              | 4 | 1  | 6 | 4              | 4  | 82 |   |                          |   |   |   |                |   |   |   |                |   |   |   |                                     |     |    |    |                |   |    |   |                |    |   |    |                  |  |  |  |                          |  |  |  |
| Bolivia                 |                                 | 1   | 394 | 36 | 32             | 5 | 0  | 9 | 4              | 15 | 67 |   |                          |   |   |   |                |   |   |   |                |   |   |   |                                     |     |    |    |                |   |    |   |                |    |   |    |                  |  |  |  |                          |  |  |  |
| Brazil                  |                                 |     |     |    |                |   |    |   |                |    |    |   |                          |   |   |   |                |   |   |   |                |   |   |   |                                     |     |    |    |                |   |    |   |                |    |   |    |                  |  |  |  |                          |  |  |  |
| British Virgin Islands  |                                 | 465 | 32  | 35 | 12             | 0 | 3  | 3 | 16             | 67 |    |   |                          |   |   |   |                |   |   |   |                |   |   |   |                                     |     |    |    |                |   |    |   |                |    |   |    |                  |  |  |  |                          |  |  |  |
| Canada                  |                                 | 1   | 100 |    |                |   |    | 0 | 100            |    |    |   |                          |   |   |   |                |   |   |   |                |   |   |   |                                     |     |    |    |                |   |    |   |                |    |   |    |                  |  |  |  |                          |  |  |  |
| Cayman Islands          |                                 | 1   | 303 | 83 | 9              | 1 | 6  | 2 | 0              | 83 |    |   |                          |   |   |   |                |   |   |   |                |   |   |   |                                     |     |    |    |                |   |    |   |                |    |   |    |                  |  |  |  |                          |  |  |  |
| Chile                   |                                 | 507 | 65  | 19 | 4              | 2 | 6  | 4 | 0              | 85 |    |   |                          |   |   |   |                |   |   |   |                |   |   |   |                                     |     |    |    |                |   |    |   |                |    |   |    |                  |  |  |  |                          |  |  |  |
| Colombia                |                                 | 252 | 68  | 4  | 8              | 0 | 6  | 1 | 12             | 72 |    |   |                          |   |   |   |                |   |   |   |                |   |   |   |                                     |     |    |    |                |   |    |   |                |    |   |    |                  |  |  |  |                          |  |  |  |
| Costa Rica              |                                 | 559 | 93  | 0  | 4              | 1 | 2  | 0 | 93             |    |    |   |                          |   |   |   |                |   |   |   |                |   |   |   |                                     |     |    |    |                |   |    |   |                |    |   |    |                  |  |  |  |                          |  |  |  |
| Cuba                    |                                 | 1   | 100 |    |                |   |    | 0 | 100            |    |    |   |                          |   |   |   |                |   |   |   |                |   |   |   |                                     |     |    |    |                |   |    |   |                |    |   |    |                  |  |  |  |                          |  |  |  |
| Dominica                |                                 | 373 | 81  | 5  | 4              | 2 | 6  | 2 | 0              | 85 |    |   |                          |   |   |   |                |   |   |   |                |   |   |   |                                     |     |    |    |                |   |    |   |                |    |   |    |                  |  |  |  |                          |  |  |  |
| Dominican Republic      |                                 | 152 | 75  | 7  | 3              | 6 | 5  | 1 | 4              | 82 |    |   |                          |   |   |   |                |   |   |   |                |   |   |   |                                     |     |    |    |                |   |    |   |                |    |   |    |                  |  |  |  |                          |  |  |  |
| Ecuador                 |                                 | 1   | 003 | 86 | 2              | 5 | 1  | 5 | 1              | 0  | 88 |   |                          |   |   |   |                |   |   |   |                |   |   |   |                                     |     |    |    |                |   |    |   |                |    |   |    |                  |  |  |  |                          |  |  |  |
| El Salvador             |                                 |     |     |    |                |   |    |   |                |    |    |   |                          |   |   |   |                |   |   |   |                |   |   |   |                                     |     |    |    |                |   |    |   |                |    |   |    |                  |  |  |  |                          |  |  |  |
| Grenada                 |                                 | 1   | 617 | 72 | 13             | 5 | 1  | 7 | 1              | 0  | 85 |   |                          |   |   |   |                |   |   |   |                |   |   |   |                                     |     |    |    |                |   |    |   |                |    |   |    |                  |  |  |  |                          |  |  |  |
| Guatemala               |                                 | 78  | 82  | 8  | 3              | 0 | 4  | 4 | 0              | 90 |    |   |                          |   |   |   |                |   |   |   |                |   |   |   |                                     |     |    |    |                |   |    |   |                |    |   |    |                  |  |  |  |                          |  |  |  |
| Guyana                  |                                 | 3   | 545 | 67 | 9              | 5 | 1  | 7 | 6              | 5  | 75 |   |                          |   |   |   |                |   |   |   |                |   |   |   |                                     |     |    |    |                |   |    |   |                |    |   |    |                  |  |  |  |                          |  |  |  |
| Haiti                   |                                 | 2   | 996 | 70 | 16             | 7 | 1  | 4 | 2              | 0  | 86 |   |                          |   |   |   |                |   |   |   |                |   |   |   |                                     |     |    |    |                |   |    |   |                |    |   |    |                  |  |  |  |                          |  |  |  |
| Honduras                |                                 | 82  | 7   | 71 | 10             | 1 | 10 | 1 | 0              | 78 |    |   |                          |   |   |   |                |   |   |   |                |   |   |   |                                     |     |    |    |                |   |    |   |                |    |   |    |                  |  |  |  |                          |  |  |  |
| Jamaica                 |                                 | 14  | 537 | 75 | 8              | 3 | 1  | 4 | 4              | 83 |    |   |                          |   |   |   |                |   |   |   |                |   |   |   |                                     |     |    |    |                |   |    |   |                |    |   |    |                  |  |  |  |                          |  |  |  |
| Mexico                  |                                 |     |     |    |                |   |    |   |                |    |    |   |                          |   |   |   |                |   |   |   |                |   |   |   |                                     |     |    |    |                |   |    |   |                |    |   |    |                  |  |  |  |                          |  |  |  |
| Montserrat              |                                 |     |     |    |                |   |    |   |                |    |    |   |                          |   |   |   |                |   |   |   |                |   |   |   |                                     |     |    |    |                |   |    |   |                |    |   |    |                  |  |  |  |                          |  |  |  |
| Netherlands Antilles    |                                 | 1   | 506 | 71 | 12             | 3 | 2  | 9 | 2              | 0  | 83 |   |                          |   |   |   |                |   |   |   |                |   |   |   |                                     |     |    |    |                |   |    |   |                |    |   |    |                  |  |  |  |                          |  |  |  |
| Nicaragua               |                                 | 537 | 44  | 21 | 9              | 3 | 15 | 8 | 0              | 65 |    |   |                          |   |   |   |                |   |   |   |                |   |   |   |                                     |     |    |    |                |   |    |   |                |    |   |    |                  |  |  |  |                          |  |  |  |
| Panama                  |                                 | 152 | 66  | 20 | 6              | 1 | 7  | 1 | 0              | 86 |    |   |                          |   |   |   |                |   |   |   |                |   |   |   |                                     |     |    |    |                |   |    |   |                |    |   |    |                  |  |  |  |                          |  |  |  |
| Paraguay                |                                 | 13  | 524 | 90 | 0              | 2 | 2  | 3 | 1              | 3  | 90 |   |                          |   |   |   |                |   |   |   |                |   |   |   |                                     |     |    |    |                |   |    |   |                |    |   |    |                  |  |  |  |                          |  |  |  |
| Peru                    |                                 | 93  |     | 80 | 16             |   | 2  | 1 | 1              | 80 |    |   |                          |   |   |   |                |   |   |   |                |   |   |   |                                     |     |    |    |                |   |    |   |                |    |   |    |                  |  |  |  |                          |  |  |  |
| Puerto Rico             |                                 |     |     |    |                |   |    |   |                |    |    |   |                          |   |   |   |                |   |   |   |                |   |   |   |                                     |     |    |    |                |   |    |   |                |    |   |    |                  |  |  |  |                          |  |  |  |
| Saint Kitts & Nevis     |                                 | 6   | 33  | 17 | 33             |   | 17 |   | 0              | 50 |    |   |                          |   |   |   |                |   |   |   |                |   |   |   |                                     |     |    |    |                |   |    |   |                |    |   |    |                  |  |  |  |                          |  |  |  |
| Saint Lucia             |                                 | 10  | 80  | 0  | 0              | 0 | 20 | 0 | 0              | 80 |    |   |                          |   |   |   |                |   |   |   |                |   |   |   |                                     |     |    |    |                |   |    |   |                |    |   |    |                  |  |  |  |                          |  |  |  |
| St Vincent & Grenadines |                                 |     |     |    |                |   |    |   |                |    |    |   |                          |   |   |   |                |   |   |   |                |   |   |   |                                     |     |    |    |                |   |    |   |                |    |   |    |                  |  |  |  |                          |  |  |  |
| Suriname                |                                 |     |     |    |                |   |    |   |                |    |    |   |                          |   |   |   |                |   |   |   |                |   |   |   |                                     |     |    |    |                |   |    |   |                |    |   |    |                  |  |  |  |                          |  |  |  |
| Trinidad & Tobago       |                                 |     |     |    |                |   |    |   |                |    |    |   |                          |   |   |   |                |   |   |   |                |   |   |   |                                     |     |    |    |                |   |    |   |                |    |   |    |                  |  |  |  |                          |  |  |  |
| Turks & Caicos Islands  |                                 |     |     |    |                |   |    |   |                |    |    |   |                          |   |   |   |                |   |   |   |                |   |   |   |                                     |     |    |    |                |   |    |   |                |    |   |    |                  |  |  |  |                          |  |  |  |
| Uruguay                 |                                 |     |     |    |                |   |    |   |                |    |    |   |                          |   |   |   |                |   |   |   |                |   |   |   |                                     |     |    |    |                |   |    |   |                |    |   |    |                  |  |  |  |                          |  |  |  |
| US Virgin Islands       |                                 |     |     |    |                |   |    |   |                |    |    |   |                          |   |   |   |                |   |   |   |                |   |   |   |                                     |     |    |    |                |   |    |   |                |    |   |    |                  |  |  |  |                          |  |  |  |
| USA                     |                                 | 10  | 198 | 70 | 8              |   | 2  | 3 | 17             | 70 |    |   |                          |   |   |   |                |   |   |   |                |   |   |   |                                     |     |    |    |                |   |    |   |                |    |   |    |                  |  |  |  |                          |  |  |  |
| Venezuela               |                                 | 3   | 057 | 80 | 5              | 0 | 10 | 4 | 1              | 80 |    |   |                          |   |   |   |                |   |   |   |                |   |   |   |                                     |     |    |    |                |   |    |   |                |    |   |    |                  |  |  |  |                          |  |  |  |
| Region                  |                                 | 68  | 142 | 63 | 17             | 5 | 1  | 5 | 3              | 6  | 81 |   |                          |   |   |   |                |   |   |   |                |   |   |   |                                     |     |    |    |                |   |    |   |                |    |   |    |                  |  |  |  |                          |  |  |  |
|                         |                                 |     |     |    |                |   |    |   |                |    |    |   |                          |   |   |   |                |   |   |   |                |   |   |   |                                     |     |    |    |                |   |    |   |                |    |   |    |                  |  |  |  |                          |  |  |  |
|                         |                                 |     |     |    |                |   |    |   |                |    |    |   |                          |   |   |   |                |   |   |   |                |   |   |   |                                     |     |    |    |                |   |    |   |                |    |   |    |                  |  |  |  |                          |  |  |  |
|                         |                                 |     |     |    |                |   |    |   |                |    |    |   |                          |   |   |   |                |   |   |   |                |   |   |   |                                     |     |    |    |                |   |    |   |                |    |   |    |                  |  |  |  |                          |  |  |  |
|                         |                                 |     |     |    |                |   |    |   |                |    |    |   |                          |   |   |   |                |   |   |   |                |   |   |   |                                     |     |    |    |                |   |    |   |                |    |   |    |                  |  |  |  |                          |  |  |  |
|                         |                                 |     |     |    |                |   |    |   |                |    |    |   |                          |   |   |   |                |   |   |   |                |   |   |   |                                     |     |    |    |                |   |    |   |                |    |   |    |                  |  |  |  |                          |  |  |  |
|                         |                                 |     |     |    |                |   |    |   |                |    |    |   |                          |   |   |   |                |   |   |   |                |   |   |   |                                     |     |    |    |                |   |    |   |                |    |   |    |                  |  |  |  |                          |  |  |  |
|                         |                                 |     |     |    |                |   |    |   |                |    |    |   |                          |   |   |   |                |   |   |   |                |   |   |   |                                     |     |    |    |                |   |    |   |                |    |   |    |                  |  |  |  |                          |  |  |  |
|                         |                                 |     |     |    |                |   |    |   |                |    |    |   |                          |   |   |   |                |   |   |   |                |   |   |   |                                     |     |    |    |                |   |    |   |                |    |   |    |                  |  |  |  |                          |  |  |  |
|                         |                                 |     |     |    |                |   |    |   |                |    |    |   |                          |   |   |   |                |   |   |   |                |   |   |   |                                     |     |    |    |                |   |    |   |                |    |   |    |                  |  |  |  |                          |  |  |  |
|                         |                                 |     |     |    |                |   |    |   |                |    |    |   |                          |   |   |   |                |   |   |   |                |   |   |   |                                     |     |    |    |                |   |    |   |                |    |   |    |                  |  |  |  |                          |  |  |  |
|                         |                                 |     |     |    |                |   |    |   |                |    |    |   |                          |   |   |   |                |   |   |   |                |   |   |   |                                     |     |    |    |                |   |    |   |                |    |   |    |                  |  |  |  |                          |  |  |  |
|                         |                                 |     |     |    |                |   |    |   |                |    |    |   |                          |   |   |   |                |   |   |   |                |   |   |   |                                     |     |    |    |                |   |    |   |                |    |   |    |                  |  |  |  |                          |  |  |  |
|                         |                                 |     |     |    |                |   |    |   |                |    |    |   |                          |   |   |   |                |   |   |   |                |   |   |   |                                     |     |    |    |                |   |    |   |                |    |   |    |                  |  |  |  |                          |  |  |  |
|                         |                                 |     |     |    |                |   |    |   |                |    |    |   |                          |   |   |   |                |   |   |   |                |   |   |   |                                     |     |    |    |                |   |    |   |                |    |   |    |                  |  |  |  |                          |  |  |  |
|                         |                                 |     |     |    |                |   |    |   |                |    |    |   |                          |   |   |   |                |   |   |   |                |   |   |   |                                     |     |    |    |                |   |    |   |                |    |   |    |                  |  |  |  |                          |  |  |  |
|                         |                                 |     |     |    |                |   |    |   |                |    |    |   |                          |   |   |   |                |   |   |   |                |   |   |   |                                     |     |    |    |                |   |    |   |                |    |   |    |                  |  |  |  |                          |  |  |  |
|                         |                                 |     |     |    |                |   |    |   |                |    |    |   |                          |   |   |   |                |   |   |   |                |   |   |   |                                     |     |    |    |                |   |    |   |                |    |   |    |                  |  |  |  |                          |  |  |  |

See explanatory notes, page 129.

Country data for the Americas, cont'd: age and sex distribution of smear-positive cases in DOTS areas, 2002 (absolute numbers)

|                         | MALE |       |       |       |       |       | FEMALE |      |       |       |       |       | ALL   |       |       |        |        |        |       |       |       |
|-------------------------|------|-------|-------|-------|-------|-------|--------|------|-------|-------|-------|-------|-------|-------|-------|--------|--------|--------|-------|-------|-------|
|                         | 0-14 | 15-24 | 25-34 | 35-44 | 45-54 | 55-64 | 65+    | 0-14 | 15-24 | 25-34 | 35-44 | 45-54 | 55-64 | 65+   | 0-14  | 15-24  | 25-34  | 35-44  | 45-54 | 55-64 | 65+   |
| Anguilla                |      |       |       |       |       |       |        |      |       |       |       |       |       |       |       |        |        |        |       |       |       |
| Antigua & Barbuda       | 0    | 0     | 1     | 0     | 0     | 0     | 0      | 2    | 0     | 1     | 0     | 0     | 0     | 0     | 2     | 0      | 2      | 0      | 0     | 0     | 0     |
| Argentina               | 42   | 378   | 413   | 302   | 325   | 279   | 300    | 88   | 433   | 398   | 208   | 171   | 141   | 189   | 130   | 811    | 811    | 510    | 496   | 420   | 489   |
| Bahamas                 | 2    | 2     | 2     | 7     | 7     | 3     | 2      | 4    | 1     | 6     | 3     | 3     | 1     | 1     | 6     | 3      | 8      | 10     | 10    | 4     | 3     |
| Barbados                | 2    | 2     |       |       | 1     | 1     | 1      |      |       |       |       | 1     |       |       |       | 2      | 2      | 1      | 2     | 2     | 1     |
| Belize                  | 4    | 7     | 5     | 7     | 11    | 4     | 4      | 3    | 5     | 6     | 3     | 4     | 4     | 4     | 7     | 12     | 11     | 10     | 15    | 8     | 8     |
| Bermuda                 |      |       |       |       |       |       |        |      |       |       |       |       |       |       |       |        |        |        |       |       |       |
| Bolivia                 | 231  | 1 235 | 787   | 492   | 417   | 356   | 386    | 281  | 938   | 630   | 358   | 238   | 185   | 295   | 512   | 2 173  | 1 417  | 850    | 655   | 541   | 681   |
| Brazil                  | 59   | 462   | 650   | 720   | 585   | 364   | 316    | 57   | 381   | 413   | 297   | 231   | 154   | 144   | 116   | 843    | 1 063  | 1 017  | 816   | 518   | 460   |
| British Virgin Islands  |      |       |       |       |       |       |        |      |       |       |       |       |       |       |       |        |        |        |       |       |       |
| Canada                  | 0    | 32    | 36    | 51    | 38    | 32    | 69     | 5    | 35    | 34    | 30    | 19    | 19    | 45    | 5     | 67     | 70     | 81     | 57    | 51    | 114   |
| Cayman Islands          |      |       |       |       |       |       |        |      |       |       |       |       |       |       |       |        |        |        |       |       |       |
| Chile                   | 6    | 87    | 163   | 196   | 193   | 144   | 160    | 7    | 64    | 91    | 82    | 76    | 54    | 89    | 13    | 151    | 254    | 278    | 269   | 198   | 249   |
| Colombia                | 20   | 72    | 95    | 78    | 70    | 42    | 76     | 20   | 79    | 85    | 54    | 43    | 34    | 50    | 40    | 151    | 180    | 132    | 113   | 76    | 126   |
| Costa Rica              | 2    | 13    | 31    | 22    | 34    | 14    | 23     | 5    | 8     | 19    | 13    | 13    | 7     | 15    | 7     | 21     | 50     | 35     | 47    | 21    | 38    |
| Cuba                    | 0    | 21    | 102   | 83    | 67    | 45    | 77     | 3    | 15    | 28    | 22    | 21    | 20    | 34    | 3     | 36     | 130    | 105    | 88    | 65    | 111   |
| Dominica                |      |       |       |       |       | 1     |        |      |       |       | 1     |       |       |       |       |        |        | 1      |       | 1     |       |
| Dominican Republic      | 20   | 218   | 288   | 203   | 91    | 58    | 50     | 21   | 190   | 174   | 103   | 46    | 33    | 37    | 41    | 408    | 462    | 306    | 137   | 91    | 87    |
| Ecuador                 |      |       |       |       |       |       |        |      |       |       |       |       |       |       |       |        |        |        |       |       |       |
| El Salvador             | 8    | 85    | 127   | 101   | 91    | 59    | 93     | 6    | 80    | 84    | 61    | 49    | 51    | 85    | 14    | 165    | 211    | 162    | 140   | 110   | 178   |
| Grenada                 |      |       |       |       |       |       |        |      |       |       |       |       |       |       |       |        |        |        |       |       |       |
| Guatemala               | 27   | 217   | 219   | 171   | 158   | 117   | 146    | 42   | 192   | 171   | 147   | 116   | 68    | 74    | 69    | 409    | 390    | 318    | 274   | 185   | 220   |
| Guyana                  | 7    | 3     | 11    | 6     | 2     | 0     | 0      | 3    | 1     | 3     | 3     | 2     | 0     | 0     | 10    | 4      | 14     | 9      | 4     | 0     | 0     |
| Haiti                   | 52   | 683   | 685   | 426   | 279   | 152   | 117    | 81   | 743   | 651   | 406   | 240   | 105   | 81    | 133   | 1 406  | 1 336  | 832    | 519   | 257   | 198   |
| Honduras                | 76   | 29    | 519   | 353   | 338   | 257   | 24     | 65   | 23    | 351   | 339   | 354   | 193   | 35    | 141   | 52     | 870    | 692    | 450   | 59    |       |
| Jamaica                 | 0    | 9     | 11    | 8     | 7     | 7     | 4      | 1    | 3     | 3     | 3     | 1     | 3     | 0     | 1     | 12     | 14     | 11     | 8     | 10    | 4     |
| Mexico                  | 150  | 1 060 | 1 252 | 1 258 | 1 098 | 952   | 1 091  | 145  | 742   | 717   | 679   | 667   | 580   | 675   | 295   | 1 802  | 1 969  | 1 937  | 1 765 | 1 532 | 1 766 |
| Montserrat              |      |       |       |       |       |       |        |      |       |       |       |       |       |       |       |        |        |        |       |       |       |
| Netherlands Antilles    |      |       |       |       |       |       |        |      |       |       |       |       |       |       |       |        |        |        |       |       |       |
| Nicaragua               | 22   | 168   | 180   | 140   | 101   | 73    | 74     | 26   | 149   | 135   | 91    | 72    | 45    | 44    | 48    | 317    | 315    | 231    | 173   | 118   | 118   |
| Panama                  | 3    | 62    | 88    | 71    | 61    | 50    | 49     | 6    | 36    | 40    | 46    | 21    | 8     | 27    | 9     | 98     | 128    | 117    | 82    | 58    | 76    |
| Paraguay                | 1    | 15    | 10    | 14    | 10    | 21    | 11     | 4    | 15    | 11    | 6     | 6     | 13    | 8     | 5     | 30     | 21     | 20     | 16    | 34    | 19    |
| Peru                    | 65   | 983   | 622   | 298   | 194   | 164   | 138    | 62   | 688   | 496   | 251   | 129   | 96    | 100   | 127   | 1 671  | 1 118  | 549    | 323   | 260   | 238   |
| Puerto Rico             | 2    | 4     | 7     | 11    | 10    | 9     | 6      | 0    | 1     | 5     | 8     | 3     | 5     | 5     | 2     | 5      | 12     | 19     | 13    | 14    | 11    |
| Saint Kitts & Nevis     |      |       |       |       |       |       |        |      |       |       |       |       |       |       |       |        |        |        |       |       |       |
| Saint Lucia             |      |       |       |       |       |       |        |      |       |       |       |       |       |       |       |        |        |        |       |       |       |
| St Vincent & Grenadines |      |       |       |       |       |       |        |      |       |       |       |       |       |       |       |        |        |        |       |       |       |
| Suriname                |      |       |       |       |       |       |        |      |       |       |       |       |       |       |       |        |        |        |       |       |       |
| Trinidad & Tobago       |      |       |       |       |       |       |        |      |       |       |       |       |       |       |       |        |        |        |       |       |       |
| Turks & Caicos Islands  |      |       |       |       |       |       |        |      |       |       |       |       |       |       |       |        |        |        |       |       |       |
| Uruguay                 |      |       |       |       |       |       |        |      |       |       |       |       |       |       |       |        |        |        |       |       |       |
| US Virgin Islands       |      |       |       |       |       |       |        |      |       |       |       |       |       |       |       |        |        |        |       |       |       |
| USA                     | 18   | 345   | 558   | 802   | 789   | 482   | 584    | 18   | 231   | 416   | 358   | 248   | 165   | 364   | 36    | 576    | 974    | 1 160  | 1 037 | 647   | 948   |
| Venezuela               | 16   | 302   | 372   | 374   | 345   | 227   | 295    | 32   | 237   | 237   | 195   | 134   | 111   | 186   | 48    | 539    | 609    | 569    | 479   | 338   | 481   |
| Region                  | 834  | 6 507 | 7 268 | 6 232 | 5 359 | 3 937 | 4 129  | 988  | 5 315 | 5 230 | 3 787 | 2 919 | 2 108 | 2 608 | 1 822 | 11 822 | 12 498 | 10 019 | 8 278 | 6 045 | 6 737 |

note: the sum of cases notified by age is less than the number of new smear-positive cases notified for some countries

**Country data for the Americas, cont'd: age and sex distribution of smear-positive cases in non-DOTS areas, 2002 (absolute numbers)**

|                         | MALE |       |       |       |       |       |       | FEMALE |       |       |       |       |       |     | ALL   |        |        |        |       |       |       |
|-------------------------|------|-------|-------|-------|-------|-------|-------|--------|-------|-------|-------|-------|-------|-----|-------|--------|--------|--------|-------|-------|-------|
|                         | 0-14 | 15-24 | 25-34 | 35-44 | 45-54 | 55-64 | 65+   | 0-14   | 15-24 | 25-34 | 35-44 | 45-54 | 55-64 | 65+ | 0-14  | 15-24  | 25-34  | 35-44  | 45-54 | 55-64 | 65+   |
| Anguilla                |      |       |       |       |       |       |       |        |       |       |       |       |       |     |       |        |        |        |       |       |       |
| Antigua & Barbuda       |      |       |       |       |       |       |       |        |       |       |       |       |       |     |       |        |        |        |       |       |       |
| Argentina               |      |       |       |       |       |       |       |        |       |       |       |       |       |     |       |        |        |        |       |       |       |
| Bahamas                 | 28   | 234   | 245   | 161   | 152   | 110   | 99    | 29     | 189   | 182   | 93    | 66    | 62    | 66  | 57    | 423    | 427    | 254    | 218   | 172   | 165   |
| Barbados                |      |       |       |       |       |       |       |        |       |       |       |       |       |     |       |        |        |        |       |       |       |
| Belize                  |      |       |       |       |       |       |       |        |       |       |       |       |       |     |       |        |        |        |       |       |       |
| Bermuda                 |      |       |       |       |       |       |       |        |       |       |       |       |       |     |       |        |        |        |       |       |       |
| Bolivia                 |      |       |       |       |       |       |       |        |       |       |       |       |       |     |       |        |        |        |       |       |       |
| Brazil                  | 285  | 4 233 | 5 240 | 5 605 | 4 249 | 2 374 | 1 764 | 323    | 3 334 | 3 171 | 2 520 | 1 524 | 877   | 391 | 608   | 7 567  | 8 411  | 8 125  | 5 773 | 3 251 | 2 155 |
| British Virgin Islands  |      |       |       |       |       |       |       |        |       |       |       |       |       |     |       |        |        |        |       |       |       |
| Canada                  |      |       |       |       |       |       |       |        |       |       |       |       |       |     |       |        |        |        |       |       |       |
| Cayman Islands          |      |       |       |       |       |       |       |        |       |       |       |       |       |     |       |        |        |        |       |       |       |
| Chile                   |      |       |       |       |       |       |       |        |       |       |       |       |       |     |       |        |        |        |       |       |       |
| Colombia                | 189  | 542   | 601   | 610   | 523   | 430   | 586   | 147    | 445   | 460   | 348   | 275   | 224   | 321 | 336   | 987    | 1 061  | 958    | 798   | 654   | 907   |
| Costa Rica              | 1    | 13    | 14    | 22    | 9     | 5     | 15    | 1      | 5     | 5     | 6     | 1     | 8     | 4   | 2     | 18     | 19     | 28     | 10    | 13    | 19    |
| Cuba                    |      |       |       |       |       |       |       |        |       |       |       |       |       |     |       |        |        |        |       |       |       |
| Dominica                |      |       |       |       |       |       |       |        |       |       |       |       |       |     |       |        |        |        |       |       |       |
| Dominican Republic      | 19   | 77    | 129   | 67    | 54    | 28    | 21    | 14     | 61    | 67    | 34    | 35    | 16    | 25  | 33    | 138    | 196    | 101    | 89    | 44    | 46    |
| Ecuador                 |      |       |       |       |       |       |       |        |       |       |       |       |       |     |       |        |        |        |       |       |       |
| El Salvador             |      |       |       |       |       |       |       |        |       |       |       |       |       |     |       |        |        |        |       |       |       |
| Grenada                 |      |       |       |       |       |       |       |        |       |       |       |       |       |     |       |        |        |        |       |       |       |
| Guatemala               |      |       |       |       |       |       |       |        |       |       |       |       |       |     |       |        |        |        |       |       |       |
| Guayana                 | 13   | 46    | 79    | 88    | 49    | 19    | 23    | 23     | 31    | 33    | 31    | 17    | 15    | 18  | 36    | 77     | 112    | 119    | 66    | 34    | 41    |
| Haiti                   | 27   | 240   | 219   | 146   | 98    | 32    | 31    | 37     | 237   | 200   | 144   | 63    | 15    | 18  | 64    | 477    | 419    | 290    | 161   | 47    | 49    |
| Honduras                |      |       |       |       |       |       |       |        |       |       |       |       |       |     |       |        |        |        |       |       |       |
| Jamaica                 |      |       |       |       |       |       |       |        |       |       |       |       |       |     |       |        |        |        |       |       |       |
| Mexico                  | 4    | 30    | 40    | 43    | 48    | 34    | 53    | 4      | 27    | 37    | 37    | 33    | 41    | 58  | 8     | 57     | 77     | 80     | 81    | 75    | 111   |
| Montserrat              |      |       |       |       |       |       |       |        |       |       |       |       |       |     |       |        |        |        |       |       |       |
| Netherlands Antilles    |      |       |       |       |       |       |       |        |       |       |       |       |       |     |       |        |        |        |       |       |       |
| Nicaragua               |      |       |       |       |       |       |       |        |       |       |       |       |       |     |       |        |        |        |       |       |       |
| Panama                  | 4    | 18    | 16    | 26    | 12    | 9     | 9     | 0      | 10    | 11    | 9     | 4     | 6     | 7   | 4     | 28     | 27     | 35     | 16    | 15    | 16    |
| Paraguay                | 19   | 104   | 117   | 98    | 95    | 57    | 67    | 8      | 73    | 72    | 44    | 30    | 42    | 31  | 27    | 177    | 189    | 142    | 125   | 99    | 98    |
| Peru                    |      |       |       |       |       |       |       |        |       |       |       |       |       |     |       |        |        |        |       |       |       |
| Puerto Rico             |      |       |       |       |       |       |       |        |       |       |       |       |       |     |       |        |        |        |       |       |       |
| Saint Kitts & Nevis     |      |       |       |       |       |       |       |        |       |       |       |       |       |     |       |        |        |        |       |       |       |
| Saint Lucia             |      |       |       |       |       |       |       |        |       |       |       |       |       |     |       |        |        |        |       |       |       |
| St Vincent & Grenadines |      |       |       |       |       |       |       |        |       |       |       |       |       |     |       |        |        |        |       |       |       |
| Suriname                | 2    | 1     | 11    | 11    | 1     | 3     | 2     | 0      | 3     | 2     | 2     | 2     | 0     | 1   | 2     | 4      | 13     | 13     | 3     | 3     | 3     |
| Trinidad & Tobago       | 0    | 8     | 13    | 20    | 12    | 12    | 3     | 0      | 4     | 11    | 3     | 2     | 0     | 7   | 0     | 12     | 24     | 23     | 14    | 12    | 10    |
| Turks & Caicos Islands  |      |       |       |       |       |       |       |        |       |       |       |       |       |     |       |        |        |        |       |       |       |
| Uruguay                 |      |       |       |       |       |       |       |        |       |       |       |       |       |     |       |        |        |        |       |       |       |
| US Virgin Islands       |      |       |       |       |       |       |       |        |       |       |       |       |       |     |       |        |        |        |       |       |       |
| USA                     |      |       |       |       |       |       |       |        |       |       |       |       |       |     |       |        |        |        |       |       |       |
| Venezuela               | 3    | 37    | 57    | 51    | 35    | 19    | 18    | 10     | 37    | 43    | 23    | 24    | 12    | 12  | 13    | 74     | 100    | 74     | 59    | 31    | 30    |
| Region                  | 594  | 5 583 | 6 781 | 6 954 | 5 338 | 3 134 | 2 693 | 596    | 4 457 | 4 298 | 3 295 | 2 076 | 1 318 | 960 | 1 190 | 10 040 | 11 079 | 10 249 | 7 414 | 4 452 | 3 653 |

note: the sum of cases notified by age is less than the number of new smear-positive cases notified for some countries

Country data for the Americas, cont'd: smear-positive notification rates (per 100 000 population) by age and sex, 2002

|                         | MALE |       |       |       |       |       | FEMALE |      |       |       |       |       | ALL   |     |      |       |       |       |       |       |     |
|-------------------------|------|-------|-------|-------|-------|-------|--------|------|-------|-------|-------|-------|-------|-----|------|-------|-------|-------|-------|-------|-----|
|                         | 0-14 | 15-24 | 25-34 | 35-44 | 45-54 | 55-64 | 65+    | 0-14 | 15-24 | 25-34 | 35-44 | 45-54 | 55-64 | 65+ | 0-14 | 15-24 | 25-34 | 35-44 | 45-54 | 55-64 | 65+ |
| Anguilla                |      |       |       |       |       |       |        |      |       |       |       |       |       |     |      |       |       |       |       |       |     |
| Antigua & Barbuda       |      |       |       |       |       |       |        |      |       |       |       |       |       |     |      |       |       |       |       |       |     |
| Argentina               | 1    | 18    | 23    | 20    | 25    | 27    | 26     | 2    | 19    | 21    | 13    | 12    | 13    | 11  | 2    | 18    | 22    | 17    | 18    | 20    | 17  |
| Bahamas                 | 4    | 7     | 8     | 31    | 53    | 34    | 27     | 9    | 4     | 23    | 13    | 20    | 9     | 10  | 7    | 5     | 15    | 22    | 35    | 21    | 17  |
| Barbados                |      | 10    |       |       | 6     |       | 10     |      |       |       |       | 6     |       |     |      | 5     |       |       | 6     |       | 4   |
| Belize                  | 8    | 26    | 26    | 53    | 130   | 82    | 76     | 6    | 19    | 31    | 23    | 50    | 88    | 75  | 7    | 23    | 28    | 38    | 91    | 85    | 75  |
| Bermuda                 |      |       |       |       |       |       |        |      |       |       |       |       |       |     |      |       |       |       |       |       |     |
| Bolivia                 | 13   | 147   | 125   | 112   | 135   | 179   | 227    | 17   | 114   | 99    | 78    | 71    | 84    | 140 | 15   | 131   | 112   | 94    | 102   | 129   | 179 |
| Brazil                  | 1    | 27    | 41    | 52    | 57    | 55    | 50     | 2    | 21    | 24    | 22    | 19    | 18    | 10  | 1    | 24    | 33    | 37    | 38    | 36    | 27  |
| British Virgin Islands  |      |       |       |       |       |       |        |      |       |       |       |       |       |     |      |       |       |       |       |       |     |
| Canada                  | 0    | 1     | 2     | 2     | 2     | 2     | 4      | 0    | 2     | 2     | 1     | 1     | 1     | 2   | 0    | 2     | 2     | 2     | 1     | 2     | 3   |
| Cayman Islands          |      |       |       |       |       |       |        |      |       |       |       |       |       |     |      |       |       |       |       |       |     |
| Chile                   | 0    | 7     | 13    | 17    | 23    | 27    | 33     | 0    | 5     | 8     | 7     | 9     | 9     | 13  | 0    | 6     | 11    | 12    | 16    | 17    | 21  |
| Colombia                | 3    | 15    | 20    | 24    | 31    | 44    | 71     | 2    | 13    | 15    | 13    | 15    | 22    | 31  | 3    | 14    | 18    | 18    | 23    | 32    | 48  |
| Costa Rica              | 0    | 6     | 14    | 15    | 22    | 18    | 36     | 1    | 3     | 8     | 7     | 7     | 14    | 16  | 1    | 5     | 11    | 11    | 15    | 16    | 25  |
| Cuba                    | 0    | 3     | 10    | 9     | 10    | 9     | 14     | 0    | 2     | 3     | 2     | 3     | 4     | 6   | 0    | 2     | 6     | 5     | 7     | 6     | 10  |
| Dominica                |      |       |       |       |       |       |        |      |       |       |       |       |       |     |      |       |       |       |       |       |     |
| Dominican Republic      | 3    | 33    | 59    | 48    | 39    | 38    | 38     | 3    | 30    | 36    | 25    | 22    | 21    | 30  | 3    | 32    | 48    | 37    | 30    | 29    | 34  |
| Ecuador                 |      |       |       |       |       |       |        |      |       |       |       |       |       |     |      |       |       |       |       |       |     |
| El Salvador             | 1    | 13    | 24    | 33    | 41    | 39    | 63     | 1    | 12    | 15    | 17    | 19    | 30    | 44  | 1    | 13    | 20    | 25    | 29    | 34    | 53  |
| Grenada                 |      |       |       |       |       |       |        |      |       |       |       |       |       |     |      |       |       |       |       |       |     |
| Guatemala               | 1    | 17    | 26    | 33    | 45    | 52    | 71     | 2    | 16    | 20    | 27    | 32    | 30    | 33  | 1    | 16    | 23    | 30    | 38    | 41    | 51  |
| Guyana                  | 17   | 62    | 134   | 203   | 171   | 118   | 140    | 23   | 41    | 51    | 62    | 55    | 75    | 82  | 20   | 52    | 91    | 126   | 108   | 94    | 107 |
| Haiti                   | 5    | 95    | 161   | 161   | 155   | 110   | 103    | 7    | 105   | 147   | 140   | 103   | 60    | 56  | 6    | 100   | 154   | 150   | 127   | 83    | 77  |
| Honduras                | 5    | 4     | 102   | 104   | 161   | 205   | 21     | 5    | 3     | 71    | 99    | 165   | 146   | 26  | 5    | 4     | 87    | 102   | 163   | 175   | 24  |
| Jamaica                 | 0    | 3     | 5     | 5     | 7     | 10    | 5      | 0    | 1     | 1     | 2     | 1     | 4     | 0   | 0    | 2     | 3     | 3     | 4     | 7     | 2   |
| Mexico                  | 1    | 11    | 16    | 22    | 28    | 39    | 50     | 1    | 8     | 8     | 11    | 16    | 23    | 26  | 1    | 9     | 12    | 17    | 22    | 31    | 37  |
| Montserrat              |      |       |       |       |       |       |        |      |       |       |       |       |       |     |      |       |       |       |       |       |     |
| Netherlands Antilles    |      |       |       |       |       |       |        |      |       |       |       |       |       |     |      |       |       |       |       |       |     |
| Nicaragua               | 2    | 29    | 48    | 57    | 64    | 84    | 99     | 2    | 26    | 34    | 34    | 42    | 47    | 47  | 2    | 28    | 41    | 45    | 53    | 65    | 70  |
| Panama                  | 1    | 28    | 40    | 48    | 53    | 66    | 69     | 1    | 17    | 20    | 27    | 18    | 16    | 38  | 1    | 23    | 30    | 38    | 36    | 41    | 53  |
| Paraguay                | 2    | 20    | 31    | 34    | 46    | 67    | 90     | 1    | 15    | 20    | 16    | 16    | 46    | 33  | 1    | 18    | 26    | 25    | 32    | 56    | 57  |
| Peru                    | 1    | 37    | 29    | 18    | 17    | 23    | 22     | 1    | 27    | 23    | 16    | 12    | 13    | 14  | 1    | 32    | 26    | 17    | 14    | 18    | 18  |
| Puerto Rico             | 0    | 1     | 3     | 5     | 5     | 5     | 3      | 0    | 0     | 2     | 3     | 1     | 2     | 2   | 0    | 1     | 2     | 4     | 3     | 4     | 2   |
| Saint Kitts & Nevis     |      |       |       |       |       |       |        |      |       |       |       |       |       |     |      |       |       |       |       |       |     |
| Saint Lucia             |      | 8     |       | 11    | 18    | 58    | 29     |      |       |       |       | 16    | 26    |     |      |       | 4     | 5     | 17    | 41    | 12  |
| St Vincent & Grenadines |      |       |       |       |       |       |        |      |       |       |       |       |       |     |      |       |       |       |       |       |     |
| Suriname                | 3    | 2     | 29    | 37    | 8     | 33    | 19     |      | 0     | 7     | 5     | 7     | 13    | 0   | 7    | 1     | 4     | 18    | 22    | 11    | 33  |
| Trinidad & Tobago       | 0    | 6     | 13    | 21    | 17    | 27    | 7      | 0    | 3     | 11    | 3     | 3     | 0     | 14  | 0    | 4     | 12    | 12    | 10    | 13    | 11  |
| Turks & Caicos Islands  |      |       |       |       |       |       |        |      |       |       |       |       |       |     |      |       |       |       |       |       |     |
| Uruguay                 | 0    | 12    | 13    | 18    | 20    | 17    | 18     | 0    | 10    | 10    | 9     | 5     | 7     | 8   | 0    | 11    | 12    | 13    | 13    | 11    | 12  |
| US Virgin Islands       |      |       |       |       |       |       |        |      |       |       |       |       |       |     |      |       |       |       |       |       |     |
| USA                     | 0    | 2     | 3     | 4     | 4     | 4     | 4      | 0    | 1     | 2     | 2     | 1     | 1     | 2   | 0    | 1     | 2     | 3     | 3     | 2     | 3   |
| Venezuela               | 0    | 14    | 22    | 26    | 33    | 37    | 59     | 1    | 11    | 14    | 13    | 14    | 18    | 31  | 1    | 12    | 18    | 20    | 24    | 27    | 44  |
| World Region            | 1    | 16    | 22    | 22    | 23    | 24    | 23     | 1    | 13    | 15    | 12    | 10    | 11    | 9   | 1    | 15    | 18    | 17    | 17    | 17    | 15  |

Rates are missing where data for smear-positive cases are missing, or where age- and sex-specific population data are not available.



Country data for the Americas, cont'd: number of TB cases notified, 1980-2002

|                         | 1980           | 1981           | 1982           | 1983           | 1984           | 1985           | 1986           | 1987           | 1988           | 1989           | 1990           | 1991           | 1992           | 1993           | 1994           | 1995           | 1996           | 1997           | 1998           | 1999           | 2000           | 2001           | 2002           |
|-------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| Anguilla                | 0              | 0              | 0              | 4              | 0              | 0              | 1              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 2              | 0              | 0              | 0              | 0              | 0              | 0              | 0              |
| Antigua & Barbuda       | 8              | 3              | 0              | 1              | 3              | 2              | 7              | 0              | 3              | 3              | 1              | 0              | 6              | 0              | 0              | 0              | 3              | 4              | 4              | 3              | 4              | 1              | 4              |
| Argentina               | 16 406         | 16 693         | 17 292         | 17 305         | 16 359         | 15 987         | 14 681         | 13 368         | 13 267         | 12 636         | 12 303         | 12 185         | 12 606         | 13 887         | 13 683         | 13 450         | 13 397         | 12 621         | 12 276         | 11 871         | 11 767         | 11 456         | 11 546         |
| Bahamas                 | 70             | 67             | 54             | 58             | 53             | 63             | 52             | 43             | 51             | 52             | 46             | 53             | 63             | 60             | 78             | 57             | 59             | 88             | 75             | 76             | 82             | 44             | 44             |
| Barbados                | 64             | 3              | 30             | 17             | 14             | 12             | 7              | 3              | 4              | 5              | 5              | 5              | 6              | 6              | 3              | 3              | 3              | 5              | 7              | 2              | 3              | 6              | 5              |
| Belize                  | 21             | 33             | 44             | 140            | 35             | 25             | 23             | 41             | 28             | 30             | 57             | 89             | 65             | 80             | 59             | 95             | 99             | 107            | 123            | 104            | 106            | 136            | 135            |
| Bermuda                 | 1              | 2              | 5              | 10             | 3              | 3              | 6              | 2              | 1              | 2              | 0              | 3              | 4              | 0              | 0              | 4              | 0              | 4              | 0              | 0              | 0              | 0              | 0              |
| Bolivia                 | 4 412          | 5 072          | 4 777          | 5 178          | 4 131          | 7 679          | 6 837          | 8 960          | 10 664         | 12 563         | 11 166         | 11 223         | 9 520          | 8 614          | 9 431          | 14 422         | 10 194         | 9 853          | 10 132         | 9 863          | 10 127         | 10 531         | 10 201         |
| Brazil                  | 72 608         | 86 411         | 87 822         | 86 617         | 88 365         | 84 310         | 83 731         | 81 826         | 82 395         | 80 048         | 74 570         | 84 990         | 85 965         | 86 870         | 75 759         | 91 013         | 87 254         | 83 309         | 95 009         | 78 870         | 77 899         | 74 466         | 81 436         |
| British Virgin Islands  |                |                |                |                |                |                |                |                |                |                |                |                |                |                |                |                |                |                |                |                |                |                |                |
| Canada                  | 2 885          | 2 554          | 2 515          | 2 186          | 2 345          | 1 980          | 2 046          | 1 972          | 1 947          | 2 035          | 1 997          | 2 018          | 2 108          | 2 012          | 2 074          | 1 931          | 1 868          | 1 976          | 1 791          | 1 806          | 1 694          | 1 703          | 1 556          |
| Cayman Islands          | 0              | 2              | 0              | 1              | 1              | 4              | 1              | 0              | 0              | 2              | 2              | 3              | 3              | 2              | 2              | 2              | 0              | 0              | 3              | 0              | 0              | 5              | 1              |
| Chile                   | 8 523          | 7 337          | 6 941          | 6 989          | 6 561          | 6 644          | 6 854          | 6 280          | 6 324          | 6 728          | 6 151          | 5 498          | 5 304          | 4 598          | 4 138          | 4 150          | 4 178          | 3 880          | 3 652          | 3 429          | 3 021          | 3 006          | 2 448          |
| Colombia                | 11 589         | 11 483         | 12 126         | 13 716         | 12 792         | 12 024         | 11 639         | 11 437         | 11 469         | 11 329         | 12 447         | 12 263         | 11 199         | 11 043         | 8 901          | 9 912          | 9 702          | 8 042          | 9 155          | 10 999         | 11 630         | 11 480         | 11 376         |
| Costa Rica              | 396            | 521            | 459            | 479            | 393            | 376            | 418            | 434            | 442            | 311            | 230            | 201            | 118            | 313            | 325            | 586            | 636            | 692            | 730            | 851            | 585            | 630            | 543            |
| Cuba                    | 1 133          | 833            | 815            | 762            | 705            | 680            | 656            | 630            | 628            | 581            | 546            | 514            | 410            | 790            | 1 681          | 1 553          | 1 465          | 1 346          | 1 234          | 1 135          | 1 135          | 929            | 896            |
| Dominica                | 20             | 26             | 18             | 16             | 5              | 8              | 35             | 27             | 7              | 13             | 6              | 14             | 13             | 7              | 12             | 8              | 10             | 6              | 5              | 5              | 0              | 2              | 2              |
| Dominican Republic      | 2 174          | 1 778          | 2 457          | 2 959          | 3 100          | 2 335          | 2 634          | 2 459          | 3 081          | 3 145          | 2 597          | 1 837          | 3 490          | 4 033          | 4 337          | 4 053          | 6 302          | 5 381          | 5 114          | 5 767          | 5 291          | 4 766          | 4 040          |
| Ecuador                 | 3 950          | 3 966          | 3 880          | 3 985          | 4 301          | 4 798          | 5 687          | 5 867          | 5 497          | 5 480          | 8 243          | 6 879          | 7 313          | 7 050          | 9 885          | 7 893          | 8 397          | 9 435          | 7 164          | 5 756          | 6 908          | 6 015          | 5 829          |
| El Salvador             | 2 255          | 2 091          | 2 171          | 2 053          | 1 564          | 1 461          | 1 659          | 1 647          | 2 378          | 617            | 2 367          | 2 304          | 2 495          | 3 347          | 3 901          | 2 422          | 1 686          | 1 682          | 1 700          | 1 623          | 1 485          | 1 458          | 1 550          |
| Grenada                 | 17             | 1              | 1              | 6              | 4              | 2              | 2              | 1              | 0              | 4              | 0              | 1              | 3              | 0              | 3              | 4              | 0              | 2              | 2              | 5              | 0              | 0              | 1              |
| Guatemala               | 5 624          | 6 641          | 7 277          | 6 013          | 6 586          | 6 570          | 4 806          | 5 700          | 5 739          | 4 900          | 3 813          | 2 631          | 2 517          | 2 474          | 2 508          | 3 119          | 3 232          | 2 948          | 2 755          | 2 820          | 2 913          | 2 419          | 2 909          |
| Guyana                  | 124            | 117            | 135            | 149            | 165            | 215            | 190            | 117            | 150            | 120            | 168            | 134            | 182            | 91             | 266            | 296            | 314            | 407            | 318            | 407            | 422            | 422            | 590            |
| Haiti                   | 8 306          | 6 550          | 3 337          | 6 839          | 5 803          | 4 959          | 8 514          | 8 514          | 8 054          | 8 100          | 10 237         | 10 237         | 10 237         | 91             | 266            | 6 212          | 6 632          | 10 116         | 9 770          | 9 124          | 10 420         | 10 224         | 12 066         |
| Honduras                | 1 674          | 1 696          | 1 714          | 1 935          | 2 120          | 3 377          | 4 213          | 4 227          | 3 962          | 4 026          | 3 647          | 4 560          | 4 155          | 3 745          | 4 291          | 4 984          | 4 176          | 4 030          | 4 916          | 4 568          | 3 984          | 4 435          | 4 579          |
| Jamaica                 | 176            | 178            | 153            | 157            | 160            | 130            | 88             | 133            | 65             | 86             | 123            | 121            | 111            | 115            | 109            | 109            | 121            | 118            | 121            | 115            | 127            | 121            | 106            |
| Mexico                  | 31 247         | 32 572         | 24 853         | 22 795         | 14 531         | 15 017         | 13 180         | 14 631         | 15 371         | 15 489         | 14 437         | 15 216         | 14 446         | 15 145         | 16 353         | 11 329         | 20 722         | 23 575         | 21 514         | 19 802         | 18 434         | 18 879         | 17 790         |
| Montserrat              | 1              | 0              | 0              | 1              | 7              | 9              | 5              | 13             | 6              | 5              | 1              | 1              | 0              | 0              | 0              | 0              | 0              | 2              | 1              | 2              | 0              | 0              | 0              |
| Netherlands Antilles    |                |                |                |                |                |                |                |                |                |                |                |                |                |                |                |                |                |                |                |                |                |                |                |
| Nicaragua               | 1 300          | 3 723          | 3 082          | 2 773          | 2 705          | 2 604          | 2 617          | 2 983          | 2 737          | 3 106          | 2 944          | 2 797          | 2 885          | 2 798          | 2 750          | 2 842          | 3 003          | 2 806          | 2 604          | 2 558          | 2 402          | 2 447          | 2 092          |
| Panama                  | 643            | 580            | 580            | 429            | 413            | 614            | 709            | 765            | 770            | 672            | 846            | 863            | 750            | 1 146          | 827            | 1 300          | 1 314          | 1 473          | 1 422          | 1 387          | 1 168          | 1 711          | 1 514          |
| Paraguay                | 1 354          | 1 388          | 1 415          | 1 800          | 1 718          | 1 931          | 1 628          | 1 502          | 1 438          | 2 270          | 2 167          | 2 283          | 1 927          | 2 037          | 1 850          | 1 745          | 2 072          | 1 946          | 1 831          | 2 115          | 1 950          | 2 073          | 2 107          |
| Peru                    | 16 011         | 21 925         | 21 579         | 22 753         | 22 792         | 24 438         | 24 702         | 30 571         | 36 908         | 35 687         | 37 905         | 40 580         | 52 552         | 51 675         | 48 601         | 45 310         | 41 739         | 42 062         | 43 723         | 40 345         | 38 661         | 37 197         | 36 092         |
| Puerto Rico             | 686            | 521            | 473            | 452            | 418            | 338            | 363            | 303            | 275            | 314            | 159            | 241            | 257            | 274            | 263            | 263            | 110            | 257            | 201            | 200            | 174            | 121            | 129            |
| Saint Kitts & Nevis     | 7              | 4              | 6              | 2              | 3              | 0              | 0              | 0              | 0              | 0              | 0              | 1              | 4              | 6              | 2              | 5              | 3              | 12             | 5              | 3              | 0              | 2              | 3              |
| Saint Lucia             | 41             | 39             | 37             | 48             | 55             | 21             | 34             | 25             | 32             | 28             | 13             | 25             | 26             | 24             | 24             | 11             | 35             | 22             | 20             | 16             | 9              | 15             | 17             |
| St Vincent & Grenadines | 78             | 11             | 14             | 4              | 23             | 14             | 9              | 3              | 6              | 3              | 2              | 1              | 4              | 13             | 0              | 13             | 6              | 6              | 8              | 9              | 16             | 10             | 10             |
| Suriname                | 78             | 81             | 56             | 78             | 76             | 50             | 60             | 77             | 77             | 70             | 82             | 47             | 58             | 45             | 53             | 53             | 53             | 76             | 85             | 95             | 90             | 80             | 93             |
| Trinidad & Tobago       | 80             | 82             | 62             | 112            | 108            | 112            | 119            | 122            | 108            | 124            | 120            | 141            | 142            | 112            | 129            | 166            | 204            | 260            | 199            | 159            | 198            | 206            | 133            |
| Turks & Caicos Islands  | 2              | 0              | 2              | 5              | 0              | 4              | 2              | 12             | 951            | 987            | 886            | 0              | 0              | 0              | 0              | 0              | 0              | 0              | 17             | 0              | 3              | 3              | 3              |
| Uruguay                 | 1 874          | 1 699          | 1 450          | 1 359          | 1 389          | 1 201          | 1 082          | 1 023          | 951            | 987            | 886            | 759            | 699            | 689            | 666            | 625            | 701            | 708            | 668            | 627            | 645            | 689            | 536            |
| US Virgin Islands       | 0              | 1              | 1              | 2              | 3              | 1              | 1              | 2              | 6              | 4              | 4              | 4              | 4              | 10             | 10             | 4              | 0              | 0              | 0              | 0              | 0              | 0              | 0              |
| USA                     | 27 749         | 27 373         | 25 520         | 23 846         | 22 255         | 22 201         | 22 768         | 22 517         | 22 436         | 23 495         | 25 701         | 26 283         | 26 673         | 25 287         | 24 361         | 22 860         | 21 119         | 17 314         | 18 199         | 17 521         | 16 362         | 15 980         | 15 055         |
| Venezuela               | 4 233          | 4 093          | 4 159          | 4 266          | 4 737          | 4 822          | 4 974          | 4 954          | 4 557          | 4 524          | 5 457          | 5 216          | 5 444          | 5 169          | 4 877          | 5 578          | 5 650          | 5 984          | 6 273          | 6 598          | 6 466          | 6 251          | 6 204          |
| <b>Region</b>           | <b>227 820</b> | <b>248 150</b> | <b>237 316</b> | <b>238 296</b> | <b>226 801</b> | <b>227 022</b> | <b>227 107</b> | <b>233 192</b> | <b>241 834</b> | <b>239 594</b> | <b>231 215</b> | <b>252 221</b> | <b>253 256</b> | <b>166 640</b> | <b>242 018</b> | <b>258 331</b> | <b>256 459</b> | <b>252 536</b> | <b>262 809</b> | <b>240 648</b> | <b>236 183</b> | <b>229 874</b> | <b>233 648</b> |
| number reporting        | 42             | 42             | 42             | 42             | 42             | 42             | 42             | 42             | 41             | 41             | 41             | 42             | 39             | 33             | 35             | 39             | 39             | 40             | 39             | 39             | 38             | 40             | 43             |
| percent reporting       | 95             | 95             | 95             | 95             | 95             | 95             | 95             | 95             | 93             | 93             | 93             | 95             | 89             | 75             | 80             | 89             | 89             | 91             | 89             | 89             | 86             | 91             | 98             |

Country data for the Americas, cont'd: case notification rates (per 100 000 population), 1980-2002

|                         | 1980 | 1981 | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
|-------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Anguilla                | 0    | 0    | 57   | 0    | 0    | 14   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |      | 20   |      | 0    |      |      |      | 0    | 0    |
| Antigua & Barbuda       | 13   | 5    | 0    | 2    | 5    | 3    | 11   | 0    | 5    | 5    | 2    | 0    | 9    |      |      | 0    | 4    | 6    | 6    | 4    | 6    | 1    | 6    |
| Argentina               | 58   | 59   | 60   | 59   | 55   | 53   | 48   | 43   | 42   | 39   | 38   | 37   | 38   | 41   | 40   | 39   | 38   | 35   | 34   | 32   | 32   | 31   | 30   |
| Bahamas                 | 33   | 31   | 25   | 26   | 23   | 27   | 22   | 18   | 21   | 21   | 18   | 20   | 24   | 22   | 28   | 20   | 20   | 30   | 25   | 25   | 27   |      | 14   |
| Barbados                | 26   | 1    | 12   | 7    | 6    | 5    | 3    | 1    | 2    | 2    | 2    | 2    | 2    | 2    |      | 1    | 1    | 2    | 3    | 1    | 1    | 2    | 2    |
| Belize                  | 15   | 22   | 19   | 91   | 22   | 15   | 14   | 24   | 16   | 17   | 31   | 47   | 33   | 40   | 28   | 45   | 45   | 48   | 54   | 44   | 44   | 55   | 54   |
| Bermuda                 | 1    | 3    | 7    | 14   | 4    | 4    | 8    | 3    | 1    | 3    | 0    | 4    | 5    |      |      | 5    | 0    | 5    | 0    | 0    | 0    | 0    | 0    |
| Bolivia                 | 82   | 93   | 85   | 91   | 71   | 129  | 112  | 144  | 167  | 193  | 167  | 164  | 136  | 120  | 129  | 193  | 133  | 126  | 127  | 127  | 122  | 124  | 118  |
| Brazil                  | 60   | 69   | 69   | 67   | 66   | 62   | 60   | 58   | 57   | 55   | 56   | 56   | 56   |      | 48   | 57   | 54   | 50   | 57   | 47   | 45   | 43   | 46   |
| British Virgin Islands  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 16   |      |      |      |      | 5    |
| Canada                  | 12   | 10   | 10   | 9    | 9    | 8    | 8    | 7    | 7    | 7    | 7    | 7    | 7    | 7    | 7    | 7    | 6    | 7    | 6    | 6    | 6    | 5    | 5    |
| Cayman Islands          | 0    | 11   | 0    | 5    | 5    | 19   | 5    | 0    | 0    | 8    | 8    | 11   | 11   |      |      | 6    | 0    | 0    | 9    | 0    | 14   | 3    | 0    |
| Chile                   | 76   | 65   | 60   | 60   | 55   | 55   | 56   | 50   | 50   | 52   | 47   | 41   | 39   | 33   | 30   | 29   | 29   | 27   | 25   | 23   | 20   | 19   | 16   |
| Colombia                | 41   | 39   | 41   | 45   | 41   | 38   | 36   | 35   | 34   | 33   | 36   | 34   | 31   | 30   | 24   | 26   | 25   | 20   | 22   | 27   | 28   | 27   | 26   |
| Costa Rica              | 17   | 22   | 18   | 19   | 15   | 14   | 15   | 15   | 15   | 10   | 7    | 6    | 4    | 9    | 10   | 17   | 18   | 19   | 19   | 22   | 15   | 16   | 13   |
| Cuba                    | 12   | 9    | 8    | 8    | 7    | 7    | 6    | 6    | 6    | 6    | 5    | 5    | 4    | 7    | 15   | 14   | 13   | 12   | 11   | 10   | 10   | 8    | 8    |
| Dominica                | 27   | 35   | 24   | 22   | 7    | 11   | 48   | 37   | 10   | 18   | 8    | 19   | 18   | 10   | 16   | 11   | 13   | 8    | 7    |      |      |      | 3    |
| Dominican Republic      | 38   | 30   | 41   | 48   | 49   | 36   | 40   | 37   | 45   | 45   | 37   | 26   | 48   | 54   | 57   | 53   | 81   | 68   | 63   | 70   | 63   | 56   | 47   |
| Ecuador                 | 50   | 48   | 46   | 46   | 49   | 53   | 61   | 61   | 56   | 55   | 80   | 66   | 68   | 64   | 87   | 69   | 72   | 80   | 60   | 47   | 56   | 48   | 46   |
| El Salvador             | 49   | 45   | 46   | 44   | 33   | 31   | 34   | 34   | 48   | 12   | 46   | 44   | 47   | 62   | 70   | 43   | 29   | 28   | 28   | 27   | 24   | 23   | 24   |
| Grenada                 | 19   | 1    | 1    | 7    | 5    | 2    | 1    | 2    | 0    | 5    | 0    | 1    | 4    | 0    | 4    | 5    | 0    | 2    | 2    | 6    | 0    |      | 1    |
| Guatemala               | 82   | 95   | 101  | 82   | 87   | 85   | 61   | 70   | 69   | 57   | 44   | 29   | 27   | 26   | 26   | 31   | 32   | 28   | 25   | 25   | 26   | 21   | 24   |
| Guyana                  | 16   | 15   | 18   | 20   | 22   | 29   | 25   | 16   | 20   | 16   | 23   | 18   | 25   | 12   | 36   | 40   | 42   | 54   | 42   | 54   | 56   | 55   | 77   |
| Haiti                   | 152  | 117  | 58   | 117  | 97   | 81   | 136  | 132  | 122  | 120  | 145  | 145  |      |      |      | 83   | 87   | 131  | 125  | 130  | 126  | 147  |      |
| Honduras                | 47   | 46   | 45   | 49   | 52   | 81   | 98   | 95   | 86   | 85   | 75   | 91   | 80   | 70   | 78   | 88   | 72   | 68   | 80   | 73   | 62   | 67   | 68   |
| Jamaica                 | 8    | 8    | 7    | 7    | 7    | 6    | 4    | 6    | 3    | 4    | 5    | 5    | 5    | 5    | 4    | 4    | 5    | 5    | 5    | 4    | 5    | 5    | 4    |
| Mexico                  | 46   | 47   | 35   | 32   | 20   | 20   | 17   | 19   | 19   | 19   | 17   | 18   | 17   | 17   | 18   | 12   | 22   | 25   | 22   | 20   | 19   | 19   | 17   |
| Montserrat              | 8    | 0    | 0    | 9    | 61   | 80   | 45   | 118  | 55   | 46   | 9    | 9    | 0    |      | 0    |      |      |      | 16   | 41   | 0    | 0    | 0    |
| Netherlands Antilles    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 2    | 3    |
| Nicaragua               | 45   | 124  | 99   | 86   | 82   | 77   | 75   | 84   | 75   | 83   | 77   | 71   | 71   | 67   | 64   | 64   | 66   | 60   | 54   | 52   | 47   | 47   | 39   |
| Panama                  | 33   | 29   | 28   | 21   | 19   | 28   | 32   | 34   | 33   | 28   | 35   | 35   | 30   | 45   | 32   | 49   | 48   | 53   | 40   | 48   | 40   | 57   | 49   |
| Paraguay                | 43   | 43   | 43   | 53   | 49   | 54   | 44   | 39   | 36   | 55   | 51   | 53   | 43   | 44   | 39   | 36   | 42   | 38   | 35   | 40   | 36   | 37   | 37   |
| Peru                    | 92   | 123  | 119  | 122  | 120  | 125  | 124  | 150  | 177  | 167  | 174  | 183  | 233  | 225  | 208  | 190  | 172  | 170  | 174  | 158  | 149  | 141  | 135  |
| Puerto Rico             | 21   | 16   | 14   | 14   | 12   | 10   | 11   | 9    | 8    | 9    | 5    | 7    |      | 7    | 8    | 7    | 3    | 7    | 5    | 5    | 5    | 3    | 3    |
| Saint Kitts & Nevis     | 16   | 9    | 14   | 5    | 7    | 0    | 0    | 0    | 0    | 0    | 0    | 2    | 10   | 14   | 5    | 11   | 7    | 28   | 12   | 7    | 0    | 5    | 7    |
| Saint Lucia             | 36   | 34   | 32   | 41   | 46   | 17   | 28   | 20   | 25   | 22   | 10   | 19   | 19   |      | 17   | 8    | 25   | 15   | 14   | 11   | 6    | 10   | 11   |
| St Vincent & Grenadines | 78   | 11   | 14   | 4    | 22   | 13   | 9    | 3    | 6    | 3    | 2    | 1    | 4    | 12   | 0    | 11   | 5    | 5    | 7    | 8    | 14   | 8    | 8    |
| Suriname                | 22   | 23   | 15   | 21   | 20   | 13   | 15   | 20   | 19   | 18   | 20   | 12   | 14   | 11   | 13   |      | 13   | 18   | 20   | 23   | 21   | 19   | 22   |
| Trinidad & Tobago       | 7    | 7    | 6    | 10   | 9    | 10   | 10   | 10   | 9    | 10   | 10   | 12   | 12   | 9    | 10   | 13   | 16   | 20   | 16   | 12   | 15   | 16   | 10   |
| Turks & Caicos Islands  | 27   | 0    | 24   | 58   | 0    | 42   | 20   | 113  |      |      | 0    | 0    | 0    | 0    |      |      |      |      |      | 95   | 16   | 15   |      |
| Uruguay                 | 64   | 58   | 49   | 46   | 46   | 40   | 36   | 34   | 31   | 32   | 29   | 24   | 22   | 22   | 21   | 19   | 22   | 22   | 20   | 19   | 19   | 20   | 16   |
| US Virgin Islands       | 0    | 1    | 1    | 2    | 3    | 1    | 1    | 2    | 6    | 4    | 4    | 4    |      |      | 10   | 4    | 0    |      |      |      |      |      |      |
| USA                     | 12   | 12   | 11   | 10   | 9    | 9    | 9    | 9    | 9    | 9    | 10   | 10   | 10   | 10   | 9    | 8    | 8    | 6    | 7    | 6    | 6    | 6    | 5    |
| Venezuela               | 28   | 26   | 26   | 26   | 28   | 28   | 28   | 27   | 25   | 24   | 28   | 26   | 27   | 25   | 23   | 25   | 25   | 26   | 27   | 28   | 27   | 25   | 25   |
| Region                  | 37   | 40   | 37   | 37   | 34   | 34   | 33   | 34   | 34   | 34   | 32   | 34   | 34   | 34   | 31   | 33   | 32   | 31   | 32   | 29   | 28   | 27   | 27   |

Country data for the Americas, cont'd: new smear-positive cases, 1993-2002

|                         | Number of cases |         |         |         |         |         |         |         |         |         | Rate (per 100 000 population) |      |      |      |      |      |      |      |      |      |
|-------------------------|-----------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|-------------------------------|------|------|------|------|------|------|------|------|------|
|                         | 1993            | 1994    | 1995    | 1996    | 1997    | 1998    | 1999    | 2000    | 2001    | 2002    | 1993                          | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
| Anguilla                |                 |         | 0       |         | 0       |         |         |         | 0       | 0       |                               |      |      |      | 0    |      |      |      | 0    | 0    |
| Antigua & Barbuda       |                 |         |         | 2       |         |         | 1       | 3       | 1       | 2       |                               |      |      | 3    |      |      | 1    | 4    | 1    | 3    |
| Argentina               | 5 937           | 5 696   | 5 698   | 5 787   | 5 307   | 5 186   | 4 830   | 4 749   | 5 595   | 5 495   | 18                            | 17   | 16   | 16   | 15   | 14   | 13   | 13   | 15   | 14   |
| Bahamas                 | 41              | 41      | 38      | 25      | 57      | 30      | 37      | 56      |         | 32      | 15                            | 15   | 13   | 9    | 20   | 10   | 12   | 18   | 10   |      |
| Barbados                |                 |         | 3       | 3       | 5       | 4       | 2       | 3       | 6       | 5       |                               |      | 1    | 1    | 2    | 2    | 1    | 1    | 2    |      |
| Belize                  | 50              | 36      | 36      | 46      | 32      | 52      | 48      | 44      | 53      | 71      | 25                            | 17   | 17   | 21   | 14   | 23   | 20   | 18   | 22   |      |
| Bermuda                 |                 |         | 2       | 0       |         | 0       | 0       | 0       |         | 0       |                               |      |      | 3    | 0    | 0    |      | 0    | 0    |      |
| Bolivia                 | 6 833           | 6 905   | 7 010   | 6 949   | 6 458   | 6 750   | 6 673   | 6 458   | 6 672   | 6 829   | 96                            | 94   | 94   | 91   | 83   | 85   | 82   | 78   | 79   |      |
| Brazil                  | 39 167          | 45 650  | 44 503  | 43 490  | 43 490  | 43 554  | 41 619  | 41 186  | 38 478  | 41 371  |                               | 25   | 28   | 27   | 26   | 26   | 25   | 24   | 22   |      |
| British Virgin Islands  |                 |         |         |         | 0       |         |         |         | 0       | 0       |                               |      |      |      | 0    |      |      |      | 0    |      |
| Canada                  | 542             | 404     | 404     | 156     | 487     | 471     | 395     | 506     | 502     | 445     | 2                             | 2    | 1    | 1    | 2    | 2    | 1    | 2    | 1    |      |
| Cayman Islands          | 2               |         | 0       | 0       | 0       | 2       | 2       | 5       | 1       | 0       | 7                             |      | 0    | 0    | 0    | 6    | 6    | 14   | 3    |      |
| Chile                   | 2 629           | 1 951   | 1 561   | 1 562   | 1 582   | 1 576   | 1 497   | 1 290   | 1 355   | 1 412   | 19                            | 14   | 11   | 11   | 11   | 11   | 10   | 8    | 9    |      |
| Colombia                | 6 987           | 6 532   | 7 530   | 7 572   | 6 090   | 6 969   | 8 329   | 8 358   | 8 022   | 7 787   | 19                            | 17   | 20   | 19   | 15   | 17   | 20   | 20   | 18   |      |
| Costa Rica              |                 | 230     | 245     | 302     | 320     | 353     | 458     | 349     | 385     | 328     |                               | 7    | 7    | 8    | 9    | 9    | 12   | 9    | 10   |      |
| Cuba                    | 565             | 914     | 834     | 835     | 765     | 746     | 720     | 677     | 562     | 538     | 5                             | 8    | 8    | 8    | 7    | 7    | 6    | 6    | 5    |      |
| Dominica                | 6               | 8       | 5       | 7       | 5       | 5       |         |         |         | 2       | 8                             | 11   | 7    | 9    | 7    | 7    |      |      | 3    |      |
| Dominican Republic      | 2 297           | 3 177   | 2 787   | 3 733   | 3 162   | 2 669   | 3 278   | 2 907   | 2 622   | 2 179   | 31                            | 42   | 36   | 48   | 40   | 33   | 40   | 35   | 25   |      |
| Ecuador                 | 5 325           | 6 674   | 5 890   | 6 426   | 7 214   | 4 900   | 4 300   | 5 064   | 4 439   | 4 223   | 49                            | 60   | 52   | 55   | 61   | 41   | 35   | 41   | 35   |      |
| El Salvador             | 2 471           | 2 144   |         | 965     | 882     | 1 071   | 1 023   | 1 008   | 1 003   | 980     | 45                            | 39   | 17   | 15   | 18   | 17   | 16   | 16   | 15   |      |
| Grenada                 | 0               | 3       | 2       | 0       | 1       | 2       | 3       | 0       | 0       | 0       | 0                             | 4    | 2    | 0    | 1    | 2    | 4    | 0    | 0    |      |
| Guatemala               | 2 128           | 1 994   | 2 368   | 2 224   | 2 218   | 2 255   | 2 264   | 2 052   | 1 669   | 1 865   | 23                            | 21   | 24   | 22   | 21   | 21   | 20   | 18   | 14   |      |
| Guyana                  | 51              | 61      | 85      | 71      | 105     | 85      | 178     | 119     | 174     | 138     | 7                             | 8    | 11   | 10   | 14   | 11   | 24   | 16   | 23   |      |
| Haiti                   |                 |         |         | 3 524   | 5 497   | 6 442   | 6 828   | 5 887   | 5 607   | 6 188   |                               |      |      | 46   | 71   | 83   | 86   | 74   | 69   |      |
| Honduras                | 2 016           | 2 385   | 2 306   | 1 808   | 1 928   | 2 311   | 2 415   | 2 415   | 2 839   | 2 956   | 38                            | 44   | 41   | 31   | 32   | 38   | 38   | 37   | 43   |      |
| Jamaica                 | 83              | 61      | 93      | 81      | 84      | 90      | 90      | 90      | 75      | 60      | 3                             | 2    | 4    | 3    | 3    | 4    | 4    | 3    | 2    |      |
| Mexico                  | 8 164           | 9 726   | 9 220   | 8 495   | 15 440  | 11 473  | 11 968  | 11 676  | 15 103  | 11 555  | 9                             | 11   | 10   | 9    | 16   | 12   | 12   | 12   | 15   |      |
| Montserrat              |                 | 0       |         |         |         | 1       | 2       | 0       | 0       | 0       |                               | 0    |      |      |      | 16   | 41   | 0    | 0    |      |
| Netherlands Antilles    |                 |         |         |         |         |         |         |         | 4       | 7       |                               |      |      |      |      |      |      | 2    | 3    |      |
| Nicaragua               | 1 714           | 1 615   | 1 568   | 1 722   | 1 670   | 1 648   | 1 564   | 1 471   | 1 510   | 1 320   | 41                            | 38   | 35   | 38   | 36   | 34   | 32   | 29   | 25   |      |
| Panama                  | 1 046           | 748     | 1 066   | 904     | 592     | 1 393   | 432     | 410     | 575     | 709     | 41                            | 29   | 40   | 33   | 21   | 49   | 15   | 14   | 19   |      |
| Paraguay                |                 | 985     | 873     | 748     | 859     | 850     | 1 041   | 900     | 915     | 1 004   | 21                            | 19   | 15   | 18   | 17   | 16   | 20   | 16   | 17   |      |
| Peru                    | 35 646          | 33 925  | 32 096  | 26 800  | 27 498  | 27 707  | 24 511  | 22 580  | 21 685  | 20 533  | 155                           | 145  | 135  | 110  | 111  | 110  | 96   | 87   | 82   |      |
| Puerto Rico             | 117             |         | 128     | 110     | 126     | 106     | 106     | 82      | 71      | 76      | 3                             |      | 3    | 3    | 3    | 3    | 3    | 2    | 2    |      |
| Saint Kitts & Nevis     | 2               | 2       | 4       | 2       | 4       | 4       | 2       | 0       | 0       | 1       | 5                             | 5    | 9    | 5    | 5    | 9    | 5    | 0    | 2    |      |
| Saint Lucia             |                 | 17      | 11      | 22      | 14      | 10      | 9       | 7       | 6       | 8       |                               | 12   | 8    | 16   | 10   | 7    | 6    | 5    | 4    |      |
| St Vincent & Grenadines |                 |         | 5       | 3       | 2       | 3       | 4       | 9       | 3       | 0       | 10                            | 0    | 4    | 3    | 2    | 3    | 3    | 8    | 3    |      |
| Suriname                |                 |         |         | 39      | 31      | 32      | 36      | 37      | 35      | 41      |                               |      |      | 9    | 7    | 8    | 9    | 9    | 8    |      |
| Trinidad & Tobago       |                 | 55      | 7       | 58      | 52      | 82      | 87      | 115     | 152     | 60      |                               | 4    | 1    | 5    | 4    | 6    | 7    | 9    | 12   |      |
| Turks & Caicos Islands  |                 |         |         |         |         |         |         |         | 1       | 2       |                               |      |      |      |      |      |      |      | 5    |      |
| Uruguay                 |                 |         |         |         |         |         |         |         |         |         |                               |      |      |      |      |      |      |      | 10   |      |
| US Virgin Islands       |                 |         |         |         |         |         |         |         |         |         |                               |      |      |      |      |      |      |      | 9    |      |
| USA                     | 16 046          | 14 346  | 8 013   | 7 401   | 6 882   | 6 630   | 6 252   | 5 865   | 5 600   | 5 380   | 6                             | 5    | 3    | 3    | 2    | 2    | 2    | 2    | 2    |      |
| Venezuela               | 2 849           | 2 738   | 3 056   | 3 195   | 3 234   | 3 450   | 3 670   | 3 525   | 3 476   | 3 444   | 14                            | 13   | 14   | 14   | 14   | 15   | 15   | 15   | 14   |      |
| Region                  | 104 931         | 142 405 | 138 820 | 136 657 | 142 512 | 139 286 | 135 068 | 130 251 | 129 536 | 127 354 | 14                            | 19   | 18   | 17   | 18   | 17   | 16   | 16   | 15   |      |

# Notes

**CANADA** Treatment outcomes for new cases are for laboratory-confirmed (not necessarily smear-positive) cases.

**GUYANA** Non-DOTS age and sex data provided are for all forms of TB, not just smear-positive cases.

**JAMAICA** Treatment outcomes for new cases are for laboratory-confirmed (not necessarily smear-positive) cases.

**MEXICO** Treatment outcomes for new cases are for laboratory-confirmed (not necessarily smear-positive) cases.

**PUERTO RICO** Treatment outcome data for 2001 are considered preliminary. Treatment outcomes for new cases are for laboratory-confirmed (not necessarily smear-positive) cases.

**SURINAME** Treatment outcomes for new cases are for laboratory-confirmed (not necessarily smear-positive) cases.

## **TRINIDAD & TOBAGO**

Treatment outcomes for new cases are for laboratory-confirmed (not necessarily smear-positive) cases.

**USA** Treatment outcome data for 2001 cohort are preliminary (the US CDC finalizes treatment outcomes with states two years after the reporting calendar year). Generally the USA preliminary outcome data show <10% of cases with unknown information. However, for the 2001 cohort, >15% of outcomes were unknown including 100% of outcomes from one large reporting area. Treatment outcomes for new cases are for laboratory-confirmed (not necessarily smear-positive) cases.



## Eastern Mediterranean: Summary of TB control policies

| COUNTRY                | STATUS <sup>a</sup> | MANUAL <sup>b</sup> | MICROSCOPY <sup>c</sup> | MONITORING OF TB SUSPECTS <sup>d</sup> | SCC <sup>e</sup> | DOT <sup>f</sup> | OUTCOME MONITORING <sup>g</sup> |
|------------------------|---------------------|---------------------|-------------------------|--|------------------|------------------|---------------------------------|
| AFGHANISTAN            | DOTS                | YES                 |                         |  |                  |                  |                                 |
| BAHRAIN                | DOTS                | YES                 |                         |  |                  |                  |                                 |
| DJIBOUTI               | DOTS                | YES                 |                         |  |                  |                  |                                 |
| EGYPT                  | DOTS                | YES                 |                         |  |                  |                  |                                 |
| IRAN                   | DOTS                | YES                 |                         |  |                  |                  |                                 |
| IRAQ                   | DOTS                | YES                 |                         |  |                  |                  |                                 |
| JORDAN                 | DOTS                | YES                 |                         |  |                  |                  |                                 |
| KUWAIT                 |                     |                     |                         |  |                  |                  |                                 |
| LEBANON                | DOTS                | YES                 |                         |  |                  |                  |                                 |
| LIBYAN ARAB JAMAHIRIYA |                     |                     |                         |  |                  |                  |                                 |
| MOROCCO                | DOTS                | YES                 |                         |  |                  |                  |                                 |
| OMAN                   | DOTS                | YES                 |                         |  |                  |                  |                                 |
| PAKISTAN               | DOTS                | YES                 |                         |  |                  |                  |                                 |
| QATAR                  | DOTS                | NO                  |                         |  |                  |                  |                                 |
| SAUDI ARABIA           | DOTS                | YES                 |                         |  |                  |                  |                                 |
| SOMALIA                | DOTS                | YES                 |                         |  |                  |                  |                                 |
| SUDAN                  | DOTS                | YES                 |                         |  |                  |                  |                                 |
| SYRIAN ARAB REPUBLIC   | DOTS                | YES                 |                         |  |                  |                  |                                 |
| TUNISIA                | DOTS                | YES                 |                         |  |                  |                  |                                 |
| UNITED ARAB EMIRATES   | DOTS                | YES                 |                         |  |                  |                  |                                 |
| YEMEN                  | DOTS                | YES                 |                         |  |                  |                  |                                 |

|  |                                 |
|--|---------------------------------|
|  | Implemented in all units/areas  |
|  | Implemented in some units/areas |
|  | Not implemented                 |
|  | Unknown                         |

- a Status: DOTS status (**bold** indicates DOTS introduced in 2002)  
b Manual: National TB control manual (recommended)  
c Microscopy: Use of smear microscopy for diagnosis (core component of DOTS)  
d Monitoring of TB Suspects: Register of TB suspects (e.g. patients with cough  $\geq$  3 weeks) kept at DOTS facilities (recommended)  
e SCC: Short course chemotherapy (core component of DOTS)  
f DOT: Directly observed treatment (core component of DOTS)  
g Outcome monitoring: Monitoring of treatment outcomes by cohort analysis (core component of DOTS)



Country data for the Eastern Mediterranean: notification, detection and DOTS coverage, 2002

|                        | Country information |         |      |        |      |         |      |         |      |         |              |      |        |      |         |         |        |      |        |      |
|------------------------|---------------------|---------|------|--------|------|---------|------|---------|------|---------|--------------|------|--------|------|---------|---------|--------|------|--------|------|
|                        | Notified TB         |         |      |        |      |         |      |         |      |         | Estimated TB |      |        |      |         |         |        |      |        |      |
|                        | All cases           |         |      |        |      | New ss+ |      |         |      |         | All cases    |      |        |      |         | New ss+ |        |      |        |      |
|                        | Pop<br>thousands    | number  | rate | number | rate | number  | rate | number  | rate | number  | number       | rate | number | rate | number  | rate    | number | rate | number | rate |
| Afghanistan            | 22 930              | 13 794  | 60   | 6 509  | 28   | 6 509   | 28   | 76 433  | 333  | 34 395  | 150          | 18   | 19     | 38   | 13 794  | 60      | 6 509  | 28   | 19     | 66   |
| Bahrain                | 709                 | 44      | 6    | 17     | 2    |         |      | 320     | 45   | 144     | 20           | 14   | 12     | 100  | 44      | 6       | 17     | 2    | 12     | 57   |
| Djibouti               | 693                 | 3 191   | 461  | 1 253  | 181  | 1 253   | 181  | 6 590   | 951  | 2 783   | 402          | 48   | 45     | 100  | 3 191   | 461     | 1 253  | 181  | 45     | 63   |
| Egypt                  | 70 507              | 11 177  | 16   | 4 889  | 7    |         |      | 20 447  | 29   | 9 199   | 13           | 55   | 53     | 100  | 11 177  | 16      | 4 889  | 7    | 53     | 64   |
| Iran                   | 68 070              | 11 436  | 17   | 5 335  | 8    | 5 335   | 8    | 19 740  | 29   | 8 882   | 13           | 58   | 60     | 100  | 11 436  | 17      | 5 335  | 8    | 60     | 68   |
| Iraq                   | 24 510              | 11 898  | 49   | 3 895  | 16   | 3 895   | 16   | 40 966  | 167  | 18 433  | 75           | 29   | 21     | 88   | 11 898  | 49      | 3 895  | 16   | 21     | 50   |
| Jordan                 | 5 329               | 312     | 6    | 91     | 2    |         |      | 282     | 5    | 127     | 2            | 110  | 72     | 100  | 312     | 6       | 91     | 2    | 72     | 52   |
| Kuwait                 | 2 443               |         |      |        |      |         |      | 645     | 26   | 290     | 12           |      |        | 100  |         |         |        |      |        |      |
| Lebanon                | 3 596               | 437     | 12   | 148    | 4    | 148     | 4    | 486     | 14   | 218     | 6            | 90   | 68     | 100  | 437     | 12      | 148    | 4    | 68     | 56   |
| Libyan Arab Jamahiriya | 5 445               |         |      |        |      |         |      | 1 124   | 21   | 505     | 9            |      |        |      |         |         |        |      |        |      |
| Morocco                | 30 072              | 29 804  | 99   | 12 914 | 43   | 13 083  | 44   | 34 408  | 114  | 15 473  | 51           | 87   | 83     | 100  | 29 804  | 99      | 12 914 | 43   | 83     | 85   |
| Oman                   | 2 768               | 290     | 10   | 151    | 5    |         |      | 317     | 11   | 143     | 5            | 91   | 106    | 100  | 290     | 10      | 151    | 5    | 106    | 85   |
| Pakistan               | 149 911             | 52 172  | 35   | 16 265 | 11   |         |      | 271 745 | 181  | 122 174 | 81           | 19   | 13     | 45   | 47 754  | 32      | 15 331 | 10   | 13     | 40   |
| Qatar                  | 601                 | 278     | 46   | 64     | 11   |         |      | 363     | 60   | 163     | 27           | 77   | 39     | 100  | 278     | 46      | 64     | 11   | 39     | 46   |
| Saudi Arabia           | 23 520              | 3 374   | 14   | 1 674  | 7    |         |      | 9 939   | 42   | 4 472   | 19           | 34   | 37     | 100  | 3 374   | 14      | 1 674  | 7    | 37     | 74   |
| Somalia                | 9 480               | 7 279   | 77   | 4 729  | 50   |         |      | 38 428  | 405  | 17 156  | 181          | 19   | 28     | 100  | 7 279   | 77      | 4 729  | 50   | 28     | 80   |
| Sudan                  | 32 878              | 24 554  | 75   | 10 338 | 31   | 103 338 | 314  | 71 211  | 217  | 31 432  | 96           | 34   | 33     | 99   | 24 554  | 75      | 10 338 | 31   | 33     | 57   |
| Syrian Arab Republic   | 17 381              | 4 766   | 27   | 1 447  | 8    | 1 447   | 8    | 7 648   | 44   | 3 441   | 20           | 62   | 42     | 100  | 4 766   | 27      | 1 447  | 8    | 42     | 54   |
| Tunisia                | 9 728               | 1 885   | 19   | 927    | 10   |         |      | 2 233   | 23   | 1 004   | 10           | 84   | 92     | 100  | 1 885   | 19      | 927    | 10   | 92     | 81   |
| United Arab Emirates   | 2 937               | 90      | 3    | 57     | 2    | 66      | 2    | 518     | 18   | 233     | 8            | 17   | 25     | 20   | 90      | 3       | 57     | 2    | 25     | 90   |
| Yemen                  | 19 315              | 11 677  | 60   | 4 259  | 22   | 4 259   | 22   | 17 721  | 92   | 7 966   | 41           | 66   | 53     | 98   | 7 231   | 37      | 3 870  | 20   | 49     | 71   |
| Region                 | 502 823 931         | 188 458 | 37   | 74 962 | 15   | 139 333 | 28   | 621 563 | 124  | 278 634 | 55           | 30   | 27     | 78   | 179 594 | 36      | 73 639 | 15   | 26     | 59   |

See explanatory notes, page 129.

Country data for the Eastern Mediterranean, cont'd: treatment outcomes for cases registered in 2001 - DOTS and non-DOTS

|                        | New smear-positive cases - DOTS |    |    |    |   |    |                     |   |    |       |    |    | Retreatment cases - DOTS |    |    |    |    |    |                     |    |    |   |   |    | New smear-positive cases - non-DOTS |    |    |  |  |  |                     |  |  |  |  |  |
|------------------------|---------------------------------|----|----|----|---|----|---------------------|---|----|-------|----|----|--------------------------|----|----|----|----|----|---------------------|----|----|---|---|----|-------------------------------------|----|----|--|--|--|---------------------|--|--|--|--|--|
|                        | Regist-<br>ered                 |    |    |    |   |    | %<br>not<br>success |   |    |       |    |    | Regist-<br>ered          |    |    |    |    |    | %<br>not<br>success |    |    |   |   |    | Regist-<br>ered                     |    |    |  |  |  | %<br>not<br>success |  |  |  |  |  |
|                        | a                               | b  | c  | d  | e | f  | g                   | h | i  | j     | k  | l  | m                        | n  | o  | p  | q  | r  | s                   | t  | u  | v | w | x  | y                                   | z  | aa |  |  |  |                     |  |  |  |  |  |
| Afghanistan            | 6292                            | 53 | 32 | 4  | 2 | 7  | 3                   | 0 | 84 |       |    |    |                          |    |    |    |    |    |                     |    |    |   |   |    |                                     |    |    |  |  |  |                     |  |  |  |  |  |
|                        | 23                              | 87 | 0  | 13 | 0 | 0  | 0                   | 0 | 87 |       |    |    |                          |    |    |    |    |    |                     |    |    |   |   |    |                                     |    |    |  |  |  |                     |  |  |  |  |  |
|                        | 1309                            | 65 | 13 | 1  | 2 | 13 | 6                   | 0 | 78 | 281   | 55 | 12 | 5                        | 3  | 18 | 7  | 0  | 67 |                     |    |    |   |   |    |                                     |    |    |  |  |  |                     |  |  |  |  |  |
|                        |                                 |    |    |    |   |    |                     |   |    |       |    |    |                          |    |    |    |    |    |                     |    |    |   |   |    |                                     |    |    |  |  |  |                     |  |  |  |  |  |
| Egypt                  | 4932                            | 69 | 12 | 3  | 3 | 3  | 2                   | 7 | 82 | 532   | 53 | 14 | 7                        | 13 | 8  | 5  | 0  | 67 |                     |    |    |   |   |    |                                     |    |    |  |  |  |                     |  |  |  |  |  |
|                        | 5475                            | 80 | 4  | 5  | 3 | 4  | 4                   | 0 | 84 | 411   | 71 | 4  | 6                        | 3  | 5  | 6  | 5  | 75 |                     |    |    |   |   |    |                                     |    |    |  |  |  |                     |  |  |  |  |  |
|                        | 3579                            | 85 | 4  | 3  | 2 | 4  | 1                   | 0 | 89 | 553   | 68 | 7  | 5                        | 11 | 8  | 1  | 0  | 75 |                     |    |    |   |   |    |                                     |    |    |  |  |  |                     |  |  |  |  |  |
|                        |                                 |    |    |    |   |    |                     |   |    |       |    |    |                          |    |    |    |    |    |                     |    |    |   |   |    |                                     |    |    |  |  |  |                     |  |  |  |  |  |
| Iraq                   |                                 |    |    |    |   |    |                     |   |    |       |    |    |                          |    |    |    |    |    |                     |    |    |   |   |    |                                     |    |    |  |  |  |                     |  |  |  |  |  |
|                        | 94                              | 83 | 3  | 6  | 3 | 4  | 0                   | 0 | 86 | 10    | 30 | 30 | 0                        | 40 | 0  | 0  | 60 |    |                     |    |    |   |   |    |                                     |    |    |  |  |  |                     |  |  |  |  |  |
|                        |                                 |    |    |    |   |    |                     |   |    |       |    |    |                          |    |    |    |    |    |                     |    |    |   |   |    |                                     |    |    |  |  |  |                     |  |  |  |  |  |
|                        |                                 |    |    |    |   |    |                     |   |    |       |    |    |                          |    |    |    |    |    |                     |    |    |   |   |    |                                     |    |    |  |  |  |                     |  |  |  |  |  |
| Jordan                 |                                 |    |    |    |   |    |                     |   |    |       |    |    |                          |    |    |    |    |    |                     |    |    |   |   |    |                                     |    |    |  |  |  |                     |  |  |  |  |  |
|                        |                                 |    |    |    |   |    |                     |   |    |       |    |    |                          |    |    |    |    |    |                     |    |    |   |   |    |                                     |    |    |  |  |  |                     |  |  |  |  |  |
|                        |                                 |    |    |    |   |    |                     |   |    |       |    |    |                          |    |    |    |    |    |                     |    |    |   |   |    |                                     |    |    |  |  |  |                     |  |  |  |  |  |
|                        |                                 |    |    |    |   |    |                     |   |    |       |    |    |                          |    |    |    |    |    |                     |    |    |   |   |    |                                     |    |    |  |  |  |                     |  |  |  |  |  |
| Kuwait                 |                                 |    |    |    |   |    |                     |   |    |       |    |    |                          |    |    |    |    |    |                     |    |    |   |   |    |                                     |    |    |  |  |  |                     |  |  |  |  |  |
|                        |                                 |    |    |    |   |    |                     |   |    |       |    |    |                          |    |    |    |    |    |                     |    |    |   |   |    |                                     |    |    |  |  |  |                     |  |  |  |  |  |
|                        |                                 |    |    |    |   |    |                     |   |    |       |    |    |                          |    |    |    |    |    |                     |    |    |   |   |    |                                     |    |    |  |  |  |                     |  |  |  |  |  |
|                        |                                 |    |    |    |   |    |                     |   |    |       |    |    |                          |    |    |    |    |    |                     |    |    |   |   |    |                                     |    |    |  |  |  |                     |  |  |  |  |  |
| Lebanon                |                                 |    |    |    |   |    |                     |   |    |       |    |    |                          |    |    |    |    |    |                     |    |    |   |   |    |                                     |    |    |  |  |  |                     |  |  |  |  |  |
|                        | 171                             | 86 | 5  | 2  | 2 | 5  |                     | 0 | 91 | 7     | 29 | 29 | 43                       |    |    |    | 0  | 29 |                     |    |    |   |   |    |                                     |    |    |  |  |  |                     |  |  |  |  |  |
|                        |                                 |    |    |    |   |    |                     |   |    |       |    |    |                          |    |    |    |    |    |                     |    |    |   |   |    |                                     |    |    |  |  |  |                     |  |  |  |  |  |
|                        |                                 |    |    |    |   |    |                     |   |    |       |    |    |                          |    |    |    |    |    |                     |    |    |   |   |    |                                     |    |    |  |  |  |                     |  |  |  |  |  |
| Libyan Arab Jamahiriya |                                 |    |    |    |   |    |                     |   |    |       |    |    |                          |    |    |    |    |    |                     |    |    |   |   |    |                                     |    |    |  |  |  |                     |  |  |  |  |  |
|                        |                                 |    |    |    |   |    |                     |   |    |       |    |    |                          |    |    |    |    |    |                     |    |    |   |   |    |                                     |    |    |  |  |  |                     |  |  |  |  |  |
|                        |                                 |    |    |    |   |    |                     |   |    |       |    |    |                          |    |    |    |    |    |                     |    |    |   |   |    |                                     |    |    |  |  |  |                     |  |  |  |  |  |
|                        |                                 |    |    |    |   |    |                     |   |    |       |    |    |                          |    |    |    |    |    |                     |    |    |   |   |    |                                     |    |    |  |  |  |                     |  |  |  |  |  |
| Morocco                |                                 |    |    |    |   |    |                     |   |    |       |    |    |                          |    |    |    |    |    |                     |    |    |   |   |    |                                     |    |    |  |  |  |                     |  |  |  |  |  |
|                        | 12992                           | 80 | 7  | 2  | 1 | 8  | 1                   | 0 | 87 | 1611  | 63 | 9  | 4                        | 4  | 14 | 5  | 0  | 72 |                     |    |    |   |   |    |                                     |    |    |  |  |  |                     |  |  |  |  |  |
|                        | 107                             | 90 | 0  | 7  | 2 | 0  | 2                   | 0 | 90 | 3     | 67 | 0  | 0                        | 33 | 0  | 0  | 67 |    |                     |    |    |   |   |    |                                     |    |    |  |  |  |                     |  |  |  |  |  |
|                        |                                 |    |    |    |   |    |                     |   |    |       |    |    |                          |    |    |    |    |    |                     |    |    |   |   |    |                                     |    |    |  |  |  |                     |  |  |  |  |  |
| Oman                   |                                 |    |    |    |   |    |                     |   |    |       |    |    |                          |    |    |    |    |    |                     |    |    |   |   |    |                                     |    |    |  |  |  |                     |  |  |  |  |  |
|                        | 6251                            | 65 | 11 | 3  | 1 | 13 | 5                   | 1 | 77 |       |    |    |                          |    |    |    |    |    |                     |    |    |   |   |    |                                     |    |    |  |  |  |                     |  |  |  |  |  |
|                        |                                 |    |    |    |   |    |                     |   |    |       |    |    |                          |    |    |    |    |    |                     |    |    |   |   |    |                                     |    |    |  |  |  |                     |  |  |  |  |  |
|                        |                                 |    |    |    |   |    |                     |   |    |       |    |    |                          |    |    |    |    |    |                     |    |    |   |   |    |                                     |    |    |  |  |  |                     |  |  |  |  |  |
| Pakistan               |                                 |    |    |    |   |    |                     |   |    |       |    |    |                          |    |    |    |    |    |                     |    |    |   |   |    |                                     |    |    |  |  |  |                     |  |  |  |  |  |
|                        | 77                              | 56 | 4  | 4  |   |    | 36                  | 0 | 60 |       |    |    |                          |    |    |    |    |    |                     |    |    |   |   |    |                                     |    |    |  |  |  |                     |  |  |  |  |  |
|                        |                                 |    |    |    |   |    |                     |   |    |       |    |    |                          |    |    |    |    |    |                     |    |    |   |   |    |                                     |    |    |  |  |  |                     |  |  |  |  |  |
|                        |                                 |    |    |    |   |    |                     |   |    |       |    |    |                          |    |    |    |    |    |                     |    |    |   |   |    |                                     |    |    |  |  |  |                     |  |  |  |  |  |
| Qatar                  |                                 |    |    |    |   |    |                     |   |    |       |    |    |                          |    |    |    |    |    |                     |    |    |   |   |    |                                     |    |    |  |  |  |                     |  |  |  |  |  |
|                        | 1308                            | 67 | 9  | 6  | 0 | 14 | 3                   | 0 | 77 | 140   | 46 | 19 | 9                        | 3  | 13 | 11 | 0  | 65 |                     |    |    |   |   |    |                                     |    |    |  |  |  |                     |  |  |  |  |  |
|                        |                                 |    |    |    |   |    |                     |   |    |       |    |    |                          |    |    |    |    |    |                     |    |    |   |   |    |                                     |    |    |  |  |  |                     |  |  |  |  |  |
|                        |                                 |    |    |    |   |    |                     |   |    |       |    |    |                          |    |    |    |    |    |                     |    |    |   |   |    |                                     |    |    |  |  |  |                     |  |  |  |  |  |
| Saudi Arabia           |                                 |    |    |    |   |    |                     |   |    |       |    |    |                          |    |    |    |    |    |                     |    |    |   |   |    |                                     |    |    |  |  |  |                     |  |  |  |  |  |
|                        | 4646                            | 85 | 2  | 4  | 1 | 3  | 1                   | 5 | 86 | 398   | 63 | 2  | 5                        | 3  | 3  | 1  | 25 | 64 |                     |    |    |   |   |    |                                     |    |    |  |  |  |                     |  |  |  |  |  |
|                        |                                 |    |    |    |   |    |                     |   |    |       |    |    |                          |    |    |    |    |    |                     |    |    |   |   |    |                                     |    |    |  |  |  |                     |  |  |  |  |  |
|                        |                                 |    |    |    |   |    |                     |   |    |       |    |    |                          |    |    |    |    |    |                     |    |    |   |   |    |                                     |    |    |  |  |  |                     |  |  |  |  |  |
| Somalia                |                                 |    |    |    |   |    |                     |   |    |       |    |    |                          |    |    |    |    |    |                     |    |    |   |   |    |                                     |    |    |  |  |  |                     |  |  |  |  |  |
|                        | 11136                           | 51 | 28 | 4  | 1 | 7  | 4                   | 6 | 80 | 1776  | 51 | 24 | 4                        | 1  | 6  | 3  | 11 | 75 |                     |    |    |   |   |    |                                     |    |    |  |  |  |                     |  |  |  |  |  |
|                        |                                 |    |    |    |   |    |                     |   |    |       |    |    |                          |    |    |    |    |    |                     |    |    |   |   |    |                                     |    |    |  |  |  |                     |  |  |  |  |  |
|                        |                                 |    |    |    |   |    |                     |   |    |       |    |    |                          |    |    |    |    |    |                     |    |    |   |   |    |                                     |    |    |  |  |  |                     |  |  |  |  |  |
| Syrian Arab Republic   |                                 |    |    |    |   |    |                     |   |    |       |    |    |                          |    |    |    |    |    |                     |    |    |   |   |    |                                     |    |    |  |  |  |                     |  |  |  |  |  |
|                        | 1507                            | 55 | 26 | 2  | 4 | 11 | 2                   | 0 | 81 | 263   | 29 | 13 | 8                        | 22 | 17 | 3  | 9  | 42 |                     |    |    |   |   |    |                                     |    |    |  |  |  |                     |  |  |  |  |  |
|                        |                                 |    |    |    |   |    |                     |   |    |       |    |    |                          |    |    |    |    |    |                     |    |    |   |   |    |                                     |    |    |  |  |  |                     |  |  |  |  |  |
|                        |                                 |    |    |    |   |    |                     |   |    |       |    |    |                          |    |    |    |    |    |                     |    |    |   |   |    |                                     |    |    |  |  |  |                     |  |  |  |  |  |
| Tunisia                |                                 |    |    |    |   |    |                     |   |    |       |    |    |                          |    |    |    |    |    |                     |    |    |   |   |    |                                     |    |    |  |  |  |                     |  |  |  |  |  |
|                        | 1070                            | 87 | 3  | 4  | 1 | 2  | 2                   | 0 | 90 | 61    | 85 | 0  | 3                        | 5  | 5  | 2  | 0  | 85 |                     |    |    |   |   |    |                                     |    |    |  |  |  |                     |  |  |  |  |  |
|                        |                                 |    |    |    |   |    |                     |   |    |       |    |    |                          |    |    |    |    |    |                     |    |    |   |   |    |                                     |    |    |  |  |  |                     |  |  |  |  |  |
|                        |                                 |    |    |    |   |    |                     |   |    |       |    |    |                          |    |    |    |    |    |                     |    |    |   |   |    |                                     |    |    |  |  |  |                     |  |  |  |  |  |
| United Arab Emirates   |                                 |    |    |    |   |    |                     |   |    |       |    |    |                          |    |    |    |    |    |                     |    |    |   |   |    |                                     |    |    |  |  |  |                     |  |  |  |  |  |
|                        | 74                              | 61 | 1  | 5  | 4 | 14 | 15                  | 0 | 62 |       |    |    |                          |    |    |    |    |    |                     |    |    |   |   |    |                                     |    |    |  |  |  |                     |  |  |  |  |  |
|                        |                                 |    |    |    |   |    |                     |   |    |       |    |    |                          |    |    |    |    |    |                     |    |    |   |   |    |                                     |    |    |  |  |  |                     |  |  |  |  |  |
|                        |                                 |    |    |    |   |    |                     |   |    |       |    |    |                          |    |    |    |    |    |                     |    |    |   |   |    |                                     |    |    |  |  |  |                     |  |  |  |  |  |
| Yemen                  |                                 |    |    |    |   |    |                     |   |    |       |    |    |                          |    |    |    |    |    |                     |    |    |   |   |    |                                     |    |    |  |  |  |                     |  |  |  |  |  |
|                        | 4242                            | 70 | 10 | 3  | 1 | 9  | 4                   | 2 | 80 | 518   | 59 | 7  | 4                        | 3  | 11 | 6  | 10 | 66 |                     |    |    |   |   |    |                                     |    |    |  |  |  |                     |  |  |  |  |  |
|                        |                                 |    |    |    |   |    |                     |   |    |       |    |    |                          |    |    |    |    |    |                     |    |    |   |   |    |                                     |    |    |  |  |  |                     |  |  |  |  |  |
|                        |                                 |    |    |    |   |    |                     |   |    |       |    |    |                          |    |    |    |    |    |                     |    |    |   |   |    |                                     |    |    |  |  |  |                     |  |  |  |  |  |
| Region                 | 65 285                          | 69 | 14 | 3  | 2 | 7  | 3                   | 2 | 83 | 6 564 | 58 | 13 | 5                        | 5  | 10 | 4  | 6  | 70 | 726                 | 34 | 23 | 1 | 0 | 18 | 4                                   | 19 | 57 |  |  |  |                     |  |  |  |  |  |

See explanatory notes, page 129.

Country data for the Eastern Mediterranean, cont'd: age and sex distribution of smear-positive cases in DOTs areas, 2002 (absolute numbers)

|                        | MALE                 |       |       |       |       |       |       | FEMALE |       |       |       |       |       |       | ALL   |        |        |        |       |       |       |
|------------------------|----------------------|-------|-------|-------|-------|-------|-------|--------|-------|-------|-------|-------|-------|-------|-------|--------|--------|--------|-------|-------|-------|
|                        | 0-14                 | 15-24 | 25-34 | 35-44 | 45-54 | 55-64 | 65+   | 0-14   | 15-24 | 25-34 | 35-44 | 45-54 | 55-64 | 65+   | 0-14  | 15-24  | 25-34  | 35-44  | 45-54 | 55-64 | 65+   |
| Afghanistan            | 90                   | 476   | 481   | 368   | 246   | 241   | 189   | 192    | 1 119 | 1 251 | 792   | 526   | 320   | 218   | 282   | 1595   | 1732   | 1160   | 772   | 561   | 407   |
|                        | 0                    | 1     | 1     | 2     | 2     | 1     | 5     | 0      | 1     | 1     | 1     | 1     | 0     | 1     | 0     | 2      | 2      | 3      | 3     | 1     | 6     |
|                        | 20                   | 256   | 320   | 124   | 58    | 55    | 25    | 18     | 142   | 136   | 48    | 28    | 19    | 4     | 38    | 398    | 456    | 172    | 86    | 74    | 29    |
|                        | Djibouti             | 39    | 662   | 774   | 682   | 576   | 303   | 171    | 77    | 424   | 365   | 245   | 254   | 145   | 60    | 116    | 1086   | 1139   | 927   | 830   | 448   |
| Egypt                  | 29                   | 466   | 505   | 374   | 325   | 298   | 661   | 77     | 558   | 330   | 272   | 292   | 436   | 728   | 106   | 1024   | 835    | 646    | 617   | 734   | 1389  |
|                        | Iran                 | 47    | 706   | 923   | 308   | 284   | 205   | 158    | 45    | 338   | 288   | 172   | 176   | 129   | 116   | 92     | 1044   | 1211   | 480   | 460   | 334   |
| Iraq                   | 0                    | 8     | 9     | 11    | 12    | 11    | 5     | 0      | 9     | 4     | 3     | 2     | 12    | 5     | 0     | 17     | 13     | 14     | 14    | 23    | 10    |
|                        | Jordan               |       |       |       |       |       |       |        |       |       |       |       |       |       |       |        |        |        |       |       |       |
| Kuwait                 |                      |       |       |       |       |       |       |        |       |       |       |       |       |       |       |        |        |        |       |       |       |
| Lebanon                | 1                    | 19    | 25    | 14    | 10    | 7     | 9     | 2      | 17    | 21    | 8     | 9     | 3     | 3     | 3     | 36     | 46     | 22     | 19    | 10    | 12    |
| Libyan Arab Jamahiriya |                      |       |       |       |       |       |       |        |       |       |       |       |       |       |       |        |        |        |       |       |       |
|                        | Morocco              | 79    | 2 190 | 2 341 | 1 647 | 941   | 525   | 577    | 144   | 1 483 | 1 088 | 713   | 443   | 357   | 386   | 223    | 3673   | 3429   | 2360  | 1384  | 882   |
| Oman                   | 7                    | 22    | 18    | 20    | 16    | 26    | 20    | 16     | 41    | 15    | 12    | 13    | 7     | 7     | 23    | 63     | 33     | 32     | 29    | 33    | 27    |
| Pakistan               | 150                  | 914   | 749   | 614   | 469   | 348   | 221   | 146    | 900   | 732   | 590   | 395   | 267   | 166   | 296   | 1814   | 1481   | 1204   | 864   | 615   | 387   |
|                        | Qatar                |       | 8     | 12    | 9     | 8     | 1     | 3      | 6     | 13    | 1     | 3     | 51    | 52    | 39    | 334    | 503    | 283    | 198   | 155   | 162   |
| Saudi Arabia           | 11                   | 148   | 309   | 211   | 138   | 104   | 110   | 28     | 186   | 194   | 72    | 60    | 51    | 52    | 39    | 334    | 503    | 283    | 198   | 155   | 162   |
| Somalia                | 119                  | 922   | 821   | 478   | 307   | 219   | 176   | 112    | 468   | 447   | 302   | 172   | 111   | 75    | 231   | 1390   | 1268   | 780    | 479   | 330   | 251   |
| Sudan                  | 559                  | 1 171 | 1 494 | 1 168 | 852   | 511   | 405   | 498    | 865   | 1 007 | 840   | 523   | 275   | 170   | 1057  | 2036   | 2501   | 2008   | 1375  | 786   | 575   |
|                        | Syrian Arab Republic | 12    | 359   | 278   | 121   | 80    | 62    | 61     | 23    | 182   | 116   | 53    | 43    | 31    | 26    | 35     | 541    | 394    | 174   | 123   | 93    |
| Tunisia                | 1                    | 112   | 184   | 153   | 99    | 67    | 65    | 6      | 55    | 50    | 36    | 28    | 34    | 37    | 7     | 167    | 234    | 189    | 127   | 101   | 102   |
|                        | United Arab Emirates | 1     | 2     | 0     | 6     | 6     | 10    | 0      | 3     | 3     | 8     | 3     | 4     | 10    | 1     | 4      | 5      | 8      | 9     | 10    | 20    |
| Yemen                  | 250                  | 611   | 513   | 318   | 235   | 132   | 103   | 157    | 472   | 408   | 286   | 225   | 98    | 62    | 407   | 1083   | 921    | 604    | 460   | 230   | 165   |
| Region                 | 1 415                | 9 053 | 9 757 | 6 628 | 4 664 | 3 126 | 2 964 | 1 544  | 7 269 | 6 474 | 4 449 | 3 197 | 2 305 | 2 117 | 2 959 | 16 322 | 16 231 | 11 077 | 7 861 | 5 431 | 5 081 |

note: the sum of cases notified by age is less than the number of new smear-positive cases notified for some countries

Country data for the Eastern Mediterranean, cont'd: age and sex distribution of smear-positive cases in non-DOTS areas, 2002 (absolute numbers)

|                        | MALE |       |       |       |       | FEMALE |     |      |       |       | ALL   |       |       |     |    |
|------------------------|------|-------|-------|-------|-------|--------|-----|------|-------|-------|-------|-------|-------|-----|----|
|                        | 0-14 | 15-24 | 25-34 | 35-44 | 45-54 | 55-64  | 65+ | 0-14 | 15-24 | 25-34 | 35-44 | 45-54 | 55-64 | 65+ |    |
| Afghanistan            |      |       |       |       |       |        |     |      |       |       |       |       |       |     |    |
| Bahrain                |      |       |       |       |       |        |     |      |       |       |       |       |       |     |    |
| Djibouti               |      |       |       |       |       |        |     |      |       |       |       |       |       |     |    |
| Egypt                  |      |       |       |       |       |        |     |      |       |       |       |       |       |     |    |
| Iran                   |      |       |       |       |       |        |     |      |       |       |       |       |       |     |    |
| Iraq                   |      |       |       |       |       |        |     |      |       |       |       |       |       |     |    |
| Jordan                 |      |       |       |       |       |        |     |      |       |       |       |       |       |     |    |
| Kuwait                 |      |       |       |       |       |        |     |      |       |       |       |       |       |     |    |
| Lebanon                |      |       |       |       |       |        |     |      |       |       |       |       |       |     |    |
| Libyan Arab Jamahiriya |      |       |       |       |       |        |     |      |       |       |       |       |       |     |    |
| Morocco                |      |       |       |       |       |        |     |      |       |       |       |       |       |     |    |
| Oman                   |      |       |       |       |       |        |     |      |       |       |       |       |       |     |    |
| Pakistan               |      |       |       |       |       |        |     |      |       |       |       |       |       |     |    |
| Qatar                  |      |       |       |       |       |        |     |      |       |       |       |       |       |     |    |
| Saudi Arabia           |      |       |       |       |       |        |     |      |       |       |       |       |       |     |    |
| Somalia                |      |       |       |       |       |        |     |      |       |       |       |       |       |     |    |
| Sudan                  |      |       |       |       |       |        |     |      |       |       |       |       |       |     |    |
| Syrian Arab Republic   |      |       |       |       |       |        |     |      |       |       |       |       |       |     |    |
| Tunisia                |      |       |       |       |       |        |     |      |       |       |       |       |       |     |    |
| United Arab Emirates   |      |       |       |       |       |        |     |      |       |       |       |       |       |     |    |
| Yemen                  | 16   | 39    | 46    | 59    | 30    | 16     | 14  | 6    | 28    | 35    | 48    | 19    | 24    | 9   | 23 |
| Region                 | 16   | 39    | 46    | 59    | 30    | 16     | 14  | 6    | 28    | 35    | 48    | 19    | 24    | 9   | 23 |

note: the sum of cases notified by age is less than the number of new smear-positive cases notified for some countries

Country data for the Eastern Mediterranean, cont'd: smear-positive notification rates (per 100 000 population) by age and sex, 2002

|                        | MALE |       |       |       |       |       |     | FEMALE |       |       |       |       |       |     | ALL  |       |       |       |       |       |     |
|------------------------|------|-------|-------|-------|-------|-------|-----|--------|-------|-------|-------|-------|-------|-----|------|-------|-------|-------|-------|-------|-----|
|                        | 0-14 | 15-24 | 25-34 | 35-44 | 45-54 | 55-64 | 65+ | 0-14   | 15-24 | 25-34 | 35-44 | 45-54 | 55-64 | 65+ | 0-14 | 15-24 | 25-34 | 35-44 | 45-54 | 55-64 | 65+ |
| Afghanistan            | 2    | 21    | 29    | 32    | 32    | 49    | 59  | 4      | 52    | 83    | 74    | 72    | 66    | 66  | 3    | 36    | 55    | 52    | 51    | 57    | 63  |
| Bahrain                | 0    | 2     | 1     | 3     | 4     | 7     | 55  | 0      | 2     | 2     | 2     | 4     | 0     | 10  | 0    | 2     | 1     | 2     | 4     | 4     | 32  |
| Djibouti               | 13   | 383   | 665   | 377   | 267   | 374   | 255 | 12     | 213   | 280   | 141   | 121   | 118   | 34  | 13   | 299   | 472   | 257   | 191   | 240   | 134 |
| Egypt                  | 0    | 9     | 16    | 17    | 19    | 17    | 12  | 1      | 6     | 7     | 6     | 8     | 8     | 3   | 0    | 7     | 12    | 12    | 13    | 12    | 7   |
| Iran                   | 0    | 5     | 10    | 10    | 13    | 22    | 42  | 1      | 7     | 7     | 7     | 11    | 29    | 49  | 0    | 6     | 8     | 8     | 12    | 26    | 45  |
| Iraq                   | 1    | 28    | 50    | 25    | 35    | 41    | 49  | 1      | 14    | 16    | 14    | 22    | 25    | 31  | 1    | 21    | 33    | 20    | 28    | 33    | 39  |
| Jordan                 | 0    | 1     | 2     | 4     | 8     | 10    | 6   | 0      | 2     | 1     | 1     | 1     | 11    | 6   | 0    | 2     | 1     | 2     | 5     | 10    | 6   |
| Kuwait                 |      |       |       |       |       |       |     |        |       |       |       |       |       |     |      |       |       |       |       |       |     |
| Lebanon                | 0    | 6     | 7     | 6     | 8     | 8     | 9   | 0      | 5     | 6     | 3     | 5     | 3     | 2   | 0    | 5     | 7     | 4     | 6     | 5     | 5   |
| Libyan Arab Jamahiriya |      |       |       |       |       |       |     |        |       |       |       |       |       |     |      |       |       |       |       |       |     |
| Morocco                | 2    | 68    | 90    | 87    | 75    | 84    | 97  | 3      | 48    | 43    | 37    | 35    | 47    | 53  | 2    | 58    | 67    | 61    | 54    | 64    | 73  |
| Oman                   | 1    | 8     | 5     | 8     | 14    | 48    | 67  | 3      | 16    | 9     | 11    | 21    | 19    | 25  | 2    | 12    | 7     | 9     | 16    | 36    | 47  |
| Pakistan               | 0    | 6     | 7     | 8     | 8     | 10    | 8   | 0      | 6     | 8     | 8     | 7     | 8     | 6   | 0    | 6     | 7     | 8     | 8     | 9     | 7   |
| Qatar                  | 0    | 20    | 16    | 9     | 12    | 5     | 50  | 1      | 16    | 47    | 2     | 13    | 10    | 13  | 0    | 18    | 25    | 7     | 13    | 4     | 31  |
| Saudi Arabia           | 0    | 7     | 13    | 12    | 15    | 24    | 34  | 1      | 9     | 11    | 6     | 10    | 13    | 17  | 0    | 8     | 12    | 9     | 13    | 19    | 26  |
| Somalia                | 5    | 101   | 136   | 120   | 119   | 150   | 172 | 5      | 51    | 72    | 73    | 62    | 68    | 61  | 5    | 76    | 104   | 96    | 90    | 107   | 112 |
| Sudan                  | 8    | 36    | 60    | 69    | 75    | 69    | 76  | 8      | 27    | 41    | 49    | 45    | 34    | 27  | 8    | 32    | 51    | 59    | 51    | 49    | 49  |
| Syrian Arab Republic   | 0    | 17    | 20    | 14    | 15    | 21    | 26  | 1      | 9     | 9     | 6     | 8     | 10    | 9   | 1    | 13    | 14    | 10    | 12    | 15    | 17  |
| Tunisia                | 0    | 11    | 22    | 24    | 23    | 27    | 24  | 0      | 6     | 6     | 5     | 6     | 13    | 12  | 0    | 8     | 14    | 15    | 15    | 20    | 18  |
| United Arab Emirates   | 0    | 1     | 0     | 1     | 2     | 13    | 0   | 1      | 2     | 5     | 2     | 5     | 39    | 6   | 1    | 1     | 1     | 1     | 3     | 20    | 3   |
| Yemen                  | 6    | 32    | 48    | 47    | 50    | 50    | 55  | 4      | 26    | 40    | 40    | 46    | 41    | 31  | 5    | 29    | 44    | 44    | 48    | 45    | 42  |
| Region                 | 1    | 17    | 26    | 24    | 25    | 29    | 33  | 2      | 14    | 18    | 17    | 18    | 21    | 22  | 2    | 16    | 22    | 20    | 21    | 25    | 27  |

Rates are missing where data for smear-positive cases are missing, or where age- and sex-specific population data are not available.

Country data for the Eastern Mediterranean, cont'd: number of TB cases notified, 1980-2002

|                        | 1980           | 1981           | 1982           | 1983           | 1984           | 1985           | 1986           | 1987           | 1988           | 1989           | 1990           | 1991           | 1992          | 1993           | 1994           | 1995           | 1996           | 1997           | 1998           | 1999           | 2000           | 2001           | 2002           |
|------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|---------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| Afghanistan            | 71 685         | 71 554         | 41 752         | 52 502         | 18 784         | 10 742         | 14 351         | 18 091         | 16 051         | 14 386         | 4 332          | 23 067         |               |                |                |                |                | 1 290          | 3 084          | 3 314          | 7 107          | 10 139         | 13 794         |
| Bahrain                | 219            | 262            | 156            | 232            | 208            | 194            | 156            | 120            | 142            | 122            | 117            | 142            | 140           | 114            |                | 43             | 49             | 45             | 83             | 36             | 23             | 120            | 44             |
| Djibouti               |                | 2 265          | 671            |                | 1 489          | 2 262          | 1 864          | 1 978          | 2 030          | 2 040          | 2 100          | 2 900          | 2 884         | 3 489          | 3 311          |                | 3 332          | 3 830          | 3 785          | 4 133          | 3 971          | 4 198          | 3 191          |
| Egypt                  | 1 637          | 1 306          | 1 805          | 1 932          | 1 572          | 1 308          | 1 209          | 22 063         | 1 378          | 1 492          | 2 142          | 3 634          | 8 876         | 3 426          | 3 911          | 11 145         | 12 338         | 13 971         | 12 682         | 11 763         | 10 762         | 10 549         | 11 177         |
| Iran                   | 42 717         | 11 728         | 9 509          | 8 589          | 10 493         | 8 728          | 8 032          | 10 034         | 9 967          | 12 005         | 9 255          | 14 246         | 14 121        | 20 569         | 13 021         | 15 936         | 14 189         | 12 659         | 11 794         | 12 062         | 11 850         | 11 780         | 11 436         |
| Iraq                   | 11 809         | 10 614         | 7 741          | 6 970          | 6 807          | 6 485          | 6 946          | 6 517          | 6 504          | 8 032          | 14 684         |                |               | 18 553         | 19 733         | 9 697          | 29 196         | 26 607         | 29 410         | 29 897         | 9 697          | 10 478         | 11 898         |
| Jordan                 | 298            | 646            | 860            | 856            | 672            | 769            | 592            | 537            | 563            | 484            | 439            | 390            | 504           | 427            | 443            | 498            | 468            | 397            | 380            | 373            | 306            | 342            | 312            |
| Kuwait                 | 847            | 819            | 880            | 855            | 812            | 717            | 611            | 540            | 480            | 468            | 277            | 330            | 282           | 217            | 237            | 336            | 400            | 528            | 564            |                | 571            | 516            | 437            |
| Lebanon                |                | 67             | 75             | 284            | 410            | 1 943          | 2 257          | 2 478          |                |                |                | 884            |               |                | 940            | 983            | 836            | 701            | 640            | 679            |                |                |                |
| Libyan Arab Jamahiriya |                |                |                |                |                |                |                |                |                |                |                |                |               |                |                |                |                |                |                |                |                |                |                |
| Morocco                | 718            | 481            | 512            | 610            | 357            | 325            | 276            | 331            | 416            | 265            | 442            | 239            | 1 164         |                | 1 440          | 1 282          | 1 440          | 1 575          | 1 615          | 1 341          |                |                |                |
| Oman                   | 24 878         | 28 637         | 28 095         | 26 944         | 22 279         | 26 790         | 27 553         | 27 159         | 25 717         | 26 756         | 27 658         | 27 638         | 25 403        | 27 626         | 30 316         | 29 829         | 31 771         | 30 227         | 29 087         | 29 854         | 28 852         | 28 285         | 29 804         |
| Pakistan               | 1 872          | 928            | 897            | 802            | 843            | 861            | 1 265          | 616            | 477            | 478            | 482            | 442            | 367           | 281            | 304            | 276            | 300            | 298            | 287            | 249            | 321            | 292            | 290            |
| Qatar                  | 316 340        | 324 576        | 326 492        | 117 739        | 91 572         | 111 419        | 149 004        | 179 480        | 194 323        | 170 562        | 156 759        | 194 323        |               | 73 175         |                | 13 142         | 4 307          | 89 599         | 20 936         | 11 050         | 34 066         | 52 172         | 278            |
| Saudi Arabia           | 257            | 213            | 172            | 206            | 203            | 250            | 220            | 248            | 223            | 191            | 184            | 195            |               | 200            |                | 304            | 257            | 212            | 253            | 259            | 279            | 284            | 278            |
| Somalia                | 10 956         | 8 263          | 8 529          | 7 551          | 7 163          | 3 966          | 3 696          | 3 029          | 2 433          | 2 583          | 2 415          | 2 221          | 2 016         | 2 386          | 2 518          |                |                | 3 138          | 3 235          | 3 507          | 3 452          | 3 327          | 3 374          |
| Sudan                  | 32 971         | 47 431         |                | 2 838          | 2 719          | 2 722          | 3 079          | 7 322          | 2 728          | 1 323          |                |                |               |                |                |                |                | 4 450          | 4 320          | 4 802          | 5 686          | 6 852          | 7 279          |
| Syrian Arab Republic   | 1 689          | 1 908          | 1 838          | 1 867          | 2 111          | 1 509          | 2 460          | 800            | 693            | 701            | 212            | 16 423         | 19 503        | 37 516         | 23 178         | 14 320         | 20 230         | 20 894         | 22 318         | 26 875         | 24 807         | 23 997         | 24 554         |
| Tunisia                | 2 504          | 2 316          | 2 554          | 3 062          | 2 501          | 2 510          | 2 487          | 2 272          | 2 309          | 2 403          | 2 054          | 2 064          | 2 164         | 2 565          | 2 376          | 2 383          | 2 387          | 4 972          | 5 417          | 5 447          | 5 090          | 4 997          | 4 766          |
| United Arab Emirates   | 522            | 638            | 597            | 507            | 534            | 568            | 464            | 818            | 339            | 308            | 285            | 234            | 227           |                | 426            |                |                |                | 2 211          | 2 158          | 2 038          | 1 945          | 1 885          |
| Yemen                  |                |                |                |                |                |                |                |                |                |                |                |                |               |                |                |                |                |                | 773            | 66             | 115            | 74             | 90             |
|                        |                |                |                |                |                |                |                |                |                |                |                |                |               |                |                | 14 428         | 14 364         | 12 007         | 12 383         | 13 027         | 10 648         | 13 029         | 11 677         |
| <b>Region</b>          | <b>521 919</b> | <b>514 652</b> | <b>433 135</b> | <b>234 346</b> | <b>171 529</b> | <b>186 231</b> | <b>230 364</b> | <b>288 723</b> | <b>271 715</b> | <b>250 103</b> | <b>229 855</b> | <b>295 023</b> | <b>83 972</b> | <b>190 544</b> | <b>107 864</b> | <b>121 668</b> | <b>145 333</b> | <b>136 226</b> | <b>233 860</b> | <b>171 052</b> | <b>137 966</b> | <b>165 270</b> | <b>188 458</b> |
| number reporting       | 17             | 19             | 18             | 18             | 19             | 20             | 20             | 20             | 19             | 19             | 18             | 18             | 15            | 14             | 15             | 17             | 19             | 17             | 21             | 20             | 20             | 19             | 19             |
| percent reporting      | 81             | 90             | 86             | 86             | 90             | 95             | 95             | 95             | 90             | 90             | 86             | 86             | 71            | 67             | 71             | 81             | 90             | 81             | 100            | 95             | 95             | 90             | 90             |

Country data for the Eastern Mediterranean, cont'd: case notification rates (per 100 000 population), 1980-2002

|                        | 1980 | 1981 | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
|------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Afghanistan            | 474  | 480  | 286  | 369  | 136  | 79   | 108  | 138  | 123  | 108  | 31   | 158  | 27   | 21   | 6    | 7    | 8    | 6    | 15   | 16   | 33   | 46   | 60   |
| Bahrain                | 63   | 73   | 42   | 60   | 52   | 47   | 36   | 27   | 31   | 26   | 24   | 28   | 27   | 21   | 21   | 26   | 571  | 634  | 604  | 638  | 596  | 617  | 6    |
| Djibouti               |      | 667  | 193  |      | 408  | 593  | 458  | 451  | 429  | 405  | 398  | 535  | 524  | 630  | 593  |      |      |      |      |      |      |      | 461  |
| Egypt                  | 4    | 3    | 4    | 4    | 3    | 3    | 2    | 42   | 3    | 3    | 4    | 6    | 15   | 6    | 6    | 18   | 20   | 22   | 19   | 18   | 16   | 15   | 16   |
| Iran                   | 109  | 29   | 22   | 19   | 23   | 18   | 16   | 19   | 19   | 22   | 16   | 25   | 24   | 34   | 21   | 26   | 22   | 20   | 18   | 18   | 18   | 18   | 17   |
| Iraq                   | 91   | 79   | 56   | 49   | 46   | 43   | 44   | 41   | 40   | 48   | 85   |      |      | 98   | 101  | 48   | 140  | 124  | 134  | 132  | 42   | 44   | 49   |
| Jordan                 | 13   | 28   | 36   | 34   | 26   | 28   | 21   | 19   | 18   | 16   | 13   | 11   | 14   | 11   | 11   | 12   | 11   | 9    | 8    | 8    | 6    | 7    | 6    |
| Kuwait                 | 62   | 57   | 59   | 55   | 50   | 42   | 33   | 28   | 23   | 22   | 13   | 16   | 14   | 12   | 14   | 20   | 23   | 29   | 29   |      |      |      |      |
| Lebanon                |      | 3    | 3    | 11   | 15   | 73   | 85   | 93   |      |      |      | 32   | 31   |      | 31   | 31   | 26   | 21   | 19   | 20   | 16   | 15   | 12   |
| Libyan Arab Jamahiriya | 24   | 15   | 15   | 17   | 10   | 9    | 7    | 8    | 10   | 6    | 10   | 5    | 26   |      |      | 30   | 26   |      | 31   | 31   | 26   |      |      |
| Morocco                | 128  | 144  | 138  | 129  | 104  | 122  | 122  | 118  | 109  | 111  | 113  | 110  | 100  | 106  | 115  | 111  | 116  | 109  | 103  | 104  | 99   | 96   | 99   |
| Oman                   | 158  | 74   | 68   | 58   | 58   | 56   | 79   | 37   | 28   | 27   | 26   | 23   | 18   | 14   | 14   | 12   | 13   | 12   | 12   | 10   | 12   | 11   | 10   |
| Pakistan               | 392  | 389  | 379  | 132  | 99   | 117  | 152  | 177  | 186  | 158  | 141  | 171  |      | 61   |      | 11   | 3    | 66   | 15   | 8    | 23   | 35   |      |
| Qatar                  | 112  | 85   | 62   | 68   | 61   | 69   | 57   | 61   | 52   | 42   | 39   | 40   |      | 40   |      | 58   | 48   | 39   | 45   | 45   | 48   | 46   |      |
| Saudi Arabia           | 114  | 81   | 79   | 66   | 59   | 31   | 27   | 21   | 16   | 16   | 15   | 13   | 11   | 13   | 14   |      |      | 16   | 16   | 16   | 15   | 14   |      |
| Somalia                |      |      |      | 42   | 41   | 41   | 46   | 107  | 39   | 19   |      |      |      |      |      | 28   | 34   | 52   | 57   | 54   | 65   | 75   | 77   |
| Sudan                  | 170  | 237  |      |      |      | 7    | 11   | 3    | 3    | 3    | 1    | 64   | 75   | 140  | 85   | 51   | 70   | 71   | 74   | 87   | 79   | 75   | 75   |
| Syrian Arab Republic   | 19   | 21   | 19   | 19   | 20   | 20   | 35   | 37   | 41   | 45   | 47   | 43   | 40   |      | 36   | 30   | 35   | 32   | 34   | 34   | 31   | 29   | 27   |
| Tunisia                | 39   | 35   | 37   | 44   | 35   | 34   | 33   | 29   | 29   | 30   | 25   | 25   | 25   | 30   | 27   | 27   | 26   |      | 24   | 23   | 21   | 20   | 19   |
| United Arab Emirates   | 51   | 57   | 48   | 38   | 37   | 37   | 28   | 47   | 18   | 16   | 14   | 11   | 10   |      | 18   |      |      | 20   | 29   | 2    | 4    | 3    | 3    |
| Yemen                  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 95   | 91   | 74   | 73   | 75   | 59   | 70   | 60   |
| Region                 | 184  | 176  | 144  | 76   | 54   | 57   | 68   | 83   | 76   | 68   | 61   | 76   | 21   | 47   | 26   | 28   | 33   | 30   | 51   | 36   | 29   | 34   | 37   |



Country data for the Eastern Mediterranean, cont'd: new smear-positive cases, 1993-2002

|                        | Number of cases |        |        |        |        |        |        |        |        |        | Rate (per 100 000 population) |      |      |      |        |        |        |        |        |        |   |
|------------------------|-----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-------------------------------|------|------|------|--------|--------|--------|--------|--------|--------|---|
|                        | 1993            | 1994   | 1995   | 1996   | 1997   | 1998   | 1999   | 2000   | 2001   | 2002   | 1993                          | 1994 | 1995 | 1996 | 1997   | 1998   | 1999   | 2000   | 2001   | 2002   |   |
| Afghanistan            |                 |        |        |        | 618    | 1 833  | 1 669  | 2 892  | 4 639  | 6 509  |                               |      |      |      | 618    | 1 833  | 1 669  | 2 892  | 4 639  | 6 509  |   |
| Bahrain                | 82              |        | 17     | 31     | 22     | 25     | 21     | 94     | 89     | 17     |                               |      |      |      | 22     | 25     | 21     | 94     | 89     | 17     |   |
| Djibouti               | 1 668           | 1 743  |        | 1 744  | 1 904  | 1 690  | 1 564  | 1 391  | 1 312  | 1 253  |                               |      |      |      | 1 904  | 1 690  | 1 564  | 1 391  | 1 312  | 1 253  |   |
| Egypt                  |                 | 1 811  | 4 229  | 5 084  | 5 469  | 4 915  | 5 094  | 4 606  | 4 514  | 4 889  |                               |      |      |      | 5 469  | 4 915  | 5 094  | 4 606  | 4 514  | 4 889  |   |
| Iran                   |                 | 4 615  | 5 347  | 5 373  | 5 253  | 5 105  | 5 426  | 5 866  | 5 523  | 5 335  |                               |      |      |      | 5 253  | 5 105  | 5 426  | 5 866  | 5 523  | 5 335  |   |
| Iraq                   | 5 240           | 5 781  | 3 194  | 10 320 | 8 164  | 8 933  | 9 908  | 3 194  | 3 559  | 3 895  |                               |      |      |      | 8 164  | 8 933  | 9 908  | 3 194  | 3 559  | 3 895  |   |
| Jordan                 | 173             | 161    | 187    | 170    | 136    | 110    | 102    | 89     | 94     | 91     |                               |      |      |      | 136    | 110    | 102    | 89     | 94     | 91     |   |
| Kuwait                 | 148             | 155    | 175    | 153    | 201    | 185    |        |        |        |        |                               |      |      |      | 201    | 185    |        |        |        |        |   |
| Lebanon                |                 | 148    | 197    | 198    | 206    | 224    | 249    | 202    | 171    | 148    |                               |      |      |      | 206    | 224    | 249    | 202    | 171    | 148    |   |
| Libyan Arab Jamahiriya |                 |        |        | 515    |        |        | 803    | 607    |        |        |                               |      |      |      |        |        |        |        |        |        |   |
| Morocco                |                 |        | 14 171 | 14 278 | 14 134 | 13 426 | 13 420 | 12 872 | 12 804 | 12 914 |                               |      |      |      | 14 134 | 13 426 | 13 420 | 12 872 | 12 804 | 12 914 |   |
| Oman                   | 123             | 135    | 135    | 164    | 165    | 156    | 120    | 164    | 156    | 151    |                               |      |      |      | 165    | 156    | 120    | 164    | 156    | 151    |   |
| Pakistan               | 11 020          |        | 2 578  | 1 849  |        | 14 974 | 6 248  | 3 285  | 10 935 | 16 265 |                               |      |      |      | 39     | 69     | 58     | 53     | 77     | 64     |   |
| Qatar                  |                 |        |        | 46     |        |        |        |        |        |        |                               |      |      |      |        |        |        |        |        |        |   |
| Saudi Arabia           | 800             |        |        |        | 1 568  | 1 644  | 1 680  | 1 595  | 1 686  | 1 674  |                               |      |      |      | 1 568  | 1 644  | 1 680  | 1 595  | 1 686  | 1 674  |   |
| Somalia                |                 | 1 168  | 1 572  | 2 894  | 3 093  | 3 121  | 3 461  | 3 776  | 4 640  | 4 729  |                               |      |      |      | 3 093  | 3 121  | 3 461  | 3 776  | 4 640  | 4 729  |   |
| Sudan                  |                 | 3 728  | 8 761  | 8 978  | 10 835 | 10 820 | 11 047 | 12 311 | 11 136 | 10 338 |                               |      |      |      | 10 835 | 10 820 | 11 047 | 12 311 | 11 136 | 10 338 |   |
| Syrian Arab Republic   |                 |        | 1 295  | 1 523  | 1 423  | 1 593  | 1 577  | 1 584  | 1 507  | 1 447  |                               |      |      |      | 1 423  | 1 593  | 1 577  | 1 584  | 1 507  | 1 447  |   |
| Tunisia                | 1 006           | 983    | 1 243  | 1 005  |        | 1 196  | 1 066  | 1 099  | 1 077  | 927    |                               |      |      |      |        | 1 196  | 1 066  | 1 099  | 1 077  | 927    |   |
| United Arab Emirates   |                 |        |        |        |        |        | 31     | 73     | 69     | 57     |                               |      |      |      |        |        | 31     | 73     | 69     | 57     |   |
| Yemen                  |                 |        | 3 681  | 4 371  | 4 717  | 4 896  | 5 427  | 5 565  | 4 968  | 4 259  |                               |      |      |      | 4 717  | 4 896  | 5 427  | 5 565  | 4 968  | 4 259  |   |
| Region                 | 20 260          | 20 428 | 46 842 | 58 696 | 57 947 | 74 915 | 68 971 | 61 318 | 68 956 | 74 962 | 5                             | 5    | 11   | 13   | 13     | 16     | 15     | 13     | 14     | 15     | 5 |

# Notes

**BAHRAIN** Notification, age and sex data, and treatment outcome data are provided for nationals only.

**DJIBOUTI** Treatment outcomes for new cases are for laboratory-confirmed (not necessarily smear-positive) cases.

**EGYPT** TB notifications include data from prisons for the 3rd and 4th quarter of 2002, and data from university health centers for the 4th quarter of 2002.

**JORDAN** Treatment outcome data were provided for nationals and non-nationals. The success rate was 66/75 (88%) among nationals, and 15/79 (19%) among non-nationals.

**MOROCCO** Treatment outcomes for new cases are for laboratory-confirmed (not necessarily smear-positive) cases. Treatment outcome results reflect routine reporting of outcomes for transfer-in patients which, at national level, are used to adjust the number of transfer-out outcomes.

**OMAN** There is a discrepancy between the population estimate used by the government (2 477 687) and that used by the UN (2 768 288). Treatment outcomes are monitored only for nationals, which represent over 75% of cases notified. Age and sex data are for all forms of TB, national cases only.

**PAKISTAN** Age and sex data are from 3rd and 4th quarters of 2002.

**QATAR** Notification and treatment outcome data were also provided by nationality of cases. Fifty-four of 64 new smear-positive cases (84%) in 2002 were among nationals. In the 2001 cohort, treatment success was 10/14 (71%) among nationals, and 36/63 (57%) among non-nationals, (of whom, 27 (43%) transferred out of the country).

**SAUDI ARABIA** Treatment outcome data are not routinely available from certain hospitals and for deported cases. In 2002, there were 321 cases deported among 1686 new smear-positive cases.

**SOMALIA** There is a discrepancy between the population estimate used by the government (6 200 000) and that used by the UN (8 719 730).

## **UNITED ARAB EMIRATES**

DOTS units serve citizens of the United Arab Emirates only (the majority of non-DOTS cases are in non-nationals).



## Europe: Summary of TB control policies

| COUNTRY               | STATUS <sup>a</sup> | MANUAL <sup>b</sup> | MICROSCOPY <sup>c</sup> | MONITORING OF TB SUSPECTS <sup>d</sup> | SCC <sup>e</sup> | DOT <sup>f</sup> | OUTCOME MONITORING <sup>g</sup> |
|-----------------------|---------------------|---------------------|-------------------------|--|------------------|------------------|---------------------------------|
| ALBANIA               | DOTS                | YES                 |                         |  |                  |                  |                                 |
| ANDORRA               | DOTS                | YES                 |                         |  |                  |                  |                                 |
| ARMENIA               | DOTS                | YES                 |                         |  |                  |                  |                                 |
| AUSTRIA               | DOTS                | NO                  |                         |  |                  |                  |                                 |
| AZERBAIJAN            | DOTS                | YES                 |                         |  |                  |                  |                                 |
| BELARUS               |                     | YES                 |                         |  |                  |                  |                                 |
| BELGIUM               | DOTS                | NO                  |                         |  |                  |                  |                                 |
| BOSNIA & HERZEGOVINA  | DOTS                | YES                 |                         |  |                  |                  |                                 |
| BULGARIA              | DOTS                | YES                 |                         |  |                  |                  |                                 |
| CROATIA               |                     | YES                 |                         |  |                  |                  |                                 |
| CYPRUS                | DOTS                | NO                  |                         |  |                  |                  |                                 |
| CZECH REPUBLIC        | DOTS                | YES                 |                         |  |                  |                  |                                 |
| DENMARK               |                     | YES                 |                         |  |                  |                  |                                 |
| ESTONIA               | DOTS                | YES                 |                         |  |                  |                  |                                 |
| FINLAND               |                     | NO                  |                         |  |                  |                  |                                 |
| FRANCE                |                     | NO                  |                         |  |                  |                  |                                 |
| GEORGIA               | DOTS                | YES                 |                         |  |                  |                  |                                 |
| GERMANY               | DOTS                | YES                 |                         |  |                  |                  |                                 |
| GREECE                |                     | NO                  |                         |  |                  |                  |                                 |
| HUNGARY               | DOTS                | YES                 |                         |  |                  |                  |                                 |
| ICELAND               | DOTS                | NO                  |                         |  |                  |                  |                                 |
| IRELAND               |                     | YES                 |                         |  |                  |                  |                                 |
| ISRAEL                | DOTS                | YES                 |                         |  |                  |                  |                                 |
| ITALY                 | DOTS                | YES                 |                         |  |                  |                  |                                 |
| KAZAKHSTAN            | DOTS                | YES                 |                         |  |                  |                  |                                 |
| KYRGYZSTAN            | DOTS                | YES                 |                         |  |                  |                  |                                 |
| LATVIA                | DOTS                | YES                 |                         |  |                  |                  |                                 |
| LITHUANIA             | DOTS                | YES                 |                         |  |                  |                  |                                 |
| LUXEMBOURG            | DOTS                | NO                  |                         |  |                  |                  |                                 |
| MALTA                 | DOTS                | YES                 |                         |  |                  |                  |                                 |
| MONACO                |                     |                     |                         |  |                  |                  |                                 |
| NETHERLANDS           | DOTS                | YES                 |                         |  |                  |                  |                                 |
| NORWAY                | DOTS                | YES                 |                         |  |                  |                  |                                 |
| POLAND                | DOTS                | YES                 |                         |  |                  |                  |                                 |
| PORTUGAL              | DOTS                |                     |                         |  |                  |                  |                                 |
| REPUBLIC OF MOLDOVA   | DOTS                | YES                 |                         |  |                  |                  |                                 |
| ROMANIA               | DOTS                | YES                 |                         |  |                  |                  |                                 |
| RUSSIAN FEDERATION    | DOTS                | YES                 |                         |  |                  |                  |                                 |
| SAN MARINO            | DOTS                | NO                  |                         |  |                  |                  |                                 |
| SERBIA AND MONTENEGRO | DOTS                | YES                 |                         |  |                  |                  |                                 |
| SLOVAKIA              | DOTS                | YES                 |                         |  |                  |                  |                                 |
| SLOVENIA              | DOTS                | NO                  |                         |  |                  |                  |                                 |
| SPAIN                 |                     | NO                  |                         |  |                  |                  |                                 |
| SWEDEN                | DOTS                | NO                  |                         |  |                  |                  |                                 |
| SWITZERLAND           |                     |                     |                         |  |                  |                  |                                 |
| TAJIKISTAN            | <b>DOTS</b>         | YES                 |                         |  |                  |                  |                                 |
| TFYR MACEDONIA        | DOTS                | YES                 |                         |  |                  |                  |                                 |
| TURKEY                | <b>DOTS</b>         | YES                 |                         |  |                  |                  |                                 |
| TURKMENISTAN          | DOTS                | YES                 |                         |  |                  |                  |                                 |
| UKRAINE               | <b>DOTS</b>         | YES                 |                         |  |                  |                  |                                 |
| UNITED KINGDOM        |                     | YES                 |                         |  |                  |                  |                                 |
| UZBEKISTAN            | DOTS                | YES                 |                         |  |                  |                  |                                 |

|  |                                 |
|--|---------------------------------|
|  | Implemented in all units/areas  |
|  | Implemented in some units/areas |
|  | Not implemented                 |
|  | Unknown                         |

- a Status: DOTS status (**bold** indicates DOTS introduced in 2002)  
b Manual: National TB control manual (recommended)  
c Microscopy: Use of smear microscopy for diagnosis (core component of DOTS)  
d Monitoring of TB Suspects: Register of TB suspects (e.g. patients with cough  $\geq$  3 weeks) kept at DOTS facilities (recommended)  
e SCC: Short course chemotherapy (core component of DOTS)  
f DOT: Directly observed treatment (core component of DOTS)  
g Outcome monitoring: Monitoring of treatment outcomes by cohort analysis (core component of DOTS)

Country data for Europe: notification, detection and DOTS coverage, 2002

|  | Country information |  |      |        |  |             |        |  |      |        |               |      |        |  |      |              |  |      |        |  | DOTS           |        |  |      |        |          |      |        |  |      | non-DOTS  |  |      |        |  |         |        |  |      |        |           |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |
|--|---------------------|--|------|--------|--|-------------|--------|--|------|--------|---------------|------|--------|--|------|--------------|--|------|--------|--|----------------|--------|--|------|--------|----------|------|--------|--|------|-----------|--|------|--------|--|---------|--------|--|------|--------|-----------|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|--------|--|------|---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|  | All cases           |  |      |        |  | Notified TB |        |  |      |        | New confirmed |      |        |  |      | Estimated TB |  |      |        |  | Detection rate |        |  |      |        | % of pop |      |        |  |      | All cases |  |      |        |  | New ss+ |        |  |      |        | % of pulm |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |       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       |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |      |        |  |  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|  | number              |  | rate | number |  | rate        | number |  | rate | number |               | rate | number |  | rate | number       |  | rate | number |  | rate           | number |  | rate | number |          | rate | number |  | rate | number    |  | rate | number |  | rate    | number |  | rate | number |           | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate | number |  | rate |

Country data for Europe, cont'd: treatment outcomes for cases registered in 2001 - WHO TB control strategy DOTS and other non-DOTS control strategies

[illegible]

See explanatory notes, page 129.

Country data for Europe, cont'd: age and sex distribution of smear-positive cases in DOTS areas, 2002 (absolute numbers)

|                      | MALE |       |       |       |       |       |       |      |       |       |       |       | FEMALE |       |      |       |        |       |       |       |       |  |  |  | ALL |  |  |  |
|----------------------|------|-------|-------|-------|-------|-------|-------|------|-------|-------|-------|-------|--------|-------|------|-------|--------|-------|-------|-------|-------|--|--|--|-----|--|--|--|
|                      | 0-14 | 15-24 | 25-34 | 35-44 | 45-54 | 55-64 | 65+   | 0-14 | 15-24 | 25-34 | 35-44 | 45-54 | 55-64  | 65+   | 0-14 | 15-24 | 25-34  | 35-44 | 45-54 | 55-64 | 65+   |  |  |  |     |  |  |  |
| Albania              | 0    | 10    | 11    | 14    | 10    | 9     | 8     | 0    | 8     | 6     | 6     | 4     | 1      | 6     | 0    | 18    | 17     | 20    | 14    | 10    | 14    |  |  |  |     |  |  |  |
| Andorra              | 0    | 0     | 0     | 1     | 0     | 0     | 0     | 0    | 1     | 0     | 0     | 0     | 0      | 0     | 0    | 0     | 1      | 0     | 1     | 0     | 0     |  |  |  |     |  |  |  |
| Armenia              | 1    | 95    | 42    | 40    | 28    | 21    | 10    | 2    | 16    | 15    | 16    | 4     | 4      | 1     | 3    | 111   | 57     | 56    | 32    | 25    | 11    |  |  |  |     |  |  |  |
| Austria              | 1    | 8     | 14    | 32    | 43    | 20    | 25    | 0    | 8     | 13    | 7     | 5     | 7      | 21    | 1    | 16    | 27     | 39    | 48    | 27    | 46    |  |  |  |     |  |  |  |
| Azerbaijan           | 3    | 245   | 346   | 267   | 145   | 61    | 7     | 3    | 39    | 51    | 46    | 18    | 16     | 13    | 6    | 284   | 397    | 313   | 163   | 77    | 20    |  |  |  |     |  |  |  |
| Belarus              |      |       |       |       |       |       |       |      |       |       |       |       |        |       |      |       |        |       |       |       |       |  |  |  |     |  |  |  |
| Belgium              | 1    | 19    | 56    | 52    | 33    | 19    | 58    | 6    | 21    | 19    | 16    | 9     | 16     | 16    | 7    | 40    | 75     | 68    | 42    | 35    | 74    |  |  |  |     |  |  |  |
| Bosnia & Herzegovina | 1    | 36    | 48    | 70    | 69    | 33    | 63    | 2    | 22    | 33    | 18    | 19    | 31     | 81    | 3    | 58    | 81     | 88    | 88    | 64    | 144   |  |  |  |     |  |  |  |
| Bulgaria             | 2    | 62    | 86    | 116   | 132   | 58    | 56    | 6    | 48    | 73    | 45    | 19    | 9      | 30    | 8    | 110   | 159    | 161   | 151   | 67    | 86    |  |  |  |     |  |  |  |
| Croatia              |      |       |       |       |       |       |       |      |       |       |       |       |        |       |      |       |        |       |       |       |       |  |  |  |     |  |  |  |
| Cyprus               | 0    | 2     | 1     | 1     | 1     | 0     | 2     | 0    | 1     | 0     | 0     | 0     | 0      | 0     | 0    | 3     | 1      | 1     | 1     | 0     | 2     |  |  |  |     |  |  |  |
| Czech Republic       | 0    | 14    | 28    | 39    | 89    | 38    | 40    | 0    | 6     | 10    | 8     | 8     | 6      | 43    | 0    | 20    | 38     | 47    | 97    | 44    | 83    |  |  |  |     |  |  |  |
| Denmark              |      |       |       |       |       |       |       |      |       |       |       |       |        |       |      |       |        |       |       |       |       |  |  |  |     |  |  |  |
| Estonia              | 0    | 9     | 20    | 47    | 45    | 19    | 7     | 0    | 7     | 11    | 16    | 9     | 5      | 8     | 0    | 16    | 31     | 63    | 54    | 24    | 15    |  |  |  |     |  |  |  |
| Finland              |      |       |       |       |       |       |       |      |       |       |       |       |        |       |      |       |        |       |       |       |       |  |  |  |     |  |  |  |
| France               |      |       |       |       |       |       |       |      |       |       |       |       |        |       |      |       |        |       |       |       |       |  |  |  |     |  |  |  |
| Georgia              | 1    | 155   | 197   | 181   | 119   | 54    | 42    | 5    | 54    | 68    | 39    | 31    | 20     | 18    | 6    | 209   | 265    | 220   | 150   | 74    | 60    |  |  |  |     |  |  |  |
| Germany              | 3    | 34    | 75    | 102   | 88    | 81    | 101   | 1    | 32    | 61    | 50    | 14    | 16     | 64    | 4    | 66    | 136    | 152   | 102   | 97    | 165   |  |  |  |     |  |  |  |
| Greece               |      |       |       |       |       |       |       |      |       |       |       |       |        |       |      |       |        |       |       |       |       |  |  |  |     |  |  |  |
| Hungary              | 1    | 10    | 41    | 102   | 145   | 61    | 39    | 1    | 9     | 27    | 36    | 26    | 14     | 38    | 2    | 19    | 68     | 138   | 171   | 75    | 77    |  |  |  |     |  |  |  |
| Iceland              |      |       |       |       |       |       |       |      |       |       |       |       |        |       |      |       |        |       |       |       |       |  |  |  |     |  |  |  |
| Ireland              |      |       |       |       |       |       |       |      |       |       |       |       |        |       |      |       |        |       |       |       |       |  |  |  |     |  |  |  |
| Israel               | 2    | 7     | 18    | 13    | 12    | 9     | 23    | 3    | 19    | 12    | 15    | 7     | 8      | 16    | 5    | 26    | 30     | 28    | 19    | 17    | 39    |  |  |  |     |  |  |  |
| Italy                | 6    | 51    | 139   | 127   | 74    | 68    | 134   | 6    | 51    | 94    | 55    | 18    | 28     | 85    | 12   | 102   | 233    | 182   | 92    | 96    | 219   |  |  |  |     |  |  |  |
| Kazakhstan           | 33   | 1 067 | 1 565 | 1 490 | 1 042 | 435   | 212   | 68   | 1 035 | 1 086 | 669   | 348   | 194    | 208   | 101  | 2 102 | 2 651  | 2 159 | 1 390 | 629   | 420   |  |  |  |     |  |  |  |
| Kyrgyzstan           | 0    | 178   | 245   | 222   | 137   | 60    | 34    | 0    | 139   | 175   | 98    | 44    | 25     | 56    | 0    | 317   | 420    | 320   | 181   | 85    | 90    |  |  |  |     |  |  |  |
| Latvia               | 0    | 32    | 98    | 123   | 121   | 64    | 26    | 0    | 37    | 42    | 37    | 23    | 11     | 22    | 0    | 69    | 140    | 160   | 144   | 75    | 48    |  |  |  |     |  |  |  |
| Lithuania            | 1    | 20    | 72    | 141   | 97    | 65    | 45    | 0    | 23    | 49    | 38    | 29    | 15     | 38    | 1    | 43    | 121    | 179   | 126   | 80    | 83    |  |  |  |     |  |  |  |
| Luxembourg           | 0    | 0     | 1     | 3     | 3     | 2     | 1     | 0    | 0     | 2     | 1     | 1     | 1      | 2     | 0    | 0     | 3      | 4     | 4     | 3     | 3     |  |  |  |     |  |  |  |
| Malta                | 0    | 1     | 0     | 1     | 0     | 1     | 0     | 0    | 0     | 1     | 0     | 0     | 0      | 1     | 0    | 1     | 1      | 1     | 0     | 1     | 1     |  |  |  |     |  |  |  |
| Monaco               |      |       |       |       |       |       |       |      |       |       |       |       |        |       |      |       |        |       |       |       |       |  |  |  |     |  |  |  |
| Netherlands          | 1    | 40    | 54    | 39    | 33    | 7     | 20    | 5    | 27    | 32    | 12    | 13    | 4      | 9     | 6    | 67    | 86     | 51    | 46    | 11    | 29    |  |  |  |     |  |  |  |
| Norway               | 0    | 4     | 4     | 4     | 2     | 0     | 4     | 0    | 3     | 5     | 1     | 2     | 0      | 2     | 0    | 7     | 9      | 5     | 4     | 0     | 6     |  |  |  |     |  |  |  |
| Poland               | 4    | 100   | 206   | 515   | 687   | 264   | 309   | 7    | 90    | 135   | 157   | 148   | 70     | 368   | 11   | 190   | 341    | 672   | 835   | 334   | 677   |  |  |  |     |  |  |  |
| Portugal             | 12   | 156   | 342   | 411   | 272   | 129   | 171   | 5    | 99    | 141   | 87    | 33    | 29     | 73    | 17   | 255   | 483    | 498   | 305   | 158   | 244   |  |  |  |     |  |  |  |
| Republic of Moldova  | 2    | 99    | 120   | 106   | 73    | 19    | 14    | 4    | 32    | 33    | 21    | 19    | 8      | 7     | 6    | 131   | 153    | 127   | 92    | 27    | 21    |  |  |  |     |  |  |  |
| Romania              | 61   | 424   | 953   | 1 013 | 1 092 | 467   | 334   | 44   | 402   | 506   | 255   | 214   | 109    | 204   | 105  | 826   | 1 459  | 1 268 | 1 306 | 576   | 538   |  |  |  |     |  |  |  |
| Russian Federation   | 0    | 482   | 931   | 1 080 | 1 086 | 335   | 181   | 0    | 204   | 264   | 255   | 168   | 75     | 118   | 0    | 686   | 1 195  | 1 335 | 1 254 | 410   | 299   |  |  |  |     |  |  |  |
| San Marino           |      |       |       |       |       |       |       |      |       |       |       |       |        |       |      |       |        |       |       |       |       |  |  |  |     |  |  |  |
| Serbia & Montenegro  | 7    | 37    | 53    | 44    | 29    | 22    | 33    | 9    | 46    | 48    | 19    | 17    | 19     | 19    | 16   | 83    | 101    | 63    | 46    | 41    | 52    |  |  |  |     |  |  |  |
| Slovakia             | 0    | 4     | 18    | 35    | 40    | 21    | 26    | 0    | 6     | 9     | 7     | 3     | 5      | 26    | 0    | 10    | 27     | 42    | 43    | 26    | 52    |  |  |  |     |  |  |  |
| Slovenia             | 0    | 8     | 11    | 25    | 26    | 14    | 9     | 0    | 3     | 7     | 6     | 1     | 3      | 17    | 0    | 11    | 18     | 31    | 27    | 17    | 26    |  |  |  |     |  |  |  |
| Spain                |      |       |       |       |       |       |       |      |       |       |       |       |        |       |      |       |        |       |       |       |       |  |  |  |     |  |  |  |
| Sweden               | 0    | 6     | 15    | 10    | 8     | 7     | 8     | 0    | 11    | 14    | 8     | 7     | 2      | 13    | 0    | 17    | 29     | 18    | 15    | 9     | 21    |  |  |  |     |  |  |  |
| Switzerland          |      |       |       |       |       |       |       |      |       |       |       |       |        |       |      |       |        |       |       |       |       |  |  |  |     |  |  |  |
| Tajikistan           | 2    | 15    | 18    | 12    | 5     | 2     | 1     | 1    | 12    | 14    | 11    | 4     | 1      | 2     | 3    | 27    | 32     | 23    | 9     | 3     | 3     |  |  |  |     |  |  |  |
| TFYR Macedonia       | 1    | 14    | 13    | 21    | 17    | 14    | 3     | 2    | 16    | 21    | 11    | 0     | 5      | 5     | 3    | 30    | 34     | 32    | 17    | 19    | 8     |  |  |  |     |  |  |  |
| Turkey               |      |       |       |       |       |       |       |      |       |       |       |       |        |       |      |       |        |       |       |       |       |  |  |  |     |  |  |  |
| Turkmenistan         | 0    | 109   | 131   | 102   | 74    | 15    | 8     | 3    | 88    | 99    | 46    | 26    | 16     | 18    | 3    | 197   | 230    | 148   | 100   | 31    | 26    |  |  |  |     |  |  |  |
| Ukraine              |      |       |       |       |       |       |       |      |       |       |       |       |        |       |      |       |        |       |       |       |       |  |  |  |     |  |  |  |
| United Kingdom       |      |       |       |       |       |       |       |      |       |       |       |       |        |       |      |       |        |       |       |       |       |  |  |  |     |  |  |  |
| Uzbekistan           | 10   | 330   | 481   | 318   | 178   | 87    | 111   | 18   | 277   | 394   | 214   | 127   | 96     | 125   | 28   | 607   | 875    | 532   | 305   | 183   | 236   |  |  |  |     |  |  |  |
| Region               | 156  | 3 883 | 6 453 | 6 919 | 6 055 | 2 581 | 2 165 | 201  | 2 892 | 3 570 | 2 326 | 1 418 | 869    | 1 773 | 357  | 6 775 | 10 023 | 9 245 | 7 473 | 3 450 | 3 938 |  |  |  |     |  |  |  |

note: the sum of cases notified by age is less than the number of new smear-positive cases notified for some countries



Country data for Europe, cont'd: age and sex distribution of smear-positive cases in non-DOTS areas, 2002 (absolute numbers)

|                      | MALE |       |       |       |       |       |       |      |       |       |       |       | FEMALE |       |      |       |       | ALL   |       |       |       |  |
|----------------------|------|-------|-------|-------|-------|-------|-------|------|-------|-------|-------|-------|--------|-------|------|-------|-------|-------|-------|-------|-------|--|
|                      | 0-14 | 15-24 | 25-34 | 35-44 | 45-54 | 55-64 | 65+   | 0-14 | 15-24 | 25-34 | 35-44 | 45-54 | 55-64  | 65+   | 0-14 | 15-24 | 25-34 | 35-44 | 45-54 | 55-64 | 65+   |  |
| Albania              | 0    | 11    | 16    | 15    | 9     | 14    | 17    | 2    | 12    | 13    | 3     | 2     | 7      | 11    | 2    | 23    | 29    | 18    | 11    | 21    | 28    |  |
| Andorra              |      |       |       |       |       |       |       |      |       |       |       |       |        |       |      |       |       |       |       |       |       |  |
| Armenia              | 0    | 0     | 21    | 69    | 65    | 0     | 4     | 0    | 0     | 9     | 16    | 32    | 0      | 0     | 0    | 0     | 30    | 85    | 97    | 0     | 4     |  |
| Austria              |      |       |       |       |       |       |       |      |       |       |       |       |        |       |      |       |       |       |       |       |       |  |
| Azerbaijan           | 3    | 45    | 87    | 92    | 45    | 11    | 9     | 2    | 9     | 37    | 34    | 16    | 3      | 8     | 5    | 54    | 124   | 126   | 61    | 14    | 17    |  |
| Belarus              | 0    | 66    | 133   | 217   | 159   | 75    | 51    | 0    | 12    | 22    | 28    | 17    | 17     | 41    | 0    | 78    | 155   | 245   | 176   | 92    | 92    |  |
| Belgium              |      |       |       |       |       |       |       |      |       |       |       |       |        |       |      |       |       |       |       |       |       |  |
| Bosnia & Herzegovina |      |       |       |       |       |       |       |      |       |       |       |       |        |       |      |       |       |       |       |       |       |  |
| Bulgaria             | 1    | 18    | 40    | 75    | 77    | 32    | 43    | 0    | 18    | 18    | 20    | 19    | 16     | 54    | 1    | 36    | 58    | 95    | 96    | 48    | 97    |  |
| Croatia              |      |       |       |       |       |       |       |      |       |       |       |       |        |       |      |       |       |       |       |       |       |  |
| Cyprus               |      |       |       |       |       |       |       |      |       |       |       |       |        |       |      |       |       |       |       |       |       |  |
| Czech Republic       |      |       |       |       |       |       |       |      |       |       |       |       |        |       |      |       |       |       |       |       |       |  |
| Denmark              | 2    | 11    | 8     | 25    | 14    | 6     | 9     | 1    | 14    | 17    | 11    | 10    | 2      | 5     | 3    | 25    | 25    | 36    | 24    | 8     | 14    |  |
| Estonia              |      |       |       |       |       |       |       |      |       |       |       |       |        |       |      |       |       |       |       |       |       |  |
| Finland              | 0    | 0     | 5     | 8     | 17    | 20    | 36    | 0    | 4     | 3     | 0     | 3     | 6      | 26    | 0    | 4     | 8     | 8     | 20    | 26    | 62    |  |
| France               | 24   | 138   | 265   | 223   | 219   | 119   | 180   | 13   | 106   | 127   | 90    | 56    | 33     | 161   | 37   | 244   | 392   | 313   | 275   | 152   | 341   |  |
| Georgia              |      |       |       |       |       |       |       |      |       |       |       |       |        |       |      |       |       |       |       |       |       |  |
| Germany              |      |       |       |       |       |       |       |      |       |       |       |       |        |       |      |       |       |       |       |       |       |  |
| Greece               | 0    | 1     | 13    | 27    | 33    | 30    | 10    | 0    | 0     | 3     | 17    | 11    | 5      | 2     | 0    | 1     | 16    | 44    | 44    | 35    | 12    |  |
| Hungary              |      |       |       |       |       |       |       |      |       |       |       |       |        |       |      |       |       |       |       |       |       |  |
| Iceland              | 0    | 1     | 0     | 0     | 0     | 0     | 0     | 0    | 0     | 1     | 0     | 0     | 0      | 0     | 0    | 1     | 1     | 0     | 0     | 0     | 0     |  |
| Ireland              | 0    | 7     | 18    | 13    | 14    | 12    | 6     | 0    | 4     | 3     | 5     | 2     | 0      | 4     | 0    | 11    | 21    | 18    | 16    | 12    | 10    |  |
| Israel               |      |       |       |       |       |       |       |      |       |       |       |       |        |       |      |       |       |       |       |       |       |  |
| Italy                |      |       |       |       |       |       |       |      |       |       |       |       |        |       |      |       |       |       |       |       |       |  |
| Kazakhstan           |      |       |       |       |       |       |       |      |       |       |       |       |        |       |      |       |       |       |       |       |       |  |
| Kyrgyzstan           | 0    | 24    | 23    | 11    | 0     | 1     | 11    | 0    | 14    | 4     | 18    | 0     | 14     | 11    | 0    | 38    | 27    | 29    | 0     | 15    | 22    |  |
| Latvia               |      |       |       |       |       |       |       |      |       |       |       |       |        |       |      |       |       |       |       |       |       |  |
| Lithuania            | 0    | 4     | 23    | 35    | 45    | 23    | 14    | 0    | 7     | 10    | 7     | 3     | 3      | 14    | 0    | 11    | 33    | 42    | 48    | 26    | 28    |  |
| Luxembourg           |      |       |       |       |       |       |       |      |       |       |       |       |        |       |      |       |       |       |       |       |       |  |
| Malta                |      |       |       |       |       |       |       |      |       |       |       |       |        |       |      |       |       |       |       |       |       |  |
| Monaco               |      |       |       |       |       |       |       |      |       |       |       |       |        |       |      |       |       |       |       |       |       |  |
| Netherlands          |      |       |       |       |       |       |       |      |       |       |       |       |        |       |      |       |       |       |       |       |       |  |
| Norway               |      |       |       |       |       |       |       |      |       |       |       |       |        |       |      |       |       |       |       |       |       |  |
| Poland               |      |       |       |       |       |       |       |      |       |       |       |       |        |       |      |       |       |       |       |       |       |  |
| Portugal             |      |       |       |       |       |       |       |      |       |       |       |       |        |       |      |       |       |       |       |       |       |  |
| Republic of Moldova  | 3    | 60    | 100   | 131   | 108   | 30    | 19    | 7    | 39    | 43    | 20    | 13    | 15     | 1     | 10   | 99    | 143   | 151   | 121   | 45    | 20    |  |
| Romania              | 41   | 318   | 729   | 841   | 822   | 387   | 271   | 30   | 267   | 333   | 180   | 156   | 93     | 147   | 71   | 585   | 1 062 | 1 021 | 978   | 480   | 418   |  |
| Russian Federation   | 0    | 1 599 | 3 566 | 4 923 | 4 724 | 1 739 | 880   | 0    | 916   | 1 232 | 1 237 | 932   | 377    | 514   | 0    | 2 515 | 4 798 | 6 160 | 5 656 | 2 116 | 1 394 |  |
| San Marino           |      |       |       |       |       |       |       |      |       |       |       |       |        |       |      |       |       |       |       |       |       |  |
| Serbia & Montenegro  |      |       |       |       |       |       |       |      |       |       |       |       |        |       |      |       |       |       |       |       |       |  |
| Slovakia             |      |       |       |       |       |       |       |      |       |       |       |       |        |       |      |       |       |       |       |       |       |  |
| Slovenia             |      |       |       |       |       |       |       |      |       |       |       |       |        |       |      |       |       |       |       |       |       |  |
| Spain                | 22   | 189   | 392   | 405   | 300   | 192   | 337   | 17   | 194   | 265   | 131   | 56    | 29     | 117   | 39   | 383   | 657   | 536   | 356   | 221   | 454   |  |
| Sweden               |      |       |       |       |       |       |       |      |       |       |       |       |        |       |      |       |       |       |       |       |       |  |
| Switzerland          | 0    | 9     | 16    | 11    | 16    | 5     | 8     | 0    | 11    | 13    | 7     | 4     | 1      | 6     | 0    | 20    | 29    | 18    | 20    | 6     | 14    |  |
| Tajikistan           | 5    | 119   | 115   | 54    | 40    | 26    | 18    | 5    | 57    | 70    | 35    | 25    | 14     | 4     | 10   | 176   | 185   | 89    | 65    | 40    | 22    |  |
| TFYR Macedonia       | 1    | 6     | 4     | 7     | 14    | 8     | 4     | 1    | 2     | 3     | 1     | 4     | 1      | 1     | 2    | 8     | 7     | 8     | 18    | 9     | 5     |  |
| Turkey               |      |       |       |       |       |       |       |      |       |       |       |       |        |       |      |       |       |       |       |       |       |  |
| Turkmenistan         | 2    | 55    | 118   | 122   | 38    | 23    | 13    | 0    | 25    | 44    | 28    | 31    | 18     | 2     | 2    | 80    | 162   | 150   | 69    | 41    | 15    |  |
| Ukraine              |      |       |       |       |       |       |       |      |       |       |       |       |        |       |      |       |       |       |       |       |       |  |
| United Kingdom       | 6    | 94    | 142   | 132   | 98    | 90    | 153   | 6    | 82    | 131   | 66    | 44    | 33     | 93    | 12   | 176   | 273   | 198   | 142   | 123   | 246   |  |
| Uzbekistan           |      |       |       |       |       |       |       |      |       |       |       |       |        |       |      |       |       |       |       |       |       |  |
| Region               | 110  | 2 775 | 5 834 | 7 436 | 6 857 | 2 843 | 2 093 | 84   | 1 793 | 2 401 | 1 954 | 1 436 | 687    | 1 222 | 194  | 4 568 | 8 235 | 9 390 | 8 293 | 3 530 | 3 315 |  |

note: the sum of cases notified by age is less than the number of new smear-positive cases notified for some countries

Country data for Europe, cont'd: smear-positive notification rates (per 100 000 population) by age and sex, 2002

|                      | MALE |       |       |       |       |       | FEMALE |      |       |       |       |       | ALL   |     |      |       |       |       |       |       |     |
|----------------------|------|-------|-------|-------|-------|-------|--------|------|-------|-------|-------|-------|-------|-----|------|-------|-------|-------|-------|-------|-----|
|                      | 0-14 | 15-24 | 25-34 | 35-44 | 45-54 | 55-64 | 65+    | 0-14 | 15-24 | 25-34 | 35-44 | 45-54 | 55-64 | 65+ | 0-14 | 15-24 | 25-34 | 35-44 | 45-54 | 55-64 | 65+ |
| Albania              | 0    | 7     | 10    | 12    | 12    | 20    | 29     | 0    | 8     | 8     | 4     | 4     | 8     | 16  | 0    | 7     | 9     | 8     | 8     | 14    | 22  |
| Andorra              | 0    | 32    | 28    | 43    | 52    | 23    | 12     | 1    | 6     | 11    | 12    | 18    | 4     | 1   | 0    | 19    | 20    | 27    | 34    | 12    | 5   |
| Armenia              | 0    | 2     | 2     | 4     | 8     | 4     | 5      | 0    | 2     | 2     | 1     | 1     | 1     | 3   | 0    | 2     | 2     | 3     | 5     | 3     | 4   |
| Austria              | 0    | 39    | 75    | 53    | 55    | 39    | 7      | 0    | 6     | 13    | 11    | 9     | 9     | 7   | 0    | 22    | 42    | 31    | 32    | 22    | 7   |
| Azerbaijan           | 0    | 8     | 20    | 28    | 24    | 19    | 11     | 0    | 2     | 3     | 3     | 2     | 3     | 4   | 0    | 5     | 11    | 15    | 13    | 10    | 6   |
| Belarus              | 0    | 3     | 8     | 6     | 5     | 4     | 8      | 1    | 3     | 3     | 2     | 1     | 3     | 2   | 0    | 3     | 5     | 4     | 3     | 3     | 4   |
| Bosnia & Herzegovina | 0    | 11    | 15    | 19    | 23    | 19    | 34     | 1    | 7     | 11    | 5     | 6     | 16    | 31  | 0    | 9     | 13    | 12    | 15    | 17    | 32  |
| Bulgaria             | 0    | 11    | 15    | 21    | 24    | 13    | 10     | 1    | 9     | 13    | 8     | 3     | 2     | 4   | 1    | 10    | 14    | 15    | 13    | 7     | 7   |
| Croatia              | 0    | 6     | 13    | 23    | 24    | 14    | 16     | 0    | 6     | 6     | 6     | 6     | 6     | 12  | 0    | 6     | 10    | 15    | 15    | 10    | 13  |
| Cyprus               | 0    | 3     | 2     | 2     | 2     | 0     | 5      | 0    | 2     | 0     | 0     | 0     | 0     | 0   | 0    | 2     | 1     | 1     | 1     | 0     | 2   |
| Czech Republic       | 0    | 2     | 3     | 6     | 11    | 7     | 7      | 0    | 1     | 1     | 1     | 1     | 1     | 5   | 0    | 1     | 2     | 3     | 6     | 4     | 6   |
| Denmark              | 0    | 4     | 2     | 6     | 4     | 2     | 3      | 0    | 5     | 5     | 3     | 3     | 1     | 1   | 0    | 4     | 3     | 5     | 3     | 1     | 2   |
| Estonia              | 0    | 9     | 22    | 53    | 53    | 30    | 10     | 0    | 7     | 12    | 17    | 9     | 6     | 6   | 0    | 8     | 17    | 34    | 30    | 16    | 7   |
| Finland              | 0    | 0     | 2     | 2     | 4     | 7     | 12     | 0    | 1     | 1     | 0     | 1     | 2     | 5   | 0    | 1     | 1     | 1     | 2     | 4     | 8   |
| France               | 0    | 3     | 6     | 5     | 5     | 4     | 5      | 0    | 3     | 3     | 2     | 1     | 1     | 3   | 0    | 3     | 5     | 4     | 3     | 3     | 4   |
| Georgia              | 0    | 37    | 52    | 47    | 39    | 26    | 15     | 1    | 13    | 19    | 9     | 9     | 8     | 4   | 1    | 26    | 36    | 28    | 23    | 16    | 8   |
| Germany              | 0    | 1     | 1     | 1     | 2     | 2     | 2      | 0    | 1     | 1     | 1     | 0     | 0     | 1   | 0    | 1     | 1     | 1     | 1     | 1     | 1   |
| Greece               | 0    | 0     | 2     | 3     | 5     | 5     | 1      | 0    | 0     | 0     | 2     | 2     | 1     | 0   | 0    | 0     | 1     | 3     | 3     | 3     | 1   |
| Hungary              | 0    | 1     | 5     | 16    | 20    | 12    | 7      | 0    | 1     | 4     | 6     | 3     | 2     | 4   | 0    | 1     | 4     | 11    | 11    | 7     | 5   |
| Iceland              | 0    | 5     | 0     | 0     | 0     | 0     | 0      | 0    | 0     | 5     | 0     | 0     | 0     | 0   | 0    | 2     | 2     | 0     | 0     | 0     | 0   |
| Ireland              | 0    | 2     | 6     | 5     | 6     | 7     | 3      | 0    | 1     | 1     | 2     | 1     | 0     | 2   | 0    | 2     | 4     | 3     | 3     | 3     | 2   |
| Israel               | 0    | 1     | 4     | 3     | 3     | 4     | 9      | 0    | 4     | 3     | 4     | 2     | 3     | 4   | 0    | 2     | 3     | 4     | 3     | 4     | 6   |
| Italy                | 0    | 2     | 3     | 3     | 2     | 2     | 3      | 0    | 2     | 2     | 1     | 0     | 1     | 1   | 0    | 2     | 3     | 2     | 1     | 1     | 2   |
| Kazakhstan           | 2    | 74    | 136   | 134   | 129   | 94    | 52     | 3    | 73    | 93    | 56    | 38    | 32    | 28  | 3    | 74    | 114   | 94    | 80    | 59    | 36  |
| Kyrgyzstan           | 0    | 40    | 70    | 72    | 65    | 58    | 37     | 0    | 31    | 47    | 34    | 19    | 32    | 34  | 0    | 35    | 58    | 53    | 41    | 44    | 35  |
| Latvia               | 0    | 18    | 62    | 75    | 87    | 56    | 22     | 0    | 22    | 27    | 21    | 14    | 7     | 9   | 0    | 20    | 44    | 47    | 48    | 28    | 13  |
| Lithuania            | 0    | 9     | 40    | 68    | 72    | 57    | 34     | 0    | 12    | 24    | 16    | 14    | 9     | 16  | 0    | 11    | 32    | 42    | 41    | 30    | 22  |
| Luxembourg           | 0    | 0     | 3     | 8     | 10    | 9     | 4      | 0    | 0     | 6     | 3     | 3     | 5     | 5   | 0    | 0     | 4     | 5     | 7     | 7     | 5   |
| Malta                | 0    | 3     | 0     | 4     | 0     | 5     | 0      | 0    | 0     | 4     | 0     | 0     | 0     | 3   | 0    | 2     | 2     | 2     | 0     | 2     | 2   |
| Monaco               | 0    | 4     | 5     | 3     | 3     | 1     | 2      | 0    | 3     | 3     | 1     | 1     | 0     | 0   | 0    | 4     | 4     | 2     | 2     | 1     | 1   |
| Netherlands          | 0    | 1     | 1     | 1     | 1     | 0     | 1      | 0    | 1     | 2     | 0     | 1     | 0     | 1   | 0    | 1     | 1     | 1     | 1     | 0     | 1   |
| Norway               | 0    | 3     | 7     | 19    | 24    | 17    | 17     | 0    | 3     | 5     | 6     | 5     | 4     | 12  | 0    | 3     | 6     | 12    | 14    | 10    | 14  |
| Poland               | 1    | 23    | 42    | 59    | 44    | 26    | 26     | 1    | 15    | 17    | 12    | 5     | 5     | 8   | 1    | 19    | 30    | 35    | 24    | 15    | 15  |
| Republic of Moldova  | 1    | 40    | 73    | 79    | 67    | 32    | 21     | 2    | 18    | 25    | 12    | 10    | 12    | 3   | 2    | 29    | 49    | 44    | 37    | 21    | 10  |
| Romania              | 5    | 41    | 89    | 128   | 128   | 82    | 47     | 4    | 39    | 46    | 30    | 24    | 17    | 19  | 5    | 40    | 67    | 79    | 75    | 47    | 31  |
| Russian Federation   | 0    | 18    | 45    | 53    | 56    | 37    | 17     | 0    | 10    | 15    | 13    | 10    | 6     | 5   | 0    | 14    | 30    | 33    | 32    | 19    | 9   |
| San Marino           | 1    | 4     | 7     | 6     | 4     | 4     | 5      | 1    | 6     | 7     | 3     | 2     | 4     | 2   | 1    | 5     | 7     | 4     | 3     | 4     | 4   |
| Serbia & Montenegro  | 0    | 1     | 4     | 9     | 10    | 9     | 11     | 0    | 1     | 2     | 2     | 1     | 2     | 7   | 0    | 1     | 3     | 5     | 6     | 5     | 8   |
| Slovakia             | 0    | 6     | 7     | 16    | 17    | 13    | 8      | 0    | 2     | 5     | 4     | 1     | 3     | 9   | 0    | 4     | 6     | 10    | 9     | 8     | 9   |
| Slovenia             | 1    | 7     | 11    | 13    | 12    | 10    | 11     | 1    | 7     | 8     | 4     | 2     | 1     | 3   | 1    | 7     | 9     | 8     | 7     | 5     | 7   |
| Spain                | 0    | 1     | 3     | 2     | 1     | 1     | 1      | 0    | 2     | 2     | 1     | 1     | 0     | 1   | 0    | 2     | 2     | 1     | 1     | 1     | 1   |
| Sweden               | 0    | 2     | 3     | 2     | 3     | 1     | 2      | 0    | 3     | 3     | 1     | 1     | 0     | 1   | 0    | 3     | 3     | 2     | 2     | 1     | 1   |
| Switzerland          | 1    | 21    | 29    | 18    | 22    | 25    | 15     | 1    | 11    | 18    | 12    | 14    | 14    | 3   | 1    | 16    | 24    | 15    | 18    | 19    | 8   |
| Tajikistan           | 1    | 12    | 11    | 19    | 24    | 24    | 8      | 1    | 11    | 16    | 8     | 3     | 6     | 5   | 1    | 11    | 13    | 14    | 13    | 15    | 6   |
| TFR Macedonia        | 0    | 33    | 66    | 73    | 62    | 43    | 24     | 0    | 23    | 39    | 23    | 29    | 35    | 15  | 0    | 28    | 52    | 47    | 45    | 39    | 19  |
| Turkey               | 0    | 3     | 4     | 3     | 3     | 3     | 4      | 0    | 2     | 3     | 1     | 1     | 1     | 2   | 0    | 2     | 3     | 2     | 2     | 2     | 3   |
| Turkmenistan         | 0    | 12    | 24    | 20    | 19    | 18    | 22     | 0    | 10    | 20    | 13    | 13    | 19    | 17  | 0    | 11    | 22    | 16    | 16    | 18    | 19  |
| Ukraine              | 0    | 10    | 19    | 22    | 23    | 14    | 9      | 0    | 7     | 9     | 7     | 5     | 3     | 4   | 0    | 9     | 14    | 14    | 14    | 8     | 6   |
| United Kingdom       | 0    | 3     | 4     | 3     | 3     | 3     | 4      | 0    | 2     | 3     | 1     | 1     | 1     | 2   | 0    | 2     | 3     | 2     | 2     | 2     | 3   |
| Uzbekistan           | 0    | 12    | 24    | 20    | 19    | 18    | 22     | 0    | 10    | 20    | 13    | 13    | 19    | 17  | 0    | 11    | 22    | 16    | 16    | 18    | 19  |
| Region               | 0    | 10    | 19    | 22    | 23    | 14    | 9      | 0    | 7     | 9     | 7     | 5     | 3     | 4   | 0    | 9     | 14    | 14    | 14    | 8     | 6   |

Rates are missing where data for smear-positive cases are missing, or where age- and sex-specific population data are not available.

Country data for Europe, cont'd: number of TB cases notified, 1980-2002

|                      | 1980           | 1981           | 1982           | 1983           | 1984           | 1985           | 1986           | 1987           | 1988           | 1989           | 1990           | 1991           | 1992           | 1993           | 1994           | 1995           | 1996           | 1997           | 1998           | 1999           | 2000           | 2001           | 2002           |
|----------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| Albania              | 1 050          | 954            | 978            | 891            | 975            | 916            | 989            | 915            | 759            | 695            | 653            | 628            | 21             | 15             | 707            | 641            | 738            | 655            | 694            | 733            | 604            | 555            | 594            |
| Andorra              |                |                |                |                |                |                |                |                |                |                |                |                | 23             | 24             |                |                | 17             | 19             | 8              | 10             | 12             | 10             | 5              |
| Armenia              | 756            | 924            | 759            | 702            | 774            | 768            | 832            | 766            | 651            | 649            | 590            | 741            | 235            | 590            | 753            | 1 157          | 928            | 1 026          | 1 455          | 1 488          | 1 333          | 1 389          | 1 433          |
| Austria              | 2 191          | 2 061          | 1 942          | 1 825          | 1 765          | 1 442          | 1 377          | 1 390          | 1 402          | 1 334          | 1 521          | 1 426          | 1 354          | 1 267          | 1 264          | 1 399          | 1 375          | 1 369          | 1 307          | 1 085          | 1 185          | 1 013          | 871            |
| Azerbaijan           | 3 080          | 3 180          | 3 217          | 3 176          | 3 506          | 3 772          | 3 804          | 3 677          | 3 349          | 2 989          | 2 620          | 2 771          | 2 821          | 3 036          | 2 839          | 1 630          | 4 630          | 4 635          | 4 672          | 4 654          | 5 187          | 4 898          | 5 142          |
| Belarus              | 9 564          | 6 198          | 5 468          | 5 509          | 5 065          | 4 873          | 4 128          | 3 911          | 3 769          | 3 708          | 3 745          | 3 745          | 2 414          | 4 134          | 4 348          | 4 854          | 5 598          | 5 985          | 6 150          | 7 339          | 6 799          | 5 505          | 5 139          |
| Belgium              | 2 687          | 2 837          | 2 652          | 2 190          | 2 149          | 1 956          | 1 893          | 1 772          | 1 588          | 1 648          | 1 577          | 1 462          | 1 335          | 1 503          | 1 521          | 1 380          | 1 348          | 1 263          | 1 203          | 1 124          | 1 278          | 1 321          | 1 211          |
| Bosnia & Herzegovina | 4 421          | 4 376          | 4 678          | 4 468          | 4 691          | 4 666          | 4 605          | 4 522          | 4 093          | 4 176          | 4 073          | 3 546          | 600            | 680            | 1 595          | 2 132          | 2 220          | 2 869          | 2 711          | 2 923          | 2 476          | 2 469          | 1 691          |
| Bulgaria             | 3 280          | 3 007          | 2 999          | 2 892          | 2 856          | 2 555          | 2 430          | 2 352          | 2 387          | 2 301          | 2 256          | 2 606          | 3 096          | 3 213          | 5 296          | 3 245          | 3 109          | 3 437          | 4 117          | 3 530          | 3 349          | 3 862          | 3 335          |
| Croatia              | 3 999          | 4 021          | 3 718          | 3 632          | 3 612          | 3 605          | 3 355          | 3 326          | 2 973          | 2 861          | 2 576          | 2 158          | 2 189          | 2 279          | 2 217          | 2 114          | 2 174          | 2 054          | 2 118          | 1 765          | 1 630          | 1 376          | 1 443          |
| Cyprus               | 69             | 69             | 86             | 73             | 39             | 61             | 48             | 35             | 39             | 23             | 29             | 43             |                | 37             | 37             | 36             | 24             | 47             | 45             | 39             | 33             | 40             | 20             |
| Czech Republic       | 4 962          | 4 312          | 4 146          | 4 016          | 3 653          | 3 117          | 2 553          | 2 196          | 2 047          | 1 905          | 1 937          | 2 079          | 1 986          | 1 864          | 1 960          | 1 834          | 1 969          | 1 834          | 1 805          | 1 605          | 1 414          | 1 291          | 1 156          |
| Denmark              | 430            | 394            | 378            | 348            | 302            | 312            | 299            | 322            | 304            | 328            | 350            | 334            | 359            | 411            | 495            | 448            | 484            | 554            | 529            | 587            | 567            | 494            | 403            |
| Estonia              | 614            | 560            | 563            | 587            | 546            | 541            | 522            | 446            | 471            | 422            | 423            | 406            | 403            | 532            | 623            | 624            | 683            | 744            | 820            | 754            | 791            | 708            | 620            |
| Finland              | 2 247          | 2 204          | 2 170          | 1 882          | 1 791          | 1 819          | 1 546          | 1 419          | 1 078          | 970            | 772            | 771            | 700            | 542            | 553            | 661            | 645            | 573            | 629            | 565            | 527            | 460            | 449            |
| France               | 17 199         | 16 459         | 15 425         | 13 831         | 12 302         | 11 290         | 10 535         | 10 241         | 9 191          | 9 027          | 9 030          | 8 510          | 8 605          | 9 551          | 9 093          | 8 723          | 7 656          | 6 832          | 5 981          | 6 052          | 6 122          | 5 814          | 5 709          |
| Georgia              | 2 098          | 2 124          | 2 168          | 1 881          | 1 855          | 1 822          | 1 833          | 1 810          | 1 598          | 1 609          | 1 537          |                | 2 130          | 3 741          |                | 1 625          | 3 522          | 8 446          | 6 302          | 4 793          | 4 397          | 4 006          | 4 490          |
| Germany              | 29 991         | 27 083         | 25 397         | 22 977         | 20 243         | 20 074         | 17 906         | 17 102         | 16 282         | 15 385         | 14 653         | 13 474         | 14 113         | 14 161         | 12 982         | 12 198         | 11 814         | 11 163         | 10 440         | 9 974          | 9 064          | 6 959          | 6 931          |
| Greece               | 5 412          | 7 334          | 5 193          | 3 880          | 1 956          | 1 556          | 1 566          | 1 193          | 907            | 1 068          | 877            | 762            | 920            |                |                | 939            | 945            | 767            | 1 152          | 936            | 703            | 5              | 2 720          |
| Hungary              | 5 412          | 5 322          | 5 181          | 5 028          | 4 472          | 4 852          | 4 522          | 4 125          | 4 016          | 3 789          | 3 588          | 3 658          | 3 960          | 4 209          | 4 163          | 4 339          | 4 403          | 4 240          | 3 999          | 3 532          | 3 073          | 2 923          | 2 965          |
| Iceland              | 25             | 23             | 25             | 24             | 26             | 13             | 13             | 12             | 16             | 18             | 18             | 15             | 16             | 11             | 18             | 12             | 11             | 10             | 17             | 10             | 13             | 12             | 8              |
| Ireland              | 1 152          | 1 018          | 975            | 924            | 837            | 804            | 602            | 581            | 534            | 672            | 624            | 640            | 604            | 598            | 544            | 458            | 434            | 416            | 424            | 455            | 386            | 393            | 375            |
| Israel               | 249            | 227            | 232            | 222            | 257            | 368            | 239            | 184            | 226            | 160            | 234            | 505            | 345            | 419            | 395            | 398            | 369            | 422            | 656            | 490            | 557            | 546            | 485            |
| Italy                | 3 311          | 3 182          | 3 850          | 4 253          | 3 472          | 4 113          | 4 077          | 3 278          | 3 610          | 3 996          | 4 246          | 3 719          | 4 685          | 4 734          | 5 816          | 5 627          | 4 155          | 4 596          | 5 727          | 4 429          | 3 501          | 4 287          | 3 925          |
| Kazakhstan           | 14 442         | 13 876         | 13 808         | 13 357         | 12 563         | 12 423         | 13 090         | 13 286         | 13 501         | 13 307         | 10 969         | 10 821         | 10 920         | 10 425         | 10 519         | 11 310         | 13 944         | 16 109         | 20 623         | 24 979         | 25 843         | 26 224         | 27 546         |
| Kyrgyzstan           | 1 973          | 2 085          | 2 051          | 1 981          | 2 022          | 2 094          | 2 122          | 2 088          | 2 159          | 2 132          | 2 306          | 2 515          | 2 582          | 2 427          | 2 726          | 3 393          | 4 093          | 5 189          | 5 706          | 6 376          | 6 205          | 6 654          | 6 613          |
| Latvia               | 1 194          | 1 140          | 1 077          | 1 072          | 1 054          | 1 223          | 982            | 948            | 938            | 857            | 906            | 943            | 955            | 994            | 1 131          | 1 541          | 1 761          | 2 003          | 2 182          | 1 891          | 1 982          | 2 000          | 1 803          |
| Lithuania            | 1 636          | 1 599          | 1 495          | 1 477          | 1 420          | 1 453          | 1 412          | 1 372          | 1 339          | 1 381          | 1 471          | 1 556          | 1 598          | 1 895          | 2 135          | 2 362          | 2 608          | 2 926          | 3 016          | 2 800          | 2 657          | 2 598          | 2 414          |
| Luxembourg           | 71             | 45             | 41             | 41             | 46             | 42             | 45             | 48             | 16             | 45             | 48             | 48             | 25             | 35             | 33             | 32             | 41             | 38             | 44             | 37             | 44             | 31             | 31             |
| Malta                | 24             | 26             | 13             | 24             | 15             | 14             | 14             | 14             | 12             | 16             | 13             | 26             | 30             | 26             | 25             | 33             | 28             | 11             | 16             | 22             | 16             | 16             | 24             |
| Monaco               | 1              | 0              | 0              | 0              | 0              | 1              | 2              | 2              | 1              | 1              | 1              | 0              | 1              |                | 1              | 1              | 0              | 0              | 0              | 3              | 0              | 0              | 0              |
| Netherlands          | 1 701          | 1 734          | 1 514          | 1 423          | 1 400          | 1 362          | 1 238          | 1 227          | 1 341          | 1 317          | 1 369          | 1 345          | 1 465          | 1 587          | 1 811          | 1 619          | 1 678          | 1 486          | 1 341          | 1 398          | 1 244          | 1 408          | 1 355          |
| Norway               | 499            | 461            | 448            | 396            | 373            | 374            | 343            | 307            | 294            | 255            | 285            | 290            | 288            | 256            | 242            | 236            | 217            | 205            | 244            | 213            | 221            | 276            | 243            |
| Poland               | 25 807         | 24 087         | 23 685         | 23 411         | 22 527         | 21 650         | 20 603         | 19 757         | 18 537         | 16 185         | 16 136         | 16 496         | 16 551         | 16 828         | 16 653         | 15 958         | 15 358         | 13 967         | 13 302         | 12 168         | 10 931         | 10 153         | 10 069         |
| Portugal             | 6 873          | 7 249          | 7 309          | 7 052          | 6 908          | 6 889          | 6 624          | 7 099          | 6 363          | 6 664          | 6 214          | 5 980          | 5 927          | 5 447          | 5 619          | 5 577          | 5 248          | 5 110          | 5 260          | 4 599          | 4 227          | 4 320          | 4 381          |
| Republic of Moldova  | 2 781          | 2 852          | 3 197          | 2 858          | 2 554          | 2 732          | 3 022          | 2 810          | 2 510          | 2 281          | 1 728          | 1 910          | 1 835          | 2 426          | 2 626          | 2 925          | 2 922          | 2 908          | 2 625          | 2 711          | 2 935          | 3 608          | 3 769          |
| Romania              | 13 553         | 13 602         | 13 588         | 13 570         | 12 952         | 12 677         | 12 860         | 13 361         | 14 137         | 14 676         | 16 256         | 15 482         | 18 097         | 20 349         | 21 422         | 23 271         | 24 189         | 23 903         | 25 758         | 26 107         | 27 470         | 28 580         | 29 752         |
| Russian Federation   | 74 270         | 73 369         | 72 236         | 73 280         | 74 597         | 64 644         | 71 764         | 70 132         | 67 553         | 62 987         | 50 641         | 50 407         | 53 148         | 63 591         | 70 822         | 84 980         | 111 075        | 119 123        | 110 935        | 134 360        | 140 677        | 132 477        | 128 873        |
| San Marino           |                |                |                |                |                |                |                | 1              |                |                | 1              | 1              |                | 3              | 2              | 2              | 0              | 1              | 0              | 0              | 1              | 0              | 1              |
| Serbia & Montenegro  | 6 232          | 6 381          | 6 274          | 6 443          | 6 454          | 6 246          | 6 126          | 6 042          | 5 583          | 5 045          | 4 194          | 4 502          | 3 771          | 3 843          | 3 606          | 2 798          | 4 017          | 4 062          | 3 028          | 2 646          | 2 864          | 4 556          | 4 232          |
| Slovakia             | 2 465          | 2 304          | 2 263          | 2 252          | 2 152          | 1 989          | 2 022          | 1 830          | 1 651          | 1 501          | 1 448          | 1 620          | 1 733          | 1 799          | 1 760          | 1 540          | 1 503          | 1 298          | 1 282          | 1 100          | 1 010          | 986            | 975            |
| Slovenia             | 1 085          | 939            | 982            | 925            | 896            | 923            | 816            | 792            | 760            | 768            | 722            | 583            | 640            | 646            | 526            | 525            | 563            | 481            | 449            | 423            | 368            | 359            | 338            |
| Spain                | 4 853          | 5 552          | 7 961          | 8 987          | 10 078         | 10 749         | 13 755         | 9 468          | 8 497          | 8 058          | 7 600          | 9 007          | 9 703          | 9 441          |                | 8 764          | 8 331          | 9 347          | 8 927          | 8 393          | 7 993          | 6 851          | 7 283          |
| Sweden               | 926            | 875            | 784            | 832            | 754            | 702            | 640            | 545            | 536            | 595            | 557            | 521            | 610            | 616            | 537            | 564            | 497            | 456            | 446            | 479            | 417            | 394            | 375            |
| Switzerland          | 1 160          | 1 193          | 1 167          | 1 097          | 946            | 961            | 881            | 1 018          | 1 201          | 1 104          | 1 278          | 1 134          | 987            | 930            | 924            | 830            | 765            | 747            | 750            | 756            | 544            | 539            | 591            |
| Tajikistan           |                |                |                |                |                |                |                |                |                |                |                |                |                |                |                |                |                |                |                |                |                |                |                |
| TFYR Macedonia       | 2 647          | 2 631          | 2 628          | 2 509          | 2 427          | 2 485          | 2 610          | 2 727          | 2 474          | 2 621          | 2 460          | 2 116          | 1 602          | 1 712          | 728            | 786            | 724            | 2 448          | 2 553          | 2 779          | 3 508          | 4 052          |                |
| Turkey               | 36 716         | 39 992         | 26 457         | 28 634         | 27 589         | 30 960         | 31 029         | 30 531         | 27 884         | 26 669         | 24 468         | 25 166         | 25 455         |                |                | 22 981         | 20 212         | 25 685         | 25 501         | 22 088         | 18 038         | 17 263         | 18 043         |
| Turkmenistan         | 1 677          | 1 625          | 1 559          | 1 541          | 1 604          | 1 607          | 1 614          | 1 956          | 1 904          | 2 169          | 2 325          | 2 358          | 2 074          | 2 751          |                | 1 939          | 2 072          | 3 438          | 3 839          | 4 092          | 4 038          | 3 948          | 3 671          |
| Ukraine              | 26 095         | 25 646         | 24 710         | 24 216         | 24 356         | 24 946         | 22 145         | 20 744         | 20 182         | 16 465         | 16 713         | 18 140         | 19 964         | 20 622         | 21 459         | 23 414         | 28 344         | 27 763         | 32 879         | 32 945         | 36 784         | 40 175         |                |
| United Kingdom       | 10 488         | 9 290          | 8 436          | 7 814          | 7 026          | 6 666          | 6 841          | 5 732          | 5 793          | 6 059          | 5 908          | 6 088          | 6 411          | 6 481          | 6 196          | 6 176          | 6 238          | 6 355          | 6 176          | 6 183          | 6 220          | 6 027          | 6 889          |
| Uzbekistan           | 9 163          | 9 682          | 8 697          | 8 817          | 8 544          | 8 717          | 9 427          | 9 794          | 10 134         | 10 632         | 9 414          |                | 9 370          | 9 774          | 14 890         | 9 866          | 11 919         | 13 352         | 14 558         | 15 080         | 15 750         | 17 391         | 20 588         |
| <b>Region</b>        | <b>348 921</b> | <b>346 104</b> | <b>324 580</b> | <b>319 220</b> | <b>308 401</b> | <b>298 933</b> | <b>302 602</b> | <b>290 606</b> | <b>277 143</b> | <b>267 232</b> | <b>242 428</b> | <b>231 651</b> | <b>248 519</b> | <b>242 425</b> | <b>243 691</b> | <b>289 949</b> | <b>322 165</b> | <b>353 336</b> | <b>349 800</b> | <b>373 765</b> | <b>373 081</b> | <b>368 433</b> | <b>373 497</b> |
| number reporting     | 49             | 49             | 49             | 49             | 49             | 49             | 49             | 49             | 49             | 50             | 51             | 49             | 50             | 48             | 47             | 51             | 52             | 52             | 52             | 52             | 52             | 52             | 52             |
|                      |                |                |                |                |                |                |                |                |                |                |                |                |                |                |                |                |                |                |                |                |                |                |                |

Country data for Europe, cont'd: case notification rates (per 100 000 population), 1980-2002

|   | 1980                | 1981 | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |    |
|---|---------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|----|
| Albania<br>Andorra<br>Armenia<br>Austria<br>Azerbaijan<br>Belarus<br>Belgium<br>Bosnia & Herzegovina  | 39                  | 35   | 35   | 31   | 34   | 31   | 33   | 29   | 24   | 21   | 20   | 19   | 44   | 36   | 25   | 38   | 22   | 20   | 23   | 21   | 22   | 24   | 19   | 18 |
|   | 24                  | 29   | 24   | 22   | 24   | 23   | 25   | 22   | 19   | 18   | 17   | 21   | 7    | 17   | 22   | 35   | 28   | 26   | 29   | 12   | 15   | 18   | 15   | 7  |
|   | 29                  | 27   | 26   | 24   | 23   | 19   | 18   | 18   | 18   | 17   | 20   | 18   | 17   | 16   | 16   | 17   | 17   | 17   | 16   | 13   | 15   | 12   | 11   |    |
|   | 50                  | 51   | 51   | 49   | 53   | 57   | 56   | 54   | 48   | 42   | 36   | 38   | 40   | 37   | 21   | 31   | 58   | 58   | 58   | 64   | 60   | 62   | 62   |    |
|   | 62                  | 64   | 56   | 56   | 51   | 49   | 41   | 39   | 37   | 36   | 30   | 36   | 23   | 40   | 42   | 47   | 55   | 59   | 61   | 73   | 68   | 55   | 52   |    |
|   | 27                  | 29   | 27   | 22   | 22   | 20   | 19   | 18   | 16   | 17   | 16   | 15   | 13   | 15   | 15   | 14   | 13   | 12   | 12   | 11   | 12   | 13   | 12   |    |
|   | 113                 | 111  | 117  | 111  | 115  | 113  | 110  | 106  | 94   | 96   | 95   | 85   | 15   | 18   | 45   | 62   | 65   | 81   | 74   | 76   | 62   | 61   | 41   |    |
|   | 37                  | 34   | 34   | 32   | 32   | 29   | 28   | 26   | 27   | 26   | 26   | 30   | 36   | 38   | 63   | 39   | 37   | 41   | 50   | 43   | 41   | 48   | 42   |    |
|   | 91                  | 92   | 85   | 83   | 82   | 81   | 74   | 72   | 63   | 59   | 53   | 45   | 46   | 49   | 49   | 47   | 49   | 47   | 48   | 40   | 37   | 31   | 33   |    |
|   | Cyprus              | 11   | 11   | 14   | 12   | 6    | 9    | 7    | 5    | 6    | 3    | 4    | 6    | 6    | 5    | 5    | 5    | 3    | 6    | 6    | 5    | 4    | 5    | 3  |
| Czech Republic<br>Denmark<br>Estonia<br>Finland<br>France<br>Georgia<br>Germany<br>Greece<br>Hungary<br>Iceland                                   | 48                  | 42   | 40   | 39   | 35   | 30   | 25   | 21   | 20   | 18   | 19   | 20   | 19   | 18   | 19   | 18   | 19   | 18   | 18   | 16   | 14   | 13   | 11   |    |
|   | 8                   | 8    | 7    | 7    | 6    | 6    | 6    | 6    | 6    | 6    | 7    | 6    | 7    | 8    | 10   | 9    | 9    | 11   | 10   | 11   | 11   | 9    | 8    |    |
|   | 42                  | 38   | 38   | 39   | 36   | 35   | 34   | 29   | 30   | 27   | 27   | 26   | 26   | 35   | 42   | 43   | 48   | 53   | 59   | 55   | 58   | 52   | 48   |    |
|   | 47                  | 46   | 45   | 39   | 37   | 31   | 29   | 22   | 20   | 15   | 15   | 14   | 11   | 11   | 13   | 13   | 11   | 12   | 11   | 10   | 9    | 9    | 9    |    |
|   | 32                  | 30   | 28   | 25   | 22   | 20   | 19   | 18   | 16   | 16   | 16   | 15   | 15   | 17   | 16   | 15   | 13   | 12   | 10   | 10   | 10   | 10   | 10   |    |
|   | 41                  | 42   | 42   | 36   | 35   | 34   | 34   | 34   | 29   | 30   | 28   | 39   | 69   | 39   | 66   | 159  | 119  | 91   | 84   | 77   | 87   | 87   | 87   |    |
|   | 38                  | 35   | 33   | 30   | 26   | 26   | 23   | 22   | 21   | 19   | 18   | 17   | 18   | 18   | 16   | 15   | 14   | 14   | 13   | 12   | 11   | 8    | 9    |    |
|   | 56                  | 75   | 53   | 39   | 20   | 16   | 16   | 12   | 9    | 11   | 9    | 7    | 9    | 9    | 9    | 9    | 7    | 11   | 9    | 6    | 5    | 5    | 5    |    |
|   | 51                  | 50   | 48   | 47   | 42   | 46   | 43   | 39   | 38   | 36   | 35   | 35   | 38   | 41   | 41   | 42   | 43   | 42   | 40   | 35   | 31   | 29   | 30   |    |
|   | Ireland             | 34   | 30   | 28   | 26   | 24   | 23   | 17   | 16   | 15   | 19   | 18   | 18   | 17   | 17   | 15   | 13   | 12   | 11   | 11   | 12   | 10   | 10   | 10 |
| Israel<br>Italy<br>Kazakhstan<br>Kyrgyzstan<br>Latvia<br>Lithuania<br>Luxembourg<br>Malta<br>Monaco<br>Netherlands<br>Norway                      | 7                   | 6    | 6    | 6    | 6    | 9    | 6    | 4    | 5    | 4    | 5    | 11   | 7    | 8    | 7    | 7    | 7    | 7    | 7    | 11   | 8    | 9    | 8    |    |
|   | 6                   | 6    | 7    | 8    | 6    | 7    | 7    | 6    | 6    | 7    | 7    | 7    | 8    | 8    | 10   | 10   | 7    | 8    | 10   | 8    | 6    | 7    | 7    |    |
|   | 97                  | 92   | 90   | 86   | 80   | 78   | 81   | 81   | 82   | 80   | 65   | 64   | 65   | 62   | 63   | 68   | 85   | 99   | 129  | 158  | 165  | 169  | 178  |    |
|   | 54                  | 56   | 54   | 51   | 51   | 52   | 50   | 51   | 49   | 52   | 57   | 58   | 54   | 60   | 74   | 89   | 111  | 120  | 132  | 126  | 133  | 131  |      |    |
|   | 48                  | 45   | 43   | 42   | 41   | 47   | 38   | 36   | 35   | 32   | 33   | 35   | 36   | 38   | 44   | 62   | 72   | 82   | 90   | 79   | 84   | 85   | 78   |    |
|   | 48                  | 47   | 43   | 42   | 40   | 41   | 39   | 38   | 36   | 37   | 39   | 42   | 43   | 52   | 59   | 66   | 74   | 83   | 86   | 80   | 76   | 75   | 70   |    |
|   | 20                  | 12   | 11   | 11   | 13   | 11   | 12   | 13   | 4    | 12   | 13   | 13   | 6    | 9    | 8    | 8    | 10   | 9    | 10   | 9    | 10   | 7    | 7    |    |
|   | 7                   | 8    | 4    | 7    | 4    | 3    | 4    | 4    | 3    | 4    | 4    | 7    | 8    | 7    | 8    | 3    | 7    | 3    | 4    | 6    | 4    | 4    | 6    |    |
|   | 4                   | 0    | 0    | 0    | 4    | 7    | 7    | 7    | 3    | 3    | 3    | 0    | 3    | 3    | 3    | 3    | 0    | 0    | 0    | 9    | 0    | 0    | 0    |    |
|   | Netherlands         | 12   | 12   | 11   | 10   | 10   | 9    | 8    | 8    | 9    | 9    | 9    | 9    | 10   | 10   | 12   | 10   | 11   | 10   | 9    | 9    | 8    | 9    | 8  |
| Norway<br>Poland<br>Portugal<br>Republic of Moldova<br>Romania<br>Russian Federation<br>San Marino<br>Serbia & Montenegro<br>Slovakia<br>Slovenia | 12                  | 11   | 11   | 10   | 9    | 9    | 8    | 7    | 7    | 6    | 7    | 7    | 7    | 6    | 6    | 5    | 5    | 5    | 6    | 5    | 5    | 6    | 5    |    |
|   | 73                  | 67   | 65   | 64   | 61   | 58   | 55   | 52   | 49   | 43   | 42   | 43   | 43   | 44   | 43   | 41   | 40   | 36   | 34   | 31   | 28   | 26   | 26   |    |
|   | 70                  | 74   | 74   | 71   | 69   | 69   | 66   | 71   | 64   | 67   | 63   | 60   | 60   | 55   | 57   | 56   | 53   | 51   | 53   | 46   | 42   | 43   | 45   |    |
|   | 69                  | 70   | 78   | 69   | 61   | 65   | 71   | 66   | 58   | 52   | 40   | 44   | 42   | 56   | 60   | 67   | 68   | 67   | 61   | 63   | 69   | 84   | 88   |    |
|   | 61                  | 61   | 60   | 57   | 56   | 56   | 58   | 58   | 61   | 63   | 70   | 67   | 78   | 89   | 94   | 103  | 107  | 106  | 114  | 116  | 122  | 127  | 138  |    |
|   | 54                  | 53   | 51   | 52   | 52   | 45   | 50   | 48   | 46   | 43   | 34   | 34   | 36   | 43   | 48   | 57   | 75   | 81   | 76   | 92   | 97   | 91   | 89   |    |
|   | San Marino          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |    |
|   | Serbia & Montenegro | 65   | 66   | 65   | 66   | 66   | 63   | 62   | 61   | 56   | 50   | 41   | 44   | 37   | 37   | 34   | 27   | 38   | 38   | 29   | 25   | 27   | 43   | 42 |
|   | Slovakia            | 50   | 46   | 45   | 44   | 42   | 39   | 39   | 35   | 32   | 29   | 28   | 31   | 33   | 34   | 33   | 29   | 28   | 24   | 24   | 20   | 19   | 18   | 19 |
|   | Slovenia            | 59   | 51   | 53   | 50   | 48   | 49   | 43   | 42   | 40   | 40   | 38   | 30   | 33   | 33   | 27   | 26   | 28   | 24   | 23   | 21   | 18   | 18   | 17 |
| Spain<br>Sweden<br>Switzerland<br>Tajikistan<br>TFYR Macedonia<br>Turkey<br>Turkmenistan<br>Ukraine<br>United Kingdom<br>Uzbekistan               | 13                  | 15   | 21   | 24   | 26   | 28   | 36   | 24   | 22   | 21   | 19   | 23   | 25   | 24   | 22   | 21   | 23   | 22   | 21   | 20   | 17   | 18   | 18   |    |
|   | 11                  | 11   | 9    | 10   | 9    | 8    | 8    | 6    | 6    | 7    | 7    | 6    | 7    | 7    | 6    | 6    | 6    | 5    | 5    | 5    | 4    | 4    | 4    |    |
|   | 18                  | 19   | 18   | 17   | 15   | 15   | 13   | 15   | 18   | 16   | 19   | 16   | 14   | 13   | 13   | 12   | 11   | 10   | 10   | 11   | 8    | 8    | 8    |    |
|   | 67                  | 65   | 63   | 58   | 55   | 54   | 55   | 56   | 49   | 51   | 46   | 39   | 30   | 12   | 16   | 35   | 28   | 36   | 41   | 42   | 46   | 57   | 65   |    |
|   | TFYR Macedonia      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |    |
|   | Turkey              | 80   | 85   | 55   | 58   | 54   | 60   | 59   | 56   | 50   | 47   | 42   | 43   | 43   | 88   | 37   | 40   | 37   | 35   | 31   | 28   | 32   | 36   |    |
|   | Turkmenistan        | 59   | 55   | 52   | 50   | 51   | 50   | 49   | 58   | 55   | 61   | 63   | 63   | 53   | 69   | 46   | 48   | 48   | 78   | 86   | 90   | 87   | 84   |    |
|   | Ukraine             | 52   | 51   | 49   | 48   | 47   | 45   | 43   | 40   | 39   | 32   | 32   | 35   | 38   | 40   | 42   | 46   | 46   | 56   | 55   | 66   | 66   | 75   |    |
|   | United Kingdom      | 19   | 17   | 15   | 14   | 13   | 12   | 12   | 10   | 10   | 11   | 10   | 11   | 11   | 11   | 11   | 11   | 11   | 11   | 11   | 11   | 11   | 10   | 12 |
|   | Uzbekistan          | 57   | 59   | 52   | 51   | 48   | 48   | 51   | 51   | 52   | 53   | 46   | 44   | 45   | 67   | 43   | 51   | 56   | 60   | 62   | 63   | 69   | 80   |    |
| Region  | 117                 | 197  | 52   | 72   | 62   | 72   | 104  | 39   | 70   | 92   | 68   | 58   | 8    | 6    | 65   | 72   | 69   | 64   | 66   | 59   | 55   | 49   | 50   |    |

Country data for Europe, cont'd: new smear-positive cases, 1993-2002

|                      | Number of cases |        |         |         |         |         |        |        |        |        | Rate (per 100 000 population) |      |      |      |      |      |      |      |      |      |
|----------------------|-----------------|--------|---------|---------|---------|---------|--------|--------|--------|--------|-------------------------------|------|------|------|------|------|------|------|------|------|
|                      | 1993            | 1994   | 1995    | 1996    | 1997    | 1998    | 1999   | 2000   | 2001   | 2002   | 1993                          | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
| Albania              | 15              | 250    | 139     | 173     | 241     | 212     | 168    | 171    | 171    | 225    | 25                            | 38   | 4    | 5    | 8    | 7    | 5    | 5    | 5    | 7    |
|                      |                 | 24     |         | 8       | 17      | 1       | 4      | 1      | 3      | 2      |                               |      |      | 12   | 26   | 2    | 6    | 2    | 4    | 3    |
|                      |                 | 319    | 436     | 327     | 400     | 475     | 576    | 621    | 572    | 511    |                               | 9    | 13   | 10   | 12   | 15   | 18   | 20   | 19   | 17   |
|                      |                 |        | 662     | 580     | 370     | 370     | 323    | 324    | 262    | 220    |                               |      | 8    | 7    | 5    | 4    | 4    | 4    | 3    | 3    |
| Azerbaijan           | 499             | 513    | 669     | 990     | 981     | 727     | 763    | 890    | 927    | 1 661  | 7                             | 7    | 9    | 13   | 12   | 9    | 9    | 11   | 11   | 20   |
|                      | 1 493           | 1 775  | 1 845   | 2 117   | 2 273   | 5 047   | 2 769  | 2 547  | 2 341  |        | 15                            | 17   | 18   | 21   | 22   | 50   | 27   | 25   | 23   |      |
|                      | 484             | 427    | 400     | 364     | 434     | 418     | 403    | 409    | 472    | 419    | 5                             | 4    | 4    | 4    | 4    | 4    | 4    | 4    | 5    | 4    |
|                      |                 |        | 865     | 927     | 803     | 640     | 786    | 759    | 800    | 526    |                               | 37   | 13   | 11   | 13   | 16   | 21   | 31   | 11   | 13   |
| Bosnia & Herzegovina |                 | 3 096  | 1 087   | 903     | 1 037   | 1 325   | 1 697  | 2 524  | 897    | 1 007  |                               |      | 27   | 28   | 24   | 26   | 17   | 0    | 9    | 10   |
|                      |                 |        | 6       | 3       | 19      | 20      | 9      | 4      | 0      | 8      |                               |      | 1    | 0    | 2    | 3    | 1    | 1    | 0    | 1    |
|                      |                 |        | 487     | 586     | 481     | 545     | 449    | 420    | 391    | 329    | 5                             | 5    | 5    | 6    | 5    | 5    | 4    | 4    | 4    | 3    |
|                      |                 |        | 128     | 97      | 114     | 132     | 172    | 171    | 127    | 135    | 5                             | 2    | 2    | 2    | 2    | 2    | 3    | 3    | 2    | 3    |
| Denmark              | 243             | 120    | 128     | 97      | 114     | 132     | 172    | 171    | 127    | 135    | 20                            | 24   | 26   | 17   | 19   | 21   | 20   | 19   | 16   | 15   |
|                      | 303             | 347    | 369     | 240     | 269     | 299     | 274    | 255    | 212    | 203    |                               |      | 5    | 5    | 4    | 4    | 3    | 4    | 3    | 3    |
|                      |                 |        | 244     | 240     | 186     | 188     | 179    | 205    | 150    | 130    |                               |      | 6    | 6    | 5    | 4    | 4    | 3    | 4    | 4    |
|                      |                 |        | 3 196   | 3 002   | 2 430   |         | 2 325  | 1 815  | 2 398  | 2 276  |                               | 8    | 6    | 6    | 5    | 4    | 4    | 3    | 4    | 4    |
| France               |                 |        | 221     | 482     | 595     | 547     | 746    | 601    | 1 014  | 987    |                               |      | 4    | 9    | 11   | 10   | 14   | 11   | 19   | 19   |
|                      |                 |        | 832     | 991     | 1 536   | 830     | 1 642  | 1 296  | 0      | 1 587  |                               | 15   | 18   | 21   | 33   | 17   | 34   | 26   | 0    | 31   |
|                      | 470             |        | 504     | 575     | 634     | 668     | 588    | 637    | 661    | 636    | 18                            |      | 20   | 23   | 26   | 25   | 27   | 28   | 27   | 27   |
|                      |                 |        | 979     | 1 121   | 1 200   | 787     | 787    | 776    | 935    | 822    | 19                            | 27   | 32   | 34   | 22   | 22   | 22   | 27   | 27   | 24   |
| Lithuania            |                 |        |         |         |         |         |        |        |        |        |                               |      |      |      |      |      |      |      |      |      |
|                      |                 |        |         |         |         |         |        |        |        |        |                               |      |      |      |      |      |      |      |      |      |
|                      |                 |        |         |         |         |         |        |        |        |        |                               |      |      |      |      |      |      |      |      |      |
|                      |                 |        |         |         |         |         |        |        |        |        |                               |      |      |      |      |      |      |      |      |      |
| Luxembourg           |                 |        |         |         |         |         |        |        |        |        |                               |      |      |      |      |      |      |      |      |      |
|                      |                 |        |         |         |         |         |        |        |        |        |                               |      |      |      |      |      |      |      |      |      |
|                      |                 |        |         |         |         |         |        |        |        |        |                               |      |      |      |      |      |      |      |      |      |
|                      |                 |        |         |         |         |         |        |        |        |        |                               |      |      |      |      |      |      |      |      |      |
| Malta                |                 |        |         |         |         |         |        |        |        |        |                               |      |      |      |      |      |      |      |      |      |
|                      |                 |        |         |         |         |         |        |        |        |        |                               |      |      |      |      |      |      |      |      |      |
|                      |                 |        |         |         |         |         |        |        |        |        |                               |      |      |      |      |      |      |      |      |      |
|                      |                 |        |         |         |         |         |        |        |        |        |                               |      |      |      |      |      |      |      |      |      |
| Monaco               |                 |        |         |         |         |         |        |        |        |        |                               |      |      |      |      |      |      |      |      |      |
|                      |                 |        |         |         |         |         |        |        |        |        |                               |      |      |      |      |      |      |      |      |      |
|                      |                 |        |         |         |         |         |        |        |        |        |                               |      |      |      |      |      |      |      |      |      |
|                      |                 |        |         |         |         |         |        |        |        |        |                               |      |      |      |      |      |      |      |      |      |
| Netherlands          |                 |        |         |         |         |         |        |        |        |        |                               |      |      |      |      |      |      |      |      |      |
|                      |                 |        |         |         |         |         |        |        |        |        |                               |      |      |      |      |      |      |      |      |      |
|                      |                 |        |         |         |         |         |        |        |        |        |                               |      |      |      |      |      |      |      |      |      |
|                      |                 |        |         |         |         |         |        |        |        |        |                               |      |      |      |      |      |      |      |      |      |
| Norway               |                 |        |         |         |         |         |        |        |        |        |                               |      |      |      |      |      |      |      |      |      |
|                      |                 |        |         |         |         |         |        |        |        |        |                               |      |      |      |      |      |      |      |      |      |
|                      |                 |        |         |         |         |         |        |        |        |        |                               |      |      |      |      |      |      |      |      |      |
|                      |                 |        |         |         |         |         |        |        |        |        |                               |      |      |      |      |      |      |      |      |      |
| Poland               |                 |        |         |         |         |         |        |        |        |        |                               |      |      |      |      |      |      |      |      |      |
|                      |                 |        |         |         |         |         |        |        |        |        |                               |      |      |      |      |      |      |      |      |      |
|                      |                 |        |         |         |         |         |        |        |        |        |                               |      |      |      |      |      |      |      |      |      |
|                      |                 |        |         |         |         |         |        |        |        |        |                               |      |      |      |      |      |      |      |      |      |
| Portugal             |                 |        |         |         |         |         |        |        |        |        |                               |      |      |      |      |      |      |      |      |      |
|                      |                 |        |         |         |         |         |        |        |        |        |                               |      |      |      |      |      |      |      |      |      |
|                      |                 |        |         |         |         |         |        |        |        |        |                               |      |      |      |      |      |      |      |      |      |
|                      |                 |        |         |         |         |         |        |        |        |        |                               |      |      |      |      |      |      |      |      |      |
| Republic of Moldova  |                 |        |         |         |         |         |        |        |        |        |                               |      |      |      |      |      |      |      |      |      |
|                      |                 |        |         |         |         |         |        |        |        |        |                               |      |      |      |      |      |      |      |      |      |
|                      |                 |        |         |         |         |         |        |        |        |        |                               |      |      |      |      |      |      |      |      |      |
|                      |                 |        |         |         |         |         |        |        |        |        |                               |      |      |      |      |      |      |      |      |      |
| Romania              |                 |        |         |         |         |         |        |        |        |        |                               |      |      |      |      |      |      |      |      |      |
|                      |                 |        |         |         |         |         |        |        |        |        |                               |      |      |      |      |      |      |      |      |      |
|                      |                 |        |         |         |         |         |        |        |        |        |                               |      |      |      |      |      |      |      |      |      |
|                      |                 |        |         |         |         |         |        |        |        |        |                               |      |      |      |      |      |      |      |      |      |
| Russian Federation   |                 |        |         |         |         |         |        |        |        |        |                               |      |      |      |      |      |      |      |      |      |
|                      |                 |        |         |         |         |         |        |        |        |        |                               |      |      |      |      |      |      |      |      |      |
|                      |                 |        |         |         |         |         |        |        |        |        |                               |      |      |      |      |      |      |      |      |      |
|                      |                 |        |         |         |         |         |        |        |        |        |                               |      |      |      |      |      |      |      |      |      |
| San Marino           |                 |        |         |         |         |         |        |        |        |        |                               |      |      |      |      |      |      |      |      |      |
|                      |                 |        |         |         |         |         |        |        |        |        |                               |      |      |      |      |      |      |      |      |      |
|                      |                 |        |         |         |         |         |        |        |        |        |                               |      |      |      |      |      |      |      |      |      |
|                      |                 |        |         |         |         |         |        |        |        |        |                               |      |      |      |      |      |      |      |      |      |
| Serbia & Montenegro  |                 |        |         |         |         |         |        |        |        |        |                               |      |      |      |      |      |      |      |      |      |
|                      |                 |        |         |         |         |         |        |        |        |        |                               |      |      |      |      |      |      |      |      |      |
|                      |                 |        |         |         |         |         |        |        |        |        |                               |      |      |      |      |      |      |      |      |      |
|                      |                 |        |         |         |         |         |        |        |        |        |                               |      |      |      |      |      |      |      |      |      |
| Slovakia             |                 |        |         |         |         |         |        |        |        |        |                               |      |      |      |      |      |      |      |      |      |
|                      |                 |        |         |         |         |         |        |        |        |        |                               |      |      |      |      |      |      |      |      |      |
|                      |                 |        |         |         |         |         |        |        |        |        |                               |      |      |      |      |      |      |      |      |      |
|                      |                 |        |         |         |         |         |        |        |        |        |                               |      |      |      |      |      |      |      |      |      |
| Slovenia             |                 |        |         |         |         |         |        |        |        |        |                               |      |      |      |      |      |      |      |      |      |
|                      |                 |        |         |         |         |         |        |        |        |        |                               |      |      |      |      |      |      |      |      |      |
|                      |                 |        |         |         |         |         |        |        |        |        |                               |      |      |      |      |      |      |      |      |      |
|                      |                 |        |         |         |         |         |        |        |        |        |                               |      |      |      |      |      |      |      |      |      |
| Spain                |                 |        |         |         |         |         |        |        |        |        |                               |      |      |      |      |      |      |      |      |      |
|                      |                 |        |         |         |         |         |        |        |        |        |                               |      |      |      |      |      |      |      |      |      |
|                      |                 |        |         |         |         |         |        |        |        |        |                               |      |      |      |      |      |      |      |      |      |
|                      |                 |        |         |         |         |         |        |        |        |        |                               |      |      |      |      |      |      |      |      |      |
| Sweden               |                 |        |         |         |         |         |        |        |        |        |                               |      |      |      |      |      |      |      |      |      |
|                      |                 |        |         |         |         |         |        |        |        |        |                               |      |      |      |      |      |      |      |      |      |
|                      |                 |        |         |         |         |         |        |        |        |        |                               |      |      |      |      |      |      |      |      |      |
|                      |                 |        |         |         |         |         |        |        |        |        |                               |      |      |      |      |      |      |      |      |      |
| Switzerland          |                 |        |         |         |         |         |        |        |        |        |                               |      |      |      |      |      |      |      |      |      |
|                      |                 |        |         |         |         |         |        |        |        |        |                               |      |      |      |      |      |      |      |      |      |
|                      |                 |        |         |         |         |         |        |        |        |        |                               |      |      |      |      |      |      |      |      |      |
|                      |                 |        |         |         |         |         |        |        |        |        |                               |      |      |      |      |      |      |      |      |      |
| Tajikistan           |                 |        |         |         |         |         |        |        |        |        |                               |      |      |      |      |      |      |      |      |      |
|                      |                 |        |         |         |         |         |        |        |        |        |                               |      |      |      |      |      |      |      |      |      |
|                      |                 |        |         |         |         |         |        |        |        |        |                               |      |      |      |      |      |      |      |      |      |
|                      |                 |        |         |         |         |         |        |        |        |        |                               |      |      |      |      |      |      |      |      |      |
| TFYR Macedonia       |                 |        |         |         |         |         |        |        |        |        |                               |      |      |      |      |      |      |      |      |      |
|                      |                 |        |         |         |         |         |        |        |        |        |                               |      |      |      |      |      |      |      |      |      |
|                      |                 |        |         |         |         |         |        |        |        |        |                               |      |      |      |      |      |      |      |      |      |
|                      |                 |        |         |         |         |         |        |        |        |        |                               |      |      |      |      |      |      |      |      |      |
| Turkey               |                 |        |         |         |         |         |        |        |        |        |                               |      |      |      |      |      |      |      |      |      |
|                      |                 |        |         |         |         |         |        |        |        |        |                               |      |      |      |      |      |      |      |      |      |
|                      |                 |        |         |         |         |         |        |        |        |        |                               |      |      |      |      |      |      |      |      |      |
|                      |                 |        |         |         |         |         |        |        |        |        |                               |      |      |      |      |      |      |      |      |      |
| Turkmenistan         |                 |        |         |         |         |         |        |        |        |        |                               |      |      |      |      |      |      |      |      |      |
|                      |                 |        |         |         |         |         |        |        |        |        |                               |      |      |      |      |      |      |      |      |      |
|                      |                 |        |         |         |         |         |        |        |        |        |                               |      |      |      |      |      |      |      |      |      |
|                      |                 |        |         |         |         |         |        |        |        |        |                               |      |      |      |      |      |      |      |      |      |
| Ukraine              |                 |        |         |         |         |         |        |        |        |        |                               |      |      |      |      |      |      |      |      |      |
|                      |                 |        |         |         |         |         |        |        |        |        |                               |      |      |      |      |      |      |      |      |      |
|                      |                 |        |         |         |         |         |        |        |        |        |                               |      |      |      |      |      |      |      |      |      |
|                      |                 |        |         |         |         |         |        |        |        |        |                               |      |      |      |      |      |      |      |      |      |
| United Kingdom       |                 |        |         |         |         |         |        |        |        |        |                               |      |      |      |      |      |      |      |      |      |
|                      |                 |        |         |         |         |         |        |        |        |        |                               |      |      |      |      |      |      |      |      |      |
|                      |                 |        |         |         |         |         |        |        |        |        |                               |      |      |      |      |      |      |      |      |      |
|                      |                 |        |         |         |         |         |        |        |        |        |                               |      |      |      |      |      |      |      |      |      |
| Uzbekistan           |                 |        |         |         |         |         |        |        |        |        |                               |      |      |      |      |      |      |      |      |      |
|                      |                 |        |         |         |         |         |        |        |        |        |                               |      |      |      |      |      |      |      |      |      |
|                      |                 |        |         |         |         |         |        |        |        |        |                               |      |      |      |      |      |      |      |      |      |
|                      |                 |        |         |         |         |         |        |        |        |        |                               |      |      |      |      |      |      |      |      |      |
| Region               | 45 771          | 83 568 | 104 639 | 110 752 | 106 636 | 111 391 | 89 199 | 94 275 | 86 239 | 82 868 | 5                             | 10   | 12   | 13   | 12   | 13   | 10   | 11   | 10   | 9    |

# Notes

**AZERBAIJAN** Prisons contributed to case notifications in 2002.

**BOSNIA & HERZEGOVINA**

Data are geographically incomplete and therefore preliminary.

**CYPRUS** Data refer only to the Republic of Cyprus, i.e. the northern area is excluded.

**ISRAEL** Treatment and retreatment outcomes are based on cohorts of culture-positive cases, where cure is based on culture result.

**NETHERLANDS** Treatment outcome data for the 2001 cohort were not submitted to WHO at the time of this report.

**REPUBLIC OF MOLDOVA**

The majority of failures (29/37, 78%) among the DOTS cohort came from the penitentiary system which accounted for 132 of 200 (66%) patients in the cohort. The failure rate was 11.8% excluding prison cases, and 22% for prison cases only, and 18.5% overall.

**UKRAINE** Only the total number of notifications was available at the time of this report.

**UNITED KINGDOM** Data on 2002 TB notifications are provisional. Data on 2001 treatment outcomes are provisional and do not include Scotland.





## South-East Asia: Summary of TB control policies

| COUNTRY     | STATUS <sup>a</sup> | MANUAL <sup>b</sup> | MICROSCOPY <sup>c</sup> | MONITORING OF TB SUSPECTS <sup>d</sup> | SCC <sup>e</sup> | DOT <sup>f</sup> | OUTCOME MONITORING <sup>g</sup> |
|-------------|---------------------|---------------------|-------------------------|--|------------------|------------------|---------------------------------|
| BANGLADESH  | DOTS                | YES                 |                         |  |                  |                  |                                 |
| BHUTAN      | DOTS                | NO                  |                         |  |                  |                  |                                 |
| DPR KOREA   | DOTS                | YES                 |                         |  |                  |                  |                                 |
| INDIA       | DOTS                | YES                 |                         |  |                  |                  |                                 |
| INDONESIA   | DOTS                | YES                 |                         |  |                  |                  |                                 |
| MALDIVES    | DOTS                | YES                 |                         |  |                  |                  |                                 |
| MYANMAR     | DOTS                | YES                 |                         |  |                  |                  |                                 |
| NEPAL       | DOTS                | YES                 |                         |  |                  |                  |                                 |
| SRI LANKA   | DOTS                | YES                 |                         |  |                  |                  |                                 |
| THAILAND    | DOTS                | YES                 |                         |  |                  |                  |                                 |
| TIMOR-LESTE | <b>DOTS</b>         | YES                 |                         |  |                  |                  |                                 |

|  |                                 |
|--|---------------------------------|
|  | Implemented in all units/areas  |
|  | Implemented in some units/areas |
|  | Not implemented                 |
|  | Unknown                         |

- a Status: DOTS status (**bold** indicates DOTS introduced in 2002)  
b Manual: National TB control manual (recommended)  
c Microscopy: Use of smear microscopy for diagnosis (core component of DOTS)  
d Monitoring of TB Suspects: Register of TB suspects (e.g. patients with cough  $\geq$  3 weeks) kept at DOTS facilities (recommended)  
e SCC: Short course chemotherapy (core component of DOTS)  
f DOT: Directly observed treatment (core component of DOTS)  
g Outcome monitoring: Monitoring of treatment outcomes by cohort analysis (core component of DOTS)

Country data for South-East Asia: notification, detection and DOTS coverage, 2002

|  | Country information |              |           |     |         |         |           |      |           |     |              |     |      |     |     |         |     |         |     |    | DOTS      |         |         |    |   |               |    |      |    |    | non-DOTS  |    |      |    |    |         |  |      |  |  |
|--|---------------------|--------------|-----------|-----|---------|---------|-----------|------|-----------|-----|--------------|-----|------|-----|-----|---------|-----|---------|-----|----|-----------|---------|---------|----|---|---------------|----|------|----|----|-----------|----|------|----|----|---------|--|------|--|--|
|  | Notified TB         |              |           |     |         |         |           |      |           |     | Estimated TB |     |      |     |     |         |     |         |     |    | % of      |         |         |    |   | Notifications |    |      |    |    | % of      |    |      |    |    |         |  |      |  |  |
|  | All cases           |              |           |     |         | New ss+ |           |      |           |     | All cases    |     |      |     |     | New ss+ |     |         |     |    | All cases |         |         |    |   | New ss+       |    |      |    |    | All cases |    |      |    |    | New ss+ |  |      |  |  |
|  | number              |              | rate      |     |         | number  |           | rate |           |     | number       |     | rate |     |     | number  |     | rate    |     |    | number    |         | rate    |    |   | number        |    | rate |    |    | number    |    | rate |    |    | number  |  | rate |  |  |
|  | a                   | b            | c         | d   | e       | f       | g         | h    | i         | j   | k            | l   | m    | n   | o   | p       | q   | r       | s   | t  | u         | v       | w       | x  | y | z             | aa | ab   | ac | ad | ae        | af | ag   | ah | ai |         |  |      |  |  |
|  | Pop thousands       | 143 809      | 81 822    | 57  | 46 771  | 33      | 317 839   | 221  | 143 004   | 99  | 26           | 33  | 26   | 33  | 95  | 71 637  | 50  | 45 701  | 32  | 32 | 70        | 10 185  | 1 070   | 13 |   |               |    |      |    |    |           |    |      |    |    |         |  |      |  |  |
|  |                     | 2 190        | 1 089     | 50  | 364     | 17      | 2 577     | 118  | 1 159     | 53  | 42           | 31  | 42   | 31  | 100 | 1 089   | 50  | 364     | 17  | 31 | 49        |         |         |    |   |               |    |      |    |    |           |    |      |    |    |         |  |      |  |  |
|  |                     | 22 541       | 40 159    | 178 | 18 576  | 82      | 36 010    | 160  | 16 205    | 72  | 112          | 115 | 112  | 115 | 66  | 30 812  | 137 | 14 290  | 63  | 88 | 52        | 9 347   | 4 286   | 52 |   |               |    |      |    |    |           |    |      |    |    |         |  |      |  |  |
|  |                     | 1 049 549    | 1 060 951 | 101 | 395 833 | 38      | 1 761 339 | 168  | 787 162   | 75  | 60           | 50  | 60   | 50  | 52  | 549 700 | 52  | 245 135 | 23  | 31 | 55        | 511 251 | 150 698 | 33 |   |               |    |      |    |    |           |    |      |    |    |         |  |      |  |  |
|  |                     | 217 131      | 155 188   | 71  | 76 230  | 35      | 556 625   | 256  | 250 256   | 115 | 28           | 30  | 28   | 30  | 98  | 155 188 | 71  | 76 230  | 35  | 30 | 51        |         |         |    |   |               |    |      |    |    |           |    |      |    |    |         |  |      |  |  |
|  |                     | 309          | 125       | 40  | 60      | 19      | 145       | 47   | 65        | 21  | 86           | 92  | 86   | 92  | 100 | 125     | 40  | 60      | 19  | 92 | 67        |         |         |    |   |               |    |      |    |    |           |    |      |    |    |         |  |      |  |  |
|  |                     | 48 852       | 57 012    | 117 | 24 162  | 49      | 75 030    | 154  | 33 211    | 68  | 76           | 73  | 76   | 73  | 88  | 57 012  | 117 | 24 162  | 49  | 73 | 57        |         |         |    |   |               |    |      |    |    |           |    |      |    |    |         |  |      |  |  |
|  |                     | 24 609       | 30 359    | 123 | 13 714  | 56      | 46 714    | 190  | 20 931    | 85  | 65           | 66  | 65   | 66  | 89  | 29 423  | 120 | 13 307  | 54  | 64 | 59        | 936     | 407     | 57 |   |               |    |      |    |    |           |    |      |    |    |         |  |      |  |  |
|  |                     | 18 910       | 8 939     | 47  | 4 297   | 23      | 10 280    | 54   | 4 623     | 24  | 87           | 93  | 87   | 93  | 73  | 7 400   | 39  | 3 643   | 19  | 79 | 66        | 1 539   | 654     | 55 |   |               |    |      |    |    |           |    |      |    |    |         |  |      |  |  |
|  |                     | 62 193       | 49 581    | 80  | 25 593  | 41      | 79 503    | 128  | 35 246    | 57  | 62           | 73  | 62   | 73  | 100 | 49 581  | 80  | 25 593  | 41  | 73 | 61        |         |         |    |   |               |    |      |    |    |           |    |      |    |    |         |  |      |  |  |
|  |                     | 739          | 2 760     | 374 | 1 090   | 148     | 4 103     | 556  | 1 845     | 250 | 67           | 59  | 67   | 59  | 78  | 2 760   | 374 | 1 090   | 148 | 59 | 48        |         |         |    |   |               |    |      |    |    |           |    |      |    |    |         |  |      |  |  |
|  |                     | 1590 832 546 | 1 487 985 | 94  | 606 690 | 38      | 2 890 166 | 182  | 1 293 706 | 81  | 51           | 47  | 51   | 47  | 66  | 954 727 | 60  | 449 575 | 28  | 35 | 56        | 533 258 | 157 115 | 33 |   |               |    |      |    |    |           |    |      |    |    |         |  |      |  |  |

See explanatory notes, page 129.

Country data for South-East Asia, cont'd: treatment outcomes for cases registered in 2001 - WHO TB control strategy DOTS and non-DOTS

|             | New smear-positive cases - DOTS |    |    |    |   |                       |   |   |    |        | Retreatment cases - DOTS |    |    |    |    |                       |     |    |         |    | New smear-positive cases - non-DOTS |   |    |    |   |                       |    |  |  |  |
|-------------|---------------------------------|----|----|----|---|-----------------------|---|---|----|--------|--------------------------|----|----|----|----|-----------------------|-----|----|---------|----|-------------------------------------|---|----|----|---|-----------------------|----|--|--|--|
|             | Regist-<br>ered                 |    |    |    |   | % not success<br>eval |   |   |    |        | Regist-<br>ered          |    |    |    |    | % not success<br>eval |     |    |         |    | Regist-<br>ered                     |   |    |    |   | % not success<br>eval |    |  |  |  |
|             | a                               | b  | c  | d  | e | f                     | g | h | i  | j      | k                        | l  | m  | n  | o  | p                     | q   | r  | s       | t  | u                                   | v | w  | x  | y | z                     | aa |  |  |  |
| Bangladesh  | 38 722                          | 81 | 3  | 5  | 1 | 7                     | 3 | 1 | 84 | 1 922  | 75                       | 2  | 5  | 1  | 5  | 3                     | 9   | 77 | 2 049   | 43 | 22                                  | 1 | 2  | 24 | 8 | 1                     | 65 |  |  |  |
| Bhutan      | 359                             | 78 | 16 | 3  | 3 | 1                     | 1 | 0 | 93 | 31     | 35                       | 55 | 6  | 3  | 0  | 0                     | 90  |    |         |    |                                     |   |    |    |   |                       |    |  |  |  |
| DPR Korea   | 9 586                           | 86 | 5  | 1  | 4 | 1                     | 4 | 0 | 91 | 1 468  | 78                       | 9  | 4  | 6  | 2  | 1                     | 0   | 87 | 2 807   | 77 | 8                                   | 3 | 7  | 2  | 4 | 0                     | 85 |  |  |  |
| India       | 184 523                         | 84 | 1  | 5  | 3 | 7                     | 0 | 0 | 85 | 68 012 | 66                       | 3  | 8  | 7  | 16 | 1                     | 0   | 69 | 199 550 | 17 | 9                                   | 0 | 1  | 10 | 2 | 61                    | 26 |  |  |  |
| Indonesia   | 53 965                          | 69 | 16 | 2  | 1 | 4                     | 1 | 6 | 86 | 2 708  | 58                       | 25 | 2  | 2  | 4  | 1                     | 8   | 83 |         |    |                                     |   |    |    |   |                       |    |  |  |  |
| Maldives    | 59                              | 97 | 0  | 2  | 0 | 0                     | 2 | 0 | 97 | 5      | 100                      | 0  | 0  | 0  | 0  | 0                     | 100 |    |         |    |                                     |   |    |    |   |                       |    |  |  |  |
| Myanmar     | 20 887                          | 74 | 8  | 5  | 2 | 9                     | 2 | 0 | 81 | 3 561  | 64                       | 10 | 8  | 5  | 9  | 4                     | 0   | 74 |         |    |                                     |   |    |    |   |                       |    |  |  |  |
| Nepal       | 12 456                          | 83 | 5  | 4  | 1 | 5                     | 0 | 0 | 88 | 2 424  | 77                       | 3  | 7  | 5  | 6  | 3                     | 0   | 80 | 1 227   | 60 | 11                                  | 7 | 1  | 11 | 2 | 8                     | 71 |  |  |  |
| Sri Lanka   | 3 708                           | 78 | 1  | 5  | 1 | 13                    | 2 | 0 | 80 | 372    | 52                       | 3  | 8  | 2  | 32 | 2                     | 1   | 55 | 608     | 68 | 13                                  | 4 | 12 | 1  | 1 | 82                    |    |  |  |  |
| Thailand    | 19 717                          | 71 | 4  | 10 | 2 | 9                     | 3 | 1 | 75 | 2 033  | 45                       | 4  | 13 | 5  | 6  | 4                     | 22  | 49 |         |    |                                     |   |    |    |   |                       |    |  |  |  |
| Timor-Leste | 1 288                           | 57 | 16 | 5  | 1 | 15                    | 5 | 0 | 73 | 90     | 60                       | 6  | 2  | 10 | 13 | 9                     | 0   | 66 |         |    |                                     |   |    |    |   |                       |    |  |  |  |
| Region      | 345 270                         | 80 | 5  | 4  | 2 | 7                     | 1 | 1 | 84 | 82 626 | 65                       | 4  | 7  | 6  | 14 | 2                     | 1   | 70 | 206 241 | 18 | 9                                   | 1 | 1  | 10 | 2 | 59                    | 27 |  |  |  |

See explanatory notes, page 129.

Country data for South-East Asia, cont'd: age and sex distribution of smear-positive cases in DOTs areas, 2002 (absolute numbers)

|             | MALE  |        |        |        |        |        |        | FEMALE |        |        |        |        |        |       | ALL   |        |        |        |        |        |        |
|-------------|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-------|-------|--------|--------|--------|--------|--------|--------|
|             | 0-14  | 15-24  | 25-34  | 35-44  | 45-54  | 55-64  | 65+    | 0-14   | 15-24  | 25-34  | 35-44  | 45-54  | 55-64  | 65+   | 0-14  | 15-24  | 25-34  | 35-44  | 45-54  | 55-64  | 65+    |
| Bangladesh  | 439   | 4 381  | 6 113  | 6 864  | 5 845  | 4 387  | 3 603  | 569    | 3 046  | 3 864  | 2 747  | 2 043  | 963    | 837   | 1 008 | 7 427  | 9 977  | 9 611  | 7 888  | 5 350  | 4 440  |
| Bhutan      | 5     | 54     | 51     | 32     | 26     | 22     | 19     | 6      | 54     | 38     | 22     | 20     | 5      | 10    | 11    | 108    | 89     | 54     | 46     | 27     | 29     |
| DPR Korea   | 153   | 1 111  | 1 755  | 1 988  | 2 014  | 950    | 573    | 108    | 807    | 1 323  | 1 263  | 1 158  | 686    | 401   | 261   | 1 918  | 3 078  | 3 251  | 3 172  | 1 636  | 974    |
| India       | 1 341 | 29 912 | 38 895 | 38 836 | 31 865 | 20 105 | 10 716 | 2 809  | 21 560 | 21 501 | 13 037 | 7 857  | 4 492  | 2 172 | 4 150 | 51 472 | 60 396 | 51 873 | 39 722 | 24 597 | 12 888 |
| Indonesia   | 569   | 7 826  | 10 248 | 8 760  | 7 668  | 5 332  | 2 891  | 650    | 7 366  | 8 794  | 6 773  | 4 943  | 3 118  | 1 292 | 1 219 | 15 192 | 19 042 | 15 533 | 12 611 | 8 450  | 4 183  |
| Maldives    | 0     | 11     | 9      | 0      | 1      | 5      | 8      | 1      | 8      | 5      | 4      | 5      | 1      | 2     | 1     | 19     | 14     | 4      | 6      | 6      | 10     |
| Myanmar     | 64    | 2 125  | 3 986  | 4 016  | 3 022  | 1 671  | 1 067  | 109    | 1 563  | 2 044  | 1 758  | 1 348  | 845    | 544   | 173   | 3 688  | 6 030  | 5 774  | 4 370  | 2 516  | 1 611  |
| Nepal       | 114   | 1 919  | 1 651  | 1 626  | 1 528  | 1 436  | 755    | 194    | 1 189  | 1 010  | 754    | 525    | 409    | 197   | 308   | 3 108  | 2 661  | 2 380  | 2 053  | 1 845  | 952    |
| Sri Lanka   | 8     | 251    | 355    | 601    | 671    | 467    | 302    | 13     | 276    | 205    | 161    | 121    | 125    | 87    | 21    | 527    | 560    | 762    | 792    | 592    | 389    |
| Thailand    | 35    | 1 352  | 3 805  | 3 699  | 3 155  | 2 556  | 3 077  | 61     | 897    | 1 525  | 1 212  | 1 143  | 1 307  | 1 769 | 96    | 2 249  | 5 330  | 4 911  | 4 298  | 3 863  | 4 846  |
| Timor-Leste | 13    | 119    | 145    | 119    | 107    | 58     | 35     | 20     | 118    | 124    | 88     | 91     | 40     | 13    | 33    | 237    | 269    | 207    | 198    | 98     | 48     |
| Region      | 2 741 | 49 061 | 67 013 | 66 541 | 55 902 | 36 989 | 23 046 | 4 540  | 36 884 | 40 433 | 27 819 | 19 254 | 11 991 | 7 324 | 6 273 | 78 518 | 97 469 | 84 749 | 67 268 | 43 630 | 25 930 |

note: the sum of cases notified by age is less than the number of new smear-positive cases notified for some countries

Country data for South-East Asia, cont'd: age and sex distribution of smear-positive cases in non-DOTS areas, 2002 (absolute numbers)

|             | MALE  |        |        |        |        |       |       | FEMALE |       |        |       |       |       |       | ALL   |        |        |        |        |        |       |
|-------------|-------|--------|--------|--------|--------|-------|-------|--------|-------|--------|-------|-------|-------|-------|-------|--------|--------|--------|--------|--------|-------|
|             | 0-14  | 15-24  | 25-34  | 35-44  | 45-54  | 55-64 | 65+   | 0-14   | 15-24 | 25-34  | 35-44 | 45-54 | 55-64 | 65+   | 0-14  | 15-24  | 25-34  | 35-44  | 45-54  | 55-64  | 65+   |
| Bangladesh  | 10    | 109    | 175    | 174    | 136    | 106   | 79    | 6      | 58    | 62     | 44    | 58    | 25    | 28    | 16    | 167    | 237    | 218    | 194    | 131    | 107   |
| Bhutan      |       |        |        |        |        |       |       |        |       |        |       |       |       |       |       |        |        |        |        |        |       |
| DPR Korea   | 46    | 333    | 527    | 596    | 604    | 285   | 172   | 32     | 242   | 397    | 379   | 347   | 206   | 120   | 78    | 575    | 924    | 975    | 951    | 491    | 292   |
| India       | 1 210 | 10 011 | 15 824 | 16 993 | 12 667 | 8 094 | 4 244 | 1 391  | 7 013 | 10 445 | 8 341 | 5 376 | 3 144 | 1 642 | 2 601 | 17 024 | 26 269 | 25 334 | 18 043 | 11 238 | 5 886 |
| Indonesia   |       |        |        |        |        |       |       |        |       |        |       |       |       |       |       |        |        |        |        |        |       |
| Maldives    |       |        |        |        |        |       |       |        |       |        |       |       |       |       |       |        |        |        |        |        |       |
| Myanmar     |       |        |        |        |        |       |       |        |       |        |       |       |       |       |       |        |        |        |        |        |       |
| Nepal       | 15    | 61     | 56     | 60     | 51     | 29    | 3     | 8      | 14    | 31     | 42    | 19    | 17    | 1     | 23    | 75     | 87     | 102    | 70     | 46     | 4     |
| Sri Lanka   | 3     | 36     | 56     | 81     | 117    | 84    | 64    | 6      | 44    | 43     | 44    | 30    | 26    | 20    | 9     | 80     | 99     | 125    | 147    | 110    | 84    |
| Thailand    |       |        |        |        |        |       |       |        |       |        |       |       |       |       |       |        |        |        |        |        |       |
| Timor-Leste |       |        |        |        |        |       |       |        |       |        |       |       |       |       |       |        |        |        |        |        |       |
| Region      | 1 284 | 10 550 | 16 638 | 17 904 | 13 575 | 8 598 | 4 562 | 1 443  | 7 371 | 10 978 | 8 850 | 5 830 | 3 418 | 1 811 | 2 727 | 17 921 | 27 616 | 26 754 | 19 405 | 12 016 | 6 373 |

note: the sum of cases notified by age is less than the number of new smear-positive cases notified for some countries



Country data for South-East Asia, cont'd: number of TB cases notified, 1980-2002

|                   | 1980           | 1981           | 1982             | 1983             | 1984             | 1985             | 1986             | 1987             | 1988             | 1989             | 1990             | 1991             | 1992             | 1993             | 1994             | 1995             | 1996             | 1997             | 1998             | 1999             | 2000             | 2001             | 2002             |
|-------------------|----------------|----------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| Bangladesh        | 39 774         | 42 644         | 49 870           | 52 961           | 45 679           | 41 802           | 45 599           | 45 355           | 44 280           | 45 191           | 48 673           | 56 052           | 31 400           | 54 001           | 48 276           | 56 437           | 63 471           | 63 420           | 72 256           | 79 339           | 75 557           | 76 302           | 81 822           |
| Bhutan            | 1 539          | 2 657          | 720              | 1 017            | 904              | 1 073            | 1 582            | 608              | 1 126            | 1 525            | 1 154            | 996              | 140              | 108              | 1 159            | 1 299            | 1 271            | 1 211            | 1 292            | 1 174            | 1 140            | 1 037            | 1 089            |
| DPR Korea         |                |                |                  |                  |                  |                  |                  |                  | 0                |                  |                  |                  |                  |                  |                  |                  |                  | 11 050           | 1 152            | 12 287           | 34 131           | 29 284           | 40 159           |
| India             | 705 600        | 769 540        | 923 095          | 1 075 098        | 1 109 310        | 1 168 804        | 1 279 536        | 1 403 122        | 1 457 288        | 1 510 500        | 1 519 182        | 1 555 353        | 1 121 120        | 1 081 279        | 1 114 374        | 1 218 183        | 1 290 343        | 1 132 859        | 1 102 002        | 1 218 743        | 1 115 718        | 1 085 075        | 1 060 951        |
| Indonesia         | 25 235         | 32 461         | 33 000           | 31 809           | 32 432           | 17 681           | 16 750           |                  | 97 505           | 105 516          | 74 470           | 60 808           | 98 458           | 62 966           | 49 647           | 35 529           | 24 647           | 22 184           | 40 497           | 69 064           | 84 591           | 92 792           | 155 188          |
| Maldives          | 73             | 112            | 111              | 143              | 123              | 91               | 111              | 115              | 85               | 203              | 152              | 123              | 92               | 175              | 249              | 231              | 212              | 173              | 176              | 153              | 132              | 139              | 125              |
| Myanmar           | 12 744         | 12 461         | 12 069           | 11 012           | 11 045           | 10 506           | 10 840           | 11 986           | 9 348            | 10 940           | 12 416           | 14 905           | 17 000           | 19 009           | 15 583           | 18 229           | 22 201           | 17 122           | 14 756           | 19 626           | 30 840           | 42 838           | 57 012           |
| Nepal             | 1 020          | 337            | 1 459            | 700              | 190              | 52               | 252              | 1 012            | 1 603            | 11 003           | 10 142           | 8 983            |                  | 13 161           | 15 572           | 19 604           | 22 970           | 24 158           | 24 135           | 27 356           | 29 519           | 29 519           | 30 359           |
| Sri Lanka         | 6 212          | 6 288          | 7 334            | 6 666            | 6 376            | 5 889            | 6 596            | 6 411            | 6 092            | 6 429            | 6 666            | 6 174            | 6 802            | 6 809            | 6 132            | 5 710            | 5 366            | 6 542            | 6 925            | 7 157            | 8 413            | 7 499            | 8 939            |
| Thailand          | 45 704         | 49 452         | 48 553           | 65 413           | 69 240           | 77 611           | 52 152           | 51 835           | 50 021           | 44 553           | 46 510           | 43 858           | 47 697           | 49 668           | 47 767           | 45 428           | 39 871           | 30 262           | 15 850           | 29 413           | 34 187           | 49 656           | 49 581           |
| Timor-Leste       |                |                |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  | 2 760            |
| <b>Region</b>     | <b>837 901</b> | <b>915 952</b> | <b>1 076 211</b> | <b>1 244 819</b> | <b>1 275 299</b> | <b>1 323 509</b> | <b>1 413 418</b> | <b>1 520 444</b> | <b>1 667 348</b> | <b>1 735 860</b> | <b>1 719 365</b> | <b>1 747 252</b> | <b>1 322 709</b> | <b>1 287 176</b> | <b>1 298 759</b> | <b>1 400 850</b> | <b>1 470 352</b> | <b>1 308 981</b> | <b>1 279 041</b> | <b>1 464 312</b> | <b>1 414 228</b> | <b>1 414 141</b> | <b>1 487 985</b> |
| number reporting  | 9              | 9              | 9                | 9                | 9                | 9                | 9                | 8                | 10               | 9                | 9                | 9                | 8                | 9                | 9                | 9                | 9                | 10               | 10               | 10               | 10               | 10               | 11               |
| percent reporting | 90             | 90             | 90               | 90               | 90               | 90               | 90               | 80               | 100              | 90               | 90               | 90               | 80               | 90               | 90               | 90               | 90               | 100              | 100              | 100              | 100              | 100              | 100              |



Country data for South-East Asia, cont'd: case notification rates (per 100 000 population), 1980-2002

|             | 1980 | 1981 | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
|-------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Bangladesh  | 47   | 49   | 56   | 58   | 48   | 43   | 46   | 45   | 43   | 42   | 44   | 50   | 27   | 46   | 40   | 46   | 50   | 49   | 55   | 59   | 55   | 54   | 57   |
| Bhutan      | 117  | 197  | 52   | 72   | 62   | 72   | 104  | 39   | 70   | 92   | 68   | 58   | 8    | 6    | 65   | 72   | 69   | 64   | 66   | 59   | 55   | 49   | 50   |
| DPR Korea   |      |      |      |      |      |      |      |      | 0    |      |      |      |      |      |      |      |      | 51   | 5    | 56   | 153  | 131  | 178  |
| India       | 102  | 109  | 129  | 147  | 148  | 153  | 164  | 176  | 179  | 182  | 179  | 180  | 127  | 121  | 122  | 131  | 136  | 117  | 112  | 122  | 110  | 105  | 101  |
| Indonesia   | 17   | 21   | 21   | 20   | 20   | 11   | 10   | 55   | 55   | 59   | 41   | 33   | 52   | 33   | 26   | 18   | 12   | 11   | 20   | 33   | 40   | 43   | 71   |
| Maldives    | 46   | 69   | 66   | 83   | 69   | 50   | 59   | 59   | 42   | 97   | 70   | 55   | 40   | 74   | 102  | 92   | 82   | 65   | 64   | 54   | 45   | 46   | 40   |
| Myanmar     | 38   | 36   | 34   | 31   | 30   | 28   | 29   | 31   | 24   | 27   | 31   | 36   | 41   | 45   | 36   | 41   | 50   | 38   | 32   | 42   | 65   | 89   | 117  |
| Nepal       | 7    | 2    | 9    | 4    | 1    | 0    | 1    | 6    | 9    | 60   | 54   | 47   | 66   | 76   | 95   | 107  | 107  | 110  | 107  | 119  | 126  | 123  | 123  |
| Sri Lanka   | 43   | 43   | 49   | 44   | 41   | 38   | 42   | 40   | 37   | 39   | 40   | 36   | 39   | 39   | 35   | 32   | 30   | 36   | 38   | 39   | 45   | 40   | 47   |
| Thailand    | 99   | 105  | 101  | 134  | 139  | 153  | 101  | 99   | 95   | 83   | 86   | 80   | 85   | 88   | 84   | 79   | 68   | 51   | 27   | 49   | 56   | 81   | 80   |
| Timor-Leste |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 374  |
| Region      | 80   | 85   | 98   | 111  | 111  | 113  | 119  | 125  | 134  | 137  | 133  | 133  | 99   | 94   | 93   | 99   | 102  | 89   | 86   | 96   | 92   | 90   | 94   |

Country data for South-East Asia, cont'd: new smear-positive cases, 1993-2002

|  |             | Number of cases |         |         |         |         |         |         |         |         |         | Rate (per 100 000 population) |      |      |      |      |      |      |      |      |      |
|--|-------------|-----------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|-------------------------------|------|------|------|------|------|------|------|------|------|
|  |             | 1993            | 1994    | 1995    | 1996    | 1997    | 1998    | 1999    | 2000    | 2001    | 2002    | 1993                          | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
|  | Bangladesh  | 18 993          | 1 710   | 20 524  | 29 674  | 33 117  | 37 737  | 37 821  | 38 484  | 40 777  | 46 771  | 16                            | 1    | 17   | 23   | 26   | 29   | 28   | 28   | 29   | 33   |
|  | Bhutan      |                 | 352     | 367     | 308     | 284     | 270     | 315     | 347     | 359     | 364     |                               | 20   | 20   | 17   | 15   | 14   | 16   | 17   | 17   | 17   |
|  | DPR Korea   |                 |         |         |         | 3 960   | 403     | 5 073   | 16 440  | 14 429  | 18 576  |                               |      |      |      | 18   | 2    | 23   | 74   | 64   | 82   |
|  | India       | 225 256         | 226 543 | 264 515 | 290 953 | 274 877 | 278 275 | 345 150 | 349 374 | 384 827 | 395 833 | 25                            | 25   | 28   | 31   | 28   | 28   | 35   | 34   | 37   | 38   |
|  | Indonesia   | 62 966          | 49 647  | 31 768  | 11 790  | 19 492  | 32 280  | 49 172  | 52 338  | 53 965  | 76 230  | 33                            | 26   | 16   | 6    | 10   | 16   | 24   | 25   | 25   | 35   |
|  | Maldives    | 126             | 125     | 114     | 106     | 95      | 88      | 88      | 65      | 59      | 60      | 53                            | 51   | 46   | 41   | 36   | 32   | 31   | 22   | 20   | 19   |
|  | Myanmar     |                 |         | 8 681   | 9 716   | 9 695   | 10 089  | 11 458  | 17 254  | 21 161  | 24 162  |                               |      |      | 22   | 21   | 22   | 24   | 36   | 44   | 49   |
|  | Nepal       | 6 679           | 10 442  | 8 591   | 10 365  | 11 323  | 11 306  | 13 410  | 13 683  | 13 683  | 13 714  | 33                            | 51   | 41   | 48   | 52   | 50   | 58   | 58   | 57   | 56   |
|  | Sri Lanka   | 3 335           | 3 405   | 3 049   | 2 958   | 3 506   | 3 761   | 3 911   | 4 314   | 4 316   | 4 297   | 19                            | 19   | 17   | 16   | 19   | 21   | 21   | 23   | 23   | 23   |
|  | Thailand    |                 | 20 260  | 20 273  | 16 997  | 13 214  | 7 962   | 14 934  | 17 754  | 28 363  | 25 593  |                               | 35   | 35   | 29   | 22   | 13   | 25   | 29   | 46   | 41   |
|  | Timor-Leste |                 |         |         |         |         |         |         |         |         | 1 090   |                               |      |      |      |      |      |      |      |      | 148  |
|  | Region      | 317 355         | 312 484 | 357 882 | 372 867 | 369 583 | 382 171 | 481 332 | 510 053 | 561 939 | 606 690 | 23                            | 22   | 25   | 26   | 25   | 26   | 32   | 33   | 36   | 38   |

# Notes

**BANGLADESH** There is a discrepancy between the population estimates used by the government (129 247 233) and that used by the UN (140 000 546). Country offers additional information on geographic “access” to DOTS services, which it estimates to be about 50% (versus 95% DOTS coverage).

**BHUTAN** Estimates of the population vary widely, from 800 000 to over 2 million.

**NEPAL** Data are from a calendar starting 16 July.

**THAILAND** Prisons contributed to case notifications. Notifications are from a October-September calendar.



## The Western Pacific: Summary of TB control policies

| COUNTRY              | STATUS <sup>a</sup> | MANUAL <sup>b</sup> | MICROSCOPY <sup>c</sup> | MONITORING OF TB SUSPECTS <sup>d</sup> | SCC <sup>e</sup> | DOT <sup>f</sup> | OUTCOME MONITORING <sup>g</sup> |
|----------------------|---------------------|---------------------|-------------------------|--|------------------|------------------|---------------------------------|
| AMERICAN SAMOA       | DOTS                | YES                 |                         |  |                  |                  |                                 |
| AUSTRALIA            | DOTS                | NO                  |                         |  |                  |                  |                                 |
| BRUNEI DARUSSALAM    | DOTS                | YES                 |                         |  |                  |                  |                                 |
| CAMBODIA             | DOTS                | YES                 |                         |  |                  |                  |                                 |
| CHINA                | DOTS                | YES                 |                         |  |                  |                  |                                 |
| CHINA, HONG KONG SAR | DOTS                | YES                 |                         |  |                  |                  |                                 |
| CHINA, MACAO SAR     | DOTS                | NO                  |                         |  |                  |                  |                                 |
| COOK ISLANDS         | DOTS                | YES                 |                         |  |                  |                  |                                 |
| FIJI                 | DOTS                | YES                 |                         |  |                  |                  |                                 |
| FRENCH POLYNESIA     | DOTS                | YES                 |                         |  |                  |                  |                                 |
| GUAM                 | DOTS                | YES                 |                         |  |                  |                  |                                 |
| JAPAN                | DOTS                | YES                 |                         |  |                  |                  |                                 |
| KIRIBATI             | DOTS                | YES                 |                         |  |                  |                  |                                 |
| LAO PDR              | DOTS                | YES                 |                         |  |                  |                  |                                 |
| MALAYSIA             | DOTS                | YES                 |                         |  |                  |                  |                                 |
| MARSHALL ISLANDS     | DOTS                | YES                 |                         |  |                  |                  |                                 |
| MICRONESIA           | DOTS                | YES                 |                         |  |                  |                  |                                 |
| MONGOLIA             | DOTS                | YES                 |                         |  |                  |                  |                                 |
| NAURU                | DOTS                | NO                  |                         |  |                  |                  |                                 |
| NEW CALEDONIA        | DOTS                | YES                 |                         |  |                  |                  |                                 |
| NEW ZEALAND          | DOTS                | YES                 |                         |  |                  |                  |                                 |
| NIUE                 | DOTS                | YES                 |                         |  |                  |                  |                                 |
| NORTHERN MARIANA IS  | DOTS                | YES                 |                         |  |                  |                  |                                 |
| PALAU                | DOTS                | YES                 |                         |  |                  |                  |                                 |
| PAPUA NEW GUINEA     | DOTS                | YES                 |                         |  |                  |                  |                                 |
| PHILIPPINES          | DOTS                | YES                 |                         |  |                  |                  |                                 |
| REP. KOREA           |                     | YES                 |                         |  |                  |                  |                                 |
| SAMOA                | DOTS                | YES                 |                         |  |                  |                  |                                 |
| SINGAPORE            | DOTS                | YES                 |                         |  |                  |                  |                                 |
| SOLOMON ISLANDS      | DOTS                | YES                 |                         |  |                  |                  |                                 |
| TOKELAU              |                     |                     |                         |  |                  |                  |                                 |
| TONGA                | DOTS                | YES                 |                         |  |                  |                  |                                 |
| TUVALU               |                     | YES                 |                         |  |                  |                  |                                 |
| VANUATU              | DOTS                | YES                 |                         |  |                  |                  |                                 |
| VIET NAM             | DOTS                | YES                 |                         |  |                  |                  |                                 |
| WALLIS & FUTUNA IS   | <b>DOTS</b>         | YES                 |                         |  |                  |                  |                                 |

|  |                                 |
|--|---------------------------------|
|  | Implemented in all units/areas  |
|  | Implemented in some units/areas |
|  | Not implemented                 |
|  | Unknown                         |

- a Status: DOTS status (**bold** indicates DOTS introduced in 2002)  
b Manual: National TB control manual (recommended)  
c Microscopy: Use of smear microscopy for diagnosis (core component of DOTS)  
d Monitoring of TB Suspects: Register of TB suspects (e.g. patients with cough  $\geq$  3 weeks) kept at DOTS facilities (recommended)  
e SCC: Short course chemotherapy (core component of DOTS)  
f DOT: Directly observed treatment (core component of DOTS)  
g Outcome monitoring: Monitoring of treatment outcomes by cohort analysis (core component of DOTS)

Country data for the Western Pacific: notification, detection and DOTS coverage, 2002

|                      | Country information |         |      |         |         |         |      |           |           |         |      |        |              |        |         |        |           |        |      |        |         |        |      |        |
|----------------------|---------------------|---------|------|---------|---------|---------|------|-----------|-----------|---------|------|--------|--------------|--------|---------|--------|-----------|--------|------|--------|---------|--------|------|--------|
|                      | Notified TB         |         |      |         |         |         |      |           |           |         |      |        | Estimated TB |        |         |        |           |        |      |        |         |        |      |        |
|                      | All cases           |         |      |         | New ss+ |         |      |           | All cases |         |      |        | New ss+      |        |         |        | All cases |        |      |        | New ss+ |        |      |        |
|                      | Pop<br>thousands    | number  | rate | number  | rate    | number  | rate | number    | rate      | number  | rate | number | rate         | number | rate    | number | rate      | number | rate | number | rate    | number | rate | number |
| American Samoa       | 60                  | 2       | 3    | 1       | 2       | 2       | 3    | 18        | 30        | 8       | 14   | 11     | 12           | 100    | 2       | 3      | 3         | 1      | 2    | 12     | 100     |        |      |        |
| Australia            | 19 544              | 1 013   | 5    | 210     | 1       | 368     | 2    | 1 126     | 6         | 505     | 3    | 90     | 42           | 54     | 603     | 3      | 127       | 1      | 25   | 40     | 410     | 83     | 39   |        |
| Brunei Darussalam    | 350                 | 230     | 66   | 112     | 32      | 121     | 35   | 206       | 59        | 93      | 26   | 112    | 121          | 100    | 230     | 66     | 112       | 32     | 121  | 65     |         |        |      |        |
| Cambodia             | 13 810              | 24 610  | 178  | 17 258  | 125     | 17 258  | 125  | 75 787    | 549       | 33 450  | 242  | 32     | 52           | 100    | 24 610  | 178    | 17 258    | 125    | 52   | 86     |         |        |      |        |
| China                | 1 294 867           | 462 609 | 36   | 194 972 | 15      | 194 972 | 15   | 1 459 103 | 113       | 656 017 | 51   | 32     | 30           | 78     | 388 195 | 30     | 180 239   | 14     | 27   | 51     | 74 414  | 14 733 | 21   |        |
| China, Hong Kong SAR | 6 981               | 6 244   | 89   | 1 890   | 27      | 3 595   | 52   | 6 488     | 93        | 2 918   | 42   | 96     | 65           | 100    | 5 021   | 72     | 1 501     | 22     | 51   | 36     | 1 223   | 389    | 39   |        |
| China, Macao SAR     | 460                 | 388     | 84   | 147     | 32      |         |      | 393       | 85        | 176     | 38   | 99     | 83           | 100    | 358     | 78     | 135       | 29     | 77   | 45     | 30      | 12     | 46   |        |
| Cook Islands         | 18                  | 1       | 5    | 1       | 5       | 1       | 5    | 6         | 30        | 3       | 14   | 18     | 40           | 100    | 1       | 5      | 1         | 5      | 40   | 100    |         |        |      |        |
| Fiji                 | 831                 | 150     | 18   | 75      | 9       |         |      | 253       | 30        | 114     | 14   | 59     | 66           | 100    | 150     | 18     | 75        | 9      | 66   | 69     |         |        |      |        |
| French Polynesia     | 241                 | 66      | 27   | 27      | 11      | 44      | 18   | 73        | 30        | 33      | 14   | 90     | 82           | 100    | 66      | 27     | 27        | 11     | 82   | 61     |         |        |      |        |
| Guam                 | 160                 | 51      | 32   | 31      | 19      | 44      | 27   | 145       | 91        | 65      | 41   | 35     | 48           | 100    | 51      | 32     | 31        | 19     | 48   | 70     |         |        |      |        |
| Japan                | 127 478             | 32 828  | 26   | 10 807  | 8       | 15 929  | 12   | 41 990    | 33        | 18 885  | 15   | 78     | 57           | 62     | 19 301  | 15     | 6 172     | 5      | 33   | 42     | 13 527  | 4 635  | 44   |        |
| Kiribati             | 87                  | 196     | 227  | 82      | 95      | 82      | 95   | 78        | 91        | 35      | 41   | 250    | 233          | 100    | 196     | 227    | 82        | 95     | 233  | 71     |         |        |      |        |
| Lao PDR              | 5 529               | 2 621   | 47   | 1 829   | 33      |         |      | 9 390     | 170       | 4 224   | 76   | 28     | 43           | 77     | 2 621   | 47     | 1 829     | 33     | 43   | 81     |         |        |      |        |
| Malaysia             | 23 965              | 14 389  | 60   | 7 958   | 33      |         |      | 22 708    | 95        | 10 190  | 43   | 63     | 78           | 100    | 14 389  | 60     | 7 958     | 33     | 78   | 61     |         |        |      |        |
| Marshall Islands     | 52                  | 51      | 97   | 18      | 34      | 18      | 34   | 47        | 91        | 21      | 41   | 108    | 84           | 100    | 51      | 97     | 18        | 34     | 84   | 50     |         |        |      |        |
| Micronesia           | 108                 | 127     | 117  | 22      | 20      | 49      | 45   | 98        | 91        | 44      | 41   | 129    | 50           | 90     | 127     | 117    | 22        | 20     | 50   | 22     |         |        |      |        |
| Mongolia             | 2 559               | 3 829   | 150  | 1 670   | 65      | 1 670   | 65   | 5 357     | 209       | 2 411   | 94   | 71     | 69           | 100    | 3 829   | 150    | 1 670     | 65     | 69   | 66     |         |        |      |        |
| Nauru                | 13                  | 5       | 39   | 2       | 16      | 2       | 16   | 4         | 30        | 2       | 14   | 129    | 114          | 100    | 5       | 39     | 2         | 16     | 114  | 100    |         |        |      |        |
| New Caledonia        | 224                 | 65      | 29   | 21      | 9       | 32      | 14   | 203       | 91        | 91      | 41   | 32     | 23           | 100    | 65      | 29     | 21        | 9      | 23   | 46     |         |        |      |        |
| New Zealand          | 3 846               | 329     | 9    | 88      | 2       | 169     | 4    | 408       | 11        | 183     | 5    | 81     | 48           | 100    | 329     | 9      | 88        | 2      | 48   | 40     |         |        |      |        |
| Niue                 | 2                   | 4       | 203  | 1       | 51      | 1       | 51   | 1         | 30        |         | 14   | 668    | 371          | 100    | 4       | 203    | 1         | 51     | 371  | 100    |         |        |      |        |
| Northern Mariana Is  | 76                  | 53      | 70   | 21      | 28      | 31      | 41   | 69        | 91        | 31      | 41   | 77     | 68           | 100    | 53      | 70     | 21        | 28     | 68   | 40     |         |        |      |        |
| Palau                | 20                  | 11      | 55   | 9       | 45      |         |      | 18        | 91        | 8       | 41   | 61     | 110          | 100    | 11      | 55     | 9         | 45     | 110  | 82     |         |        |      |        |
| Papua New Guinea     | 5 586               | 5 324   | 95   | 926     | 17      | 926     | 17   | 14 202    | 254       | 6 358   | 114  | 37     | 15           | 24     | 5 324   | 95     | 926       | 17     | 15   | 31     |         |        |      |        |
| Philippines          | 78 580              | 118 408 | 151  | 65 148  | 83      | 65 148  | 83   | 251 439   | 320       | 113 085 | 144  | 47     | 58           | 98     | 118 408 | 151    | 65 148    | 83     | 58   | 58     |         |        |      |        |
| Rep. Korea           | 47 430              | 34 967  | 74   | 11 345  | 24      | 13 441  | 28   | 42 950    | 91        | 19 325  | 41   | 81     | 59           | 100    | 30      | 17     | 18        | 10     | 75   | 72     | 34 967  | 11 345 | 40   |        |
| Samoa                | 176                 | 30      | 17   | 18      | 10      | 18      | 10   | 54        | 30        | 24      | 14   | 56     | 75           | 100    | 30      | 17     | 18        | 10     | 75   | 72     |         |        |      |        |
| Singapore            | 4 183               | 1 516   | 36   | 549     | 13      | 903     | 22   | 1 785     | 43        | 798     | 19   | 85     | 69           | 100    | 778     | 19     | 311       | 7      | 39   | 46     | 738     | 238    | 40   |        |
| Solomon Islands      | 463                 | 256     | 55   | 108     | 23      | 108     | 23   | 420       | 91        | 189     | 41   | 61     | 57           | 100    | 256     | 55     | 108       | 23     | 57   | 52     |         |        |      |        |
| Tokelau              | 2                   |         |      |         |         |         |      | 30        |           |         | 14   |        |              |        |         |        |           |        |      |        |         |        |      |        |
| Tonga                | 103                 | 29      | 28   | 23      | 22      | 26      | 25   | 31        | 30        | 14      | 14   | 93     | 164          | 98     | 29      | 28     | 23        | 22     | 164  | 88     |         |        |      |        |
| Tuvalu               | 10                  | 13      | 124  |         |         | 3       |      | 3         | 30        | 1       | 14   | 408    |              |        |         |        |           |        |      |        | 13      |        |      |        |
| Vanuatu              | 207                 | 101     | 49   | 38      | 18      |         |      | 187       | 91        | 84      | 41   | 54     | 45           | 81     | 70      | 34     | 31        | 15     | 37   | 57     | 31      | 7      | 24   |        |
| Viet Nam             | 80 278              | 95 577  | 119  | 56 811  | 71      | 56 811  | 71   | 154 511   | 192       | 69 364  | 86   | 62     | 82           | 100    | 95 577  | 119    | 56 811    | 71     | 82   | 75     |         |        |      |        |
| Wallis & Futuna Is   | 15                  | 19      | 130  | 1       | 7       | 2       | 14   | 4         | 30        | 2       | 14   | 427    | 50           | 100    | 10      | 68     | 1         | 7      | 50   | 10     | 9       |        |      |        |
| Region               | 1 718 314 146       | 806 112 | 47   | 372 219 | 22      | 371 769 | 22   | 2 089 553 | 122       | 938 753 | 55   | 39     | 40           | 77     | 680 750 | 40     | 340 777   | 20     | 36   | 57     | 125 362 | 31 442 | 29   |        |

See explanatory notes, page 129.

Country data for the Western Pacific, cont'd: treatment outcomes for cases registered in 2001 - DOTS and non-DOTS

|                      | New smear-positive cases - DOTS |            |                |      |        |        |        |        |        |        |                 |            | Retreatment cases - DOTS |      |        |        |        |        |        |        |                 |        |        |        | New smear-positive cases - non-DOTS |        |        |        |        |                     |                     |  |   |  |  |  |
|----------------------|---------------------------------|------------|----------------|------|--------|--------|--------|--------|--------|--------|-----------------|------------|--------------------------|------|--------|--------|--------|--------|--------|--------|-----------------|--------|--------|--------|-------------------------------------|--------|--------|--------|--------|---------------------|---------------------|--|---|--|--|--|
|                      | %                               |            |                |      | %      |        |        |        | %      |        |                 |            | %                        |      |        |        | %      |        |        |        | %               |        |        |        | %                                   |        |        |        | %      |                     |                     |  | % |  |  |  |
|                      | Regist-<br>ered                 | %<br>cured | compl-<br>eted | died | %<br>e | %<br>d | %<br>f | %<br>g | %<br>h | %<br>i | Regist-<br>ered | %<br>cured | compl-<br>eted           | died | %<br>m | %<br>n | %<br>o | %<br>p | %<br>q | %<br>r | Regist-<br>ered | %<br>s | %<br>t | %<br>u | %<br>v                              | %<br>w | %<br>x | %<br>y | %<br>z | %<br>not<br>success | %<br>not<br>success |  |   |  |  |  |
| American Samoa       | 2                               | 100        | 0              | 0    | 0      | 0      | 0      | 100    | 0      | 1      | 100             | 0          | 0                        | 0    | 100    | 0      | 0      | 0      | 0      | 0      | 70              | 20     | 59     | 1      | 0                                   | 0      | 4      | 16     | 79     |                     |                     |  |   |  |  |  |
| Australia            | 133                             | 18         | 48             | 10   | 2      | 4      | 4      | 15     | 66     | 4      | 0               | 50         | 25                       | 0    | 25     | 0      | 0      | 50     | 0      | 0      |                 |        |        |        |                                     |        |        |        |        |                     |                     |  |   |  |  |  |
| Brunei Darussalam    | 147                             | 44         | 12             | 9    | 1      | 3      | 32     | 0      | 56     |        |                 |            |                          |      |        |        |        |        |        |        |                 |        |        |        |                                     |        |        |        |        |                     |                     |  |   |  |  |  |
| Cambodia             | 14                              | 277        | 89             | 3    | 4      | 0      | 3      | 1      | 92     | 707    | 87              | 4          | 5                        | 1    | 2      | 1      | 0      | 92     | 0      | 0      |                 |        |        |        |                                     |        |        |        |        |                     |                     |  |   |  |  |  |
| China                | 176                             | 476        | 94             | 2    | 1      | 1      | 1      | 1      | 96     | 35     | 991             | 88         | 5                        | 2    | 2      | 1      | 1      | 93     | 1      | 93     | 14              | 024    | 77     | 9      | 1                                   | 3      | 5      | 2      | 2      | 86                  |                     |  |   |  |  |  |
| China, Hong Kong SAR | 1                               | 450        | 72             | 6    | 4      | 9      | 3      | 3      | 78     | 209    | 57              | 8          | 8                        | 9    | 10     | 3      | 5      | 65     | 5      | 65     | 407             | 4      | 4      | 4      | 26                                  | 1      | 0      | 6      | 58     | 9                   |                     |  |   |  |  |  |
| China, Macao SAR     | 153                             | 82         | 3              | 3    | 3      | 3      | 2      | 6      | 86     | 47     | 64              | 19         | 4                        | 6    | 2      | 4      | 83     | 4      | 83     |        |                 |        |        |        |                                     |        |        |        |        |                     |                     |  |   |  |  |  |
| Cook Islands         | 1                               | 100        | 0              | 0    | 0      | 0      | 0      | 100    | 0      |        |                 |            |                          |      |        |        |        |        |        |        |                 |        |        |        |                                     |        |        |        |        |                     |                     |  |   |  |  |  |
| Fiji                 | 73                              | 85         | 0              | 8    | 0      | 5      | 1      | 0      | 85     |        |                 |            |                          |      |        |        |        |        |        |        |                 |        |        |        |                                     |        |        |        |        |                     |                     |  |   |  |  |  |
| French Polynesia     | 45                              | 80         | 0              | 7    | 4      | 9      | 0      | 0      | 80     |        |                 |            |                          |      |        |        |        |        |        |        |                 |        |        |        |                                     |        |        |        |        |                     |                     |  |   |  |  |  |
| Guam                 | 62                              | 53         | 18             | 11   | 0      | 0      | 18     | 0      | 71     | 1      | 100             | 18         | 10                       | 7    | 3      | 0      | 100    | 0      | 100    |        |                 |        |        |        |                                     |        |        |        |        |                     |                     |  |   |  |  |  |
| Japan                | 6                               | 026        | 51             | 23   | 11     | 5      | 2      | 7      | 75     | 711    | 50              | 18         | 10                       | 7    | 3      | 0      | 100    | 0      | 100    | 4      | 108             | 18     | 16     | 1      | 4                                   | 0      | 61     | 34     |        |                     |                     |  |   |  |  |  |
| Kiribati             | 71                              | 79         | 7              | 3    | 1      | 1      | 0      | 8      | 86     | 2      | 100             | 0          | 0                        | 0    | 0      | 0      | 0      | 100    | 0      | 100    |                 |        |        |        |                                     |        |        |        |        |                     |                     |  |   |  |  |  |
| Lao PDR              | 1                               | 484        | 67             | 10   | 8      | 1      | 8      | 3      | 4      | 77     | 99              | 41         | 10                       | 16   | 2      | 9      | 3      | 18     | 52     | 52     | 79              | 37     | 22     | 10     | 3                                   | 25     | 4      | 0      | 58     |                     |                     |  |   |  |  |  |
| Malaysia             | 8                               | 277        | 0              | 79   | 9      | 0      | 7      | 0      | 4      | 79     |                 |            |                          |      |        |        |        |        |        |        |                 |        |        |        |                                     |        |        |        |        |                     |                     |  |   |  |  |  |
| Marshall Islands     | 22                              | 36         | 50             | 5    | 0      | 5      | 5      | 0      | 86     |        |                 |            |                          |      |        |        |        |        |        |        |                 |        |        |        |                                     |        |        |        |        |                     |                     |  |   |  |  |  |
| Micronesia           | 8                               | 100        | 0              | 0    | 0      | 0      | 0      | 0      | 100    | 20     | 40              | 35         | 15                       | 0    | 10     | 0      | 0      | 75     | 75     | 75     |                 |        |        |        |                                     |        |        |        |        |                     |                     |  |   |  |  |  |
| Mongolia             | 1                               | 631        | 83             | 3    | 2      | 4      | 4      | 3      | 0      | 113    | 54              | 18         | 7                        | 14   | 2      | 5      | 0      | 72     | 72     | 72     |                 |        |        |        |                                     |        |        |        |        |                     |                     |  |   |  |  |  |
| Nauru                | 2                               | 100        | 0              | 0    | 0      | 0      | 0      | 0      | 100    |        |                 |            |                          |      |        |        |        |        |        |        |                 |        |        |        |                                     |        |        |        |        |                     |                     |  |   |  |  |  |
| New Caledonia        | 19                              | 84         | 11             | 5    | 0      | 0      | 0      | 0      | 84     |        |                 |            |                          |      |        |        |        |        |        |        |                 |        |        |        |                                     |        |        |        |        |                     |                     |  |   |  |  |  |
| New Zealand          | 90                              | 9          | 0              | 0    | 0      | 0      | 0      | 91     | 9      | 0      | 0               | 0          | 0                        | 0    | 0      | 0      | 0      | 0      | 0      | 0      |                 |        |        |        |                                     |        |        |        |        |                     |                     |  |   |  |  |  |
| Niue                 |                                 |            |                |      |        |        |        |        |        |        |                 |            |                          |      |        |        |        |        |        |        |                 |        |        |        |                                     |        |        |        |        |                     |                     |  |   |  |  |  |
| Northern Mariana Is  | 19                              | 74         |                |      |        |        | 26     | 0      | 74     |        |                 |            |                          |      |        |        |        |        |        |        |                 |        |        |        |                                     |        |        |        |        |                     |                     |  |   |  |  |  |
| Palau                | 1                               | 100        | 0              | 0    | 0      | 0      | 0      | 0      | 100    |        |                 |            |                          |      |        |        |        |        |        |        |                 |        |        |        |                                     |        |        |        |        |                     |                     |  |   |  |  |  |
| Papua New Guinea     | 469                             | 45         | 22             | 3    | 0      | 23     | 3      | 4      | 67     | 826    | 23              | 36         | 0                        | 12   | 25     | 2      | 1      | 60     | 60     | 60     |                 |        |        |        |                                     |        |        |        |        |                     |                     |  |   |  |  |  |
| Philippines          | 55                              | 402        | 74             | 13   | 2      | 1      | 6      | 3      | 0      |        |                 |            |                          |      |        |        |        |        |        |        |                 |        |        |        |                                     |        |        |        |        |                     |                     |  |   |  |  |  |
| Rep. Korea           |                                 |            |                |      |        |        |        |        |        |        |                 |            |                          |      |        |        |        |        |        |        |                 |        |        |        |                                     |        |        |        |        |                     |                     |  |   |  |  |  |
| Samoa                | 22                              | 41         | 36             | 18   | 0      | 0      | 0      | 0      | 5      |        |                 |            |                          |      |        |        |        |        |        |        |                 |        |        |        |                                     |        |        |        |        |                     |                     |  |   |  |  |  |
| Singapore            | 451                             | 88         | 6              | 0    | 5      | 1      | 1      | 1      | 88     |        |                 |            |                          |      |        |        |        |        |        |        |                 |        |        |        |                                     |        |        |        |        |                     |                     |  |   |  |  |  |
| Solomon Islands      | 118                             | 66         | 23             | 1    | 0      | 7      | 0      | 3      | 89     |        |                 |            |                          |      |        |        |        |        |        |        |                 |        |        |        |                                     |        |        |        |        |                     |                     |  |   |  |  |  |
| Tokelau              |                                 |            |                |      |        |        |        |        |        |        |                 |            |                          |      |        |        |        |        |        |        |                 |        |        |        |                                     |        |        |        |        |                     |                     |  |   |  |  |  |
| Tonga                | 12                              | 67         | 25             | 8    | 0      | 0      | 0      | 0      | 92     | 1      | 100             |            |                          |      |        |        |        |        |        |        |                 |        |        |        |                                     |        |        |        |        |                     |                     |  |   |  |  |  |
| Tuvalu               |                                 |            |                |      |        |        |        |        |        |        |                 |            |                          |      |        |        |        |        |        |        |                 |        |        |        |                                     |        |        |        |        |                     |                     |  |   |  |  |  |
| Vanuatu              | 48                              | 65         | 23             | 10   | 2      | 0      | 0      | 0      | 88     |        |                 |            |                          |      |        |        |        |        |        |        |                 |        |        |        |                                     |        |        |        |        |                     |                     |  |   |  |  |  |
| Viet Nam             | 54                              | 238        | 91             | 2    | 3      | 1      | 1      | 2      | 0      | 93     | 5               | 895        | 80                       | 5    | 5      | 6      | 2      | 2      | 0      | 85     | 9               | 22     | 67     | 0      | 0                                   | 0      | 11     | 0      | 89     |                     |                     |  |   |  |  |  |
| Wallis & Futuna Is   | 1                               | 100        | 0              | 0    | 0      | 0      | 0      | 0      | 100    |        |                 |            |                          |      |        |        |        |        |        |        |                 |        |        |        |                                     |        |        |        |        |                     |                     |  |   |  |  |  |
| Region               | 321                             | 230        | 86             | 7    | 2      | 1      | 2      | 1      | 93     | 44     | 627             | 85         | 6                        | 3    | 3      | 2      | 1      | 1      | 91     | 91     | 24              | 960    | 65     | 9      | 2                                   | 3      | 4      | 4      | 13     | 74                  |                     |  |   |  |  |  |

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Country data for the Western Pacific, cont'd: age and sex distribution of smear-positive cases in DOTS areas, 2001 (absolute numbers)

|                      | MALE  |        |        |        |        |        |        | FEMALE |        |        |        |        |        |        | ALL   |        |        |        |        |        |        |
|----------------------|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-------|--------|--------|--------|--------|--------|--------|
|                      | 0-14  | 15-24  | 25-34  | 35-44  | 45-54  | 55-64  | 65+    | 0-14   | 15-24  | 25-34  | 35-44  | 45-54  | 55-64  | 65+    | 0-14  | 15-24  | 25-34  | 35-44  | 45-54  | 55-64  | 65+    |
| American Samoa       |       |        |        |        |        | 1      |        |        |        |        |        |        |        |        |       |        |        |        |        | 1      |        |
| Australia            | 0     | 10     | 12     | 18     | 10     | 5      | 15     | 0      | 10     | 14     | 11     | 3      | 3      | 16     | 0     | 20     | 26     | 29     | 13     | 8      | 31     |
| Brunei Darussalam    | 2     | 15     | 15     | 7      | 6      | 8      | 14     | 0      | 11     | 9      | 8      | 5      | 5      | 7      | 2     | 26     | 24     | 15     | 11     | 13     | 21     |
| Cambodia             | 54    | 791    | 1 449  | 1 956  | 1 799  | 1 624  | 1 432  | 54     | 600    | 1 114  | 1 737  | 1 898  | 1 650  | 1 100  | 108   | 1 391  | 2 563  | 3 693  | 3 697  | 3 274  | 2 532  |
| China                | 816   | 16 560 | 23 058 | 20 665 | 22 201 | 18 295 | 21 342 | 1 065  | 12 300 | 13 886 | 9 548  | 8 095  | 6 082  | 6 326  | 1 881 | 28 860 | 36 944 | 30 213 | 30 296 | 24 377 | 27 668 |
| China, Hong Kong SAR | 1     | 89     | 101    | 142    | 180    | 184    | 371    | 3      | 87     | 83     | 81     | 40     | 29     | 110    | 4     | 176    | 184    | 223    | 220    | 213    | 481    |
| China, Macao SAR     | 1     | 13     | 8      | 20     | 19     | 14     | 16     | 1      | 7      | 10     | 7      | 9      | 1      | 9      | 2     | 20     | 18     | 27     | 28     | 15     | 25     |
| Cook Islands         |       |        |        |        |        | 1      |        |        |        |        |        |        |        |        |       |        |        |        |        | 1      |        |
| Fiji                 | 13    | 9      | 8      | 8      | 5      | 7      | 2      |        | 8      | 6      | 8      | 2      | 5      | 2      |       | 21     | 15     | 16     | 7      | 12     | 4      |
| French Polynesia     | 0     | 4      | 2      | 1      | 3      | 3      | 1      | 0      | 4      | 2      | 1      | 2      | 2      | 2      | 0     | 8      | 4      | 2      | 5      | 5      | 3      |
| Guam                 | 3     | 3      | 5      | 5      | 6      | 12     | 4      | 5      | 1      | 6      | 3      | 3      | 2      | 7      | 8     | 4      | 11     | 8      | 9      | 14     | 11     |
| Japan                | 1     | 98     | 288    | 278    | 716    | 778    | 2 196  | 3      | 108    | 218    | 153    | 140    | 170    | 1 025  | 4     | 206    | 506    | 431    | 856    | 948    | 3 221  |
| Kiribati             | 5     | 11     | 1      | 7      | 7      | 7      | 7      | 5      | 15     | 8      | 8      | 3      | 4      | 1      | 10    | 26     | 9      | 15     | 10     | 11     | 1      |
| Lao PDR              | 4     | 86     | 159    | 220    | 223    | 227    | 185    | 2      | 72     | 141    | 151    | 152    | 117    | 90     | 6     | 158    | 300    | 371    | 375    | 344    | 275    |
| Malaysia             | 22    | 562    | 1 106  | 1 182  | 997    | 758    | 844    | 30     | 421    | 524    | 415    | 485    | 319    | 293    | 52    | 983    | 1 630  | 1 597  | 1 482  | 1 077  | 1 137  |
| Marshall Islands     | 0     | 1      | 2      | 1      | 3      | 2      | 2      | 0      | 2      | 0      | 0      | 3      | 1      | 1      | 0     | 3      | 2      | 1      | 6      | 3      | 3      |
| Micronesia           | 2     | 0      | 1      | 1      | 1      | 1      | 0      | 3      | 5      | 1      | 1      | 2      | 0      | 2      | 5     | 5      | 2      | 2      | 3      | 1      | 2      |
| Mongolia             | 9     | 242    | 272    | 184    | 94     | 57     | 47     | 16     | 263    | 253    | 133    | 55     | 22     | 23     | 25    | 505    | 525    | 317    | 149    | 79     | 70     |
| Nauru                |       |        |        |        |        |        |        |        |        |        |        |        |        |        |       |        |        |        |        |        |        |
| New Caledonia        | 0     | 2      | 2      | 1      | 1      | 1      | 3      | 0      | 4      | 2      | 2      | 3      | 0      | 0      | 0     | 6      | 4      | 3      | 4      | 1      | 3      |
| New Zealand          | 0     | 10     | 14     | 5      | 6      | 4      | 10     | 1      | 15     | 8      | 4      | 3      | 5      | 3      | 1     | 25     | 22     | 9      | 9      | 9      | 13     |
| Niue                 |       |        |        |        |        |        |        |        |        |        |        |        |        |        |       |        |        |        |        |        |        |
| Northern Mariana Is  | 1     | 2      | 3      | 7      | 10     | 5      | 2      | 0      | 9      | 10     | 3      | 1      | 0      | 0      | 0     | 1      | 13     | 10     | 11     | 5      | 2      |
| Palau                | 1     | 0      | 1      | 1      | 2      | 2      | 1      | 0      | 0      | 3      | 0      | 0      | 0      | 0      | 1     | 0      | 4      | 1      | 2      | 2      | 1      |
| Papua New Guinea     | 18    | 139    | 133    | 74     | 62     | 37     | 6      | 22     | 160    | 149    | 60     | 47     | 18     | 1      | 40    | 299    | 282    | 134    | 109    | 55     | 7      |
| Philippines          |       |        |        |        |        |        |        |        |        |        |        |        |        |        |       |        |        |        |        |        |        |
| Rep. Korea           |       |        |        |        |        |        |        |        |        |        |        |        |        |        |       |        |        |        |        |        |        |
| Samoa                | 0     | 1      | 2      | 0      | 1      | 1      | 1      | 1      | 4      | 5      | 0      | 2      | 0      | 0      | 1     | 5      | 7      | 0      | 3      | 1      | 1      |
| Singapore            | 0     | 14     | 19     | 46     | 55     | 35     | 67     | 1      | 10     | 11     | 16     | 14     | 9      | 14     | 1     | 24     | 30     | 62     | 69     | 44     | 81     |
| Solomon Islands      | 3     | 16     | 12     | 9      | 9      | 7      | 4      | 0      | 16     | 15     | 4      | 2      | 7      | 4      | 3     | 32     | 27     | 13     | 11     | 14     | 8      |
| Tokelau              |       |        |        |        |        |        |        |        |        |        |        |        |        |        |       |        |        |        |        |        |        |
| Tonga                |       |        |        |        |        |        |        |        |        |        |        |        |        |        |       |        |        |        |        |        |        |
| Tuvalu               |       |        |        |        |        |        |        |        |        |        |        |        |        |        |       |        |        |        |        |        |        |
| Vanuatu              |       |        |        |        |        |        |        |        |        |        |        |        |        |        |       |        |        |        |        |        |        |
| Viet Nam             | 0     | 7      | 1      | 3      | 7      | 2      | 1      | 0      | 2      | 1      | 5      | 0      | 2      | 0      | 0     | 9      | 2      | 8      | 7      | 4      | 1      |
| Wallis & Futuna Is   | 57    | 3 250  | 6 762  | 8 855  | 8 040  | 5 162  | 8 184  | 68     | 1 571  | 2 357  | 2 508  | 2 619  | 2 409  | 4 969  | 125   | 4 821  | 9 119  | 11 363 | 10 659 | 7 571  | 13 153 |
| Region               | 1 000 | 21 940 | 33 438 | 33 696 | 34 467 | 27 240 | 34 760 | 1 280  | 15 707 | 18 837 | 14 869 | 13 588 | 10 863 | 14 010 | 2 280 | 37 647 | 52 275 | 48 565 | 48 055 | 38 103 | 48 770 |

note: the sum of cases notified by age is less than the number of new smear-positive cases notified for some countries

**Country data for the Western Pacific, cont'd: age and sex distribution of smear-positive cases in non-DOTS areas, 2001 (absolute numbers)**

|                      | Age and sex breakdown of small pox cases in 2007 (absolute numbers) |              |              |              |              |              |              |            |              |              |              |              |              |              |            |              |              |              |              |              |              |
|----------------------|---|--------------|--------------|--------------|--------------|--------------|--------------|------------|--------------|--------------|--------------|--------------|--------------|--------------|------------|--------------|--------------|--------------|--------------|--------------|--------------|
|                      | MALE  |              |              |              |              |              |              | FEMALE     |              |              |              |              |              |              | ALL        |              |              |              |              |              |              |
|                      | 0-14  | 15-24        | 25-34        | 35-44        | 45-54        | 55-64        | 65+          | 0-14       | 15-24        | 25-34        | 35-44        | 45-54        | 55-64        | 65+          | 0-14       | 15-24        | 25-34        | 35-44        | 45-54        | 55-64        | 65+          |
| American Samoa       |   |              |              |              |              |              |              |            |              |              |              |              |              |              |            |              |              |              |              |              |              |
| Australia            | 1   | 5            | 8            | 8            | 9            | 8            | 19           | 0          | 5            | 7            | 4            | 3            | 1            | 7            | 1          | 10           | 15           | 12           | 12           | 9            | 26           |
| Brunei Darussalam    |   |              |              |              |              |              |              |            |              |              |              |              |              |              |            |              |              |              |              |              |              |
| Cambodia             |   |              |              |              |              |              |              |            |              |              |              |              |              |              |            |              |              |              |              |              |              |
| China                | 109   | 1 373        | 2 184        | 1 980        | 1 683        | 1 269        | 1 220        | 87         | 950          | 1 302        | 957          | 701          | 504          | 414          | 196        | 2 323        | 3 486        | 2 937        | 2 384        | 1 773        | 1 634        |
| China, Hong Kong SAR | 1   | 10           | 3            | 20           | 26           | 34           | 174          | 5          | 10           | 32           | 8            | 16           | 6            | 44           | 6          | 20           | 35           | 28           | 42           | 40           | 218          |
| China, Macao SAR     |   |              |              | 1            | 1            | 3            | 5            |            |              |              | 0            | 0            | 0            | 2            |            |              |              | 1            | 1            | 3            | 7            |
| Cook Islands         |   |              |              |              |              |              |              |            |              |              |              |              |              |              |            |              |              |              |              |              |              |
| Fiji                 |   |              |              |              |              |              |              |            |              |              |              |              |              |              |            |              |              |              |              |              |              |
| French Polynesia     |   |              |              |              |              |              |              |            |              |              |              |              |              |              |            |              |              |              |              |              |              |
| Guam                 |   |              |              |              |              |              |              |            |              |              |              |              |              |              |            |              |              |              |              |              |              |
| Japan                | 1   | 93           | 261          | 301          | 476          | 556          | 1 551        | 0          | 84           | 177          | 106          | 108          | 138          | 783          | 1          | 177          | 438          | 407          | 584          | 694          | 2 334        |
| Kiribati             |   |              |              |              |              |              |              |            |              |              |              |              |              |              |            |              |              |              |              |              |              |
| Lao PDR              |   |              |              |              |              |              |              |            |              |              |              |              |              |              |            |              |              |              |              |              |              |
| Malaysia             |   |              |              |              |              |              |              |            |              |              |              |              |              |              |            |              |              |              |              |              |              |
| Marshall Islands     |   |              |              |              |              |              |              |            |              |              |              |              |              |              |            |              |              |              |              |              |              |
| Micronesia           |   |              |              |              |              |              |              |            |              |              |              |              |              |              |            |              |              |              |              |              |              |
| Mongolia             |   |              |              |              |              |              |              |            |              |              |              |              |              |              |            |              |              |              |              |              |              |
| Nauru                |   |              |              |              |              |              |              |            |              |              |              |              |              |              |            |              |              |              |              |              |              |
| New Caledonia        |   |              |              |              |              |              |              |            |              |              |              |              |              |              |            |              |              |              |              |              |              |
| New Zealand          |   |              |              |              |              |              |              |            |              |              |              |              |              |              |            |              |              |              |              |              |              |
| Niue                 |   |              |              |              |              |              |              |            |              |              |              |              |              |              |            |              |              |              |              |              |              |
| Northern Mariana Is  |   |              |              |              |              |              |              |            |              |              |              |              |              |              |            |              |              |              |              |              |              |
| Palau                |   |              |              |              |              |              |              |            |              |              |              |              |              |              |            |              |              |              |              |              |              |
| Papua New Guinea     |   |              |              |              |              |              |              |            |              |              |              |              |              |              |            |              |              |              |              |              |              |
| Philippines          |   |              |              |              |              |              |              |            |              |              |              |              |              |              |            |              |              |              |              |              |              |
| Rep. Korea           | 20  | 806          | 1 333        | 1 374        | 1 265        | 1 029        | 1 390        | 19         | 759          | 854          | 456          | 334          | 377          | 1 329        | 39         | 1 565        | 2 187        | 1 830        | 1 599        | 1 406        | 2 719        |
| Samoa                |   |              |              |              |              |              |              |            |              |              |              |              |              |              |            |              |              |              |              |              |              |
| Singapore            | 0   | 0            | 9            | 27           | 33           | 30           | 63           | 1          | 0            | 4            | 14           | 18           | 15           | 24           | 1          | 0            | 13           | 41           | 51           | 45           | 87           |
| Solomon Islands      |   |              |              |              |              |              |              |            |              |              |              |              |              |              |            |              |              |              |              |              |              |
| Tokelau              |   |              |              |              |              |              |              |            |              |              |              |              |              |              |            |              |              |              |              |              |              |
| Tonga                |   |              |              |              |              |              |              |            |              |              |              |              |              |              |            |              |              |              |              |              |              |
| Tuvalu               |   |              |              |              |              |              |              |            |              |              |              |              |              |              |            |              |              |              |              |              |              |
| Vanuatu              | 0   | 0            | 1            | 0            | 3            | 0            | 0            | 0          | 1            | 0            | 0            | 0            | 1            | 1            | 0          | 1            | 1            | 0            | 3            | 1            | 1            |
| Viet Nam             |   |              |              |              |              |              |              |            |              |              |              |              |              |              |            |              |              |              |              |              |              |
| Wallis & Futuna Is   |   | 1            |              | 1            | 1            |              | 1            |            |              |              |              | 3            | 2            |              |            | 1            |              | 1            | 4            | 2            | 1            |
| <b>Region</b>        | <b>132</b>  | <b>2 288</b> | <b>3 799</b> | <b>3 712</b> | <b>3 497</b> | <b>2 929</b> | <b>4 423</b> | <b>112</b> | <b>1 809</b> | <b>2 376</b> | <b>1 545</b> | <b>1 183</b> | <b>1 044</b> | <b>2 604</b> | <b>244</b> | <b>4 097</b> | <b>6 175</b> | <b>5 257</b> | <b>4 680</b> | <b>3 973</b> | <b>7 027</b> |

note: the sum of cases notified by age is less than the number of new smear-positive cases notified for some countries

**Country data for the Western Pacific, cont'd: smear-positive notification rates (per 100 000 population) by age and sex, 2002**

|                      | MALE |       |       |       |       |       |      | FEMALE |       |       |       |       |       |     | ALL  |       |       |       |       |       |     |
|----------------------|------|-------|-------|-------|-------|-------|------|--------|-------|-------|-------|-------|-------|-----|------|-------|-------|-------|-------|-------|-----|
|                      | 0-14 | 15-24 | 25-34 | 35-44 | 45-54 | 55-64 | 65+  | 0-14   | 15-24 | 25-34 | 35-44 | 45-54 | 55-64 | 65+ | 0-14 | 15-24 | 25-34 | 35-44 | 45-54 | 55-64 | 65+ |
| American Samoa       | 0    | 1     | 1     | 2     | 1     | 1     | 3    | 0      | 1     | 1     | 1     | 0     | 0     | 2   | 0    | 1     | 1     | 1     | 1     | 1     | 2   |
| Australia            | 4    | 46    | 44    | 26    | 31    | 103   | 269  | 0      | 35    | 25    | 33    | 35    | 104   | 130 | 2    | 40    | 34    | 29    | 33    | 104   | 198 |
| Brunei Darussalam    | 2    | 53    | 172   | 297   | 428   | 700   | 1064 | 2      | 40    | 130   | 227   | 359   | 483   | 419 | 2    | 47    | 151   | 259   | 390   | 571   | 638 |
| Cambodia             | 1    | 17    | 21    | 22    | 29    | 41    | 53   | 1      | 14    | 13    | 11    | 12    | 15    | 14  | 1    | 15    | 17    | 16    | 21    | 28    | 32  |
| China, Hong Kong SAR |      |       |       |       |       |       |      |        |       |       |       |       |       |     |      |       |       |       |       |       |     |
| China, Macao SAR     |      |       |       |       |       |       |      |        |       |       |       |       |       |     |      |       |       |       |       |       |     |
| Cook Islands         |      |       |       |       |       |       |      |        |       |       |       |       |       |     |      |       |       |       |       |       |     |
| Fiji                 | 15   | 14    | 14    | 14    | 13    | 31    | 14   | 10     | 10    | 15    | 15    | 5     | 21    | 12  |      | 13    | 12    | 14    | 9     | 26    | 13  |
| French Polynesia     | 0    | 17    | 10    | 6     | 24    | 39    | 19   | 0      | 18    | 11    | 6     | 18    | 29    | 35  | 0    | 17    | 10    | 6     | 21    | 34    | 27  |
| Guam                 | 12   | 24    | 41    | 38    | 60    | 217   | 85   | 21     | 8     | 56    | 27    | 35    | 42    | 148 | 16   | 16    | 48    | 33    | 48    | 135   | 117 |
| Japan                | 0    | 2     | 6     | 7     | 13    | 16    | 39   | 0      | 3     | 4     | 3     | 3     | 3     | 13  | 0    | 3     | 5     | 5     | 8     | 9     | 24  |
| Kiribati             |      |       |       |       |       |       |      |        |       |       |       |       |       |     |      |       |       |       |       |       |     |
| Lao PDR              | 0    | 16    | 41    | 81    | 128   | 217   | 203  | 0      | 13    | 36    | 53    | 82    | 96    | 86  | 0    | 14    | 39    | 67    | 104   | 152   | 140 |
| Malaysia             | 1    | 25    | 59    | 73    | 85    | 115   | 179  | 1      | 19    | 29    | 26    | 43    | 50    | 53  | 1    | 22    | 44    | 50    | 64    | 83    | 111 |
| Marshall Islands     |      |       |       |       |       |       |      |        |       |       |       |       |       |     |      |       |       |       |       |       |     |
| Micronesia           | 9    | 0     | 14    | 17    | 23    | 55    | 0    | 15     | 44    | 13    | 17    | 47    | 0     | 93  | 12   | 21    | 14    | 17    | 35    | 26    | 51  |
| Mongolia             | 2    | 86    | 123   | 109   | 111   | 110   | 112  | 4      | 96    | 116   | 77    | 63    | 41    | 42  | 3    | 91    | 119   | 93    | 87    | 75    | 73  |
| Nauru                |      |       |       |       |       |       |      |        |       |       |       |       |       |     |      |       |       |       |       |       |     |
| New Caledonia        | 0    | 10    | 11    | 6     | 8     | 12    | 51   | 0      | 22    | 11    | 12    | 27    | 0     | 0   | 0    | 16    | 11    | 9     | 17    | 6     | 24  |
| New Zealand          | 0    | 4     | 6     | 2     | 2     | 2     | 5    | 0      | 6     | 3     | 1     | 1     | 3     | 1   | 0    | 5     | 4     | 1     | 2     | 3     | 3   |
| Niue                 |      |       |       |       |       |       |      |        |       |       |       |       |       |     |      |       |       |       |       |       |     |
| Northern Mariana Is  |      |       |       |       |       |       |      |        |       |       |       |       |       |     |      |       |       |       |       |       |     |
| Palau                |      |       |       |       |       |       |      |        |       |       |       |       |       |     |      |       |       |       |       |       |     |
| Papua New Guinea     | 2    | 25    | 31    | 23    | 31    | 33    | 8    | 2      | 31    | 34    | 19    | 26    | 19    | 2   | 2    | 28    | 33    | 21    | 29    | 26    | 5   |
| Philippines          |      |       |       |       |       |       |      |        |       |       |       |       |       |     |      |       |       |       |       |       |     |
| Rep. Korea           | 0    | 21    | 30    | 33    | 43    | 53    | 94   | 0      | 21    | 21    | 11    | 12    | 18    | 60  | 0    | 21    | 26    | 22    | 27    | 35    | 74  |
| Samoa                | 0    | 5     | 13    | 0     | 20    | 29    | 30   | 3      | 23    | 43    | 0     | 38    | 0     | 0   | 1    | 13    | 26    | 0     | 29    | 13    | 13  |
| Singapore            | 0    | 5     | 9     | 18    | 26    | 38    | 90   | 0      | 4     | 5     | 7     | 10    | 14    | 22  | 0    | 5     | 7     | 13    | 18    | 26    | 53  |
| Solomon Islands      | 3    | 33    | 33    | 43    | 65    | 76    | 62   | 0      | 35    | 44    | 18    | 15    | 81    | 66  | 2    | 34    | 39    | 30    | 40    | 78    | 64  |
| Tokelau              |      |       |       |       |       |       |      |        |       |       |       |       |       |     |      |       |       |       |       |       |     |
| Tonga                | 9    |       |       |       | 118   |       | 366  | 10     | 14    | 20    |       |       | 34    | 131 |      | 9     | 7     | 10    | 55    | 18    | 242 |
| Tuvalu               |      |       |       |       |       |       |      |        |       |       |       |       |       |     |      |       |       |       |       |       |     |
| Vanuatu              | 0    | 33    | 14    | 28    | 135   | 46    | 29   | 0      | 15    | 7     | 44    | 0     | 76    | 31  | 0    | 24    | 10    | 36    | 70    | 60    | 30  |
| Viet Nam             | 0    | 39    | 101   | 169   | 254   | 307   | 410  | 1      | 19    | 35    | 47    | 80    | 134   | 213 | 0    | 29    | 68    | 107   | 166   | 218   | 304 |
| Wallis & Futuna Is   |      |       |       |       |       |       |      |        |       |       |       |       |       |     |      |       |       |       |       |       |     |
| Region               | 1    | 17    | 24    | 28    | 36    | 47    | 65   | 1      | 15    | 16    | 16    | 17    | 22    | 23  | 1    | 15    | 19    | 21    | 26    | 33    | 42  |

Rates are missing where data for smear-positive cases are missing, or where age- and sex-specific population data are not available.

Country data for the Western Pacific, cont'd: number of TB cases notified, 1980-2002

|                      | 1980           | 1981           | 1982           | 1983           | 1984           | 1985           | 1986           | 1987           | 1988           | 1989           | 1990           | 1991           | 1992           | 1993           | 1994           | 1995           | 1996           | 1997           | 1998           | 1999           | 2000           | 2001           | 2002           |
|----------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| American Samoa       | 2              | 6              | 6              | 8              | 12             | 5              | 8              | 9              | 13             | 5              | 9              | 3              | 1              | 4              | 4              | 1 073          | 0              | 6              | 3              | 4              | 3              | 3              | 2              |
| Australia            | 1 457          | 1 386          | 1 270          | 1 219          | 1 299          | 1 088          | 906            | 907            | 954            | 952            | 1 016          | 950            | 1 011          | 991            | 1 057          | 1 073          | 0              | 1 145          | 899            | 1 073          | 1 043          | 980            | 1 013          |
| Brunei Darussalam    | 196            | 285            | 245            | 276            | 256            | 238            | 212            | 189            | 126            | 128            | 143            | 180            | 180            | 160            | 160            | 230            | 160            | 160            | 272            | 307            | 216            | 230            |                |
| Cambodia             | 2 576          | 1 980          | 8 158          | 7 572          | 10 241         | 10 145         | 10 325         | 9 106          | 10 691         | 7 906          | 6 501          | 10 903         | 16 148         | 13 270         | 15 172         | 14 603         | 14 857         | 15 629         | 16 946         | 19 266         | 18 891         | 19 170         | 24 610         |
| China                | 98 654         | 117 557        | 151 964        | 226 999        | 265 095        | 251 600        | 304 639        | 310 607        | 375 481        | 345 000        | 320 426        | 344 218        | 363 904        | 515 764        | 504 758        | 466 394        | 445 518        | 466 394        | 445 518        | 454 372        | 470 221        | 462 609        |                |
| China, Hong Kong SAR | 8 085          | 7 729          | 7 527          | 7 301          | 7 843          | 7 545          | 7 432          | 7 269          | 7 021          | 6 704          | 6 510          | 6 283          | 6 545          | 6 537          | 6 319          | 0              | 6 501          | 7 072          | 7 673          | 7 512          | 7 578          | 7 262          | 6 244          |
| China, Macao SAR     | 1 101          | 585            | 233            | 455            | 671            | 571            | 420            | 389            | 320            | 274            | 343            | 329            | 294            | 285            | 285            | 402            | 570            | 575            | 465            | 449            | 465            | 388            |                |
| Cook Islands         | 37             | 10             | 19             | 29             | 20             | 36             | 17             | 16             | 20             | 1              | 22             | 8              | 12             | 6              | 4              | 4              | 0              | 0              | 1              | 3              | 2              | 1              |                |
| Fiji                 | 210            | 180            | 163            | 185            | 165            | 230            | 199            | 173            | 162            | 218            | 226            | 247            | 240            | 183            | 280            | 203            | 200            | 171            | 166            | 144            | 183            | 150            |                |
| French Polynesia     | 76             | 66             | 65             | 78             | 80             | 78             | 85             | 80             | 63             | 73             | 59             | 49             | 83             | 78             | 89             | 89             | 86             | 91             | 105            | 93             | 62             | 66             |                |
| Guam                 | 55             | 41             | 49             | 48             | 54             | 37             | 49             | 34             | 41             | 75             | 75             | 60             | 60             | 70             | 94             | 80             | 80             | 80             | 80             | 80             | 54             | 51             |                |
| Japan                | 70 916         | 65 867         | 63 940         | 62 021         | 61 521         | 58 567         | 56 690         | 56 496         | 54 357         | 53 112         | 51 821         | 50 612         | 48 956         | 48 461         | 44 425         | 43 078         | 42 122         | 42 190         | 44 016         | 40 800         | 39 384         | 35 489         | 32 828         |
| Kiribati             | 146            | 187            | 193            | 127            | 111            | 103            | 129            | 110            | 208            | 121            | 68             | 91             | 100            | 99             | 253            | 253            | 327            | 464            | 276            | 255            | 252            | 189            | 196            |
| Lao PDR              | 7 630          | 4 706          | 4 706          | 4 700          | 6 528          | 4 258          | 1 514          | 3 468          | 7 279          | 2 952          | 1 826          | 1 951          | 994            | 2 093          | 1 135          | 830            | 1 440          | 1 923          | 2 153          | 2 434          | 2 234          | 2 418          | 2 621          |
| Malaysia             | 11 218         | 10 970         | 11 944         | 11 634         | 10 577         | 10 569         | 10 735         | 11 068         | 10 944         | 10 686         | 11 702         | 11 059         | 11 420         | 12 285         | 11 708         | 11 778         | 12 691         | 13 539         | 14 115         | 14 908         | 15 057         | 14 830         | 14 389         |
| Marshall Islands     | 6              | 7              | 12             | 15             | 12             | 15             | 37             | 32             | 11             | 7              | 68             | 367            | 350            | 111            | 151            | 173            | 126            | 107            | 123            | 49             | 34             | 56             | 51             |
| Micronesia           | 1 161          | 1 094          | 1 340          | 1 512          | 1 651          | 2 992          | 2 818          | 2 432          | 2 541          | 2 237          | 1 577          | 1 611          | 1 502          | 1 433          | 1 730          | 2 780          | 3 457          | 2 987          | 2 915          | 3 348          | 3 109          | 3 526          | 3 829          |
| Mongolia             | 0              | 2              | 8              | 0              | 0              | 0              | 8              | 6              | 8              | 0              | 7              | 7              | 4              | 25             | 41             | 19             | 5              | 15             | 32             | 2              | 4              | 3              | 5              |
| Nauru                | 108            | 128            | 120            | 171            | 144            | 104            | 98             | 74             | 111            | 128            | 143            | 140            | 140            | 104            | 97             | 87             | 104            | 88             | 90             | 78             | 94             | 61             | 65             |
| New Caledonia        | 474            | 448            | 437            | 415            | 404            | 359            | 320            | 296            | 295            | 303            | 348            | 335            | 317            | 274            | 352            | 391            | 352            | 321            | 365            | 447            | 344            | 377            | 329            |
| Niue                 | 1              | 0              | 2              | 3              | 1              | 0              | 5              | 0              | 3              | 0              | 0              | 2              | 2              | 1              | 2              | 0              | 2              | 0              | 0              | 1              | 0              | 0              | 4              |
| Northern Mariana Is  | 26             | 75             | 74             | 74             | 58             | 64             | 16             | 56             | 27             | 28             | 28             | 67             | 67             | 67             | 46             | 48             | 51             | 93             | 97             | 66             | 75             | 58             | 53             |
| Palau                | 17             | 10             | 17             | 14             | 20             | 26             | 13             | 38             | 17             | 3              | 3              | 6              | 4              | 25             | 41             | 19             | 5              | 15             | 32             | 2              | 4              | 3              | 11             |
| Papua New Guinea     | 2 525          | 2 508          | 2 742          | 2 955          | 3 505          | 3 453          | 2 877          | 2 251          | 4 261          | 3 396          | 2 497          | 3 401          | 2 540          | 7 451          | 5 335          | 8 041          | 5 097          | 7 977          | 11 291         | 13 067         | 12 121         | 15 897         | 5 324          |
| Philippines          | 112 307        | 116 821        | 104 715        | 106 300        | 151 863        | 151 028        | 153 129        | 163 740        | 183 113        | 217 272        | 317 008        | 207 371        | 236 172        | 178 134        | 180 044        | 119 186        | 165 453        | 195 767        | 162 360        | 145 807        | 119 914        | 107 133        | 118 408        |
| Rep. Korea           | 89 803         | 98 532         | 100 878        | 91 572         | 85 669         | 87 169         | 88 789         | 87 419         | 74 460         | 70 012         | 63 904         | 57 864         | 48 070         | 46 999         | 38 155         | 42 117         | 39 315         | 33 215         | 34 661         | 32 075         | 21 762         | 37 268         | 34 967         |
| Samoa                | 59             | 49             | 43             | 41             | 37             | 43             | 65             | 29             | 29             | 37             | 44             | 44             | 26             | 49             | 45             | 45             | 31             | 32             | 22             | 31             | 43             | 22             | 30             |
| Singapore            | 2 710          | 2 425          | 2 179          | 2 065          | 2 143          | 1 952          | 1 760          | 1 616          | 1 666          | 1 617          | 1 591          | 1 841          | 1 778          | 1 830          | 1 677          | 1 889          | 1 951          | 1 977          | 2 120          | 1 805          | 1 728          | 1 536          | 1 516          |
| Solomon Islands      | 266            | 313            | 324            | 302            | 337            | 377            | 292            | 334            | 372            | 488            | 382            | 309            | 364            | 367            | 332            | 352            | 299            | 318            | 295            | 289            | 302            | 292            | 256            |
| Tokelau              | 0              | 1              | 0              | 0              | 0              | 2              | 0              | 9              | 1              | 0              | 1              | 1              | 1              | 1              | 0              | 2              | 0              | 0              | 0              | 0              | 0              | 0              | 0              |
| Tonga                | 64             | 49             | 45             | 50             | 54             | 49             | 35             | 24             | 14             | 36             | 23             | 20             | 29             | 33             | 23             | 20             | 22             | 21             | 30             | 22             | 24             | 12             | 29             |
| Tuvalu               | 33             | 18             | 12             | 23             | 9              | 32             | 27             | 22             | 24             | 26             | 23             | 30             | 30             | 28             | 19             | 36             | 14             | 18             | 14             | 16             | 16             | 13             |                |
| Vanuatu              | 178            | 92             | 173            | 196            | 188            | 124            | 131            | 90             | 118            | 144            | 140            | 230            | 193            | 114            | 152            | 79             | 126            | 184            | 178            | 120            | 152            | 175            | 101            |
| Viet Nam             | 43 062         | 43 506         | 51 206         | 43 185         | 43 875         | 46 941         | 47 557         | 55 505         | 52 463         | 52 270         | 50 203         | 59 784         | 56 594         | 52 994         | 51 763         | 55 739         | 74 711         | 77 838         | 88 879         | 89 792         | 90 728         | 95 577         |                |
| Wallis & Futuna Is   | 23             | 24             | 5              | 17             | 14             | 14             | 34             | 34             | 1              | 30             | 11             | 22             | 4              | 11             | 11             | 6              | 8              | 14             |                |                |                | 19             |                |
| <b>Region</b>        | <b>358 482</b> | <b>357 326</b> | <b>463 554</b> | <b>464 176</b> | <b>542 985</b> | <b>617 164</b> | <b>653 839</b> | <b>657 006</b> | <b>718 438</b> | <b>743 905</b> | <b>895 982</b> | <b>762 861</b> | <b>756 458</b> | <b>720 792</b> | <b>726 339</b> | <b>820 735</b> | <b>876 717</b> | <b>872 310</b> | <b>836 602</b> | <b>824 453</b> | <b>791 457</b> | <b>810 818</b> | <b>808 114</b> |
| number reporting     | 34             | 34             | 37             | 37             | 37             | 37             | 36             | 37             | 37             | 36             | 33             | 32             | 36             | 34             | 34             | 29             | 32             | 32             | 31             | 33             | 35             | 35             | 36             |
| percent reporting    | 92             | 92             | 100            | 100            | 100            | 100            | 97             | 100            | 100            | 97             | 89             | 86             | 97             | 92             | 92             | 78             | 86             | 86             | 84             | 89             | 95             | 95             | 97             |

Country data for the Western Pacific, cont'd: case notification rates (per 100 000 population), 1980-2002

|                      | 1980 | 1981 | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
|----------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| American Samoa       | 6    | 18   | 17   | 22   | 32   | 13   | 20   | 21   | 29   | 11   | 19   | 6    | 2    | 8    | 8    | 6    | 0    | 11   | 5    | 7    | 5    | 5    | 3    |
| Australia            | 10   | 9    | 8    | 8    | 7    | 6    | 6    | 6    | 6    | 6    | 6    | 6    | 6    | 6    | 6    | 6    | 6    | 6    | 5    | 6    | 5    | 5    | 5    |
| Brunei Darussalam    | 102  | 143  | 120  | 131  | 118  | 107  | 92   | 80   | 52   | 51   | 56   | 66   | 57   |      |      |      |      | 51   | 83   | 92   | 63   | 66   | 66   |
| Cambodia             | 39   | 29   | 116  | 103  | 132  | 125  | 122  | 104  | 118  | 84   | 67   | 108  | 155  | 123  | 136  | 127  | 126  | 129  | 136  | 150  | 144  | 142  | 178  |
| China                | 10   | 11   | 14   | 21   | 25   | 12   | 23   | 27   | 27   | 33   | 29   | 27   | 29   | 30   | 42   | 41   | 38   | 36   | 36   | 36   | 37   | 36   | 36   |
| China, Hong Kong SAR | 160  | 150  | 144  | 137  | 145  | 138  | 135  | 131  | 125  | 119  | 114  | 109  | 112  | 110  | 104  | 0    | 103  | 110  | 117  | 112  | 111  | 105  | 89   |
| China, Macao SAR     | 437  | 226  | 87   | 163  | 229  | 186  | 131  | 117  | 92   | 76   | 92   | 86   | 75   | 72   |      | 98   | 136  | 134  | 107  |      | 100  | 102  | 84   |
| Cook Islands         | 207  | 56   | 108  | 165  | 114  | 204  | 96   | 90   | 111  | 6    | 5    | 43   | 64   | 32   | 21   | 0    | 0    | 0    | 5    | 16   | 11   | 11   | 5    |
| Fiji                 | 33   | 28   | 24   | 27   | 32   | 28   | 24   | 23   | 30   | 31   | 34   | 33   | 24   | 37   | 26   | 26   | 22   | 21   | 24   | 18   | 22   | 18   | 27   |
| French Polynesia     | 50   | 42   | 41   | 47   | 47   | 45   | 48   | 44   | 34   | 38   | 30   | 25   | 41   | 38   | 42   |      | 39   | 41   | 46   | 41   | 27   | 26   | 27   |
| Guam                 | 52   | 38   | 44   | 42   | 46   | 31   | 40   | 27   | 32   | 57   |      | 43   | 50   | 66   |      |      |      |      |      | 35   | 40   | 32   | 40   |
| Japan                | 61   | 56   | 54   | 52   | 51   | 48   | 47   | 46   | 44   | 43   | 42   | 41   | 39   | 39   | 36   | 34   | 33   | 33   | 35   | 32   | 31   | 28   | 26   |
| Kiribati             | 252  | 317  | 321  | 207  | 177  | 161  | 197  | 164  | 303  | 172  | 95   | 125  | 135  | 131  | 330  | 414  | 578  | 339  | 308  | 300  | 222  | 227  | 227  |
| Lao PDR              | 238  | 141  | 137  | 185  | 118  | 41   | 91   | 186  | 73   | 44   | 46   | 23   | 47   | 25   | 18   | 30   | 39   | 43   | 47   | 42   | 45   | 47   | 47   |
| Malaysia             | 82   | 78   | 82   | 78   | 69   | 67   | 67   | 67   | 65   | 61   | 66   | 60   | 61   | 64   | 59   | 58   | 61   | 63   | 64   | 66   | 65   | 63   | 60   |
| Marshall Islands     | 20   | 22   | 36   | 43   | 33   | 40   | 94   | 79   | 26   | 16   | 57   | 113  | 131  |      |      | 122  | 122  | 98   | 81   | 67   | 108  | 97   |      |
| Micronesia           |      | 86   | 90   | 90   | 77   | 68   | 109  | 84   | 72   | 381  | 354  | 110  | 146  | 164  | 164  | 161  | 117  | 99   | 115  | 85   | 97   | 117  | 117  |
| Mongolia             | 70   | 64   | 76   | 84   | 89   | 157  | 143  | 120  | 121  | 103  | 71   | 71   | 65   | 61   | 73   | 116  | 143  | 123  | 119  | 135  | 124  | 139  | 150  |
| Nauru                | 0    | 26   | 104  | 0    | 0    | 0    | 96   | 70   | 90   | 0    | 74   |      |      |      | 38   |      |      |      |      | 17   | 33   | 24   | 39   |
| New Caledonia        | 76   | 88   | 81   | 114  | 94   | 67   | 62   | 46   | 68   | 76   | 84   | 80   | 78   | 57   | 51   | 45   | 53   | 44   | 44   | 37   | 44   | 28   | 29   |
| New Zealand          | 15   | 14   | 14   | 13   | 13   | 11   | 10   | 9    | 9    | 9    | 10   | 10   | 9    | 8    | 10   | 11   | 10   | 9    | 10   | 12   | 9    | 10   | 9    |
| Niue                 | 29   | 0    | 64   | 101  | 35   | 0    | 192  | 0    | 123  |      | 0    | 90   | 46   | 92   | 0    | 95   | 0    | 0    | 0    | 49   | 0    | 0    | 203  |
| Northern Mariana Is  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| Palau                | 140  | 81   | 135  | 108  | 151  | 191  | 93   | 266  | 117  | 20   | 39   | 25   | 153  | 245  | 111  | 28   | 83   | 170  | 99   | 107  | 79   | 70   | 70   |
| Papua New Guinea     | 78   | 76   | 81   | 85   | 98   | 94   | 77   | 59   | 109  | 85   | 61   | 81   | 59   | 167  | 117  | 171  | 106  | 161  | 222  | 251  | 227  | 291  | 95   |
| Philippines          | 234  | 237  | 207  | 205  | 287  | 278  | 276  | 288  | 314  | 364  | 519  | 332  | 369  | 272  | 269  | 174  | 237  | 274  | 223  | 196  | 158  | 139  | 151  |
| Rep. Korea           | 236  | 255  | 257  | 230  | 212  | 214  | 215  | 210  | 177  | 165  | 149  | 134  | 110  | 106  | 86   | 94   | 87   | 72   | 75   | 69   | 47   | 79   | 74   |
| Samoa                | 38   | 32   | 28   | 26   | 24   | 27   | 41   | 18   | 18   | 23   | 27   | 27   | 16   | 30   | 27   | 27   | 19   | 19   | 13   | 18   | 25   | 13   | 17   |
| Singapore            | 112  | 98   | 86   | 80   | 81   | 72   | 64   | 57   | 58   | 55   | 53   | 59   | 56   | 56   | 50   | 54   | 54   | 53   | 56   | 46   | 43   | 37   | 36   |
| Solomon Islands      | 116  | 132  | 132  | 119  | 128  | 139  | 104  | 115  | 124  | 158  | 120  | 94   | 107  | 105  | 92   | 94   | 77   | 80   | 72   | 68   | 69   | 65   | 55   |
| Tokelau              | 0    | 64   | 0    | 0    | 0    | 121  | 0    | 546  | 61   | 0    | 62   | 63   | 64   |      | 0    | 131  | 0    |      | 0    | 0    | 0    | 0    | 0    |
| Tonga                | 66   | 50   | 46   | 51   | 56   | 50   | 36   | 25   | 14   | 36   | 23   | 20   | 29   | 33   | 23   | 20   | 22   | 21   | 30   | 22   | 24   | 12   | 28   |
| Tuvalu               | 441  | 235  | 154  | 291  | 112  | 393  | 327  | 262  | 281  | 299  | 260  | 334  | 329  | 303  | 202  | 378  |      | 181  | 139  | 157  | 155  | 124  | 124  |
| Vanuatu              | 152  | 77   | 141  | 156  | 146  | 94   | 97   | 65   | 83   | 99   | 94   | 150  | 122  | 70   | 91   | 46   | 71   | 101  | 95   | 63   | 77   | 87   | 49   |
| Viet Nam             | 81   | 80   | 93   | 76   | 76   | 79   | 79   | 90   | 83   | 81   | 76   | 89   | 82   | 75   | 72   | 77   | 101  | 104  | 115  | 115  | 115  | 115  | 119  |
| Wallis & Futuna Is   | 208  | 209  | 42   | 139  | 112  | 109  | 256  | 7    | 220  | 159  | 29   | 79   | 79   | 78   | 76   | 43   | 57   | 98   |      |      |      |      | 130  |
| Region               | 27   | 27   | 34   | 34   | 39   | 44   | 46   | 45   | 49   | 50   | 59   | 49   | 48   | 46   | 45   | 51   | 54   | 53   | 50   | 49   | 47   | 47   | 47   |

Country data for the Western Pacific, cont'd: new smear-positive cases, 1993-2002

|                      | Number of cases |         |         |         |         |         |         |         |         |         | Rate (per 100 000 population) |      |      |      |      |      |      |      |      |      |
|----------------------|-----------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|-------------------------------|------|------|------|------|------|------|------|------|------|
|                      | 1993            | 1994    | 1995    | 1996    | 1997    | 1998    | 1999    | 2000    | 2001    | 2002    | 1993                          | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
| American Samoa       | 1               | 4       |         | 0       | 6       | 2       | 3       | 2       | 2       | 1       | 2                             | 8    |      | 0    | 11   | 4    | 5    | 3    | 3    | 2    |
| Australia            | 557             |         |         |         | 226     | 203     | 285     | 251     | 228     | 210     | 3                             |      |      |      | 1    | 1    | 2    | 1    | 1    | 1    |
| Brunei Darussalam    | 68              |         |         |         | 0       |         | 102     | 84      | 95      | 112     | 24                            |      |      |      | 0    |      | 31   | 25   | 28   | 32   |
| Cambodia             |                 | 11 058  | 11 101  | 12 065  | 12 686  | 13 865  | 15 744  | 14 822  | 14 361  | 17 258  |                               | 99   | 97   | 102  | 104  | 111  | 123  | 113  | 107  | 125  |
| China                | 84 898          | 104 729 | 134 488 | 203 670 | 236 021 | 202 817 | 201 775 | 204 765 | 204 591 | 194 972 | 7                             | 9    | 11   | 17   | 19   | 16   | 16   | 16   | 16   | 15   |
| China, Hong Kong SAR | 2 429           |         | 1 677   | 1 774   | 1 943   | 2 091   | 2 020   | 1 940   | 1 857   | 1 890   | 41                            |      | 27   | 28   | 30   | 32   | 30   | 28   | 27   | 27   |
| China, Macao SAR     | 108             |         | 141     | 258     | 325     | 276     |         | 160     | 157     | 147     | 27                            |      | 34   | 61   | 76   | 63   |      | 36   | 34   | 32   |
| Cook Islands         | 4               | 1       |         | 0       | 0       | 1       | 0       | 0       | 2       | 1       | 21                            | 5    |      | 0    | 0    | 5    | 0    | 0    | 11   | 5    |
| Fiji                 | 58              | 60      | 68      | 69      | 66      | 74      | 65      | 62      | 73      | 75      | 8                             | 8    | 9    | 9    | 8    | 9    | 8    | 8    | 9    | 9    |
| French Polynesia     |                 | 38      |         | 37      | 41      | 34      | 33      | 29      | 0       | 27      |                               | 18   |      | 17   | 18   | 15   | 14   | 12   | 0    | 11   |
| Guam                 |                 | 40      |         |         |         |         |         | 43      | 47      | 31      |                               | 28   |      |      |      |      |      | 28   | 30   | 19   |
| Japan                | 17 890          | 16 770  | 14 367  | 12 867  | 13 571  | 11 935  | 12 909  | 11 853  | 11 408  | 10 807  | 14                            | 13   | 11   | 10   | 11   | 9    | 10   | 9    | 9    | 8    |
| Kiribati             | 99              | 184     |         | 144     | 50      | 52      | 59      | 54      | 64      | 82      | 131                           | 240  |      | 182  | 62   | 64   | 71   | 64   | 75   | 95   |
| Lao PDR              |                 |         | 478     | 886     | 1 234   | 1 494   | 1 719   | 1 526   | 1 563   | 1 829   |                               |      | 10   | 18   | 25   | 30   | 33   | 29   | 29   | 33   |
| Malaysia             | 6 954           | 6 861   | 6 688   | 7 271   | 7 496   | 7 802   | 8 207   | 8 156   | 8 309   | 7 958   | 36                            | 35   | 33   | 35   | 35   | 36   | 35   | 35   | 35   | 33   |
| Marshall Islands     | 12              |         |         | 12      | 11      | 11      | 17      | 11      | 15      | 18      | 26                            |      |      | 25   | 22   | 22   | 34   | 22   | 29   | 34   |
| Micronesia           |                 |         | 9       | 14      | 9       | 14      |         | 15      | 8       | 22      |                               | 6    | 8    | 13   | 8    | 13   |      | 14   | 7    | 20   |
| Mongolia             | 86              | 145     | 455     | 769     | 1 171   | 1 356   | 1 513   | 1 389   | 1 631   | 1 670   | 4                             |      |      | 32   | 48   | 55   | 61   | 56   | 65   | 65   |
| Nauru                |                 | 2       |         |         |         |         | 2       | 4       | 2       | 2       |                               | 19   |      |      |      |      | 17   | 33   | 16   | 16   |
| New Caledonia        | 16              | 28      | 21      | 26      | 24      | 26      | 22      | 20      | 19      | 21      | 9                             | 15   | 11   | 13   | 12   | 13   | 10   | 9    | 9    | 9    |
| New Zealand          | 91              | 61      | 78      | 90      | 83      | 106     | 94      | 74      | 68      | 88      | 3                             | 2    | 2    | 2    | 2    | 3    | 3    | 2    | 2    | 2    |
| Niue                 | 0               | 0       | 0       | 1       | 0       | 0       | 1       | 0       | 0       | 1       | 0                             | 0    | 0    | 0    | 47   | 0    | 49   | 0    | 0    | 51   |
| Northern Mariana Is  |                 |         | 14      | 26      | 21      | 26      | 15      | 27      | 19      | 21      |                               |      |      | 25   | 45   | 34   | 41   | 22   | 26   | 28   |
| Palau                | 8               | 11      | 9       | 4       | 7       |         | 20      |         |         | 9       | 49                            | 66   |      | 23   | 39   |      | 106  |      |      | 45   |
| Papua New Guinea     |                 |         | 1 652   | 652     | 1 195   | 2 107   | 1 914   | 2 267   | 1 122   | 926     |                               |      | 35   | 14   | 24   | 41   | 37   | 43   | 21   | 17   |
| Philippines          | 92 279          | 87 401  | 94 768  | 86 695  | 80 163  | 69 476  | 73 373  | 67 056  | 59 341  | 65 148  | 141                           | 131  | 139  | 124  | 112  | 95   | 99   | 89   | 77   | 83   |
| Rep. Korea           | 16 630          | 13 266  | 11 754  | 11 420  | 9 957   | 10 359  | 9 559   | 8 216   | 11 805  | 11 345  | 38                            | 30   | 26   | 25   | 22   | 22   | 21   | 18   | 25   | 24   |
| Samoa                | 21              | 18      | 15      | 9       | 14      | 7       | 17      | 13      | 11      | 18      | 13                            | 11   | 9    | 5    | 8    | 4    | 10   | 8    | 6    | 10   |
| Singapore            | 513             | 861     | 455     | 519     | 436     | 482     | 465     | 248     | 357     | 549     | 16                            | 26   | 13   | 14   | 12   | 13   | 12   | 6    | 9    | 13   |
| Solomon Islands      | 155             | 114     | 109     | 90      | 113     | 140     | 93      | 109     | 118     | 108     | 44                            | 31   | 29   | 23   | 28   | 34   | 22   | 25   | 26   | 23   |
| Tokelau              |                 | 0       | 1       | 0       |         |         | 0       | 0       | 0       |         |                               |      | 0    | 66   | 0    |      | 0    | 0    | 0    |      |
| Tonga                | 16              | 17      | 9       | 14      | 11      | 16      | 10      | 15      | 8       | 23      | 16                            | 17   | 9    | 14   | 11   | 16   | 10   | 15   | 8    | 22   |
| Tuvalu               | 2               | 1       | 6       |         |         |         | 0       | 0       | 0       | 0       | 22                            | 11   | 63   |      |      |      | 0    | 0    | 0    | 0    |
| Vanuatu              |                 | 62      | 30      | 50      | 66      | 38      | 43      | 63      | 57      | 38      |                               | 37   | 17   | 28   | 36   | 20   | 22   | 32   | 28   | 18   |
| Viet Nam             |                 |         | 37 550  | 48 911  | 50 016  | 54 889  | 53 805  | 53 169  | 54 238  | 56 811  |                               |      | 52   | 66   | 67   | 72   | 70   | 68   | 71   | 68   |
| Wallis & Futuna Is   |                 |         | 3       |         | 1       |         |         |         | 1       | 1       |                               |      | 21   | 21   | 7    |      |      |      | 7    | 7    |
| Region               | 222 895         | 241 732 | 315 946 | 388 346 | 416 952 | 379 699 | 383 884 | 376 443 | 371 577 | 372 219 | 14                            | 15   | 20   | 24   | 25   | 23   | 23   | 22   | 22   | 22   |

# Notes

**BRUNEI DARUSSALAM** Treatment outcomes for new cases are for laboratory-confirmed (not necessarily smear-positive) cases.

**CAMBODIA** There is a discrepancy between the population estimate used by the government (12 620 100) and that used by the UN (13 809 532). The latest estimate of the incidence of TB does not take into account the results from a recent disease prevalence survey as these results were still preliminary at the time.

**SINGAPORE** Treatment outcomes for new cases are for laboratory-confirmed (not necessarily smear-positive) cases.



ANNEX 3

**Comparison  
of cases  
notified and  
registered for  
treatment  
under DOTS  
in 2001**

# Comparison of cases notified and registered for treatment under DOTS in 2001

|                          | Number of cases |            | % of notif<br>registered |
|--------------------------|-----------------|------------|--------------------------|
|                          | notified        | registered |                          |
| Afghanistan              | 4 639           | 6 292      | 136                      |
| Albania                  | 81              | 81         | 100                      |
| Algeria                  | 7 845           | 7 622      | 105                      |
| American Samoa           | 3               | 3          | 100                      |
| Andorra                  | 4               | 3          | 33                       |
| Angola                   | 7 379           |            | 10                       |
| Anguilla                 |                 |            |                          |
| Antigua & Barbuda        | 1               | 1          | 100                      |
| Argentina                | 3 068           | 3 068      | 100                      |
| Armenia                  | 284             | 284        | 100                      |
| Australia                | 99              | 133        | 134                      |
| Austria                  | 262             | 252        | 96                       |
| Azerbaijan               | 5               | 499        | 9980                     |
| Bahamas                  |                 | 42         | 1                        |
| Bahrain                  | 89              | 23         | 26                       |
| Bangladesh               | 38 728          | 38 722     | 100                      |
| Barbados                 | 6               |            |                          |
| Belarus                  |                 |            |                          |
| Belgium                  | 472             | 346        | 73                       |
| Belize                   | 53              | 71         | 134                      |
| Benin                    |                 | 2 298      | 50                       |
| Bermuda                  |                 | 0          | 0                        |
| Bhutan                   | 359             | 359        | 100                      |
| Bolivia                  | 6 672           | 6 672      | 100                      |
| Bosnia & Herzegovina     | 800             | 539        | 67                       |
| Botswana                 | 3 057           | 4 296      | 141                      |
| Brazil                   | 4 086           | 1 394      | 34                       |
| British Virgin Islands   |                 |            |                          |
| Brunei Darussalam        | 95              | 147        | 155                      |
| Bulgaria                 | 170             | 380        | 224                      |
| Burkina Faso             | 1 522           | 1 537      | 101                      |
| Burundi                  | 3 040           | 3 465      | 114                      |
| Cambodia                 | 14 361          | 14 277     | 99                       |
| Cameroon                 | 4 695           | 3 871      | 82                       |
| Canada                   | 502             | 465        | 93                       |
| Cape Verde               | 140             | 12         | 9                        |
| Cayman Islands           | 1               | 1          | 100                      |
| Central African Republic | 439             | 2 633      | 600                      |
| Chad                     |                 |            |                          |
| Chile                    | 1 355           | 1 303      | 96                       |
| China                    | 185 018         | 176 476    | 95                       |
| China, Hong Kong SAR     | 1 450           | 1 450      | 100                      |
| China, Macao SAR         | 157             | 153        | 97                       |
| Colombia                 |                 | 507        | 11                       |
| Comoros                  |                 |            |                          |
| Congo                    | 4 319           | 4 319      | 100                      |
| Cook Islands             | 2               | 1          | 50                       |
| Costa Rica               | 252             | 252        | 100                      |
| Côte d'Ivoire            | 2 380           | 6 510      | 274                      |
| Croatia                  |                 |            |                          |
| Cuba                     | 562             | 559        | 99                       |
| Cyprus                   |                 | 25         | 1                        |
| Czech Republic           | 391             | 380        | 97                       |
| Denmark                  |                 |            |                          |
| Djibouti                 | 1 312           | 1 309      | 100                      |
| Dominica                 |                 | 1          | 0                        |
| Dominican Republic       | 353             | 373        | 106                      |
| DPR Korea                | 9 586           | 9 586      | 100                      |
| DR Congo                 | 42 054          | 40 884     | 97                       |
| Ecuador                  | 436             | 152        | 35                       |
| Egypt                    | 4 514           | 4 932      | 109                      |
| El Salvador              | 1 003           | 1 003      | 100                      |
| Equatorial Guinea        |                 |            |                          |
| Eritrea                  | 702             | 860        | 123                      |
| Estonia                  | 212             | 212        | 100                      |
| Ethiopia                 | 33 028          | 32 391     | 98                       |
| Fiji                     | 73              | 73         | 100                      |
| Finland                  |                 |            |                          |
| France                   |                 |            |                          |
| French Polynesia         |                 | 45         |                          |
| Gabon                    |                 | 849        | 18                       |
| Gambia                   |                 | 861        | 19                       |
| Georgia                  | 1 014           | 1 014      | 100                      |
| Germany                  | 1 935           | 880        | 45                       |
| Ghana                    | 7 712           | 7 712      | 100                      |
| Greece                   |                 |            |                          |
| Grenada                  |                 |            |                          |
| Guam                     | 47              | 62         | 132                      |
| Guatemala                | 1 669           | 1 617      | 97                       |
| Guinea                   | 4 092           | 4 090      | 100                      |
| Guinea-Bissau            |                 | 513        | 11                       |
| Guyana                   | 72              | 78         | 108                      |
| Haiti                    | 3 545           | 3 545      | 100                      |
| Honduras                 | 2 697           | 2 996      | 111                      |
| Hungary                  | 546             | 583        | 107                      |
| Iceland                  | 3               | 3          | 100                      |
| India                    | 185 277         | 184 523    | 100                      |
| Indonesia                | 53 965          | 53 965     | 100                      |
| Iran                     | 5 523           | 5 475      | 99                       |
| Iraq                     | 3 559           | 3 579      | 101                      |
| Ireland                  |                 |            |                          |
| Israel                   | 172             | 288        | 167                      |
| Italy                    | 204             | 198        | 97                       |
| Jamaica                  | 75              | 82         | 109                      |
| Japan                    | 5 709           | 6 026      | 106                      |
| Jordan                   | 94              | 94         | 100                      |
| Kazakhstan               | 9 079           | 8 894      | 98                       |
| Kenya                    | 31 307          | 30 855     | 99                       |
| Kiribati                 | 64              | 71         | 111                      |
| Kuwait                   |                 |            |                          |
| Kyrgyzstan               |                 | 1 458      |                          |
| Lao PDR                  | 1 563           | 1 484      | 95                       |
| Latvia                   | 661             | 661        | 100                      |
| Lebanon                  | 171             | 171        | 100                      |
| Lesotho                  |                 | 2 977      | 64                       |
| Liberia                  |                 |            |                          |
| Libyan Arab Jamahiriya   |                 |            |                          |
| Lithuania                | 341             | 341        | 100                      |

continued...

Comparison of cases notified and registered for treatment under DOTS in 2001, cont.

|                         | Number of cases |            | % of notif<br>registered |
|-------------------------|-----------------|------------|--------------------------|
|                         | notified        | registered |                          |
| Luxembourg              | 11              |            |                          |
| Madagascar              | 11 092          | 9 228      | 83                       |
| Malawi                  | 8 309           | 8 274      | 100                      |
| Malaysia                | 8 309           | 8 277      | 100                      |
| Maldives                | 59              | 59         | 100                      |
| Mali                    |                 | 2 797      | 60                       |
| Malta                   | 3               | 3          | 100                      |
| Marshall Islands        | 15              | 22         | 147                      |
| Mauritania              |                 |            |                          |
| Mauritius               | 85              | 123        | 145                      |
| Mexico                  | 14 537          | 14 537     | 100                      |
| Micronesia              | 8               | 8          | 100                      |
| Monaco                  |                 |            |                          |
| Mongolia                | 1 631           | 1 631      | 100                      |
| Montserrat              | 0               |            |                          |
| Morocco                 | 12 804          | 12 992     | 101                      |
| Mozambique              | 13 964          | 14 047     | 101                      |
| Myanmar                 | 20 686          | 20 887     | 101                      |
| Namibia                 | 4 378           | 4 238      | 97                       |
| Nauru                   | 2               | 2          | 100                      |
| Nepal                   | 12 692          | 12 456     | 98                       |
| Netherlands             | 307             |            |                          |
| Netherlands Antilles    |                 |            |                          |
| New Caledonia           | 34              | 19         | 56                       |
| New Zealand             | 68              | 90         | 132                      |
| Nicaragua               | 1 510           | 1 506      | 100                      |
| Niger                   |                 |            |                          |
| Nigeria                 | 18 882          | 17 436     | 92                       |
| Niue                    | 0               |            |                          |
| Northern Mariana Is     | 19              | 19         | 100                      |
| Norway                  | 59              | 53         | 90                       |
| Oman                    | 156             | 107        | 69                       |
| Pakistan                | 6 255           | 6 251      | 100                      |
| Palau                   |                 | 1          | 0                        |
| Panama                  | 451             | 537        | 119                      |
| Papua New Guinea        | 462             | 469        | 102                      |
| Paraguay                | 152             | 152        | 100                      |
| Peru                    | 21 685          | 13 524     | 62                       |
| Philippines             | 59 341          | 55 402     | 93                       |
| Poland                  | 180             | 180        | 100                      |
| Portugal                | 2 042           | 2 042      | 100                      |
| Puerto Rico             | 71              | 93         | 131                      |
| Qatar                   | 77              | 77         | 100                      |
| Rep. Korea              |                 |            |                          |
| Republic of Moldova     | 1 060           | 200        | 19                       |
| Romania                 | 1 476           | 3 779      | 256                      |
| Russian Federation      | 4 079           | 4 058      | 99                       |
| Rwanda                  | 3 252           |            |                          |
| Saint Kitts & Nevis     | 0               |            |                          |
| Saint Lucia             | 6               | 6          | 100                      |
| Samoa                   | 11              | 22         | 200                      |
| San Marino              | 0               | 0          |                          |
| Sao Tome & Principe     |                 |            |                          |
| Saudi Arabia            | 1 686           | 1 308      | 78                       |
| Senegal                 | 6 094           | 6 094      | 100                      |
| Serbia & Montenegro     | 461             | 683        | 148                      |
| Seychelles              | 12              | 12         | 100                      |
| Sierra Leone            | 2 692           | 2 683      | 100                      |
| Singapore               | 175             | 451        | 258                      |
| Slovakia                | 226             | 226        | 100                      |
| Slovenia                | 139             | 139        | 100                      |
| Solomon Islands         | 118             | 118        | 100                      |
| Somalia                 | 4 640           | 4 646      | 100                      |
| South Africa            | 71 571          | 83 233     | 116                      |
| Spain                   |                 |            |                          |
| Sri Lanka               | 3 708           | 3 708      | 100                      |
| St Vincent & Grenadines | 3               | 10         | 333                      |
| Sudan                   | 9 482           | 11 136     | 117                      |
| Suriname                |                 |            |                          |
| Swaziland               |                 | 1 586      | 34                       |
| Sweden                  | 105             | 106        | 101                      |
| Switzerland             |                 |            |                          |
| Syrian Arab Republic    | 1 490           | 1 507      | 101                      |
| Tajikistan              |                 | 0          | 0                        |
| TFYR Macedonia          | 164             | 128        | 78                       |
| Thailand                | 28 363          | 19 717     | 70                       |
| Timor-Leste             |                 | 1 288      | 28                       |
| Togo                    |                 | 982        | 21                       |
| Tokelau                 |                 |            |                          |
| Tonga                   | 8               | 12         | 150                      |
| Trinidad & Tobago       |                 |            |                          |
| Tunisia                 | 1 077           | 1 070      | 99                       |
| Turkey                  |                 | 0          | 0                        |
| Turkmenistan            | 658             | 658        | 100                      |
| Turks & Caicos Islands  |                 |            |                          |
| Tuvalu                  |                 |            |                          |
| Uganda                  | 17 291          | 17 291     | 100                      |
| Ukraine                 |                 |            |                          |
| United Arab Emirates    | 69              | 74         | 107                      |
| United Kingdom          |                 |            |                          |
| UR Tanzania             | 24 685          | 24 235     | 98                       |
| Uruguay                 | 340             | 340        | 100                      |
| US Virgin Islands       |                 |            |                          |
| USA                     | 5 600           | 10 198     | 182                      |
| Uzbekistan              | 854             | 854        | 100                      |
| Vanuatu                 | 48              | 48         | 100                      |
| Venezuela               | 3 120           | 3 057      | 98                       |
| Viet Nam                | 54 238          | 54 238     | 100                      |
| Wallis & Futuna Is      |                 | 1          | 0                        |
| Yemen                   | 4 242           | 4 242      | 100                      |
| Zambia                  |                 | 8 847      | 191                      |
| Zimbabwe                | 15 370          | 16 569     | 108                      |

ANNEX 4

**Trends in  
treatment  
success and  
DOTS detection  
rates,  
1994–2002**



# Trends in treatment success and DOTS detection rates, 1994-2002

|                          | DOTS treatment success (%) |      |      |      |      |      |      |      | DOTS detection rate (%) |      |      |      |      |      |      |      |
|--------------------------|----------------------------|------|------|------|------|------|------|------|-------------------------|------|------|------|------|------|------|------|
|                          | 1994                       | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 1995                    | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
| Afghanistan              |                            |      |      | 45   | 33   | 87   | 86   | 84   |                         |      | 2    | 6    | 5    | 9    | 14   | 19   |
| Albania                  |                            |      |      |      |      |      |      | 98   |                         |      |      |      |      |      | 21   | 24   |
| Algeria                  |                            |      | 86   |      |      | 87   | 87   | 84   |                         |      | 134  |      |      | 126  | 115  | 114  |
| American Samoa           |                            | 100  |      |      | 50   | 100  | 100  | 100  |                         | 0    | 63   |      | 34   | 23   | 24   | 12   |
| Andorra                  |                            |      |      |      | 100  | 67   | 50   | 100  |                         |      | 226  | 14   | 44   | 15   | 47   | 32   |
| Angola                   |                            |      |      | 15   | 68   |      | 68   | 66   |                         |      | 70   | 42   | 65   |      | 69   | 91   |
| Anguilla                 |                            |      |      |      |      |      |      |      |                         |      |      |      |      |      |      |      |
| Antigua & Barbuda        |                            |      |      |      | 50   | 50   | 100  | 100  |                         |      |      |      | 44   | 134  | 45   | 92   |
| Argentina                |                            |      |      |      | 55   | 59   | 54   | 64   |                         |      | 4    | 7    | 20   | 30   | 38   | 51   |
| Armenia                  |                            | 83   | 77   | 82   | 81   | 88   | 87   | 90   | 9                       | 23   | 41   | 43   | 40   | 47   | 28   | 28   |
| Australia                |                            |      |      | 66   | 75   | 84   | 74   | 66   |                         |      |      | 23   | 30   | 24   | 20   | 25   |
| Austria                  |                            |      |      |      |      | 77   | 73   | 64   |                         |      |      |      |      | 58   | 48   | 41   |
| Azerbaijan               |                            |      | 86   | 87   | 86   | 88   | 91   | 66   | 4                       | 8    | 6    | 7    | 7    | 6    | 0    | 43   |
| Bahamas                  |                            |      |      |      | 72   | 66   |      | 64   |                         |      |      |      | 62   | 95   |      | 50   |
| Bahrain                  |                            |      |      |      | 13   | 95   | 73   | 87   |                         |      |      |      | 62   | 16   | 61   | 12   |
| Bangladesh               | 73                         | 71   | 72   | 78   | 80   | 81   | 83   | 84   | 6                       | 14   | 18   | 23   | 24   | 25   | 27   | 32   |
| Barbados                 |                            |      |      |      |      |      |      |      |                         |      |      |      |      |      | 30   | 24   |
| Belarus                  |                            |      |      |      |      |      |      |      |                         |      |      |      |      |      |      |      |
| Belgium                  |                            |      |      |      |      |      |      | 64   |                         |      |      |      |      |      | 71   | 64   |
| Belize                   |                            |      |      |      |      | 88   | 78   | 66   |                         | 43   | 99   |      |      | 79   | 91   | 117  |
| Benin                    | 76                         | 73   | 72   | 73   | 77   | 77   |      | 79   | 94                      | 93   | 93   | 92   | 98   | 99   |      | 98   |
| Bermuda                  |                            |      |      |      |      |      |      |      |                         |      |      |      |      |      |      | 0    |
| Bhutan                   | 71                         | 97   | 96   | 85   | 90   | 85   | 90   | 93   | 28                      | 24   | 23   | 22   | 26   | 29   | 30   | 31   |
| Bolivia                  | 66                         | 62   | 71   | 77   | 62   | 74   | 79   | 82   | 40                      | 79   | 73   | 75   | 74   | 71   | 74   | 75   |
| Bosnia & Herzegovina     |                            |      |      | 93   | 88   | 90   | 94   | 98   |                         |      |      | 38   | 63   | 63   | 69   | 47   |
| Botswana                 | 72                         | 67   | 70   | 70   | 47   | 71   | 77   | 78   | 69                      | 80   | 76   | 81   | 76   | 77   | 71   | 73   |
| Brazil                   |                            |      |      |      | 91   | 89   | 73   | 67   |                         |      |      | 4    | 4    | 8    | 8    | 10   |
| British Virgin Islands   |                            |      |      |      |      |      |      |      |                         |      |      |      |      |      |      |      |
| Brunei Darussalam        |                            |      |      |      | 85   | 76   | 63   | 56   |                         |      |      |      | 120  | 96   | 105  | 121  |
| Bulgaria                 |                            |      |      |      |      |      |      | 87   |                         |      |      |      |      | 23   | 10   | 43   |
| Burkina Faso             |                            | 25   | 29   | 61   | 59   | 61   | 60   | 65   | 11                      | 20   | 15   | 18   | 18   | 20   | 18   | 18   |
| Burundi                  | 44                         | 45   |      | 67   | 74   |      | 80   | 80   | 20                      | 25   | 31   | 19   | 38   |      | 33   | 28   |
| Cambodia                 | 84                         | 91   | 94   | 91   | 95   | 93   | 91   | 92   | 41                      | 34   | 44   | 47   | 51   | 47   | 44   | 52   |
| Cameroon                 |                            |      |      | 80   | 75   | 75   | 77   | 62   |                         | 5    |      | 11   | 21   | 34   | 42   | 60   |
| Canada                   |                            |      |      |      | 35   | 79   | 80   | 67   |                         |      |      |      | 51   | 58   | 58   | 52   |
| Cape Verde               |                            |      |      |      |      |      |      | 42   |                         |      |      |      |      |      | 40   | 31   |
| Cayman Islands           |                            |      |      |      |      |      |      | 100  |                         |      |      |      |      |      | 129  | 0    |
| Central African Republic |                            | 37   |      |      |      |      | 57   | 61   |                         | 63   |      |      |      |      | 9    | 49   |
| Chad                     | 63                         | 47   |      |      | 64   |      |      |      | 34                      | 14   |      |      | 41   |      |      | 42   |
| Chile                    | 83                         | 79   | 80   | 77   | 83   | 83   | 82   | 83   | 73                      | 72   | 80   | 90   | 93   | 87   | 99   | 112  |
| China                    | 94                         | 96   | 96   | 96   | 97   | 96   | 95   | 96   | 15                      | 28   | 31   | 30   | 28   | 29   | 28   | 27   |
| China, Hong Kong SAR     |                            |      |      |      | 85   | 78   | 76   | 78   |                         |      |      |      | 57   | 54   | 50   | 51   |
| China, Macao SAR         | 75                         |      |      | 81   |      | 78   | 89   | 86   | 92                      | 130  | 189  | 137  |      | 93   | 90   | 77   |
| Colombia                 |                            |      |      |      | 74   | 82   | 80   | 85   |                         |      |      |      | 30   | 91   |      | 9    |
| Comoros                  | 94                         | 90   |      | 85   |      | 93   |      |      | 59                      | 61   |      | 50   |      | 44   |      |      |
| Congo                    | 69                         |      |      |      |      | 61   | 69   | 66   | 67                      |      |      | 50   |      | 84   | 78   | 69   |
| Cook Islands             |                            |      |      | 50   |      | 80   |      | 100  |                         | 0    | 0    | 32   | 0    | 0    | 76   | 40   |
| Costa Rica               |                            |      |      |      |      | 81   | 76   | 72   |                         |      |      |      | 32   | 152  | 90   | 79   |
| Côte d'Ivoire            | 17                         | 68   | 56   | 61   | 62   | 63   |      | 73   | 54                      | 53   | 50   | 49   | 46   | 36   | 9    | 25   |
| Croatia                  |                            |      |      |      |      |      |      |      |                         |      |      |      |      |      |      |      |
| Cuba                     | 86                         | 90   | 92   | 90   | 94   | 91   | 93   | 93   | 81                      | 88   | 87   | 92   | 96   | 98   | 88   | 91   |
| Cyprus                   |                            |      |      |      | 42   |      |      | 92   |                         |      |      | 28   | 97   |      |      | 46   |
| Czech Republic           | 73                         | 60   | 66   | 69   | 65   | 78   | 70   | 73   | 44                      | 58   | 53   | 65   | 59   | 60   | 61   | 57   |
| Denmark                  |                            |      |      |      |      |      |      |      |                         |      |      |      |      |      |      |      |
| Djibouti                 |                            | 75   | 77   | 76   | 79   | 72   | 62   | 78   |                         | 117  | 112  | 90   | 75   | 60   | 51   | 45   |
| Dominica                 |                            |      | 100  |      |      |      |      | 100  |                         |      | 84   | 51   |      |      |      | 36   |
| Dominican Republic       |                            |      |      |      |      | 81   | 79   | 85   |                         |      |      |      | 9    | 6    | 10   | 43   |
| DPR Korea                |                            |      |      |      | 91   | 94   | 91   | 91   |                         |      |      |      | 2    | 27   | 58   | 88   |
| DR Congo                 | 71                         | 80   | 48   | 64   | 70   | 69   | 78   | 77   | 42                      | 49   | 47   | 57   | 54   | 51   | 54   | 52   |
| Ecuador                  |                            |      |      |      |      |      |      | 82   |                         |      |      |      |      |      | 5    | 31   |

continued...

Trends in treatment success and DOTS detection rates, 1994-2002, cont'd

|                        | DOTS treatment success (%) |      |      |      |      |      |      |      | DOTS detection rate (%) |      |      |      |      |      |      |      |
|------------------------|----------------------------|------|------|------|------|------|------|------|-------------------------|------|------|------|------|------|------|------|
|                        | 1994                       | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 1995                    | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
| Egypt                  | 52                         |      | 81   | 82   | 87   | 87   | 87   | 82   | 41                      | 0    | 10   | 16   | 30   | 44   | 48   | 53   |
| El Salvador            |                            |      |      |      | 77   | 78   | 79   | 88   |                         |      | 45   | 52   | 55   | 56   | 57   | 57   |
| Equatorial Guinea      | 89                         | 89   | 77   | 82   |      |      |      |      | 73                      | 67   | 69   | 84   |      |      |      |      |
| Eritrea                |                            |      |      | 83   | 73   | 44   | 76   | 80   |                         |      | 3    | 6    | 13   | 14   | 16   | 14   |
| Estonia                |                            |      |      |      |      | 63   | 70   | 64   |                         |      |      |      |      | 72   | 62   | 61   |
| Ethiopia               | 74                         | 61   | 73   | 72   | 74   | 76   | 80   | 76   | 16                      | 21   | 24   | 25   | 26   | 34   | 33   | 33   |
| Fiji                   | 90                         | 86   |      | 87   | 90   | 92   | 85   | 85   | 46                      | 48   | 48   | 56   | 51   | 50   | 62   | 66   |
| Finland                |                            |      |      |      |      |      |      |      |                         |      |      |      |      |      |      |      |
| France                 |                            |      |      |      |      |      |      |      |                         |      |      |      |      |      |      |      |
| French Polynesia       |                            | 67   | 95   | 100  | 74   | 85   | 97   | 80   |                         | 92   | 106  | 91   | 91   | 83   |      | 82   |
| Gabon                  |                            |      |      |      |      |      |      | 49   |                         |      |      |      |      |      |      | 73   |
| Gambia                 | 74                         | 76   | 80   | 70   |      |      |      | 71   | 76                      | 69   | 73   | 76   |      |      |      | 73   |
| Georgia                |                            | 58   |      | 65   | 78   | 61   | 63   | 67   | 15                      | 31   |      | 32   | 42   | 33   | 53   | 50   |
| Germany                |                            |      |      | 54   | 58   | 58   | 77   | 67   |                         |      | 63   | 63   | 64   |      | 50   | 52   |
| Ghana                  |                            | 54   | 51   | 48   | 59   | 55   | 50   | 42   | 16                      | 14   | 32   | 33   | 31   | 39   | 41   | 41   |
| Greece                 |                            |      |      |      |      |      |      |      |                         |      |      |      |      |      |      |      |
| Grenada                |                            |      |      |      |      |      |      |      |                         |      |      |      |      |      |      |      |
| Guam                   |                            |      |      |      |      | 94   | 93   | 71   |                         |      |      |      |      | 69   | 74   | 48   |
| Guatemala              | 62                         | 61   | 81   | 73   | 79   | 81   | 86   | 85   | 42                      | 58   | 56   | 56   | 56   | 50   | 41   | 45   |
| Guinea                 | 78                         | 78   | 75   | 74   | 73   | 74   | 68   | 74   | 44                      | 52   | 51   | 54   | 54   | 55   | 54   | 54   |
| Guinea-Bissau          |                            |      |      |      |      | 35   |      | 51   |                         |      |      |      |      | 46   |      | 43   |
| Guyana                 |                            |      |      |      |      | 91   | 91   | 90   |                         |      |      |      |      | 10   | 20   | 11   |
| Haiti                  |                            |      |      | 73   | 79   | 70   | 73   | 75   |                         |      | 2    | 12   | 24   | 23   | 30   | 41   |
| Honduras               |                            |      |      |      | 93   | 88   | 89   | 86   |                         |      |      | 2    | 15   | 61   | 104  | 114  |
| Hungary                |                            |      |      |      | 80   |      | 64   | 46   |                         |      |      |      | 36   | 25   | 35   | 39   |
| Iceland                |                            |      |      |      |      |      |      | 67   |                         |      |      |      |      |      | 69   | 48   |
| India                  | 83                         | 79   | 79   | 82   | 84   | 82   | 84   | 85   | 0                       | 1    | 1    | 2    | 7    | 12   | 23   | 31   |
| Indonesia              | 94                         | 91   | 81   | 54   | 58   | 50   | 87   | 86   | 1                       | 4    | 7    | 12   | 19   | 20   | 21   | 30   |
| Iran                   |                            |      | 87   | 84   | 83   | 82   | 85   | 84   | 50                      |      | 13   | 36   | 55   | 59   | 62   | 60   |
| Iraq                   |                            |      |      |      | 83   | 85   | 92   | 89   |                         |      |      | 2    | 6    | 21   | 21   | 21   |
| Ireland                |                            |      |      |      |      |      |      |      |                         |      |      |      |      |      |      |      |
| Israel                 |                            |      |      |      |      |      | 78   | 79   |                         |      |      |      |      | 6    | 59   | 58   |
| Italy                  |                            | 80   | 82   | 69   | 72   | 71   | 74   | 40   |                         | 14   | 9    | 13   | 55   | 31   | 10   | 63   |
| Jamaica                |                            | 67   | 72   | 79   | 89   | 74   | 45   | 78   |                         | 85   | 80   | 91   | 104  | 102  | 85   | 68   |
| Japan                  |                            |      |      |      |      | 76   | 70   | 75   |                         |      |      |      |      | 22   | 29   | 33   |
| Jordan                 | 90                         |      |      |      | 92   | 88   | 90   | 86   | 112                     |      |      | 73   | 71   | 64   | 71   | 72   |
| Kazakhstan             |                            |      |      |      | 79   | 79   | 79   | 78   |                         |      |      | 3    | 76   | 94   | 93   | 93   |
| Kenya                  | 73                         | 75   | 77   | 65   | 77   | 78   | 80   | 80   | 53                      | 55   | 54   | 59   | 58   | 49   | 51   | 49   |
| Kiribati               |                            |      |      |      | 83   | 88   | 91   | 86   |                         |      | 34   | 153  | 177  | 159  | 185  | 233  |
| Kuwait                 |                            |      |      |      |      |      |      |      |                         |      |      |      |      |      |      |      |
| Kyrgyzstan             |                            |      | 88   | 76   | 82   | 83   | 82   | 81   |                         | 2    | 3    | 31   | 58   | 42   |      | 45   |
| Lao PDR                |                            | 70   | 55   | 62   | 75   | 84   | 82   | 77   |                         | 25   | 33   | 39   | 44   | 38   | 38   | 43   |
| Latvia                 |                            | 61   | 64   | 65   | 71   | 74   | 72   | 73   |                         | 62   | 70   | 76   | 68   | 75   | 80   | 78   |
| Lebanon                | 89                         |      |      |      | 73   | 96   | 92   | 91   | 55                      |      |      |      | 92   | 80   | 73   | 68   |
| Lesotho                | 56                         | 47   | 71   | 63   |      | 69   |      | 71   | 62                      | 72   | 85   | 77   |      | 74   |      | 61   |
| Liberia                |                            | 79   |      | 75   |      |      |      |      |                         | 30   |      | 45   |      |      |      |      |
| Libyan Arab Jamahiriya |                            |      |      |      | 68   | 67   |      |      |                         |      |      |      | 150  | 116  |      |      |
| Lithuania              |                            |      |      |      | 79   | 84   | 92   | 75   |                         |      |      |      | 3    | 2    | 32   | 62   |
| Luxembourg             |                            |      |      |      |      |      |      |      |                         |      |      |      |      |      | 43   | 69   |
| Madagascar             | 51                         | 55   |      | 64   |      |      | 70   | 69   | 53                      | 67   |      | 68   |      |      | 66   | 62   |
| Malawi                 | 22                         | 71   | 68   | 71   | 69   | 71   | 73   | 70   | 39                      | 40   | 44   | 48   | 43   | 42   | 41   | 36   |
| Malaysia               |                            | 69   |      |      |      | 90   | 78   | 79   | 61                      | 67   |      |      |      | 78   | 80   | 78   |
| Maldives               | 95                         | 97   | 93   | 94   | 94   | 94   | 97   | 97   | 94                      | 96   | 93   | 95   | 104  | 84   | 83   | 92   |
| Mali                   | 68                         | 59   | 65   | 62   | 70   | 68   |      | 50   | 15                      | 16   | 17   | 17   | 15   | 13   |      | 15   |
| Malta                  |                            | 100  | 100  | 100  | 100  | 75   | 100  | 100  |                         | 35   | 22   | 45   | 70   | 41   | 26   | 44   |
| Marshall Islands       |                            |      |      |      | 83   | 82   | 91   | 86   |                         |      |      | 55   | 84   | 53   | 71   | 84   |
| Mauritania             |                            |      |      |      |      |      |      |      |                         |      |      |      |      |      |      |      |
| Mauritius              | 96                         |      |      |      | 91   | 87   | 93   | 93   | 39                      |      |      | 32   | 35   | 33   | 24   | 25   |
| Mexico                 |                            |      | 75   | 65   | 78   | 80   | 76   | 83   |                         |      | 15   | 30   | 40   | 70   | 94   | 73   |
| Micronesia             | 64                         | 80   |      |      |      | 95   | 93   | 100  | 16                      | 23   |      |      |      | 35   | 18   | 50   |

continued...

Trends in treatment success and DOTS detection rates, 1994-2002, cont'd

|                         | DOTS treatment success (%) |      |      |      |      |      |      |      | DOTS detection rate (%) |      |      |      |      |      |      |      |
|-------------------------|----------------------------|------|------|------|------|------|------|------|-------------------------|------|------|------|------|------|------|------|
|                         | 1994                       | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 1995                    | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
| Monaco                  |                            |      |      |      |      |      |      |      |                         |      |      |      |      |      |      |      |
| Mongolia                | 59                         | 78   | 78   | 86   | 84   | 86   | 87   | 87   | 8                       | 32   | 31   | 53   | 66   | 59   | 69   | 69   |
| Montserrat              |                            |      |      |      |      |      |      |      |                         |      |      |      |      |      | 0    | 0    |
| Morocco                 | 86                         | 90   | 88   | 89   | 88   | 88   | 89   | 87   | 94                      | 94   | 93   | 88   | 88   | 84   | 83   | 83   |
| Mozambique              | 67                         | 39   | 54   | 67   |      | 71   | 75   | 77   | 60                      | 54   | 52   | 52   |      | 47   | 45   | 45   |
| Myanmar                 |                            | 66   | 79   | 82   | 82   | 81   | 82   | 81   |                         | 25   | 26   | 29   | 34   | 51   | 62   | 73   |
| Namibia                 |                            |      | 66   | 64   | 69   | 68   | 64   | 68   | 23                      | 84   | 86   | 87   | 82   | 78   | 80   | 76   |
| Nauru                   |                            |      |      |      |      | 50   | 25   | 100  |                         |      |      |      |      | 217  | 112  | 114  |
| Nepal                   |                            |      | 85   | 87   | 89   | 87   | 86   | 88   |                         | 5    | 11   | 16   | 46   | 60   | 61   | 64   |
| Netherlands             | 81                         | 72   | 81   | 80   | 65   | 79   | 76   |      | 76                      | 49   | 44   | 37   | 46   | 45   | 49   | 54   |
| Netherlands Antilles    |                            |      |      |      |      |      |      |      |                         |      |      |      |      |      |      |      |
| New Caledonia           | 62                         | 75   |      |      | 70   | 77   | 89   | 84   | 34                      | 33   |      |      | 32   | 44   | 38   | 23   |
| New Zealand             |                            |      |      |      |      |      | 30   | 9    |                         |      |      |      |      | 41   | 37   | 48   |
| Nicaragua               | 81                         | 80   | 79   | 81   | 82   | 81   | 82   | 83   | 71                      | 82   | 84   | 87   | 87   | 86   | 93   | 85   |
| Niger                   |                            |      | 57   | 66   |      | 60   |      |      |                         |      | 21   | 17   |      | 33   |      |      |
| Nigeria                 | 65                         | 49   | 32   | 73   | 73   | 75   | 79   | 79   | 12                      | 18   | 12   | 12   | 13   | 13   | 13   | 12   |
| Niue                    |                            |      |      |      |      |      |      |      |                         |      |      |      |      |      | 0    | 371  |
| Northern Mariana Is     |                            |      |      |      |      | 80   | 81   | 74   |                         |      |      |      |      | 95   | 64   | 68   |
| Norway                  |                            | 77   | 80   | 44   | 69   | 77   | 70   | 87   |                         | 67   | 68   | 35   | 16   | 29   | 48   | 26   |
| Oman                    |                            | 84   | 87   | 91   | 86   | 95   | 93   | 90   |                         | 76   | 84   | 76   | 84   | 115  | 109  | 106  |
| Pakistan                | 74                         | 70   |      | 67   | 66   | 70   | 74   | 77   | 1                       | 2    |      | 4    | 2    | 3    | 5    | 13   |
| Palau                   | 64                         | 67   | 75   |      |      |      |      | 100  | 132                     | 57   | 97   |      |      |      |      | 110  |
| Panama                  |                            |      |      | 51   | 51   | 80   | 67   | 65   |                         |      |      | 13   | 8    | 44   | 68   | 88   |
| Papua New Guinea        |                            | 60   |      | 93   | 72   | 66   | 63   | 67   |                         | 4    | 1    | 7    | 4    | 7    | 7    | 15   |
| Paraguay                | 46                         | 51   |      |      |      |      | 77   | 86   | 14                      | 55   |      |      |      | 4    | 9    | 8    |
| Peru                    | 81                         | 83   | 89   | 90   | 92   | 93   | 90   | 90   | 102                     | 88   | 94   | 98   | 90   | 86   | 86   | 84   |
| Philippines             | 80                         |      | 82   | 83   | 84   | 87   | 88   | 88   | 0                       | 0    | 3    | 10   | 19   | 46   | 54   | 58   |
| Poland                  |                            |      |      |      | 75   | 69   | 72   | 77   |                         |      |      | 2    | 3    | 3    | 3    | 55   |
| Portugal                | 48                         | 69   | 74   | 78   | 74   | 85   | 79   | 78   | 78                      | 77   | 67   | 85   | 78   | 84   | 95   | 94   |
| Puerto Rico             |                            | 65   | 68   | 68   | 68   | 77   | 72   | 80   |                         | 59   | 73   | 66   | 72   | 60   | 56   | 65   |
| Qatar                   | 83                         | 81   | 72   | 79   | 84   | 74   | 66   | 60   | 46                      | 32   | 28   | 47   | 38   | 34   | 49   | 39   |
| Rep. Korea              | 71                         | 76   | 71   | 82   |      |      |      |      | 34                      | 65   | 56   | 57   |      |      |      |      |
| Republic of Moldova     |                            |      |      |      |      | 83   | 66   |      |                         |      |      |      |      |      | 38   | 19   |
| Romania                 |                            |      |      | 72   | 85   | 78   | 80   | 78   |                         |      |      | 85   | 4    | 9    | 10   | 41   |
| Russian Federation      |                            | 65   | 62   | 67   | 68   | 65   | 68   | 67   |                         | 0    | 1    | 1    | 2    | 5    | 5    | 6    |
| Rwanda                  |                            |      | 61   | 68   | 72   | 67   | 61   |      | 36                      | 35   | 41   | 54   | 45   | 33   | 26   | 29   |
| Saint Kitts & Nevis     |                            |      |      |      | 25   | 50   |      |      |                         |      |      | 131  | 45   | 0    | 0    | 49   |
| Saint Lucia             |                            |      |      | 67   | 82   | 89   | 100  | 50   |                         |      | 93   | 102  | 78   | 61   | 53   | 72   |
| Samoa                   | 50                         | 80   | 100  |      | 86   | 94   | 92   | 77   | 47                      | 33   | 48   |      | 63   | 50   | 44   | 75   |
| San Marino              |                            |      |      | 100  |      |      | 0    |      |                         | 0    | 102  | 0    | 0    | 113  | 0    | 0    |
| Sao Tome & Principe     |                            |      |      |      |      |      |      |      |                         |      |      |      |      |      |      |      |
| Saudi Arabia            |                            |      |      |      | 57   | 66   | 73   | 77   |                         |      |      |      | 22   | 36   | 38   | 37   |
| Senegal                 | 35                         | 39   | 41   | 52   | 48   |      | 52   | 53   | 67                      | 71   | 61   | 60   | 53   |      | 59   | 54   |
| Serbia & Montenegro     |                            |      |      |      |      |      |      | 88   |                         |      |      |      |      |      | 24   | 22   |
| Seychelles              |                            | 89   | 100  | 100  |      | 90   | 82   | 67   |                         | 70   | 83   | 74   |      | 77   | 82   | 60   |
| Sierra Leone            | 75                         | 69   | 74   | 79   |      | 75   | 77   | 80   | 29                      | 42   | 41   | 38   |      | 36   | 36   | 36   |
| Singapore               | 88                         | 86   |      |      |      | 95   | 85   | 88   | 57                      | 26   |      |      |      | 13   | 22   | 39   |
| Slovakia                | 96                         | 64   | 73   | 67   | 85   | 79   | 82   | 87   | 81                      | 84   | 34   | 39   | 34   | 35   | 36   | 35   |
| Slovenia                |                            | 90   | 87   | 82   | 78   | 88   | 84   | 82   |                         | 77   | 58   | 62   | 70   | 66   | 68   | 68   |
| Solomon Islands         |                            | 65   | 73   | 92   | 92   |      | 81   | 89   |                         | 59   | 71   | 85   | 54   | 62   | 65   | 57   |
| Somalia                 |                            | 86   | 84   | 90   | 88   | 88   | 83   | 86   |                         | 19   | 24   | 23   | 24   | 25   | 29   | 28   |
| South Africa            |                            |      | 69   | 73   | 74   | 60   | 66   | 65   |                         |      | 6    | 22   | 68   | 72   | 76   | 96   |
| Spain                   |                            |      |      |      |      |      |      |      |                         |      |      |      |      |      |      |      |
| Sri Lanka               | 77                         | 79   | 80   | 76   | 76   | 84   | 77   | 80   | 60                      | 59   | 71   | 77   | 78   | 72   | 79   | 79   |
| St Vincent & Grenadines |                            |      |      | 86   |      | 100  | 100  | 80   |                         |      |      | 18   |      | 56   | 19   | 0    |
| Sudan                   |                            |      |      | 70   | 65   | 81   | 79   | 80   |                         | 2    | 1    | 29   | 29   | 34   | 31   | 33   |
| Suriname                |                            |      |      |      |      |      |      |      |                         |      |      |      |      |      |      |      |
| Swaziland               |                            |      |      |      |      |      |      | 36   |                         |      |      |      |      |      |      | 31   |
| Sweden                  |                            |      |      |      |      | 79   | 62   |      |                         |      |      |      |      |      | 54   | 59   |
| Switzerland             |                            |      |      |      |      |      |      |      |                         |      |      |      |      |      |      |      |

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*Trends in treatment success and DOTS detection rates, 1994-2002, cont'd*

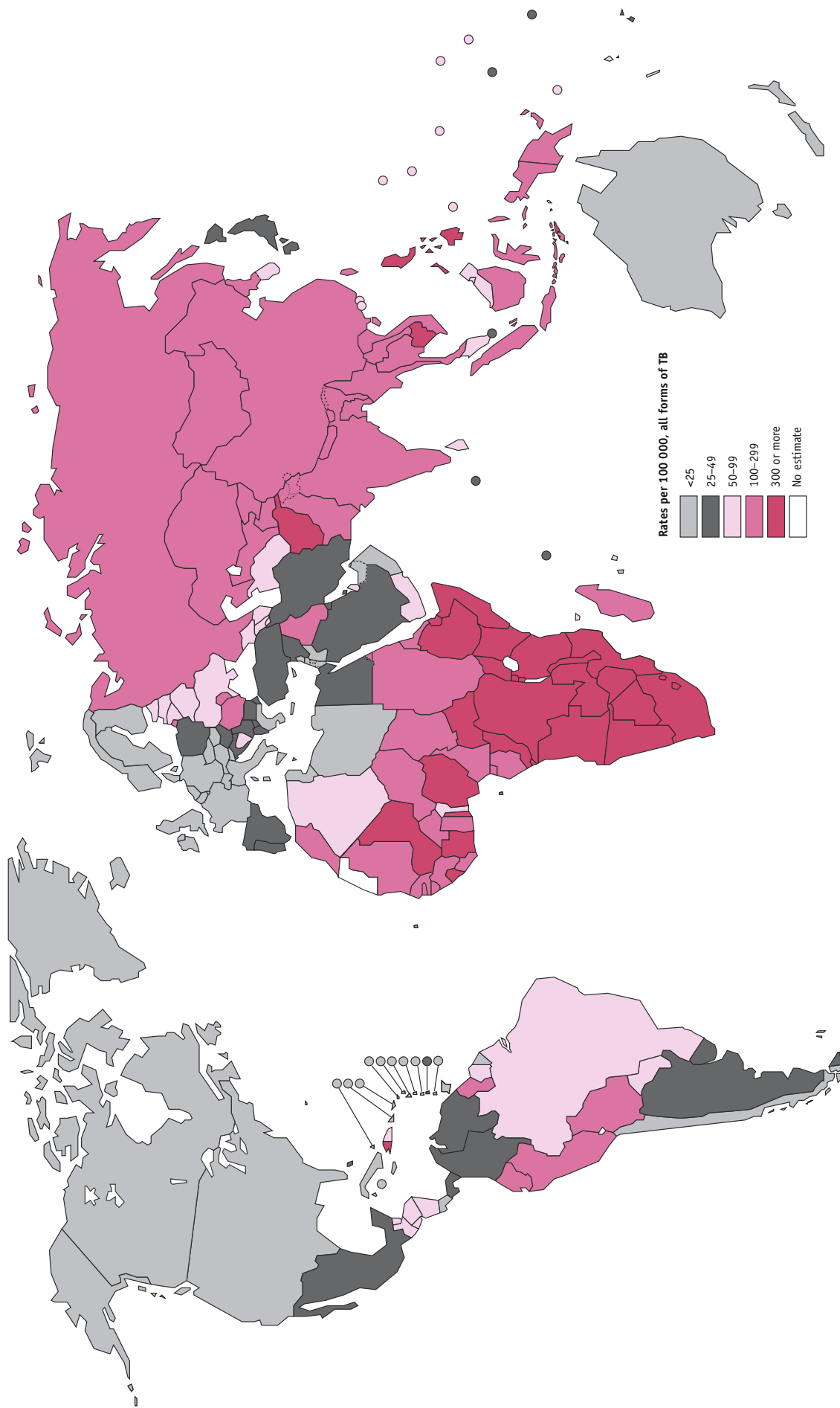
|                        | DOTS treatment success (%) |      |      |      |      |      |      |      | DOTS detection rate (%) |      |      |      |      |      |      |      |
|------------------------|----------------------------|------|------|------|------|------|------|------|-------------------------|------|------|------|------|------|------|------|
|                        | 1994                       | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 1995                    | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
| Syrian Arab Republic   |                            |      | 92   | 88   | 88   | 84   | 79   | 81   |                         |      | 8    | 21   | 29   | 42   | 43   | 42   |
| Tajikistan             |                            |      |      |      |      |      |      |      |                         |      |      |      |      |      |      | 3    |
| TFYR Macedonia         |                            |      |      |      |      |      | 86   | 88   |                         |      |      |      |      |      | 42   | 37   |
| Thailand               |                            |      | 78   | 62   | 68   | 77   | 69   | 75   |                         | 0    | 5    | 22   | 41   | 49   | 80   | 73   |
| Timor-Leste            |                            |      |      |      |      |      |      | 73   |                         |      |      |      |      |      |      | 59   |
| Togo                   | 45                         | 60   | 65   | 66   | 69   | 76   |      | 55   | 15                      | 15   |      | 14   | 13   | 14   |      | 6    |
| Tokelau                |                            |      |      |      |      |      |      |      |                         |      |      |      |      |      |      |      |
| Tonga                  | 89                         | 75   | 82   | 75   | 94   | 80   | 93   | 92   | 47                      | 88   | 69   | 96   | 63   | 99   | 55   | 164  |
| Trinidad & Tobago      |                            |      |      |      |      |      |      |      |                         |      |      |      |      |      |      |      |
| Tunisia                |                            |      |      |      | 91   | 91   | 91   | 90   |                         |      |      |      | 111  | 102  | 104  | 92   |
| Turkey                 |                            |      |      |      |      |      |      |      |                         |      |      |      |      |      |      |      |
| Turkmenistan           |                            |      |      |      |      |      | 69   | 75   |                         |      |      |      |      |      | 18   | 35   |
| Turks & Caicos Islands |                            |      |      |      | 71   |      |      |      |                         |      |      |      | 117  |      |      |      |
| Tuvalu                 |                            |      |      |      |      |      |      |      |                         |      |      |      |      |      |      |      |
| Uganda                 |                            |      | 33   | 40   | 62   | 61   | 63   | 56   |                         |      | 58   | 57   | 54   | 48   | 45   | 47   |
| Ukraine                |                            |      |      |      |      |      |      |      |                         |      |      |      |      |      |      |      |
| United Arab Emirates   |                            |      |      |      |      |      | 74   | 62   |                         |      |      |      |      | 29   | 29   | 25   |
| United Kingdom         |                            |      |      |      |      |      |      |      |                         |      |      |      |      |      |      |      |
| UR Tanzania            | 80                         | 73   | 76   | 77   | 76   | 78   | 78   | 81   | 53                      | 53   | 52   | 53   | 51   | 48   | 46   | 43   |
| Uruguay                | 83                         | 68   | 80   | 77   | 84   | 83   | 85   | 85   | 77                      | 94   | 94   | 83   | 88   | 78   | 77   | 70   |
| US Virgin Islands      |                            | 50   |      |      |      |      |      |      |                         | 74   |      |      |      |      |      |      |
| USA                    |                            | 72   | 71   | 72   | 72   | 76   | 82   | 70   |                         | 83   | 82   | 84   | 84   | 84   | 85   | 87   |
| Uzbekistan             |                            |      |      |      | 78   | 79   | 80   | 76   |                         |      |      | 0    | 2    | 4    | 8    | 24   |
| Vanuatu                |                            |      |      |      |      | 88   | 88   | 88   |                         |      |      |      | 31   | 33   | 59   | 37   |
| Venezuela              | 68                         | 74   | 80   | 72   | 81   | 82   | 76   | 80   | 73                      | 75   | 75   | 78   | 82   | 77   | 67   | 65   |
| Viet Nam               | 91                         | 91   | 90   | 85   | 93   | 92   | 92   | 93   | 31                      | 60   | 79   | 82   | 81   | 79   | 80   | 82   |
| Wallis & Futuna Is     |                            |      |      |      |      |      |      | 100  |                         |      |      |      |      |      |      | 50   |
| Yemen                  |                            |      | 76   | 81   |      | 83   | 75   | 80   |                         | 8    | 30   | 37   |      | 56   | 53   | 49   |
| Zambia                 |                            |      |      |      |      |      |      | 75   |                         |      |      |      |      |      |      | 40   |
| Zimbabwe               |                            |      |      |      | 70   | 73   | 69   | 71   |                         |      |      | 52   | 49   | 46   | 47   | 46   |

## ANNEX 5

# World maps

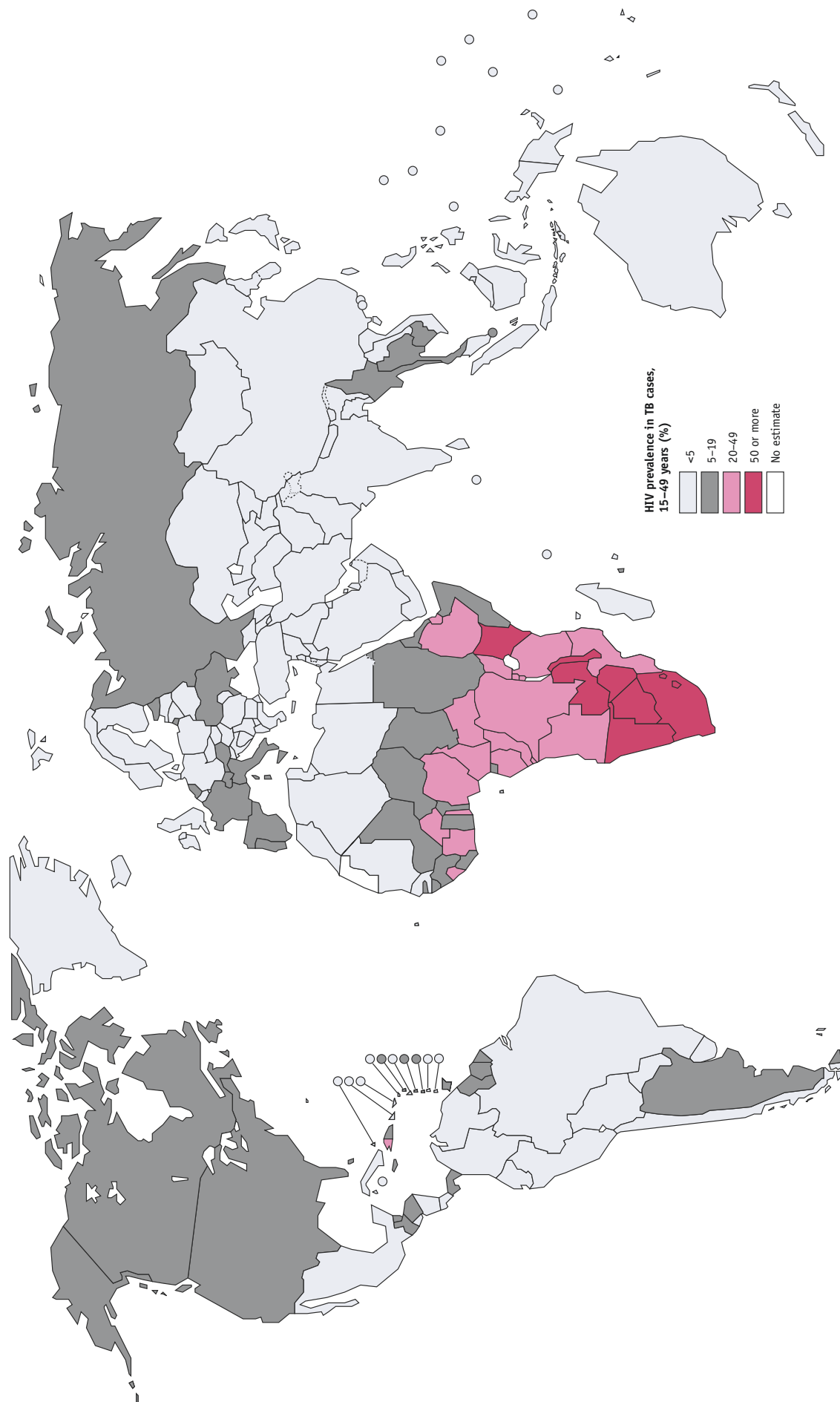
1. Estimated TB incidence rates, 2002
2. Estimated HIV prevalence in TB cases, 2002
3. Implementation of DOTS, 2002
4. Tuberculosis notification rates, 2002

# I. Estimated TB incidence rates, 2002



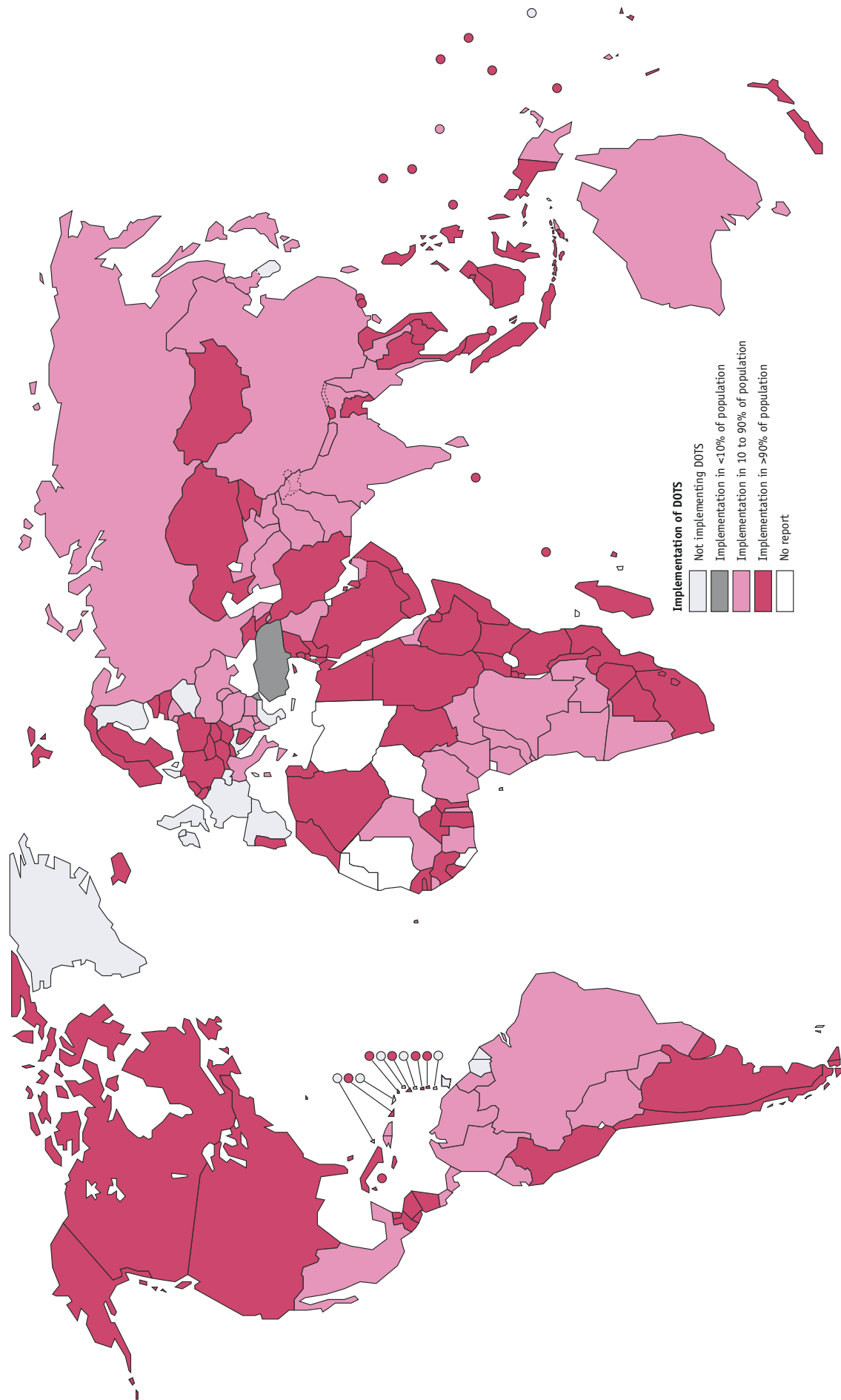
The designations employed and the presentation of material on this map do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or its authorities, or concerning the delimitation of its frontiers or boundaries. Dashed lines represent approximate border lines for which there may not yet be full agreement.

## 2. Estimated HIV prevalence in TB cases, 2002



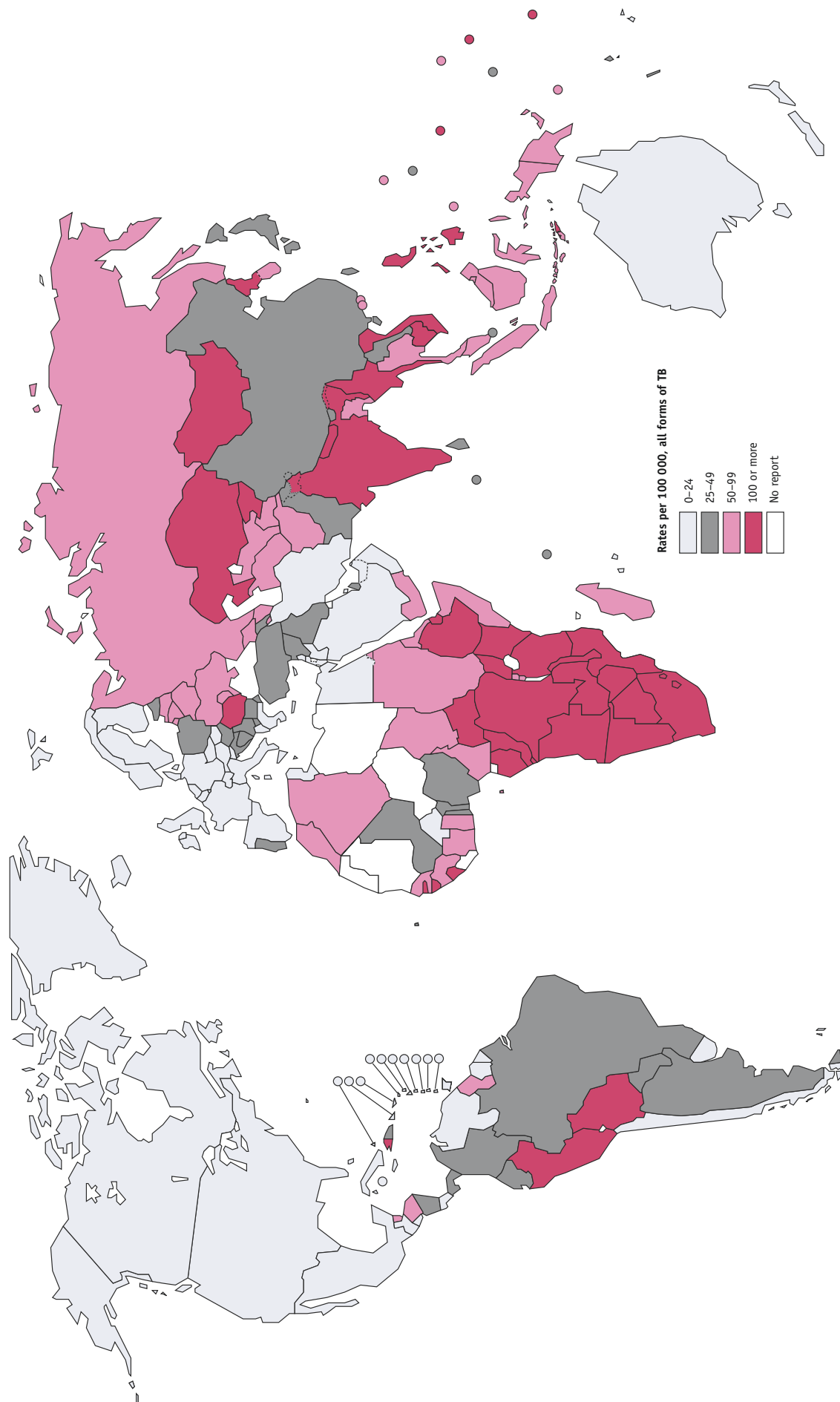
The designations employed and the presentation of material on this map do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or its authorities, or concerning the delimitation of its frontiers or boundaries. Dashed lines represent approximate border lines for which there may not yet be full agreement.

### 3. Implementation of DOTS, 2002



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## 4. Tuberculosis notification rates, 2002



The designations employed and the presentation of material on this map do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or its authorities, or concerning the delimitation of its frontiers or boundaries. Dashed lines represent approximate border lines for which there may not yet be full agreement.