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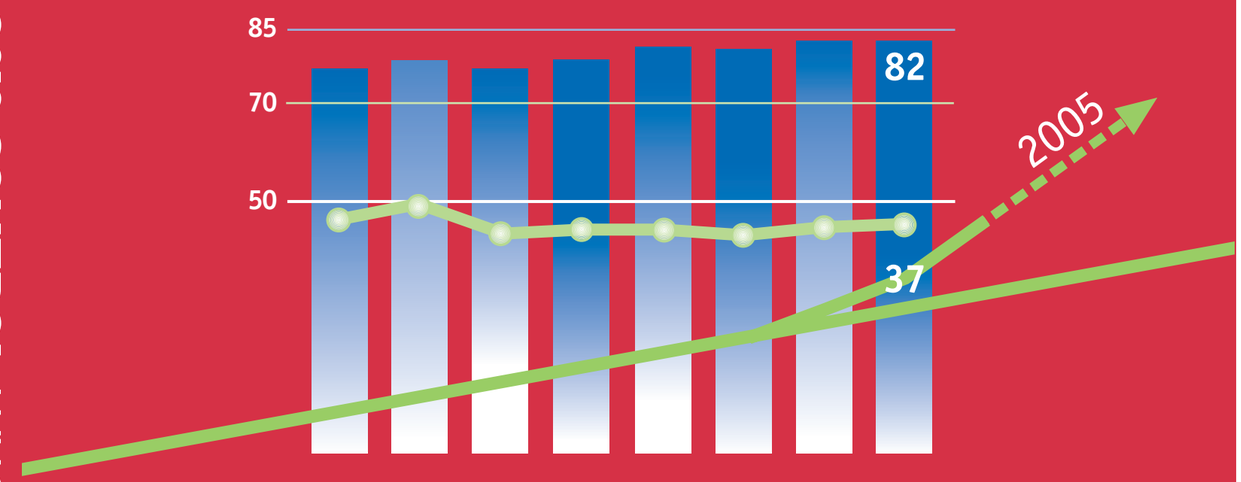
Global Tuberculosis Control

Surveillance, Planning, Financing



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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
ADB	Asian Development Bank
AFB	Acid fast bacilli
AFR	WHO African Region
AFRO	WHO Regional Office for Africa
AIDS	Acquired immunodeficiency syndrome
ALERT	All Africa Leprosy, TB, and Rehabilitation Training Centre
ALM	American Leprosy Mission
ALTI	Aide au Lépreux et Tuberculeux de l'Ituri
AMR	WHO Region of the Americas
AMRO	WHO Regional Office for the Americas
ART	Anti-retroviral therapy
BRAC	Bangladesh Rural Advancement Committee
CCM	Country Coordinating Mechanism
CDC GAP	Centers for Disease Control Global AIDS Program, USA
CDC LIFE	Centers for Disease Control Leadership and Investment in Fighting an Epidemic
CDC	Centers for Disease Control and Prevention, USA
CDR	Case detection rate (i.e. smear-positive case detection rate, whole country)
CENAT	Centre National Anti-Tuberculeux
CHC	Community health centre
CI	Confidence interval
CIDA	Canadian International Development Agency
COMBI	Communication for Behavioural Impact
DANIDA	Danish International Development Agency
DARE	District AIDS and Reproductive Health Project (Kenya)
DDR	DOTS detection rate (i.e. smear-positive case detection rate under DOTS)
DFB	Damien Foundation Belgium
DFID	UK Department for International Development
DoH	Department of Health
DOT	Directly observed treatment
DOTS	The internationally recommended control strategy for TB
DRS	Drug resistance surveillance
EMR	WHO Eastern Mediterranean Region
EMRO	WHO Regional Office for the Eastern Mediterranean
EQA	External quality assurance
EU	European Union
EUR	WHO European Region
EURO	WHO Regional Office for Europe
FDC	Fixed-dose combination
FHI	Family Health International
FILHA	Finnish Lung and Health Association
GDF	Global Drug Facility
GFATM	Global Fund to Fight AIDS, TB and Malaria
GLC	Green Light Committee
GLRA	German Leprosy Relief Association
GMS	German Medical Service
GNI	Gross national income
GoJ	Government of Japan
GTZ	Deutsche Gesellschaft für Technische Zusammenarbeit (German development agency)
HBC	High-burden country of which there are 22 that account for approximately 80% of all new TB cases arising each year
HIV	Human immunodeficiency virus
HR	Human resource
HRDP	Human resource development plan
HSDP	Health Sector Development Programme
ICC	Interagency Coordinating Committee
IEC	Information, Education, Communication
IFRC	International Federation of Red Cross and Red Crescent Societies
IUATLD	International Union Against Tuberculosis and Lung Disease
JATA	Japan Anti-Tuberculosis Association
JICA	Japan International Cooperation Agency
JSI	John Snow, Inc.
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)
LEPRA	The British Leprosy Relief Association
LGA	Local Government Areas
LHL	Norwegian Lung and Heart Association
LMI	Leprosy Mission International
MCNV	Medical Committee Netherlands-Viet Nam
MDR	Multidrug resistance
MDR-TB	Multidrug-resistant tuberculosis
MEDAIR	An international humanitarian aid organization
MERLIN	Medical Emergency Relief International
MoH	Ministry of Health
MoPH	Ministry of Public Health
MoU	Memorandum of understanding
MSF	Médecins Sans Frontières
NGO	Nongovernmental organization
NHLS	National Health Laboratory Services
NICC	National Interagency Coordinating Committee
NLR	Netherlands Leprosy Relief
NORAD	Norwegian Agency for Development
NPO	National programme officer
NTP	National Tuberculosis Control Programme
PAHO	Pan-American Health Organization
PHC	Primary Health Care
PHILCAT	Philippines Coalition against TB
PHRI	Public Health Research Institute
PIH	Partners in Health
PPM	Public-private mix
QA	Quality assurance
SAPP II	Social Action Programme, Project II (Pakistan)
SARS	Severe Acute Respiratory Syndrome
SEAR	WHO South-East Asia Region
SEARO	WHO Regional Office for South-East Asia
STD	Sexually transmitted disease
STI	Sexually transmitted infection
TB	Tuberculosis
TBCTA	Tuberculosis Coalition for Technical Assistance
TBL	Tuberculosis and leprosy
TLMI	The Leprosy Mission International
UNAIDS	Joint United Nations Programme on HIV/AIDS
UNDP	United Nations Development Programme
USAID	United States Agency for International Development
VCT	Voluntary counselling and testing
WFP	World Food Programme
WHO	World Health Organization
WHO-CHOICE	Choosing Interventions that are Cost-Effective, a WHO project
WPR	WHO Western Pacific Region
WPRO	WHO Regional Office for the Western Pacific

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 dela 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 fréquents 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 testes 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 coeur 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 accrue 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 fortalecer 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 farmacorresistencia 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 programas 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 Tanzanía.

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.[1,2] The targets for global TB control ratified by the 1991 World Health Assembly[3] 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.[4]

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[5] 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.[6] 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.

[1] WHO. Tuberculosis Programme. Framework for Effective Tuberculosis Control. Geneva, WHO/TB/94.179.

[2] WHO. *An Expanded Framework for Effective Tuberculosis Control*. Geneva, WHA44/1991/REC/1.

[3] WHO. Forty-fourth World Health Assembly, Resolutions and Decisions. Geneva, WHA44/1991/REC/1.

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

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

[6] 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

TABLE 1

Technical elements of the WHO TB control strategy (DOTS)[a]

MICROSCOPY	Case detection among symptomatic patients self-reporting to health services, using sputum smear microscopy.[b]
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.[c]
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).

[a] The DOTS strategy comprises 5 elements in all, including political commitment.
[b] Sputum culture is also used for diagnosis, but direct sputum smear microscopy should still be performed for all suspected cases.
[c] 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.

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).

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 responses 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

A. DEFINITIONS OF TUBERCULOSIS CASES
CASE OF TUBERCULOSIS ■ A known tuberculosis case is once which has been bacteriologically confirmed, or has been diagnosed by a clinician.
DEFINITE CASE ■ Patient with positive culture for the *Mycobacterium tuberculosis* 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.
SMEAR-POSITIVE PULMONARY CASE ■ 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 *M. tuberculosis*.
SMEAR-NEGATIVE PULMONARY CASE ■ 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.
EXTRAPULMONARY CASE ■ 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.
NEW CASE ■ Patient who has never had treatment for tuberculosis, or who has taken anti-tuberculosis drugs for less than 1 month.
RELAPSE CASE ■ Patient previously declared cured but with a new episode of bacteriologically positive (sputum smear or culture) tuberculosis.
RETREATMENT CASE ■ Patient previously treated for tuberculosis whose treatment failed, who defaulted (see below), or who relapsed.
B. DEFINITIONS OF TREATMENT OUTCOMES
CURED ■ Initially smear-positive patient who is smear-negative in the last month of treatment, and on at least one previous occasion.[a]
COMPLETED TREATMENT ■ Patient who has completed treatment but does not meet the criteria for cure or failure.
DIED ■ Patient who dies for any reason during treatment.
FAILED ■ Smear-positive patient who remained smear-positive, or became smear-positive again, at least 5 months after the start of treatment.
DEFAULTED ■ Patient whose treatment was interrupted for two consecutive months or more.
TRANSFERRED OUT ■ Patient who has been transferred to another reporting unit and for whom the treatment outcome is not known.
SUCCESSFULLY TREATED ■ The sum of cases that were cured and that completed treatment (expressed as a percentage of the number registered in the cohort).[b]

[a] Some European countries define cure in terms of culture conversion, rather than sputum smear conversion.

[b] 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.[7,8] 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

[7] Dye C, Scheele S, Dolin P, Pathania V, Raviglione MC, Global burden of tuberculosis: estimated incidence, prevalence and mortality by country. *Journal of the American Medical Association* 1999; 282: 677 686.

[8] Corbett EL, Watt C, Walker N, Maher D, Raviglione 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,[9] 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.[10] 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):

$$\text{case detection rate} = \frac{\text{annual new smear-positive notifications (country)}}{\text{estimated annual new smear-positive incidence (country)}}$$

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

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).[11] Cure and completion are among the 6 mutually exclusive outcomes in DOTS cohort analysis.[12] These 6 possible outcomes, plus the fraction of cases not evaluated, add up to 100%.[13]

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.[14]

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

[9] United Nations Population Division. *World Population Prospects – the 2002 revision*. New York, 2003.

[10] WHO. Tuberculosis Handbook. Geneva, WHO/TB/98.253.

[11] 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.

[12] Veen J, Raviglione 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.

[13] Although treatment outcomes are expressed as percentages, they are usually referred to as 'rates' (as for case detection).

[14] 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 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[5] 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.

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.

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,[5] 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 assembled 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.[6] 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,[15] 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[16]) 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.[17] 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.[18] In last year's report,[5] 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;

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

[16] WHO. Interim Policy on Collaborative TB/HIV Activities. Geneva, WHO/HTM/TB/2004.330 and WHO/HTM/HIV/2004.1.

[17] WHO. Global Tuberculosis Control: Surveillance, Planning, Financing. WHO Report 2002. WHO, 2002. WHO/CDS/TB/2002.295.

[18] 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,[19] and costing guidelines developed for the *Disease Control Priorities in Developing Countries* project (DCPP).[20] 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). 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*[21] by population size. We also explored the association be-

[19] www3.who.int/whosis/cea/prices/unit

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

[21] 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*.[22]

To estimate funds needed in 2004 and 2005, we updated the analysis of resource requirements previously published for the period 2001–5.[18] 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.

[21] 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

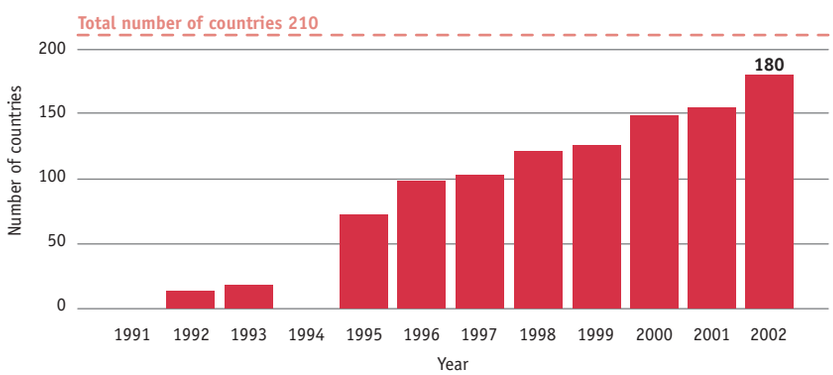
The number of countries implementing DOTS increased by 25 during 2002, bringing the total to 180 out of 210 (Figure 1). One hundred and twenty-one countries determined that DOTS was available to over 90% of their populations (Figure 2, Annex 5). Just one DOTS country had coverage under 10% (Turkey), 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

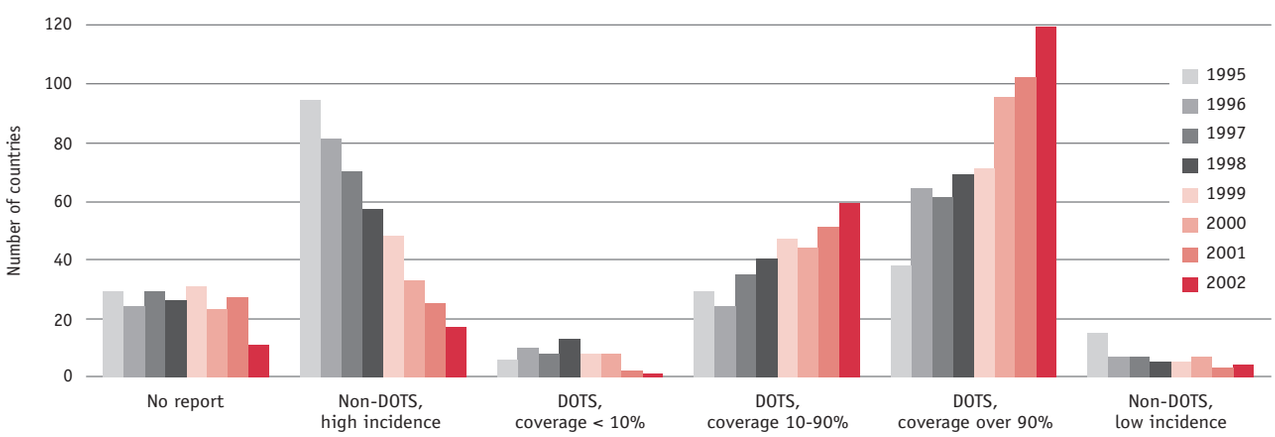
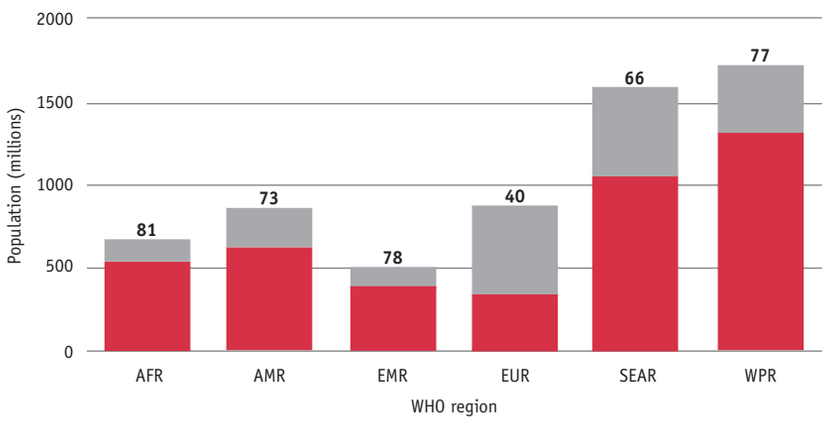


FIGURE 3

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

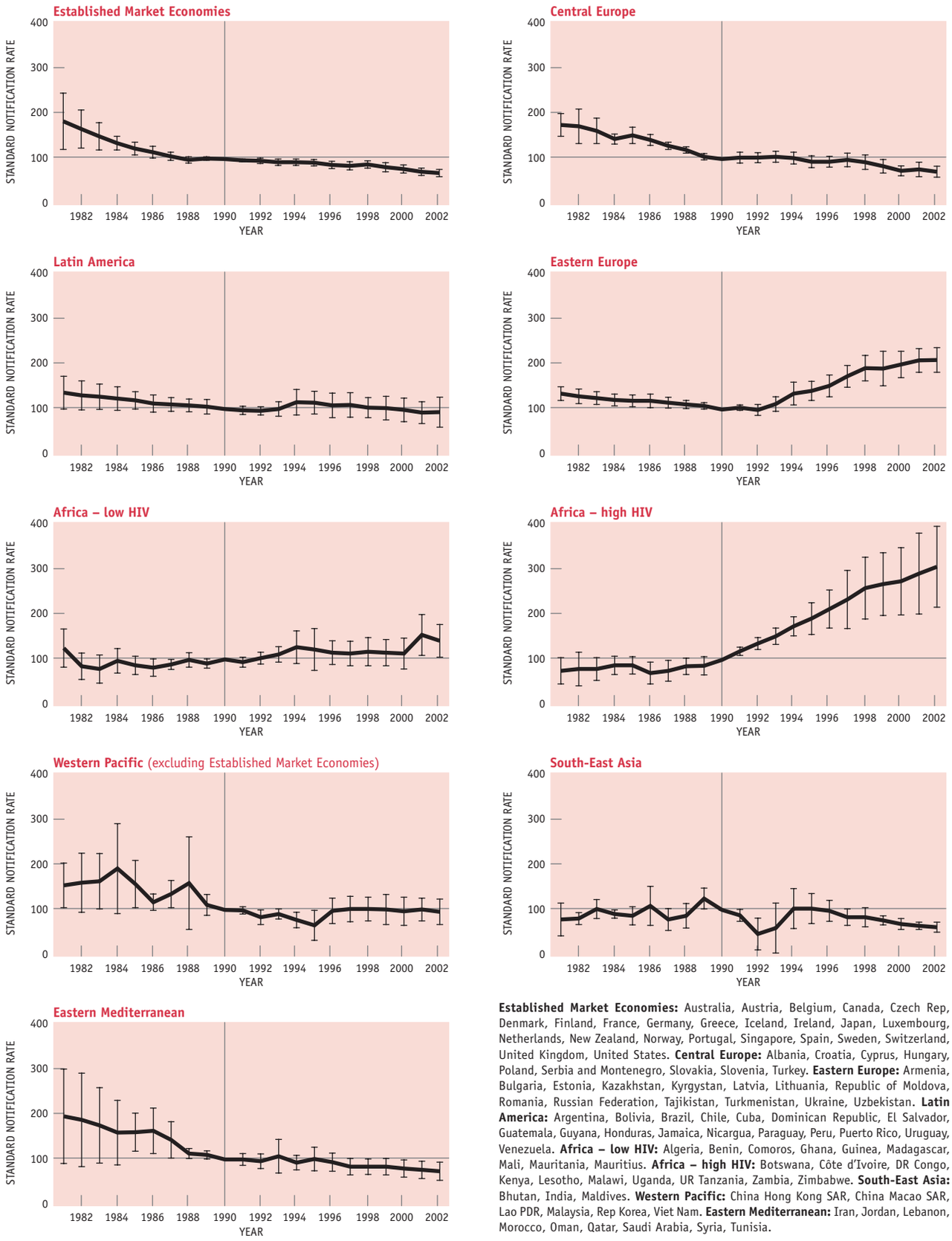
	PERCENT OF POPULATION COVERED BY DOTS							
	1995	1996	1997	1998	1999	2000	2001	2002
1 India	2	2	2	9	14	30	45	52
2 China	49	60	64	64	64	68	68	78
3 Indonesia	6	14	28	80	90	98	98	98
4 Nigeria	47	30	40	45	45	47	55	55
5 Bangladesh	41	65	80	90	90	92	95	95
6 Pakistan	2	8	—	8	8	9	24	45
7 Ethiopia	39	39	48	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
High-burden countries	**28**	**32**	**37**	**43**	**46**	**55**	**61**	**68**
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
Global	**35**	**33**	**38**	**45**	**48**	**58**	**62**	**69**

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.



Established Market Economies: Australia, Austria, Belgium, Canada, Czech Rep, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Japan, Luxembourg, Netherlands, New Zealand, Norway, Portugal, Singapore, Spain, Sweden, Switzerland, United Kingdom, United States. **Central Europe:** Albania, Croatia, Cyprus, Hungary, Poland, Serbia and Montenegro, Slovakia, Slovenia, Turkey. **Eastern Europe:** Armenia, Bulgaria, Estonia, Kazakhstan, Kyrgystan, Latvia, Lithuania, Republic of Moldova, Romania, Russian Federation, Tajikistan, Turkmenistan, Ukraine, Uzbekistan. **Latin America:** Argentina, Bolivia, Brazil, Chile, Cuba, Dominican Republic, El Salvador, Guatemala, Guyana, Honduras, Jamaica, Nicargua, Paraguay, Peru, Puerto Rico, Uruguay, Venezuela. **Africa – low HIV:** Algeria, Benin, Comoros, Ghana, Guinea, Madagascar, Mali, Mauritania, Mauritius. **Africa – high HIV:** Botswana, Côte d'Ivoire, DR Congo, Kenya, Lesotho, Malawi, Uganda, UR Tanzania, Zambia, Zimbabwe. **South-East Asia:** Bhutan, India, Maldives. **Western Pacific:** China Hong Kong SAR, China Macao SAR, Lao PDR, Malaysia, Rep Korea, Viet Nam. **Eastern Mediterranean:** Iran, Jordan, Lebanon, Morocco, Oman, Qatar, Saudi Arabia, Syria, Tunisia.

TABLE 5

Case notifications, 2002

	NUMBER NOTIFIED				SMEAR-POSITIVE CASE DETECTION RATE		% OF NEW PULMONARY CASES SMEAR-POSITIVE[a]	
	ALL CASES		SMEAR-POSITIVE					
	DOTS	NON-DOTS	DOTS	NON-DOTS	DOTS	WHOLE COUNTRY	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	—
High-burden countries	**2 286 829**	**795 764**	**1 075 180**	**230 140**	**35**	**42**	**57**	**32**
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
Global	**3 042 620**	**1 039 134**	**1 421 467**	**294 866**	**37**	**44**	**57**	**35**

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

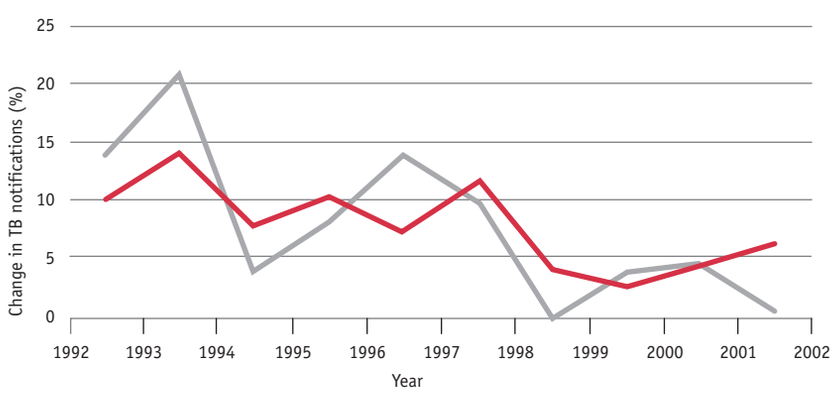


TABLE 6

Estimated incidence of TB, 2002

		NUMBER ESTIMATED				
		ALL CASES		SMEAR-POSITIVE CASES		
	POPULATION (1000s)	NUMBER (1000s)	RATE PER 100 000 POP	NUMBER (1000s)	RATE PER 100 000 POP	CUMULATIVE INCIDENCE (%) (REGIONAL PROPORTION OF GLOBAL TOTAL)
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

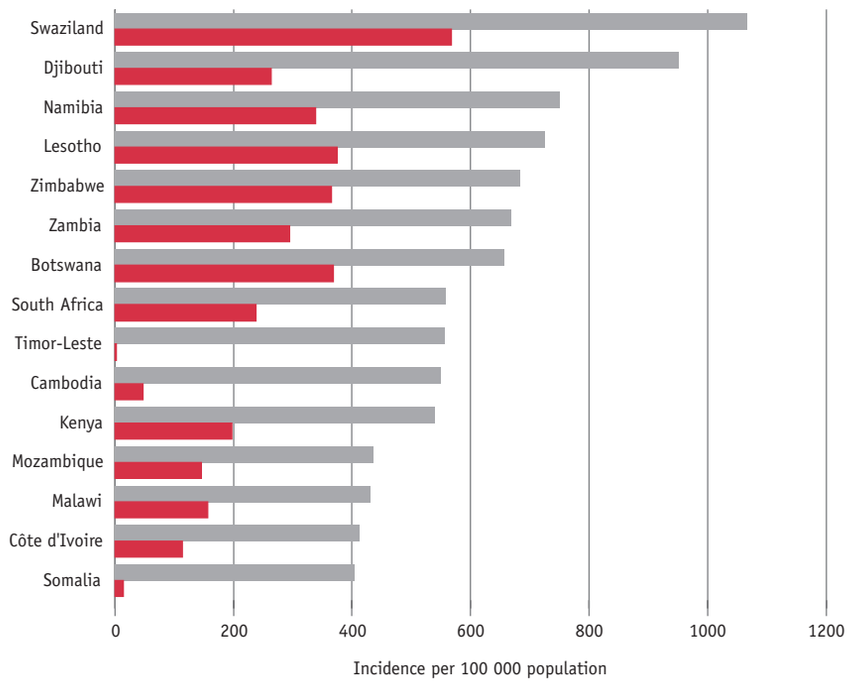


FIGURE 7

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%.

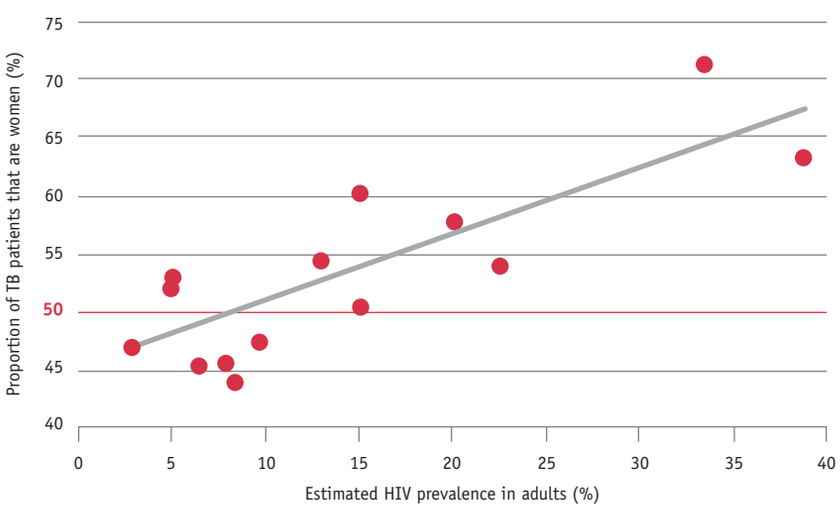


FIGURE 8

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

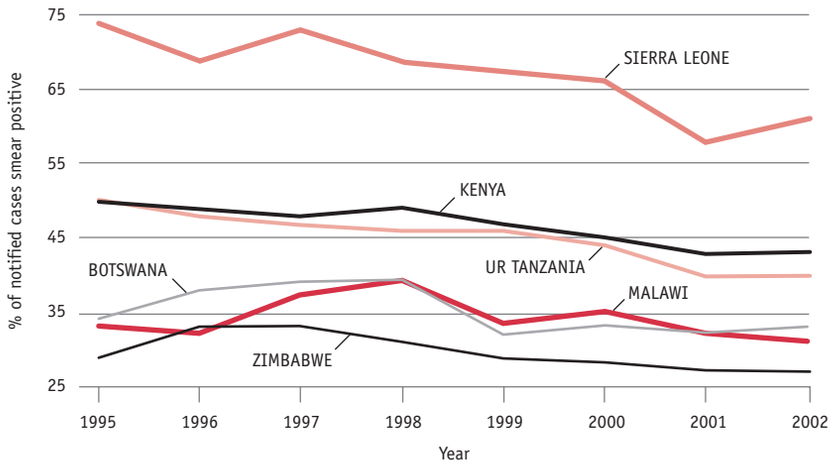
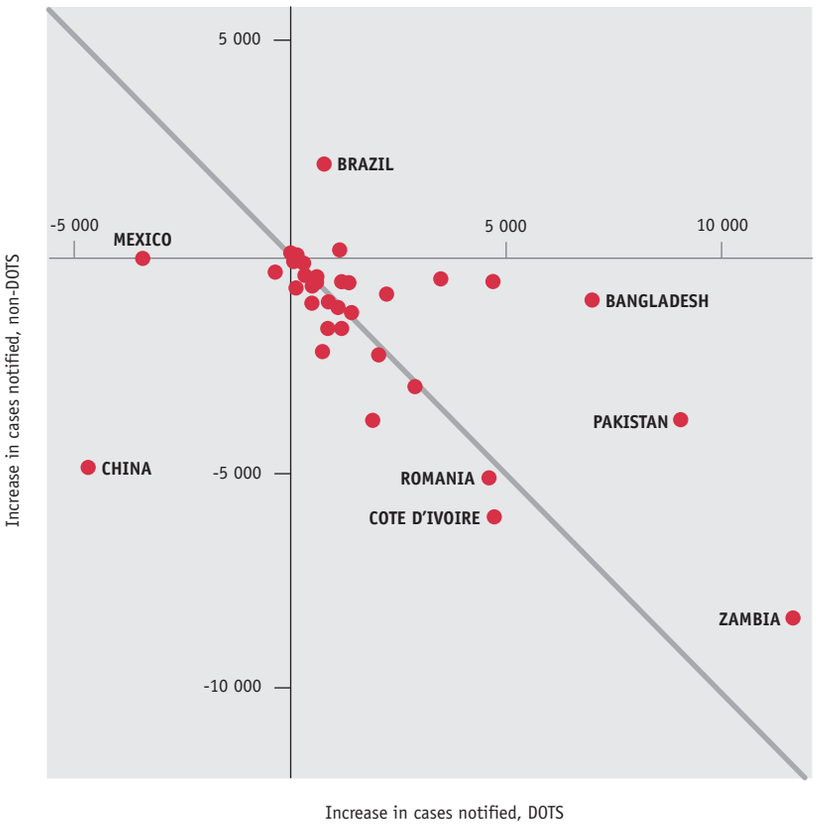


FIGURE 9

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 parallel 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

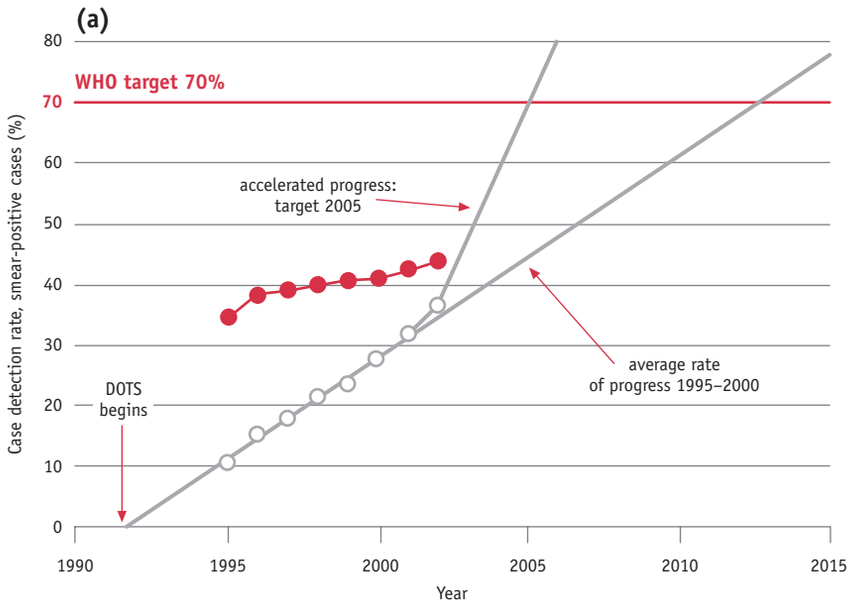
	DOTS PROGRAMMES								WHOLE COUNTRY							
	1995	1996	1997	1998	1999	2000	2001	2002	1995	1996	1997	1998	1999	2000	2001	2002
1 India	0.2	0.8	1.0	1.5	6.6	12	23	31	33	36	34	35	43	44	49	50
2 China	15	28	31	30	28	29	28	27	22	33	37	32	31	32	31	30
3 Indonesia	1.3	4.5	7.5	12	19	20	21	30	12	*	*	*	*	21	*	*
4 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	*
High-burden countries	**8.0**	**13**	**16**	**19**	**22**	**26**	**31**	**35**	**31**	**35**	**36**	**36**	**38**	**39**	**40**	**42**
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
Global	**11**	**16**	**18**	**21**	**24**	**28**	**32**	**37**	**35**	**39**	**39**	**40**	**41**	**41**	**43**	**44**

—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.



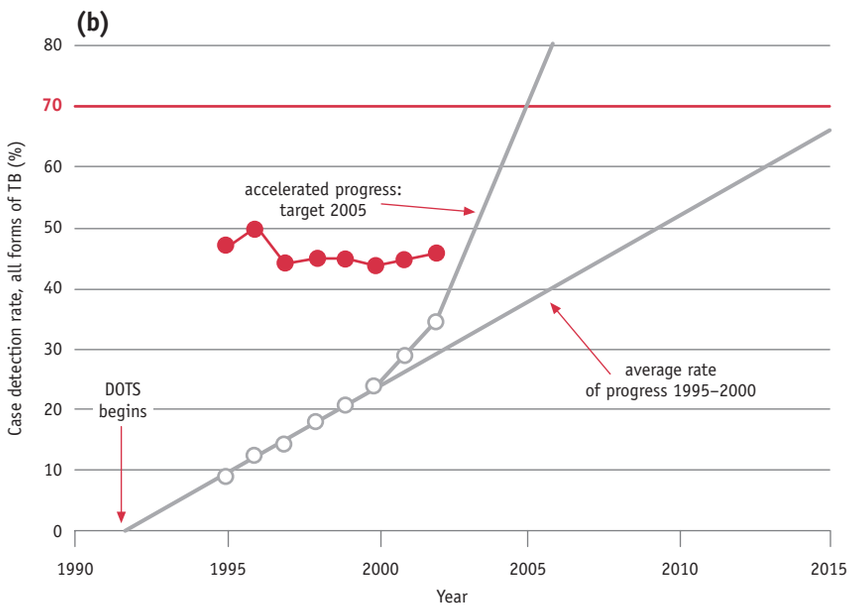
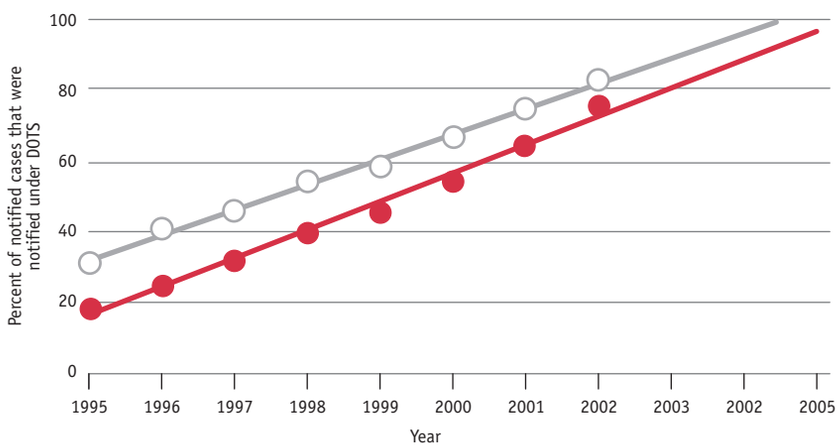


FIGURE 11

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

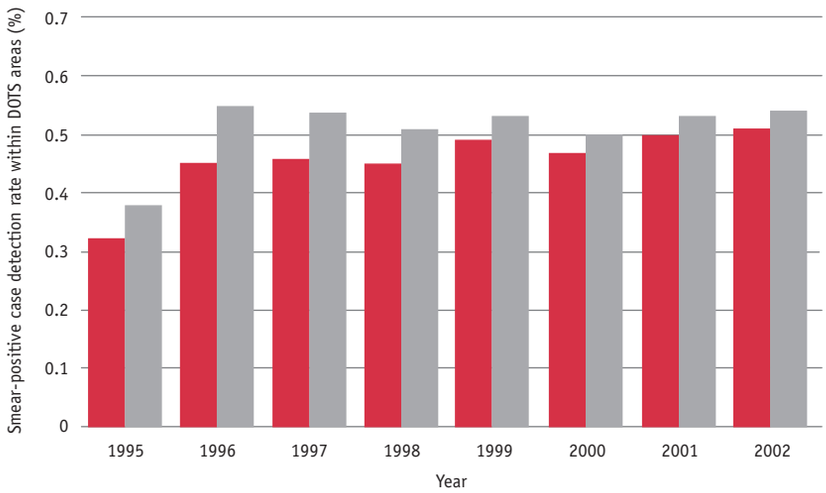
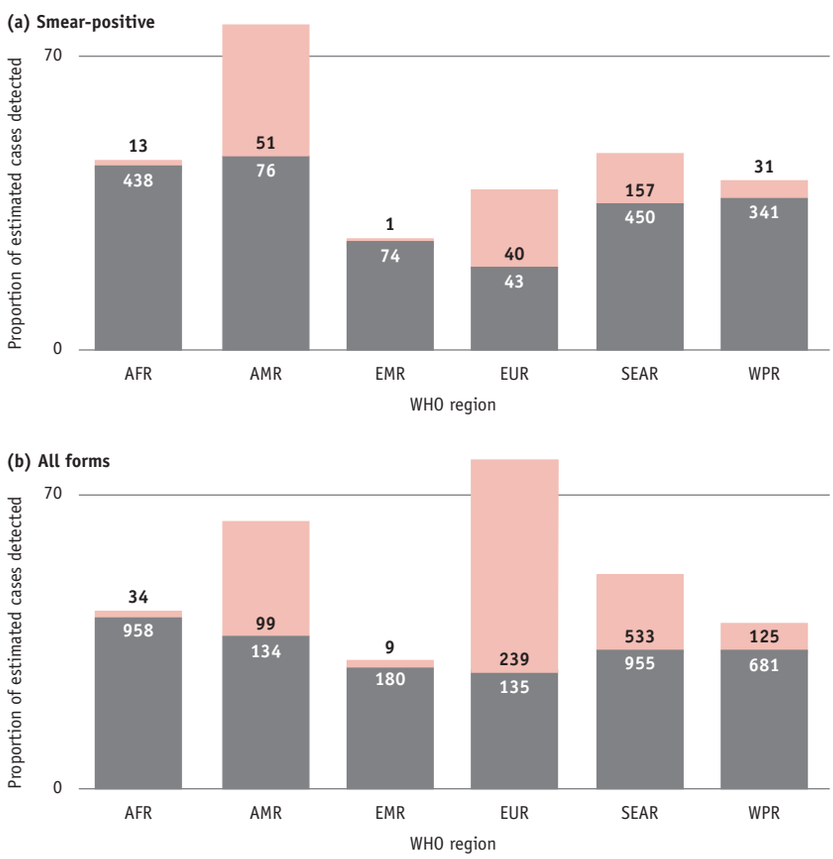


FIGURE 13

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[a]

				TREATMENT OUTCOMES (%)[a]								
	NOTIFIED	REGISTERED[a]	REGST'D (%)	CURED	COMPLETED TREATMENT[a]	DIED	FAILED	DEFAULTED	TRANS-FERRED	NOT EVAL'D	TREATMENT SUCCESS (%)	% EST[a] CASES SUCCESSFULLY 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
High-burden countries	**927 188**	**913 164**	**98**	**77**	**6.7**	**4.4**	**1.4**	**6.2**	**3.0**	**1.4**	**84**	**25**
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
Global (DOTS)	**1 203 235**	**1 209 360**	**101**	**73**	**9.2**	**4.7**	**1.5**	**6.5**	**3.1**	**2.2**	**82**	**26**

[a] 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[a]

					TREATMENT OUTCOMES (%)[a]						
	NOTIFIED	REGISTERED[a]	REGST'D (%)	CURED	COMPLETED TREATMENT[a]	DIED	FAILED	DEFAULTED	TRANS-FERRED	NOT EVAL'D	TREATMENT SUCCESS (%)
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	—	—	—	—	—	—	—	—	—	—	—
High-burden countries	**267 801**	**272 988**	**102**	**20**	**14**	**1.3**	**0.8**	**10**	**3.4**	**51**	**34**
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
Global (non-DOTS)	**359 979**	**333 090**	**93**	**25**	**15**	**1.9**	**1.2**	**9.5**	**3.6**	**44**	**40**

—Indicates not available.
[a] 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[a]

	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	*	*	*	*	*
High-burden countries	**87**	**83**	**78**	**81**	**83**	**81**	**84**	**84**	**83**	**53**	**50**	**56**	**62**	**60**	**81**	**72**
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
Global	**77**	**79**	**77**	**79**	**81**	**80**	**82**	**82**	**75**	**57**	**54**	**60**	**64**	**64**	**80**	**73**

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

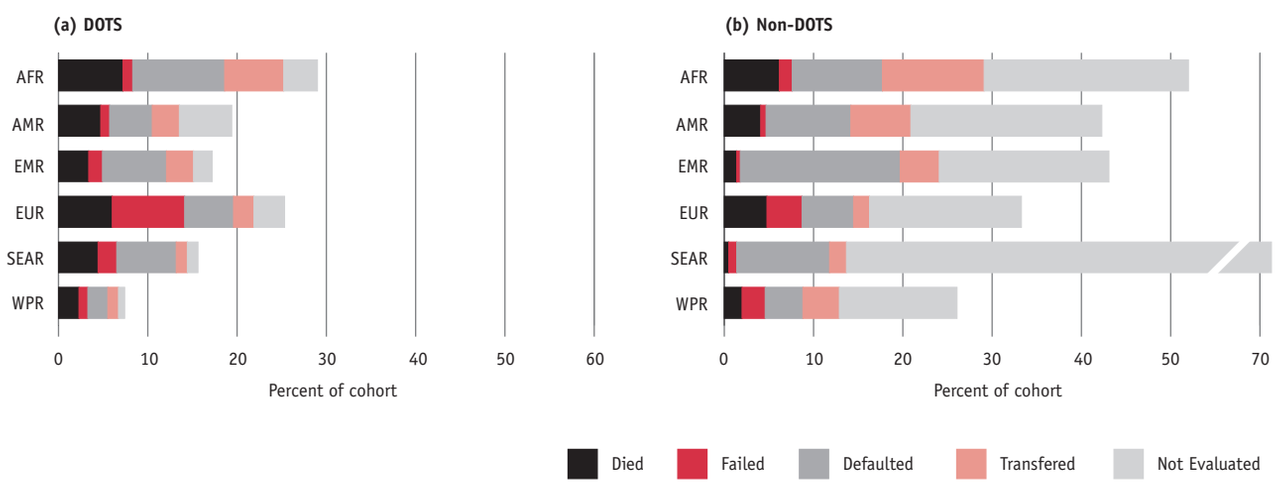


TABLE 11

Retreatment outcomes in DOTS programmes, 2001 cohort[a]

			TREATMENT OUTCOMES (%)*							
		REGISTERED	CURED	COMPLETED TREATMENT*	DIED	FAILED	DEFAULTED	TRANS-FERRED	NOT EVAL'D	TREATMENT SUCCESS (%)
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
High-burden countries		**153 427**	**68**	**6.3**	**6.5**	**4.5**	**11**	**3.4**	**1.4**	**74**
	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 †
Global		**186 280**	**65**	**7.3**	**6.7**	**4.8**	**11**	**3.4**	**1.9**	**73**

—Indicates not available.
† Treatment success > 85%.
[a] 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.

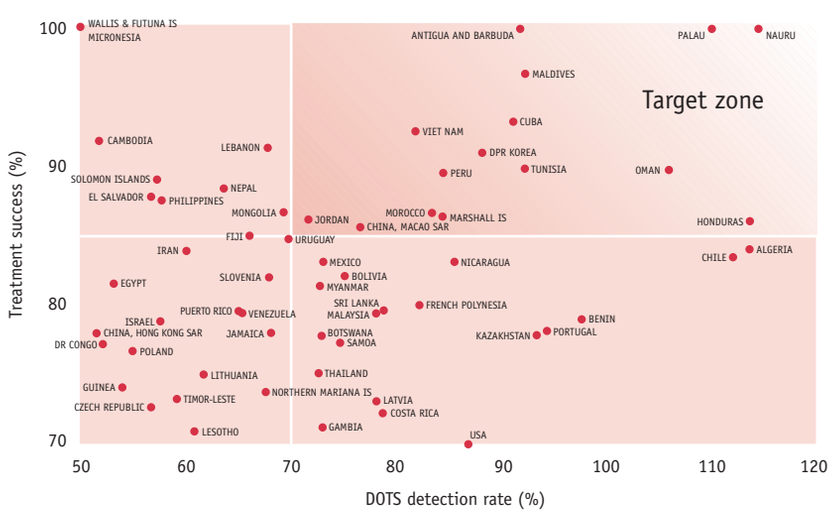


TABLE 12

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

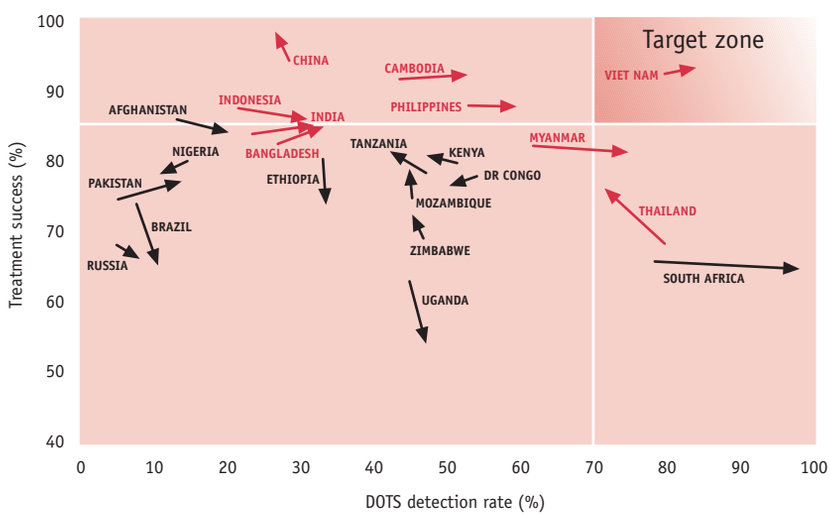
LOW TREATMENT SUCCESS (<70%)	DOTS: HIGH TREATMENT SUCCESS (≥ 70%) — INTERMEDIATE CASE DETECTION[a] (10–49%)		DOTS: HIGH TREATMENT SUCCESS (≥ 70%) — HIGH CASE DETECTION[a] (≥50%)
Brazil	Afghanistan	Indonesia	**Cambodia**
Russian Federation	Bangladesh	Kenya	DR Congo
South Africa	China	Mozambique	Myanmar
Uganda	Ethiopia	Nigeria	Philippines
	India	**Pakistan**	**Thailand**
		UR Tanzania	Viet Nam
		Zimbabwe	

[a] 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 SECRVICES	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						
	Total	**4**	**12**	**6**	**10**	**18**	**7**	**6**	**10**	**4**	**8**	**13**	**9**	**6**

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 inconsistent 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 F*inancing 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[23] 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.[6]

The DOTS-Plus initiative develops global policy on the management of MDR-TB and facilitates access to second-line drugs. As part of this process, 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*,[5] which included budget figures for Zimbabwe but not for South Africa. The difference is largely due to a change in

[20] 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[a]

		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[b]	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	
	Total	**15**	**8**	**12**	**9**	**10**	**7**	**10**	**11**	**10**	**5**	**8**	**4**

[a] Any listed activities carried out by MoH, NGOs or research organizations are included in this table.
[b] 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
Global	**213**	**123**	**77**	**28**	**16**	**74**	**23**	**24**	**113**

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
Global	**22**	**20**	**17**	**3**	**0**	**15**	**2**	**3**	**16**

TABLE 17

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

	TOTAL NTP COSTS (US$ MILLIONS)		TOTAL TB CONTROL COST (US$ MILLIONS)		TOTAL COST PER PATIENT TREATED (US$)		GOVERNMENT CONTRIBUTION TO TOTAL TB CONTROL COST: AS % OF TOTAL TB CONTROL COST		GOVERNMENT CONTRIBUTION TO TOTAL TB CONTROL COST: AS % GOVERNMENT HEALTH EXPENDITURES	
	2002 (EXPENDITURES)	2003 (BUDGET)	2002 (ACTUAL)	2003 (PLANNED)	2002 (ACTUAL)	2003 (PLANNED)	2002 (ACTUAL)	2003 (PLANNED)	2002 (ACTUAL)	2003 (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[d]	17	12	28	155	171	NA	62	2	2
6 Pakistan	NA	6	7[e,g]	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[a]	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[b]	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[e,h]	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[e,i]	22[e,i]	NA	NA	NA	NA	NA	NA
18 Mozambique	NA	8	10[e,j]	10[e,j]	NA	NA	NA	NA	NA	NA
19 Thailand	7	7[e,f]	9	9[e,f]	198	NA	100	100	0.3	NA
20 Afghanistan[c]	2	3	2	3	174	280	0	0	0	0
21 Cambodia	3	6	5	9	217	300	78	46	5	6
22 Myanmar[c]	1	5	1	5	21	65	25	6	NA	NA
High-burden countries	**289**	**430**	**834–884**	**984–1031**	**158[k]**	**199[k]**	**95[k]**	**75[k]**	**2[k]**	**2[k]**

NA Indicates not available.

[a] 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.

[b] Data were not provided for 2002; numbers for 2002 were assumed to be the same as those provided for 2003.

[c] Reflects NTP budgets and expenditures only, insufficient data available to estimate costs not included in the NTP budget.

[d] Estimate based on data provided in GFATM proposal.

[e] Data not provided on WHO surveillance form.

[f] Costs for 2003 assumed to be equal to those for 2002.

[g] 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.

[h] Total cost estimated by multiplying cost per patient for 2003 by number of cases notified in 2002.

[i] Estimate based on previous costing analyses, with cost per patient multiplied by the number of cases notified in 2002.

[j] Cost per patient estimated using budget data and by assuming that care is provided on an outpatient basis (as stated in GFATM proposal). Total cost estimated by multiplying the cost per patient by number of cases notified in 2002.

[k] Median value.

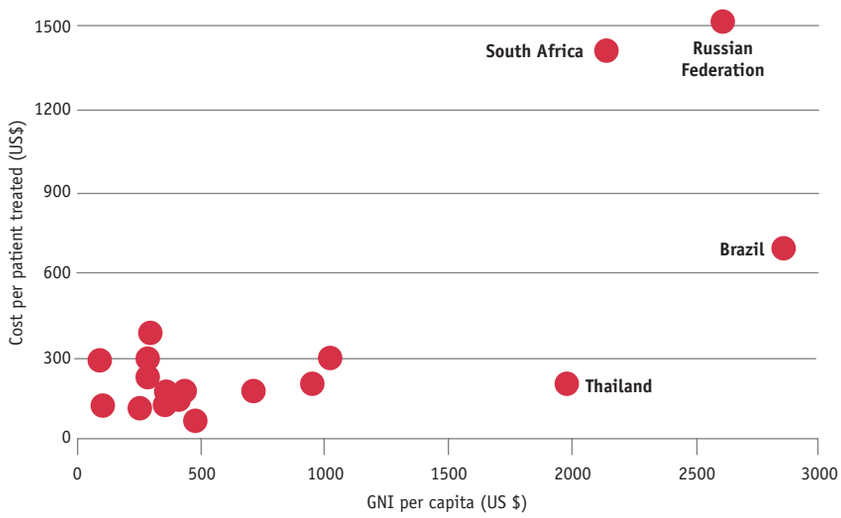
the budget for the Russian Federation. No data were provided by the Russian Federation MoH in 2002; instead, we used an estimate of US$ 200 million based on recent costing studies.[18] For this report, the Russian Federation provided data for 2003 for all expenditures at federal level and for staff expenditures 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).[5] 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

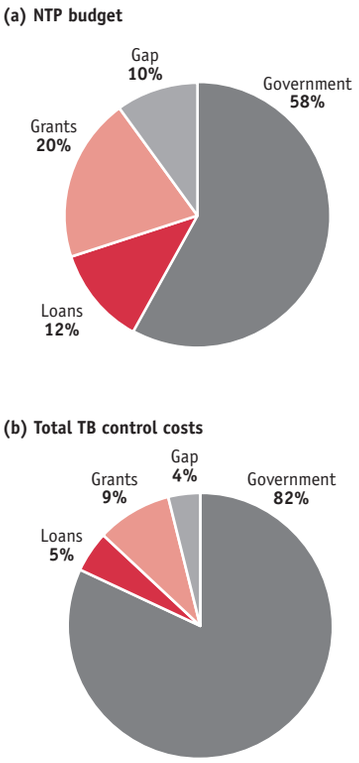
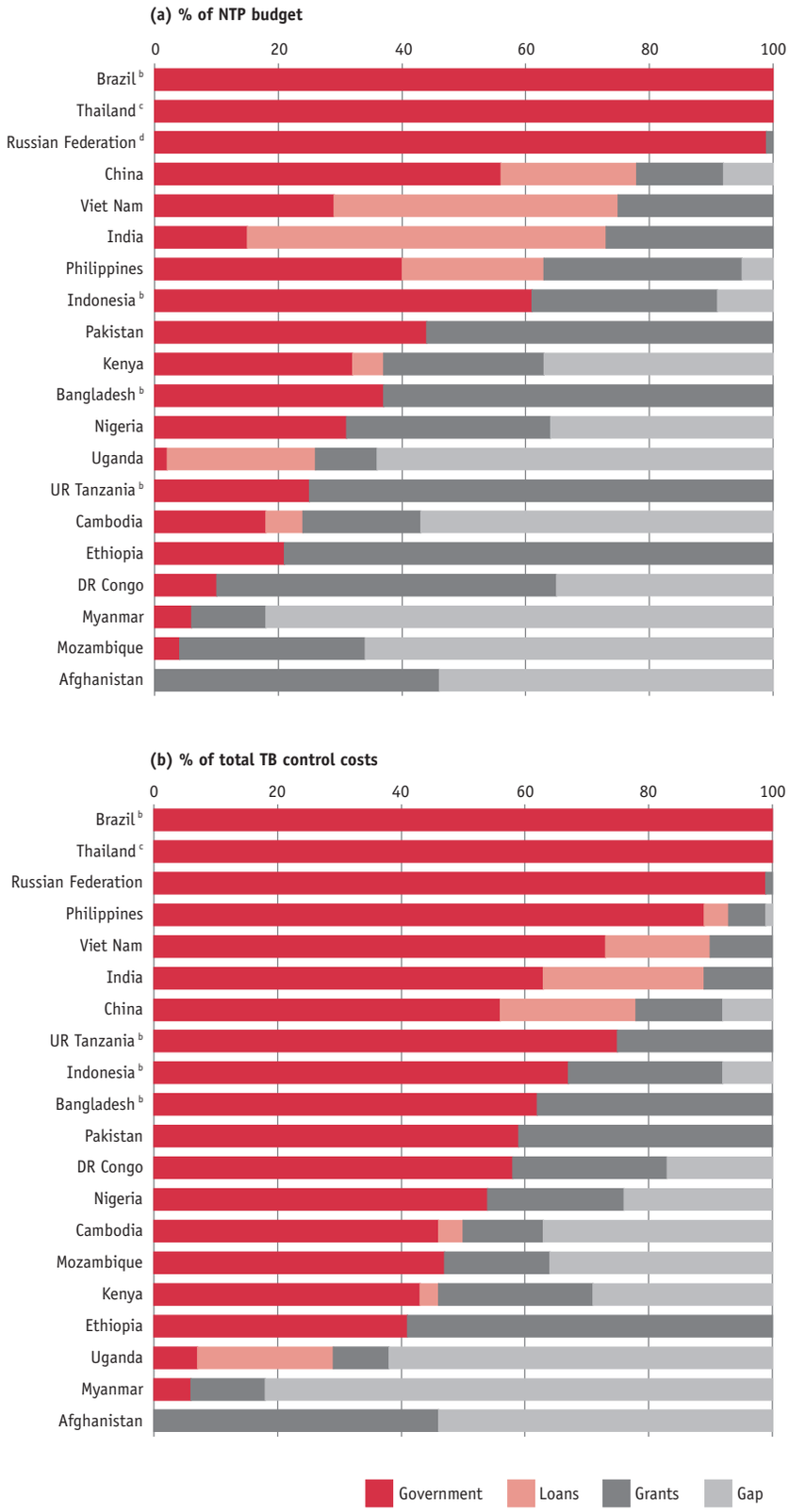


FIGURE 19

Sources of funding for (a) NTP budgets and (b) total TB control costs; high-burden countries, 2003[a]



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,[5] 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.

[a] Data not available for South Africa and Zimbabwe.
[b] 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.
[c] 2003 data not available; 2002 data are shown.
[d] Expenditure rather than budget data shown.

FIGURE 20

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

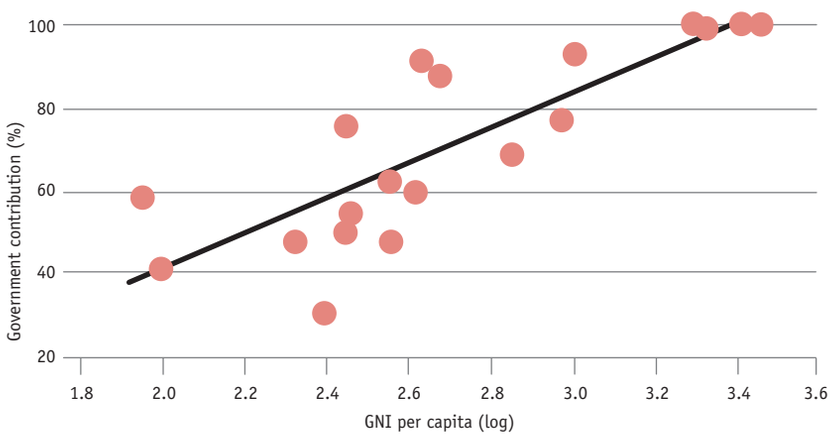


TABLE 18

GNI per capita (US$)

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

[a] No GNI data available; classification based on estimates.
[b] 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 TV/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

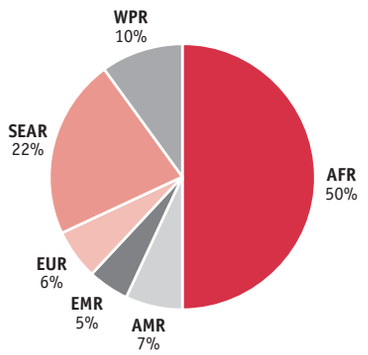
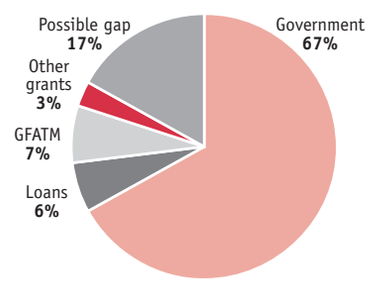


FIGURE 22

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.

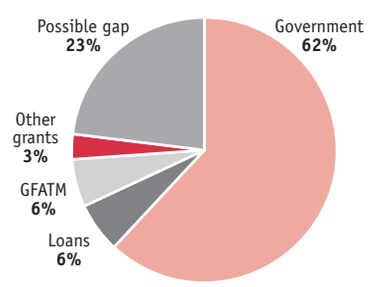


TABLE 19

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

	COMPONENT	ROUND	GRANT STATUS[a]	TOTAL LIFETIME BUDGETS (US$ MILLIONS)	FUNDS AWARDED FOR FIRST 2 YEARS (US$ MILLIONS)	DATE OF FIRST DISBURSEMENT	DISBURSEMENT TO DATE (US$ MILLIONS)
AFRO							
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		
AMRO							
No grants to high-burden countries							
Other countries (n=9)				64.9	41.9		
EMRO							
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		
EURO							
High-burden countries							
Russian Federation	TB	3	T	10.8	6.3	—	—
Other countries (n=5)				41.8	27.3		
SEARO							
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		
WPRO							
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)	TB			13.2	6.2		
Global (TB-specific)				608	294		41
Global (TB/HIV)				319	90		20
Global (integrated TB/HIV/malaria)				3	3		—
Global (19 high-burden countries, 37 others, 1 multi-country)				**930**	**387**		**61**

—Indicates no funds dispersed by end 2003.

[a] 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/

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.[6]

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.[24] 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,[5] 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

[21] 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.[16] 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.[6] 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 satisfactorily 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

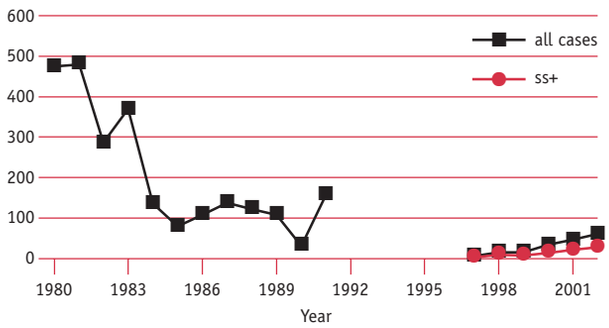
NA indicates not available

AFGHANISTAN

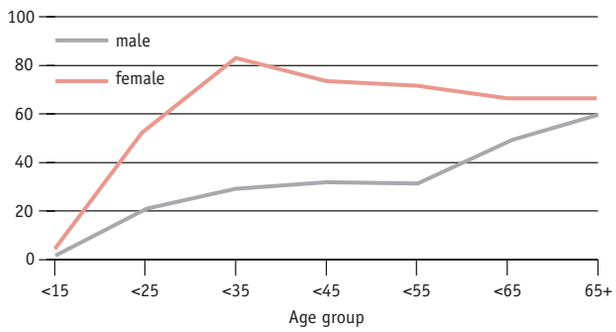
LATEST ESTIMATES[a]		TRENDS	1999	2000	2001	2002
Population	**22 930 036**	DOTS population coverage (%)	14	15	12	38
Global rank (by est. number of cases)	20	Notification rate (all cases/100 000 pop)	16	33	46	60
Incidence (all cases/100 000 pop)	333	Notification rate (new ss+/100 000 pop)	8	14	21	28
Incidence (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)

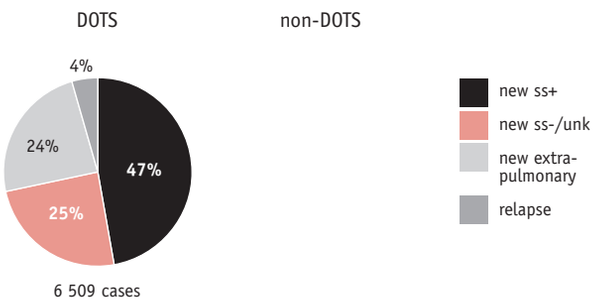
Notification (all cases) = 13 794 in 2002



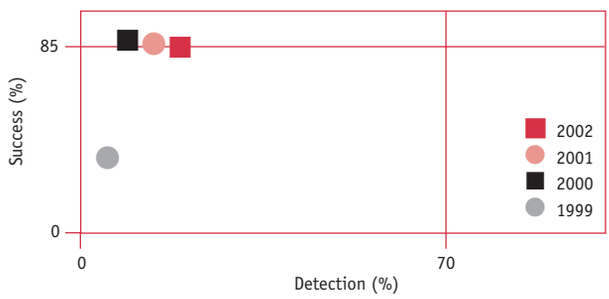
Notification rate by age and sex (new ss+)[b]



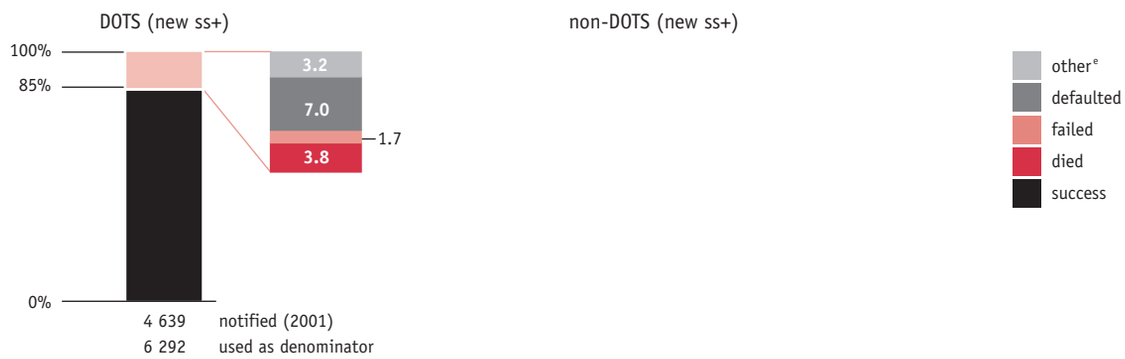
Case types notified[c]



DOTS progress towards targets[d]



Treatment outcomes[c]



Notes

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

[a] See Methods for data sources.

[b] The sum of cases notified by age and sex is less than the number of new smear-positive cases notified for some countries.

[c] Non-DOTS is blank for countries which are 100% DOTS, or where no non-DOTS data were reported.

[d] DOTS progress towards targets: DOTS detection rate for given year, DOTS success rate for cohort registered in previous year.

[e] "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	—	—
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	—	—
TOTAL NTP BUDGET	2.8	—	—	1.3	—	1.5
Costs not covered by NTP budget [a]						
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	—	1.3	—	1.5

— Indicates zero; NA, not available

[a] 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 application 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 upadzila (sub-district) is on average 270 000 and is served by 1 microscopy centre at the Upadzila 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

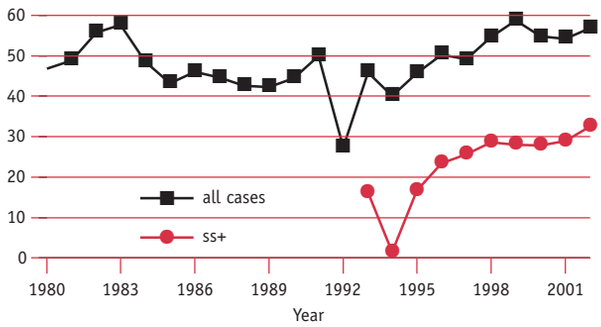
- Hire and train managerial staff
- Train and supervise staff to improve monitoring
- Improve collaboration with private and academic sectors through MoUs
- Develop an internal drug management plan in partnership with GDF and Stop TB to improve procurement, storage, and distribution

BANGLADESH

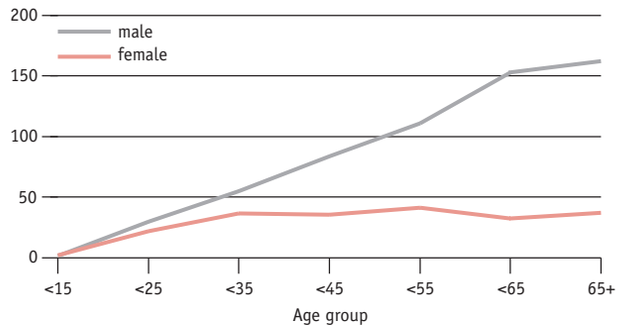
LATEST ESTIMATES[a]		TRENDS	1999	2000	2001	2002
Population	**143 808 546**	DOTS population coverage (%)	90	92	95	95
Global rank (by est. number of cases)	5	Notification rate (all cases/100 000 pop)	59	55	54	57
Incidence (all cases/100 000 pop)	221	Notification rate (new ss+/100 000 pop)	28	28	29	33
Incidence (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)

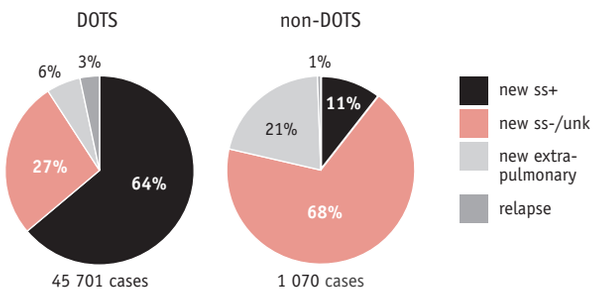
Notification (all cases) = 81 822 in 2002



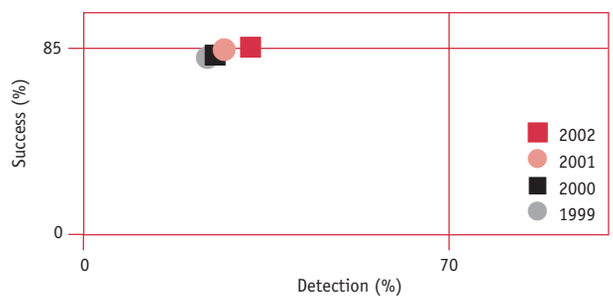
Notification rate by age and sex (new ss+)[b]



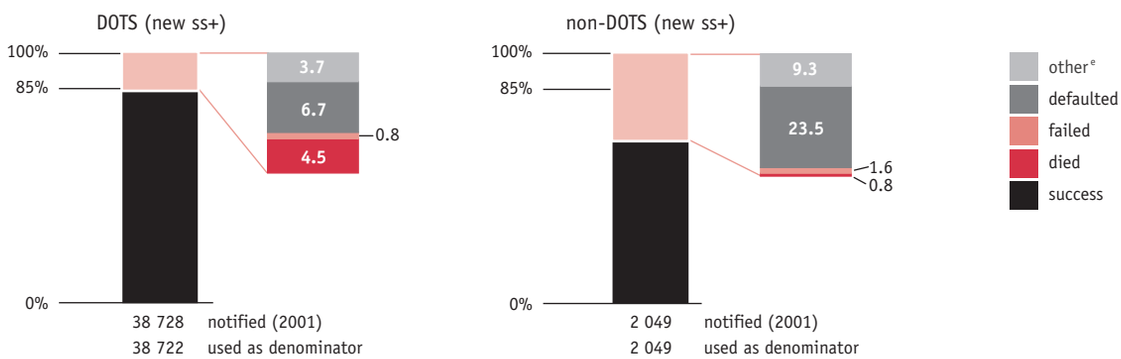
Case types notified[c]



DOTS progress towards targets[d]



Treatment outcomes[c]



Notes

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

[a] See Methods for data sources.

[b] The sum of cases notified by age and sex is less than the number of new smear-positive cases notified for some countries.

[c] Non-DOTS is blank for countries which are 100% DOTS, or where no non-DOTS data were reported.

[d] DOTS progress towards targets: DOTS detection rate for given year, DOTS success rate for cohort registered in previous year.

[e] "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 [a]						
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	—
TOTAL NTP BUDGET	**16.9**	**6.2**	**—**	**1.9**	**8.8**	**—**
Costs not covered by NTP budget [b]						
Hospital stay	1.1	1.1	—	—	—	—
Clinic visits for DOT and monitoring	9.8	9.8	—	—	—	—
TOTAL COSTS NOT COVERED BY NTP BUDGET	**10.9**	**10.9**	**—**	**—**	**—**	**—**
TOTAL TB CONTROL COSTS	**27.8**	**17.1**	**—**	**1.9**	**8.8**	**—**

— Indicates zero; NA, not available

[a] Not all cells in the table can be filled because, among sources, only the GFATM provides a breakdown of funds for all line items

[b] 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).[1] 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.

[1] 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

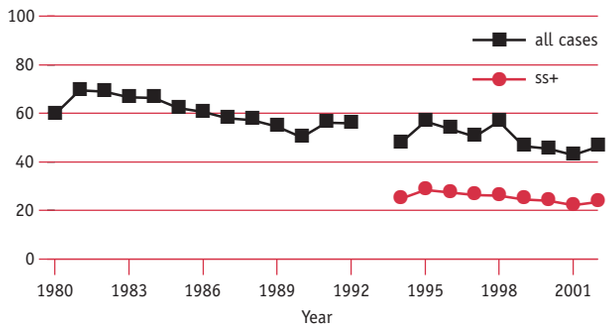
- Improve coordination among federal, state, and municipal health services to follow plans developed in November 2003
- Increase staff, training, and supervision to improve monitoring of treatment
- Develop staff training plan

BRAZIL

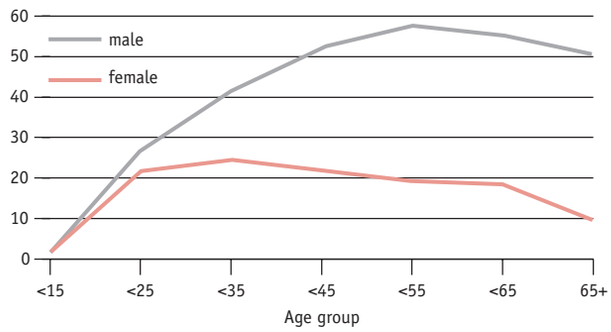
LATEST ESTIMATES[a]		TRENDS	1999	2000	2001	2002
Population	**176 257 330**	DOTS population coverage (%)	7	7	32	25
Global rank (by est. number of cases)	15	Notification rate (all cases/100 000 pop)	47	45	43	46
Incidence (all cases/100 000 pop)	62	Notification rate (new ss+/100 000 pop)	25	24	22	23
Incidence (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)

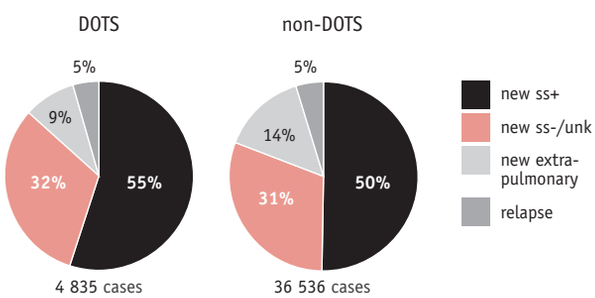
Notification (all cases) = 176 257 330 in 2002



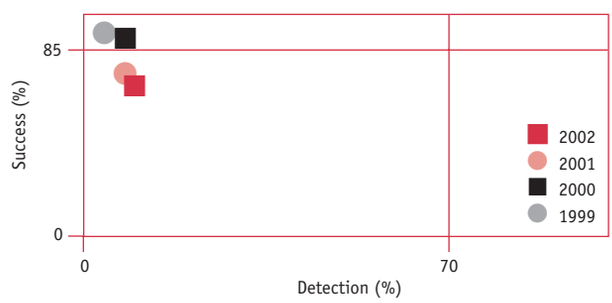
Notification rate by age and sex (new ss+)[b]



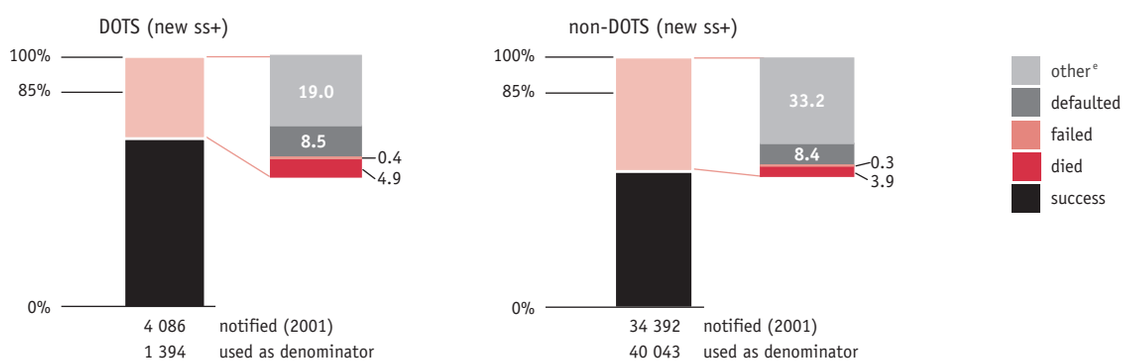
Case types notified[c]



DOTS progress towards targets[d]



Treatment outcomes[c]



Notes

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

[a] See Methods for data sources.

[b] The sum of cases notified by age and sex is less than the number of new smear-positive cases notified for some countries.

[c] Non-DOTS is blank for countries which are 100% DOTS, or where no non-DOTS data were reported.

[d] DOTS progress towards targets: DOTS detection rate for given year, DOTS success rate for cohort registered in previous year.

[e] "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	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	—	—	—	—
TOTAL NTP BUDGET	15.5	15.5	—	—	—	—
Costs not covered by NTP budget [a,b]						
Hospital stay	14.6	14.6	—	—	—	—
Clinic visits for DOT and monitoring	11.0	11.0	—	—	—	—
TOTAL COSTS NOT COVERED BY NTP BUDGET	25.6	25.6	—	—	—	—
TOTAL TB CONTROL COSTS	41.1	41.1	—	—	—	—

— Indicates zero; NA, not available

[a] WHO estimates, data not provided by the NTP

[b] 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

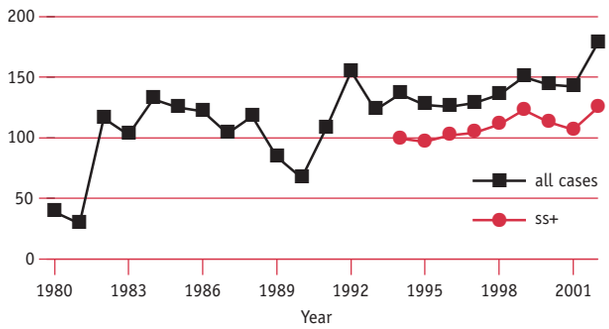
- Offer refresher courses to all TB staff to improve knowledge about TB treatment and control
- Create/revise HRDP to strengthen staffing
- Increase salaries to improve staff motivation
- Strengthen IEC to increase awareness about TB in the general population
- Use community-based DOTS to improve access 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

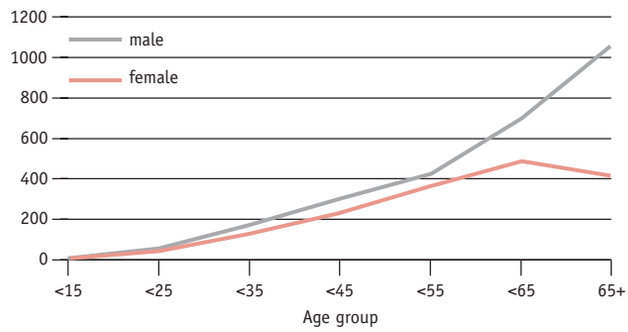
LATEST ESTIMATES[a]		TRENDS	1999	2000	2001	2002
Population	**13 809 532**	DOTS population coverage (%)	100	99	100	100
Global rank (by est. number of cases)	21	Notification rate (all cases/100 000 pop)	150	144	142	178
Incidence (all cases/100 000 pop)	549	Notification rate (new ss+/100 000 pop)	123	113	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)

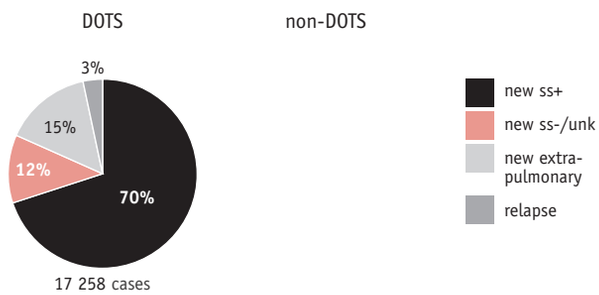
Notification (all cases) = 13 809 532 in 2002



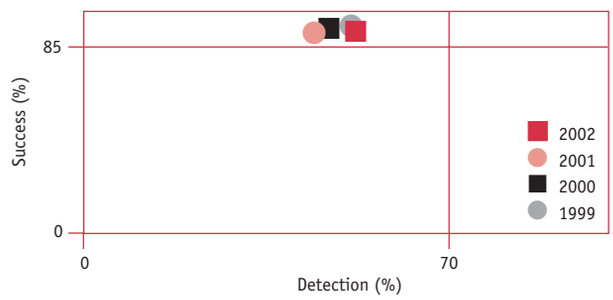
Notification rate by age and sex (new ss+)[b]



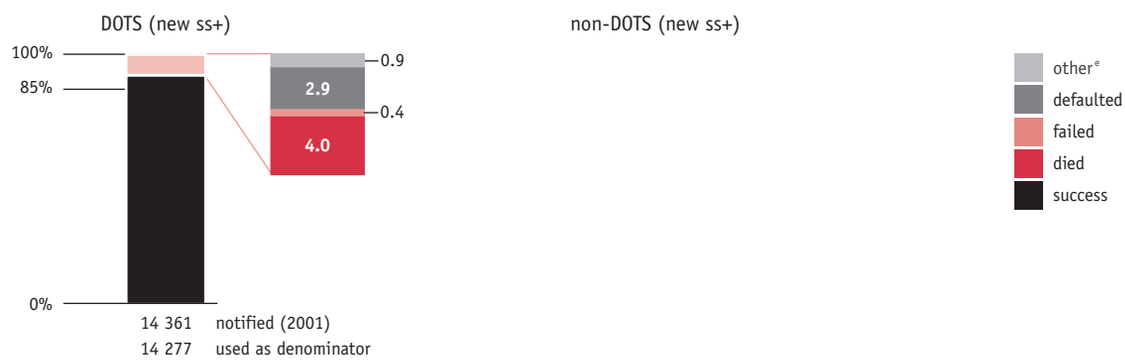
Case types notified[c]



DOTS progress towards targets[d]



Treatment outcomes[c]



Notes

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

[a] See Methods for data sources.

[b] The sum of cases notified by age and sex is less than the number of new smear-positive cases notified for some countries.

[c] Non-DOTS is blank for countries which are 100% DOTS, or where no non-DOTS data were reported.

[d] DOTS progress towards targets: DOTS detection rate for given year, DOTS success rate for cohort registered in previous year.

[e] "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	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
TOTAL NTP BUDGET	5.9	1.05	0.35	1.15	—	3.35
Costs not covered by NTP budget [a]						
Hospital stay	1.1	1.1	—	—	—	—
Clinic visits for DOT and monitoring	2.0	2.0	—	—	—	—
TOTAL COSTS NOT COVERED BY NTP BUDGET	3.1	3.1	—	—	—	—
TOTAL TB CONTROL COSTS	9.0	4.15	0.35	1.15	—	3.35

— Indicates zero; NA, not available

[a] 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 control 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

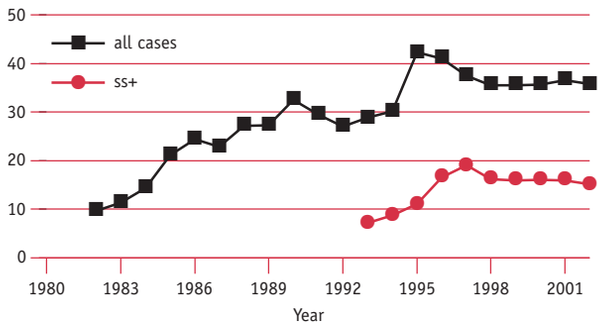
- Strengthen political commitment locally and expand international support
- Central government to formally evaluate political commitment, degree to which national TB control plan is implemented, and funding needed and available at lower governmental levels
- Hire experienced staff and enhance training 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

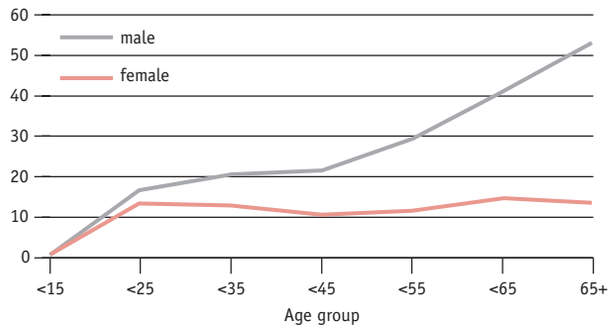
LATEST ESTIMATES[a]		TRENDS	1999	2000	2001	2002
Population	**1 294 866 589**	DOTS population coverage (%)	64	68	68	78
Global rank (by est. number of cases)	2	Notification rate (all cases/100 000 pop)	36	36	37	36
Incidence (all cases/100 000 pop)	113	Notification rate (new ss+/100 000 pop)	16	16	16	15
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)

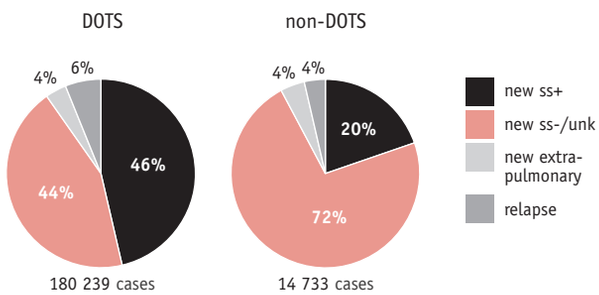
Notification (all cases) = 1 294 589 in 2002



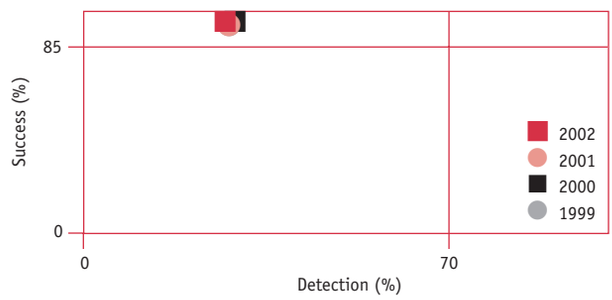
Notification rate by age and sex (new ss+)[b]



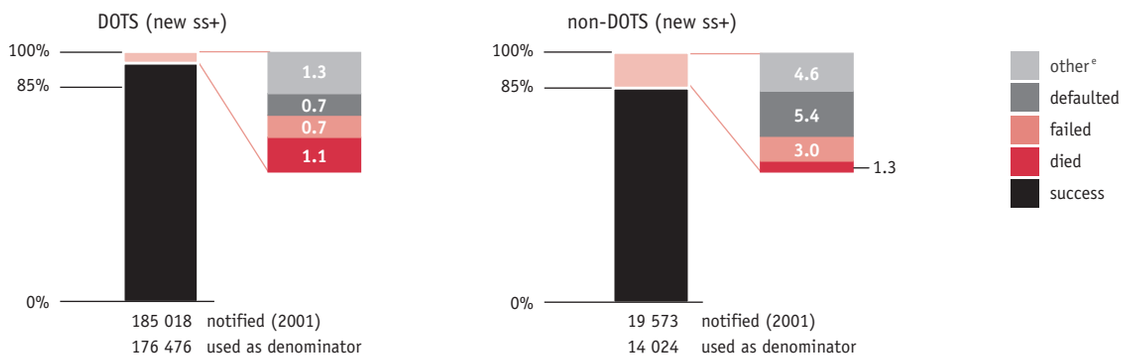
Case types notified[c]



DOTS progress towards targets[d]



Treatment outcomes[c]



Notes

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

[a] See Methods for data sources.

[b] The sum of cases notified by age and sex is less than the number of new smear-positive cases notified for some countries.

[c] Non-DOTS is blank for countries which are 100% DOTS, or where no non-DOTS data were reported.

[d] DOTS progress towards targets: DOTS detection rate for given year, DOTS success rate for cohort registered in previous year.

[e] "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	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
TOTAL NTP BUDGET	**94.8**	**52.8**	**20.6**	**3.6**	**10.1**	**7.7**
Costs not covered by NTP budget[a]						
Hospital stay	—	—	—	—	—	—
Clinic visits for DOT and monitoring	—	—	—	—	—	—
TOTAL COSTS NOT COVERED BY NTP BUDGET	**—**	**—**	**—**	**—**	**—**	**—**
TOTAL TB CONTROL COSTS	**94.8**	**52.8**	**20.6**	**3.6**	**10.1**	**7.7**

— Indicates zero; NA, not available

[a] 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[1] 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

[1] 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 percent 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 supervision 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

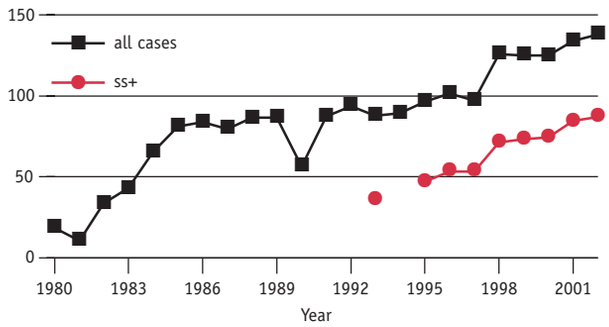
- Mobilize resources from donors
- Strengthen systems for drug management and distribution
- Continue advocacy for TB at provincial level
- Strengthen laboratory capacity by purchasing new microscopes, reagents, and laboratory materials for 400 laboratories
- Continue to expand DOTS even in areas where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

DEMOCRATIC REPUBLIC OF THE CONGO

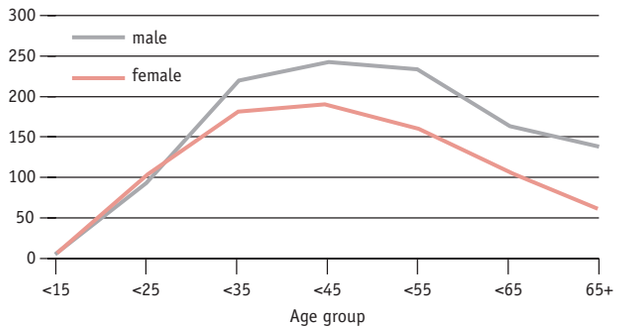
LATEST ESTIMATES[a]		TRENDS	1999	2000	2001	2002
Population	**51 201 034**	DOTS population coverage (%)	62	70	70	70
Global rank (by est. number of cases)	10	Notification rate (all cases/100 000 pop)	125	125	134	138
Incidence (all cases/100 000 pop)	383	Notification rate (new ss+/100 000 pop)	73	74	84	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)

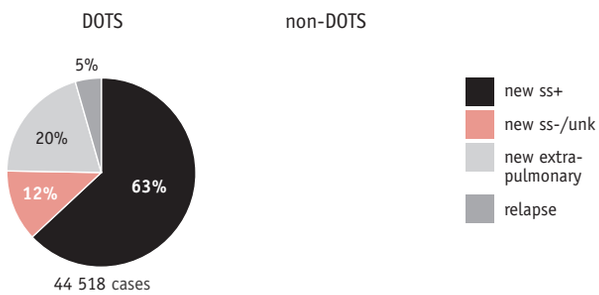
Notification (all cases) = 70 625 in 2002



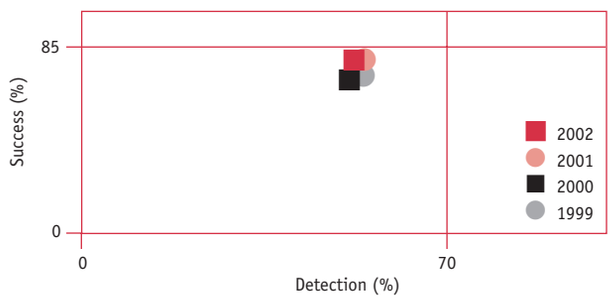
Notification rate by age and sex (new ss+)[b]



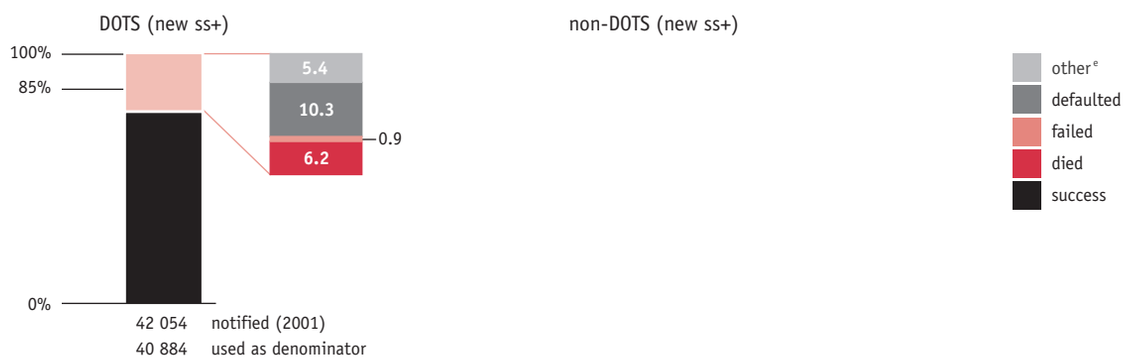
Case types notified[c]



DOTS progress towards targets[d]



Treatment outcomes[c]



Notes

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

[a] See Methods for data sources.

[b] The sum of cases notified by age and sex is less than the number of new smear-positive cases notified for some countries.

[c] Non-DOTS is blank for countries which are 100% DOTS, or where no non-DOTS data were reported.

[d] DOTS progress towards targets: DOTS detection rate for given year, DOTS success rate for cohort registered in previous year.

[e] "Other" includes transfer out and not evaluated, still on treatment, and other unknown.

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 coordination 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 Kinshasha 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	
NTP budget						
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
TOTAL NTP BUDGET	**10.4**	**1.0**	**—**	**5.7**	**—**	**3.7**
Costs not covered by NTP budget [a,b]						
Hospital stay	1.0	1.0	—	—	—	—
Clinic visits for DOT and monitoring	11.2	11.2	—	—	—	—
TOTAL COSTS NOT COVERED BY NTP BUDGET	**12.2**	**12.2**	**—**	**—**	**—**	**—**
TOTAL TB CONTROL COSTS	**22.6**	**13.2**	**—**	**5.7**	**—**	**3.7**

— Indicates zero; NA, not available

[a] WHO estimates, data not provided by the NTP

[b] 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.

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

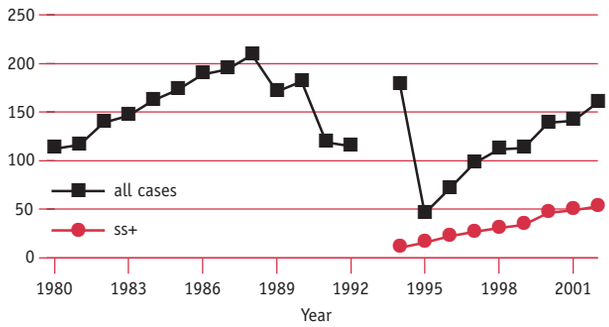
- Expand DOTS into all existing health facilities
- Develop community-based TB services in remote areas
- Strengthen public-private partnerships
- Design plan for recruitment, retention, and training of staff at all levels
- Strengthen capacity of Pharmaceutical Administration and Supply Service (PASS)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

ETHIOPIA

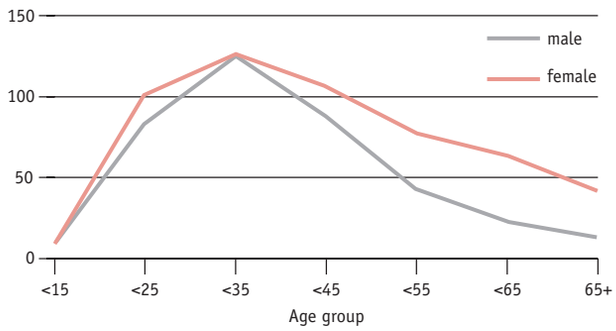
LATEST ESTIMATES[a]		TRENDS	1999	2000	2001	2002
Population	**68 961 044**	DOTS population coverage (%)	63	85	70	95
Global rank (by est. number of cases)	7	Notification rate (all cases/100 000 pop)	113	139	141	160
Incidence (all cases/100 000 pop)	370	Notification rate (new ss+/100 000 pop)	34	47	49	53
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)

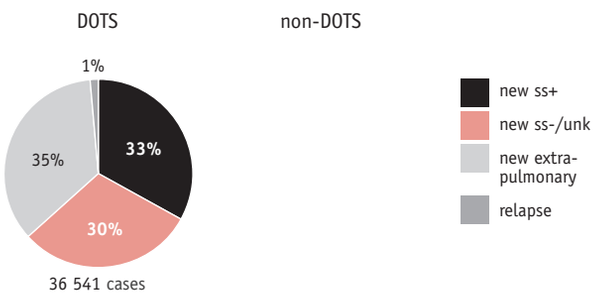
Notification (all cases) = 110 289 in 2002



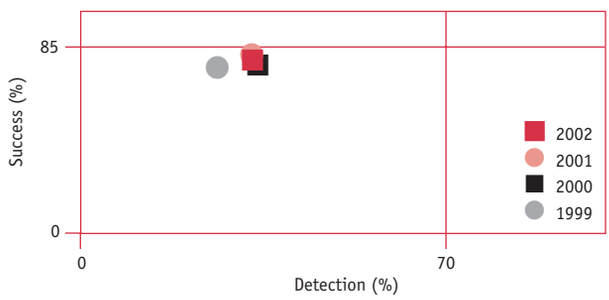
Notification rate by age and sex (new ss+)[b]



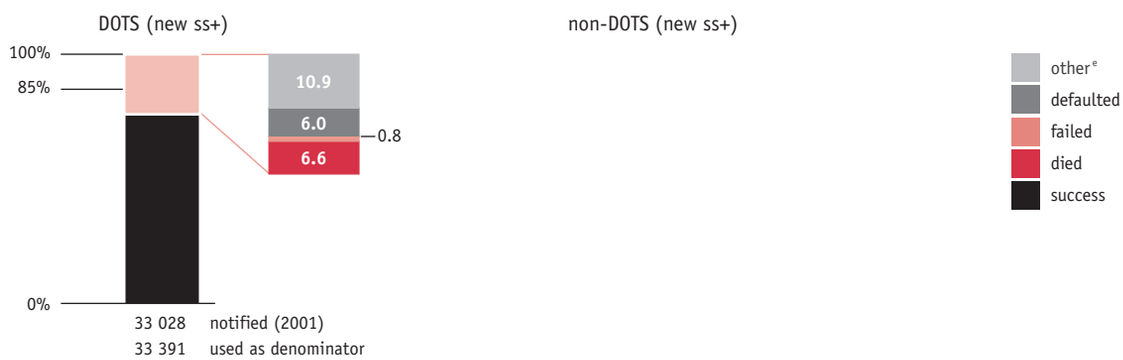
Case types notified[c]



DOTS progress towards targets[d]



Treatment outcomes[c]



Notes

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

[a] See Methods for data sources.

[b] The sum of cases notified by age and sex is less than the number of new smear-positive cases notified for some countries.

[c] Non-DOTS is blank for countries which are 100% DOTS, or where no non-DOTS data were reported.

[d] DOTS progress towards targets: DOTS detection rate for given year, DOTS success rate for cohort registered in previous year.

[e] "Other" includes transfer out and not evaluated, still on treatment, and other unknown.

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	
NTP budget						
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	—	—
TOTAL NTP BUDGET	**10.6**	**2.2**	**—**	**8.4**	**—**	**—**
Costs not covered by NTP budget [a]						
Hospital stay	0.2	0.2	—	—	—	—
Clinic visits for DOT and monitoring	3.4	3.4	—	—	—	—
TOTAL COSTS NOT COVERED BY NTP BUDGET	**3.6**	**3.6**	**—**	**—**	**—**	**—**
TOTAL TB CONTROL COSTS	**14.2**	**5.8**	**—**	**8.4**	**—**	**—**

— Indicates zero; NA, not available

[a] WHO estimates, data not provided by the NTP

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 (almost 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

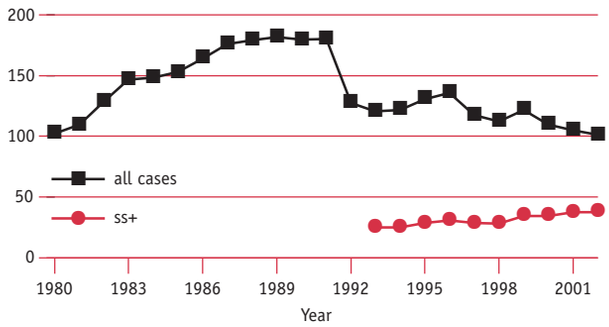
- Central and state governments to create additional staff posts and provide management training for key NTP officers
- Strengthen (re-) training, monitoring, and supervision activities at all levels
- Strengthen public-private partnerships to standardize and facilitate the delivery of TB services
- 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

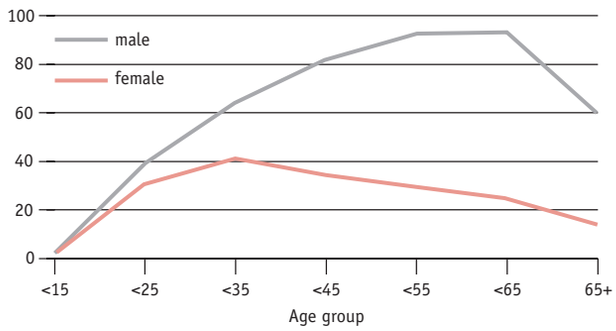
LATEST ESTIMATES[a]		TRENDS	1999	2000	2001	2002
Population	1 049 549 473	DOTS population coverage (%)	14	30	45	52
Global rank (by est. number of cases)	1	Notification rate (all cases/100 000 pop)	122	110	105	101
Incidence (all cases/100 000 pop)	168	Notification rate (new ss+/100 000 pop)	35	34	37	38
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)

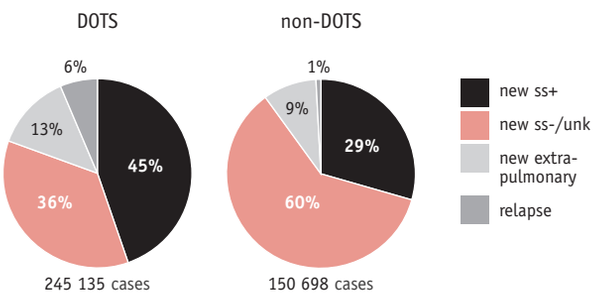
Notification (all cases) = 1 060 951 in 2002



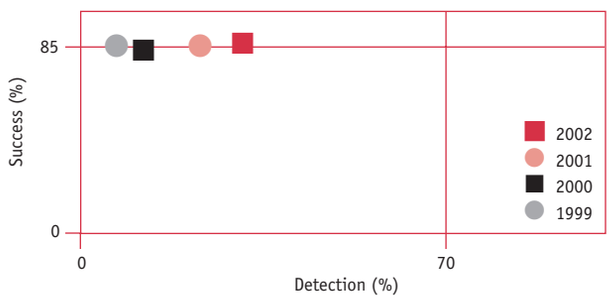
Notification rate by age and sex (new ss+)[b]



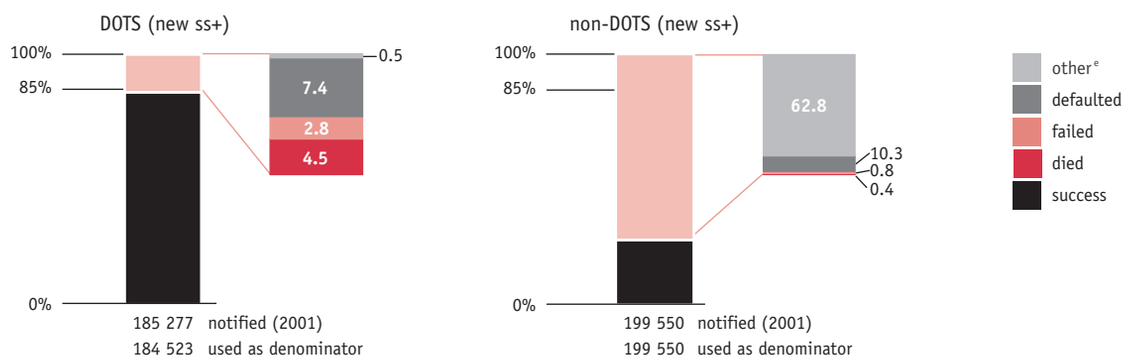
Case types notified[c]



DOTS progress towards targets[d]



Treatment outcomes[c]



Notes

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

[a] See Methods for data sources.

[b] The sum of cases notified by age and sex is less than the number of new smear-positive cases notified for some countries.

[c] Non-DOTS is blank for countries which are 100% DOTS, or where no non-DOTS data were reported.

[d] DOTS progress towards targets: DOTS detection rate for given year, DOTS success rate for cohort registered in previous year.

[e] "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). 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 resistance 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 Uttaran-

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	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	—	—
TOTAL NTP BUDGET	**41.8**	**6.1**	**24.4**	**11.3**	**—**	**—**
Costs not covered by NTP budget [a]						
Treatment in non-DOTS areas	29.4	29.4	—	—	—	—
Clinic visits for DOT and monitoring, DOTS areas[b]	24.4	24.4	—	—	—	—
TOTAL COSTS NOT COVERED BY NTP BUDGET	**53.8**	**53.8**	**—**	**—**	**—**	**—**
TOTAL TB CONTROL COSTS	**95.6**	**59.9**	**24.4**	**11.3**	**—**	**—**

— Indicates zero; NA, not available

[a] WHO estimates, data not provided by the NTP

[b] 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

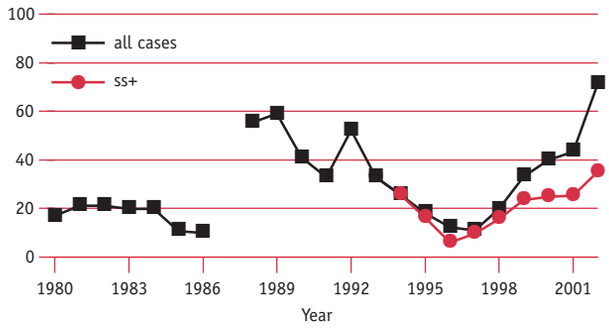
- Improve staffing, training, and quality of supervision at all levels
- Implement newly designed drug distribution and quality control system
- Increase the role of private practitioners and private facilities in TB control
- Train more health unit staff in DOTS treatment protocol

INDONESIA

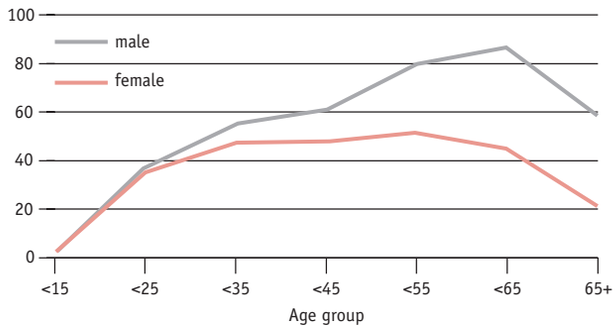
LATEST ESTIMATES[a]		TRENDS	1999	2000	2001	2002
Population	**217 131 220**	DOTS population coverage (%)	90	98	98	98
Global rank (by est. number of cases)	3	Notification rate (all cases/100 000 pop)	33	40	43	71
Incidence (all cases/100 000 pop)	256	Notification rate (new ss+/100 000 pop)	24	25	25	35
Incidence (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)

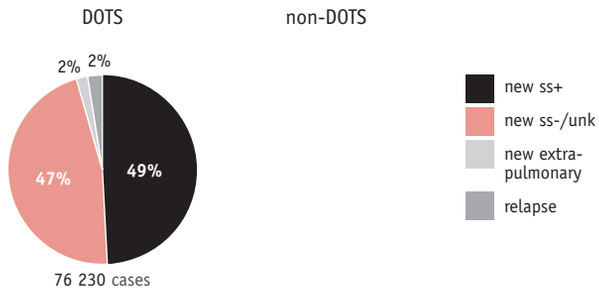
Notification (all cases) = 217 131 220 in 2002



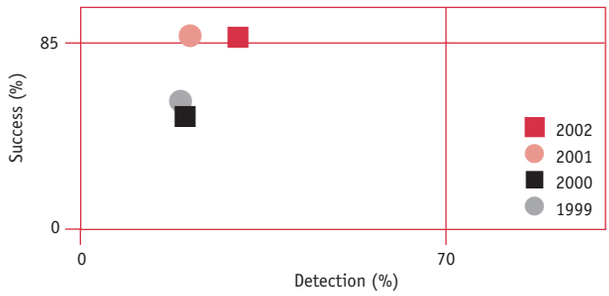
Notification rate by age and sex (new ss+)[b]



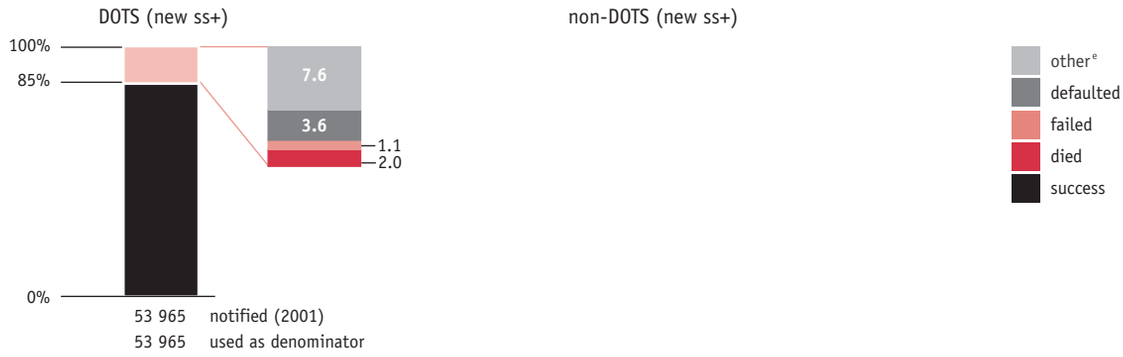
Case types notified[c]



DOTS progress towards targets[d]



Treatment outcomes[c]



Notes

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

[a] See Methods for data sources.

[b] The sum of cases notified by age and sex is less than the number of new smear-positive cases notified for some countries.

[c] Non-DOTS is blank for countries which are 100% DOTS, or where no non-DOTS data were reported.

[d] DOTS progress towards targets: DOTS detection rate for given year, DOTS success rate for cohort registered in previous year.

[e] "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	
NTP budget						
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
TOTAL NTP BUDGET	**31.9**	**19.5**	**0.1**	**9.5**	**—**	**2.8**
Costs not covered by NTP budget [a]						
Hospital stay	—	—	—	—	—	—
Clinic visits for DOT and monitoring	6.1	6.1	—	—	—	—
TOTAL COSTS NOT COVERED BY NTP BUDGET	**6.1**	**6.1**	**—**	**—**	**—**	**—**
TOTAL TB CONTROL COSTS	**38.0**	**25.6**	**0.1**	**9.5**	**—**	**2.8**

— Indicates zero; NA, not available

[a] 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

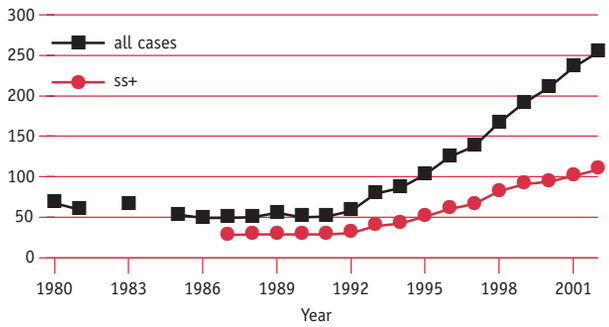
- Mobilize funding
- Improve recruitment and retention of local personnel
- Develop plan to strengthen health workforce
- Give incentives to attract private practitioners to provide DOTS services
- Strengthen public awareness through new COMBI plan, and through a strategy for urban TB control
- Provide 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

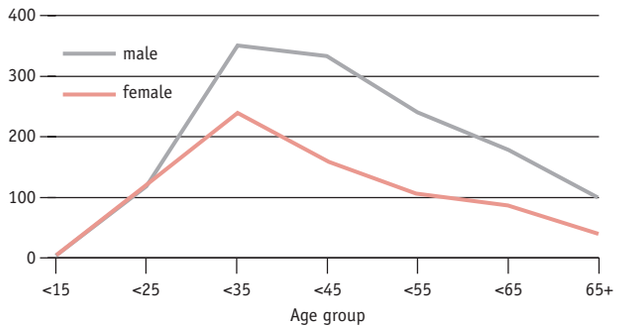
LATEST ESTIMATES[a]		TRENDS	1999	2000	2001	2002
Population	**31 540 420**	DOTS population coverage (%)	100	100	100	100
Global rank (by est. number of cases)	12	Notification rate (all cases/100 000 pop)	191	210	235	254
Incidence (all cases/100 000 pop)	540	Notification rate (new ss+/100 000 pop)	91	94	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)

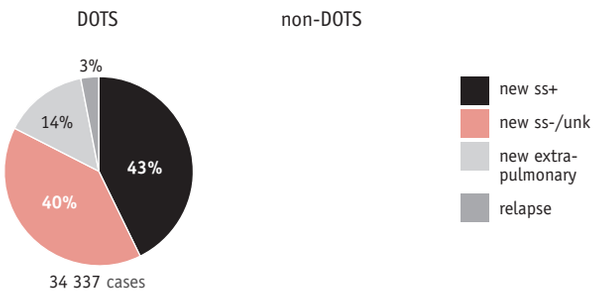
Notification (all cases) = 80 183 in 2002



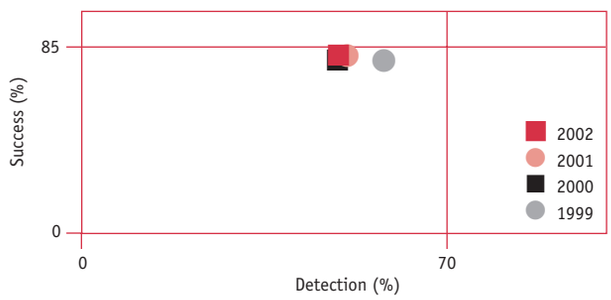
Notification rate by age and sex (new ss+)[b]



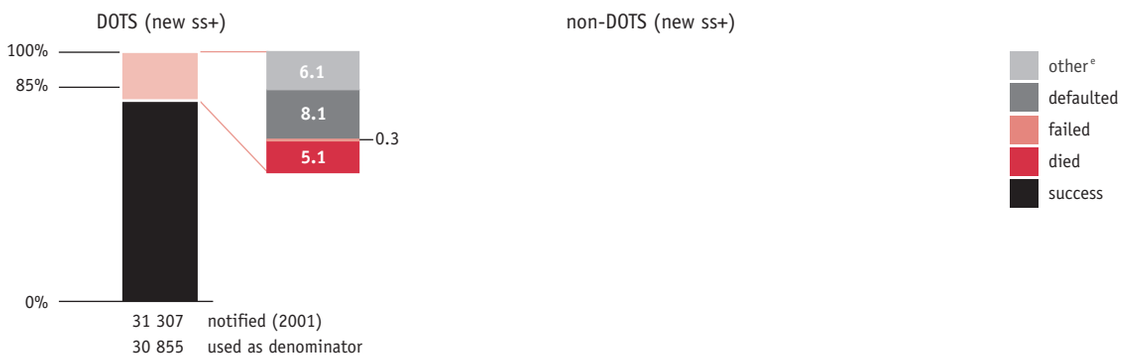
Case types notified[c]



DOTS progress towards targets[d]



Treatment outcomes[c]



Notes

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

[a] See Methods for data sources.

[b] The sum of cases notified by age and sex is less than the number of new smear-positive cases notified for some countries.

[c] Non-DOTS is blank for countries which are 100% DOTS, or where no non-DOTS data were reported.

[d] DOTS progress towards targets: DOTS detection rate for given year, DOTS success rate for cohort registered in previous year.

[e] "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 (NASCOP) 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	
NTP budget						
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	—	—	—	—
TOTAL NTP BUDGET	**11.0**	**3.5**	**0.5**	**3.3**	**0.4**	**3.3**
Costs not covered by NTP budget [a,b]						
Hospital stay	0.5	0.5	—	—	—	—
Clinic visits for DOT and monitoring	2.3	2.3	—	—	—	—
TOTAL COSTS NOT COVERED BY NTP BUDGET	**2.8**	**2.8**	**—**	**—**	**—**	**—**
TOTAL TB CONTROL COSTS	**13.8**	**6.3**	**0.5**	**3.3**	**0.4**	**3.3**

— Indicates zero; NA, not available

[a] WHO estimates, data not provided by the NTP

[b] 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.

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 motorbikes, 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

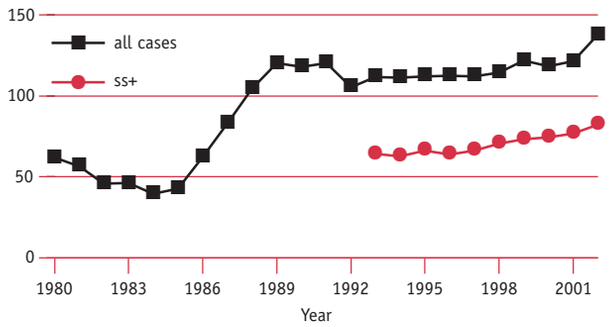
NA indicates not available

MOZAMBIQUE

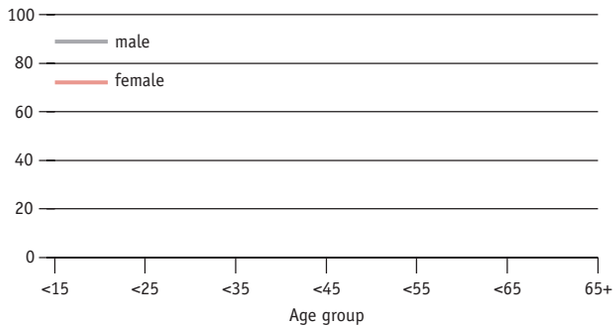
LATEST ESTIMATES[a]		TRENDS	1999	2000	2001	2002
Population	**18 537 208**	DOTS population coverage (%)	—	100	100	100
Global rank (by est. number of cases)	18	Notification rate (all cases/100 000 pop)	122	118	121	138
Incidence (all cases/100 000 pop)	436	Notification rate (new ss+/100 000 pop)	73	74	77	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)

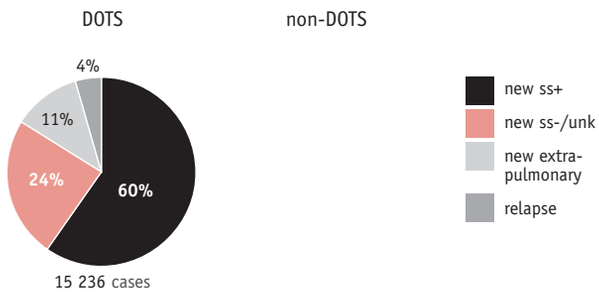
Notification (all cases) = 25 544 in 2002



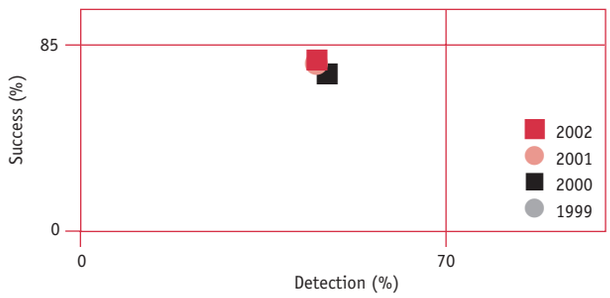
Notification rate by age and sex (new ss+)[b]



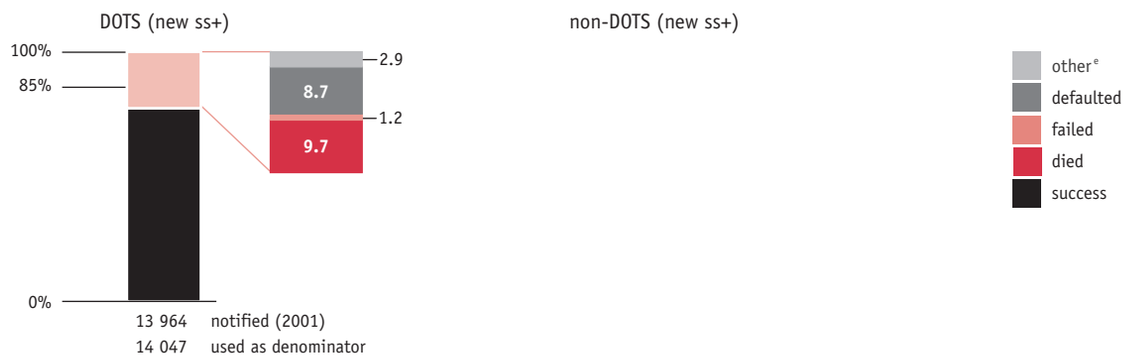
Case types notified[c]



DOTS progress towards targets[d]



Treatment outcomes[c]



Notes

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

[a] See Methods for data sources.

[b] The sum of cases notified by age and sex is less than the number of new smear-positive cases notified for some countries.

[c] Non-DOTS is blank for countries which are 100% DOTS, or where no non-DOTS data were reported.

[d] DOTS progress towards targets: DOTS detection rate for given year, DOTS success rate for cohort registered in previous year.

[e] "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 [a]**	**0.3 [a]**	**0**	**2.4**	**0**	**5.3**
Costs not covered by NTP budget [b]						
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

[a] The government contribution is actually higher because drugs are also procured with government money. However the size of the drug budget is unknown.

[b] 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, Lepra 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, culture, 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%[a]
• 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 diagnositic 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

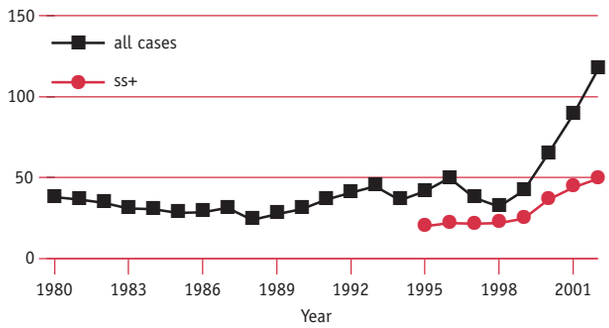
[a] Once the GFATM agreement is finalized, this will be 100%.

MYANMAR

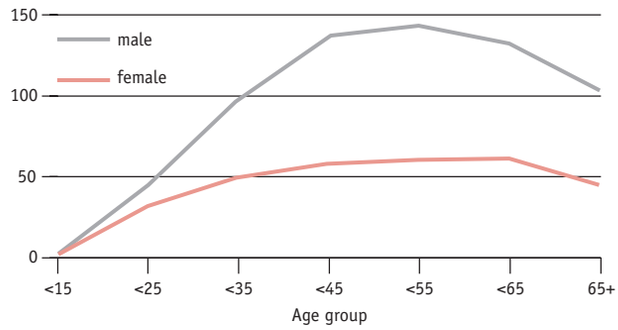
LATEST ESTIMATES[a]		TRENDS	1999	2000	2001	2002
Population	**48 852 483**	DOTS population coverage (%)	64	77	84	88
Global rank (by est. number of cases)	22	Notification rate (all cases/100 000 pop)	42	65	89	117
Incidence (all cases/100 000 pop)	154	Notification rate (new ss+/100 000 pop)	24	36	44	49
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)

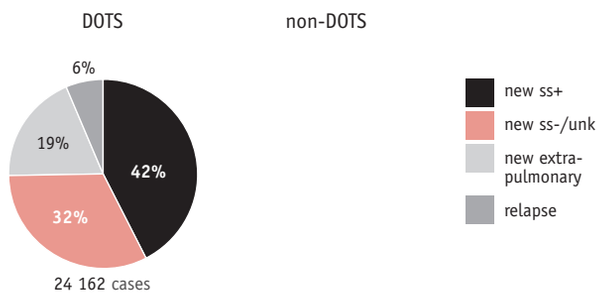
Notification (all cases) = 57 012 in 2002



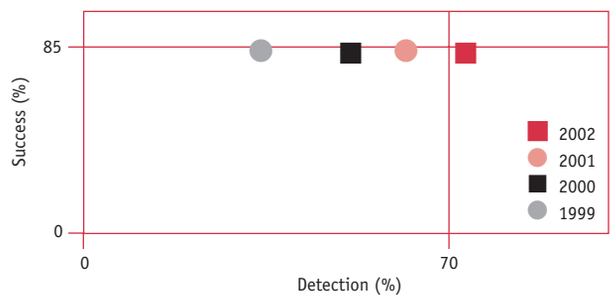
Notification rate by age and sex (new ss+)[b]



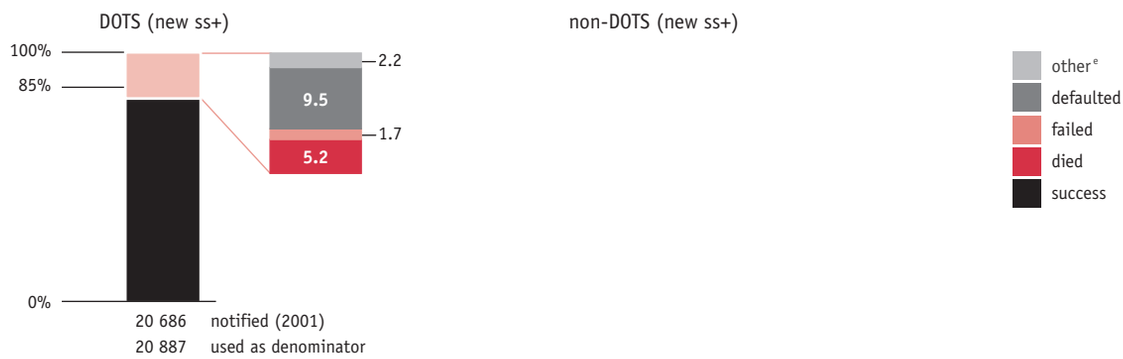
Case types notified[c]



DOTS progress towards targets[d]



Treatment outcomes[c]



Notes

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

[a] See Methods for data sources.

[b] The sum of cases notified by age and sex is less than the number of new smear-positive cases notified for some countries.

[c] Non-DOTS is blank for countries which are 100% DOTS, or where no non-DOTS data were reported.

[d] DOTS progress towards targets: DOTS detection rate for given year, DOTS success rate for cohort registered in previous year.

[e] "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	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	—	—
TOTAL NTP BUDGET	**5.1**	**0.3**	**—**	**4.8**	**—**	**—**
Costs not covered by NTP budget [a]						
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
[a] 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 observation 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%[a]
• Government contribution to NTP budget, including loans, 2003	31%[b]
• Government contribution to total TB control costs, including loans, 2003	55%[b]
• Government health spending used for TB, 2003	8%[b]

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

[a] This includes the budget committed by the government. Taking into account the limited release of funds, 32% of the NTP budget was available.

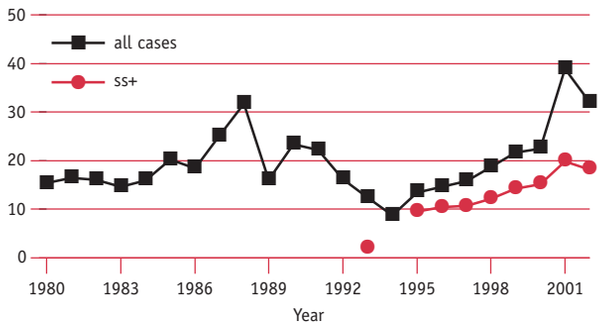
[b] This includes the budget committed by the government and does not take into account the limited release of funds.

NIGERIA

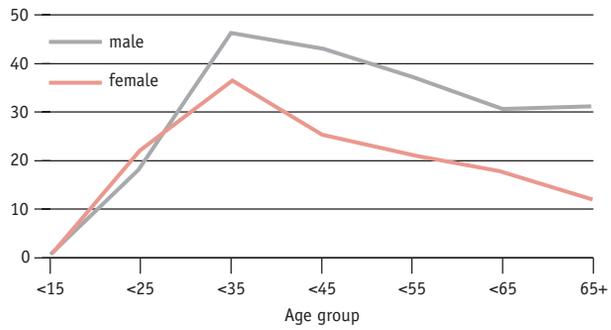
LATEST ESTIMATES[a]		TRENDS	1999	2000	2001	2002
Population	**120 911 192**	DOTS population coverage (%)	45	47	55	55
Global rank (by est. number of cases)	4	Notification rate (all cases/100 000 pop)	22	23	39	32
Incidence (all cases/100 000 pop)	304	Notification rate (new ss+/100 000 pop)	14	15	20	18
Incidence (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)

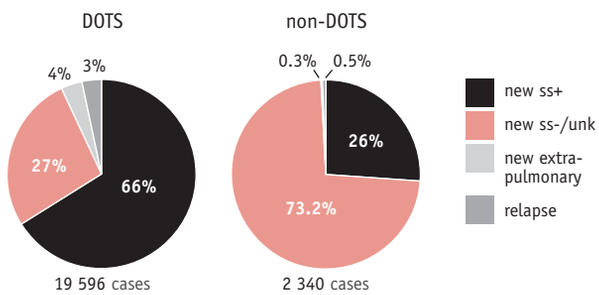
Notification (all cases) = 38 628 in 2002



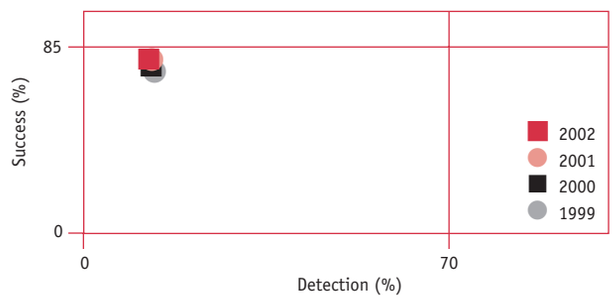
Notification rate by age and sex (new ss+)[b]



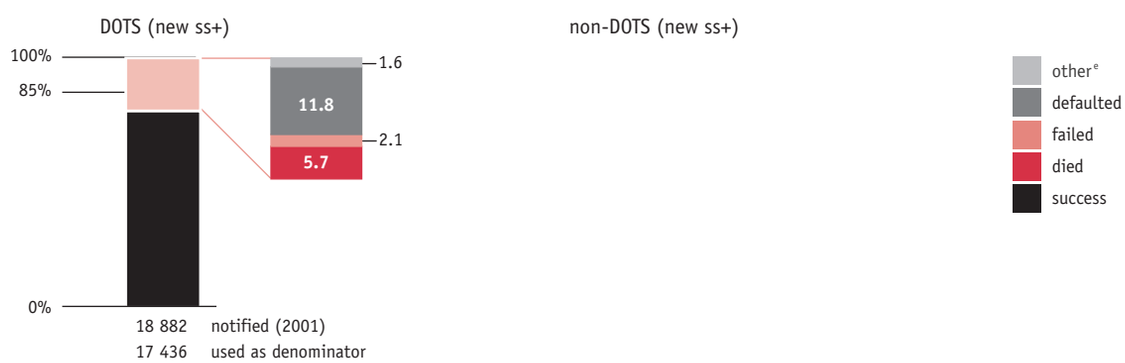
Case types notified[c]



DOTS progress towards targets[d]



Treatment outcomes[c]



Notes

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

[a] See Methods for data sources.

[b] The sum of cases notified by age and sex is less than the number of new smear-positive cases notified for some countries.

[c] Non-DOTS is blank for countries which are 100% DOTS, or where no non-DOTS data were reported.

[d] DOTS progress towards targets: DOTS detection rate for given year, DOTS success rate for cohort registered in previous year.

[e] "Other" includes transfer out and not evaluated, still on treatment, and other unknown.

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 coordinating 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	
NTP budget						
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	—	—
TOTAL NTP BUDGET	**12.6**	**3.9**	**—**	**4.1**	**—**	**4.6**
Costs not covered by NTP budget [a]						
Hospital stay	1.7	1.7	—	—	—	—
Clinic visits for DOT and monitoring	4.7	4.7	—	—	—	—
TOTAL COSTS NOT COVERED BY NTP BUDGET	**6.4**	**6.4**	**—**	**—**	**—**	**—**
TOTAL TB CONTROL COSTS	**19.0**	**10.3**	**—**	**4.1**	**—**	**4.6**

— Indicates zero; NA, not available

[a] WHO estimates, data not provided by the NTP

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 caried 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

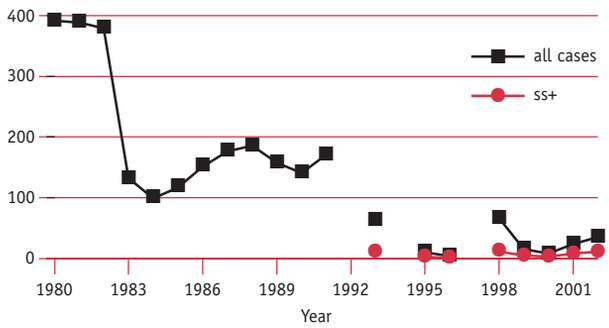
- Maintain political will, especially at district and community levels, during decentralization
- Recruit and retain staff who will be trained in management, supervision, and planning
- Train private sector practitioners through continuing education and in medical, nursing, and public health schools
- Use available funds to assess and strengthen internal drug management system in partnership with GDF and Stop TB drug management partners

PAKISTAN

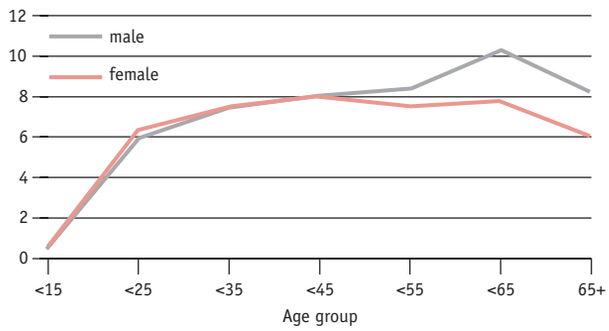
LATEST ESTIMATES[a]		TRENDS	1999	2000	2001	2002
Population	**149 910 783**	DOTS population coverage (%)	8	9	24	45
Global rank (by est. number of cases)	6	Notification rate (all cases/100 000 pop)	15	7.7	23	35
Incidence (all cases/100 000 pop)	181	Notification rate (new ss+/100 000 pop)	4.5	2.3	7.5	11
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)

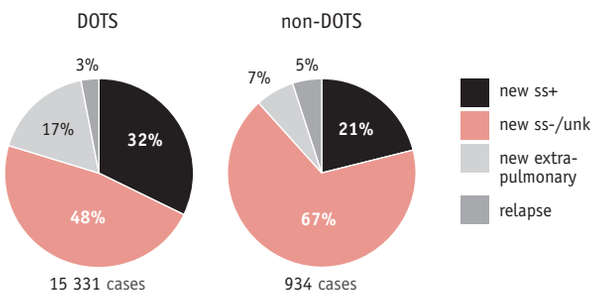
Notification (all cases) = 52 172 in 2002



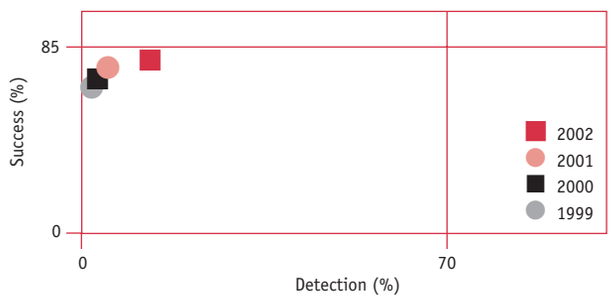
Notification rate by age and sex (new ss+)[b]



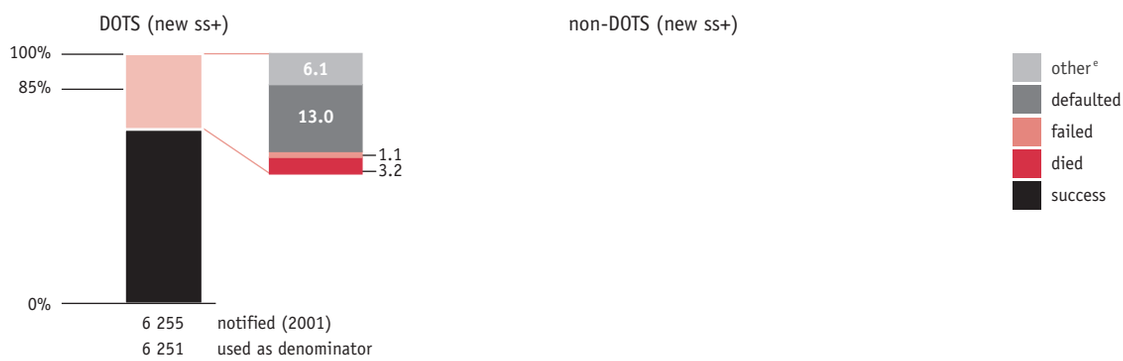
Case types notified[c]



DOTS progress towards targets[d]



Treatment outcomes[c]



Notes

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

[a] See Methods for data sources.

[b] The sum of cases notified by age and sex is less than the number of new smear-positive cases notified for some countries.

[c] Non-DOTS is blank for countries which are 100% DOTS, or where no non-DOTS data were reported.

[d] DOTS progress towards targets: DOTS detection rate for given year, DOTS success rate for cohort registered in previous year.

[e] "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	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	—	—
TOTAL NTP BUDGET	**5.9**	**2.6**	**—**	**3.3**	**—**	**—**
Costs not covered by NTP budget [a,b]						
Hospital stay	—	—	—	—	—	—
Clinic visits for DOT and monitoring	2.2	2.2	—	—	—	—
TOTAL COSTS NOT COVERED BY NTP BUDGET	**2.2**	**2.2**	**—**	**—**	**—**	**—**
TOTAL TB CONTROL COSTS	**8.1**	**4.8**	**—**	**3.3**	**—**	**—**

— Indicates zero; NA, not available

[a] 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.

[b] 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

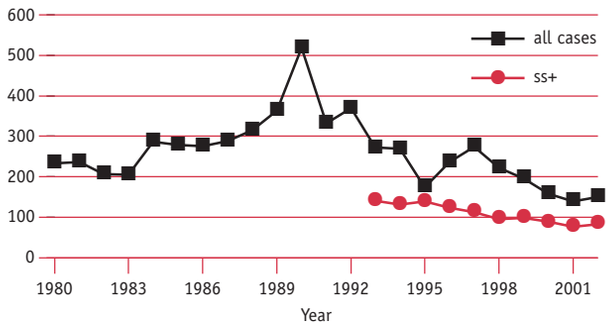
- Establish supervision guidelines and reinforce central monitoring team
- Intensify advocacy for TB screening, diagnosis, and treatment
- Increase private sector involvement through widespread implementation of new DOTS treatment guidelines and PPM projects

THE PHILIPPINES

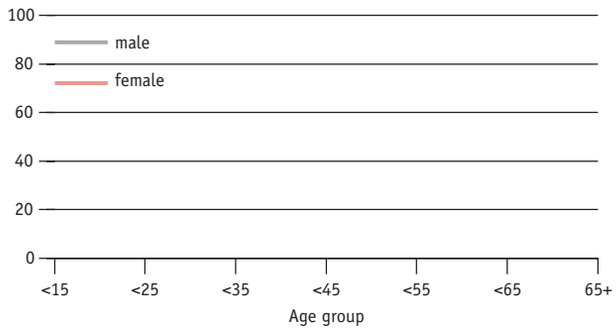
LATEST ESTIMATES[a]		TRENDS	1999	2000	2001	2002
Population	**78 580 228**	DOTS population coverage (%)	43	90	95	98
Global rank (by est. number of cases)	8	Notification rate (all cases/100 000 pop)	196	158	139	151
Incidence (all cases/100 000 pop)	320	Notification rate (new ss+/100 000 pop)	99	89	77	83
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)

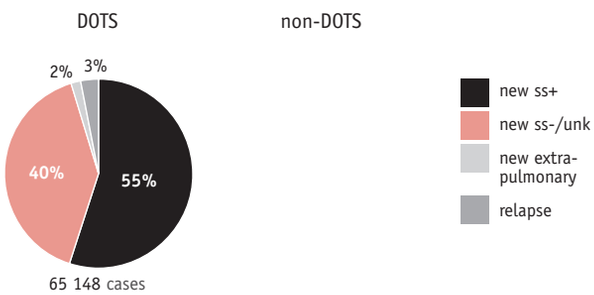
Notification (all cases) = 118 408 in 2002



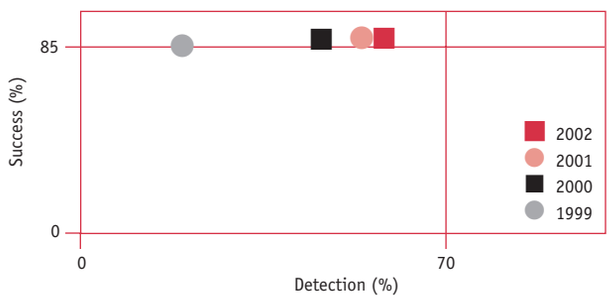
Notification rate by age and sex (new ss+)[b]



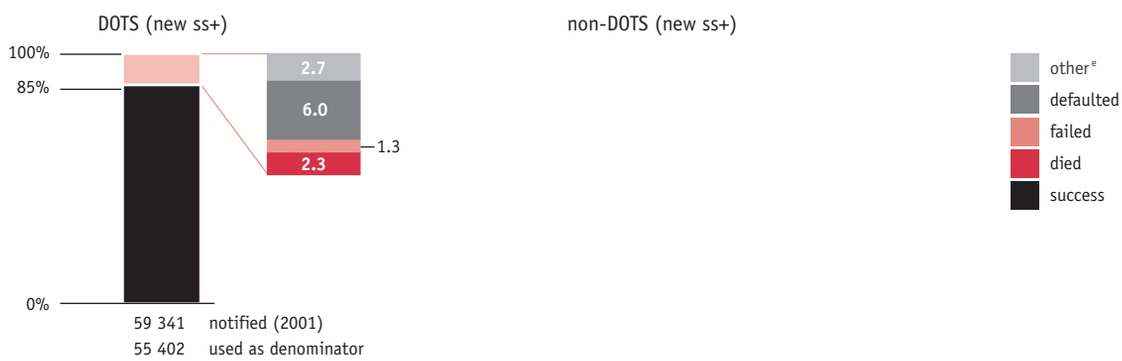
Case types notified[c]



DOTS progress towards targets[d]



Treatment outcomes[c]



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[a] See Methods for data sources.

[b] The sum of cases notified by age and sex is less than the number of new smear-positive cases notified for some countries.

[c] Non-DOTS is blank for countries which are 100% DOTS, or where no non-DOTS data were reported.

[d] DOTS progress towards targets: DOTS detection rate for given year, DOTS success rate for cohort registered in previous year.

[e] "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	4.2	2.0	1.5	0.7	—	—
Dedicated staff working exclusively for TB control[a]	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	—	—	—	—
TOTAL NTP BUDGET	**6.5**	**2.6**	**1.5**	**2.1**	**—**	**0.3**
Costs not covered by NTP budget [b,c]						
Hospital stay	—	—	—	—	—	—
Clinic visits for DOT and monitoring	29.2	29.2	—	—	—	—
TOTAL COSTS NOT COVERED BY NTP BUDGET	**29.2**	**29.2**	**—**	**—**	**—**	**—**
TOTAL TB CONTROL COSTS	**35.7**	**31.8**	**1.5**	**2.1**	**—**	**0.3**

— Indicates zero; NA, not available

[a] There are 10 dedicated NTP staff at central level. At other levels dedicated NTP staff do not exist.

[b] WHO estimates, data not provided by the NTP

[c] 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

Canada, Spain's Medicos del Mundos, 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 Phthysiopulmonology (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

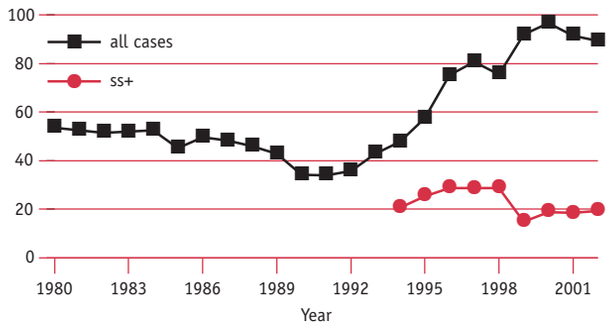
- Advocate at federal level for DOTS strategy, for the establishment of a central TB control unit, and for the development of national policy in compliance with WHO recommendations
- Improve case management by ensuring direct observation of treatment
- Develop national guidelines for MDR-TB control and 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

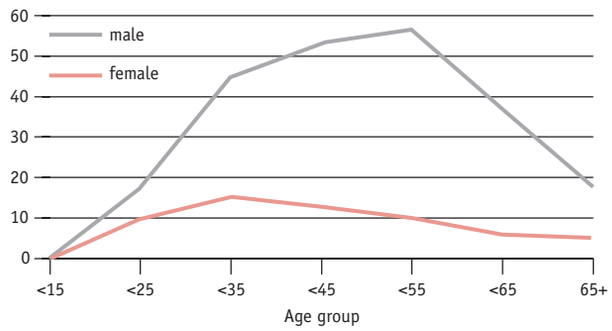
LATEST ESTIMATES[a]		TRENDS	1999	2000	2001	2002
Population	**144 081 588**	DOTS population coverage (%)	5	12	16	25
Global rank (by est. number of cases)	11	Notification rate (all cases/100 000 pop)	92	97	91	89
Incidence (all cases/100 000 pop)	126	Notification rate (new ss+/100 000 pop)	15	19	18	19
Incidence (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)

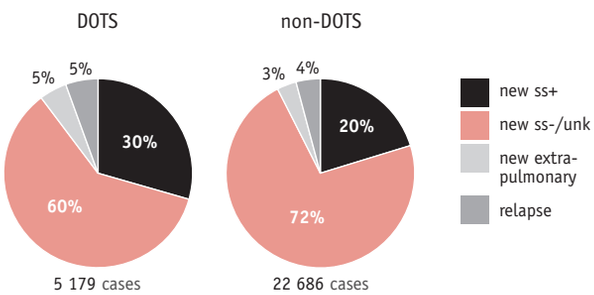
Notification (all cases) = 128 873 in 2002



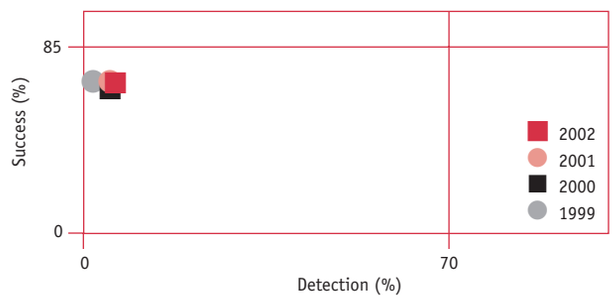
Notification rate by age and sex (new ss+)[b]



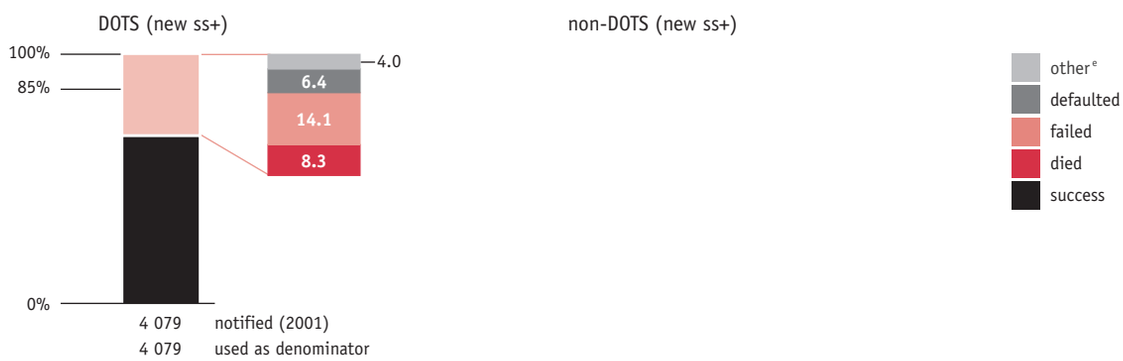
Case types notified[c]



DOTS progress towards targets[d]



Treatment outcomes[c]



Notes

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

[a] See Methods for data sources.

[b] The sum of cases notified by age and sex is less than the number of new smear-positive cases notified for some countries.

[c] Non-DOTS is blank for countries which are 100% DOTS, or where no non-DOTS data were reported.

[d] DOTS progress towards targets: DOTS detection rate for given year, DOTS success rate for cohort registered in previous year.

[e] "Other" includes transfer out and not evaluated, still on treatment, and other unknown.

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 workforce 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

	REQUIRED FUNDING	EXPECTED FUNDING				FUNDING GAP
		GOVERNMENT	LOANS	GRANTS	OTHER	
Budget item						
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 [a]	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
TOTAL BUDGET	**375.5**	**167.6**	**8.3**	**1.5**	**—**	**198.1**

— Indicates zero; NA, not available

[a] 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.

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 improvement 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 casses 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

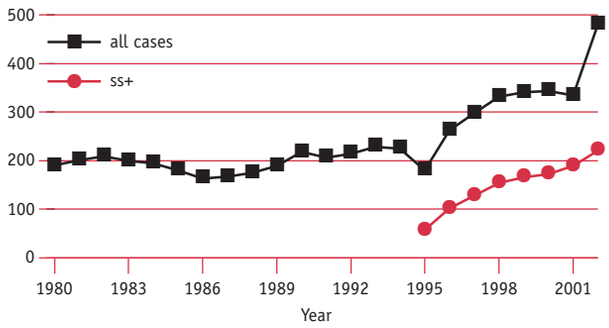
NA indicates not available

SOUTH AFRICA

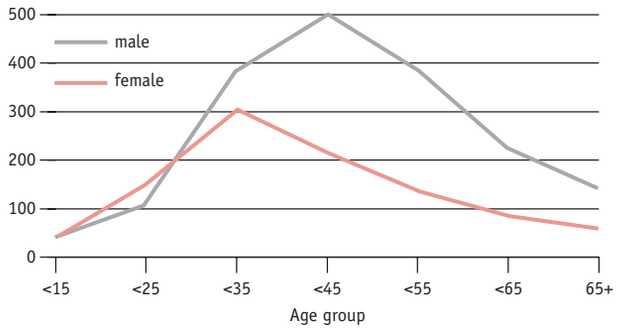
LATEST ESTIMATES[a]		TRENDS	1999	2000	2001	2002
Population	**44 759 187**	DOTS population coverage (%)	66	77	77	98
Global rank (by est. number of cases)	9	Notification rate (all cases/100 000 pop)	341	344	334	481
Incidence (all cases/100 000 pop)	558	Notification rate (new ss+/100 000 pop)	166	173	189	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)

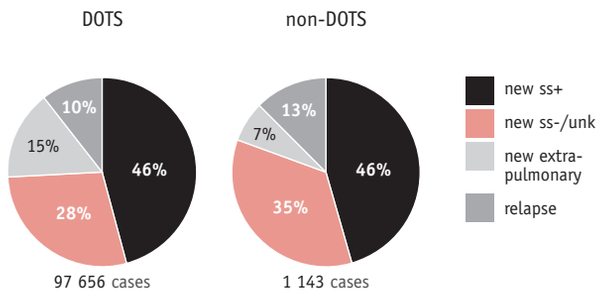
Notification (all cases) = 215 120 in 2002



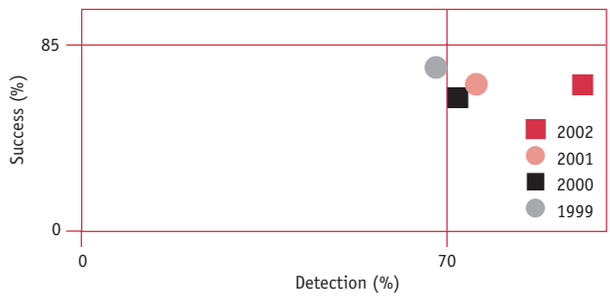
Notification rate by age and sex (new ss+)[b]



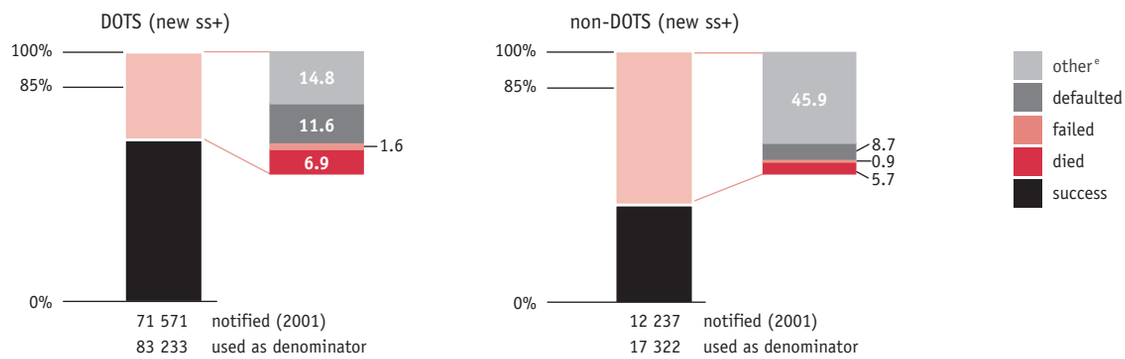
Case types notified[c]



DOTS progress towards targets[d]



Treatment outcomes[c]



Notes

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

[a] See Methods for data sources.

[b] The sum of cases notified by age and sex is less than the number of new smear-positive cases notified for some countries.

[c] Non-DOTS is blank for countries which are 100% DOTS, or where no non-DOTS data were reported.

[d] DOTS progress towards targets: DOTS detection rate for given year, DOTS success rate for cohort registered in previous year.

[e] "Other" includes transfer out and not evaluated, still on treatment, and other unknown.

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,[1] 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.

[1] 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 increased 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

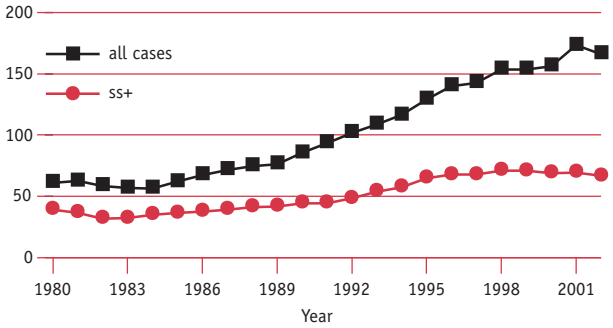
UNITED REPUBLIC OF TANZANIA

LATEST ESTIMATES[a]	
Population	**36 276 402**
Global rank (by est. number of cases)	14
Incidence (all cases/100 000 pop)	363
Incidence (new ss+/100 000 pop)	155
Prevalence (ss+/100 000 pop)	236
TB mortality per 100 000 pop	82
% of adult (15-49y) TB cases HIV+	34
% of new cases multi-drug resistant	1.2

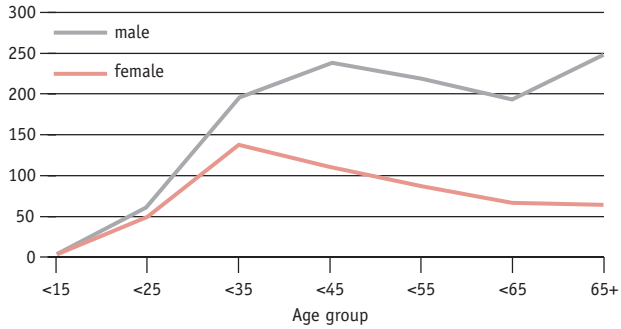
TRENDS	1999	2000	2001	2002
DOTS population coverage (%)	100	100	100	100
Notification rate (all cases/100 000 pop)	154	156	173	166
Notification rate (new ss+/100 000 pop)	71	69	69	67
Detection of all cases (%)	47	46	49	46
Detection of new ss+ cases (%)	51	48	46	43
DOTS detection of new ss+ (%)	51	48	46	43
DOTS detection of new ss+/coverage(%)	51	48	46	43
DOTS treatment success (new ss+, %)	78	78	81	—

Notification rate (per 100 000 pop)

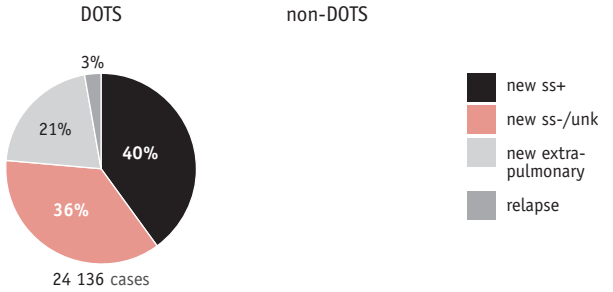
Notification (all cases) = 60 306 in 2002



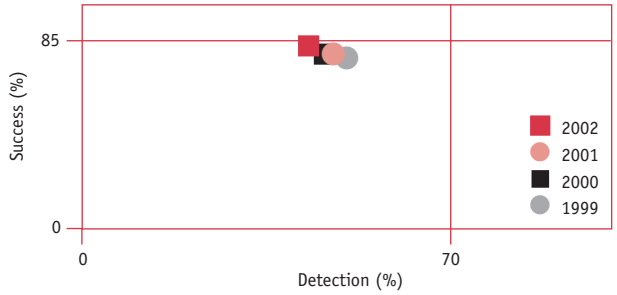
Notification rate by age and sex (new ss+)[b]



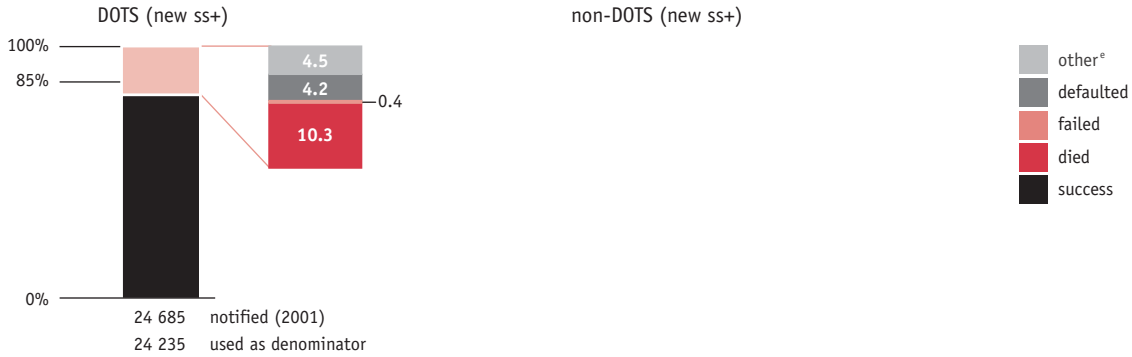
Case types notified[c]



DOTS progress towards targets[d]



Treatment outcomes[c]



Notes

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

[a] See Methods for data sources.

[b] The sum of cases notified by age and sex is less than the number of new smear-positive cases notified for some countries.

[c] Non-DOTS is blank for countries which are 100% DOTS, or where no non-DOTS data were reported.

[d] DOTS progress towards targets: DOTS detection rate for given year, DOTS success rate for cohort registered in previous year.

[e] "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	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	—	—
TOTAL NTP BUDGET	5.3	1.3	—	4.0	—	—
Costs not covered by NTP budget [a]						
Hospital stay	1.3	1.3	—	—	—	—
Clinic visits for DOT and monitoring	9.6	9.6	—	—	—	—
TOTAL COSTS NOT COVERED BY NTP BUDGET	10.9	10.9	—	—	—	—
TOTAL TB CONTROL COSTS	16.2	12.2	—	4.0	—	—

— Indicates zero; NA, not available

[a] 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 execution 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

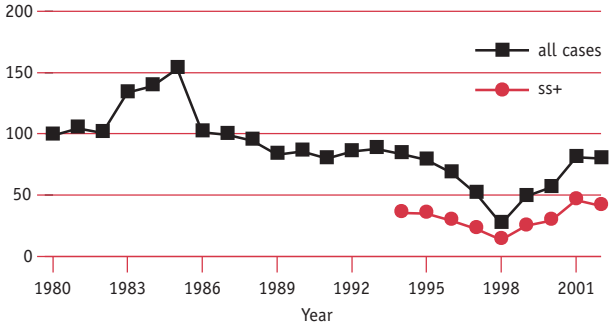
NA indicates not available

THAILAND

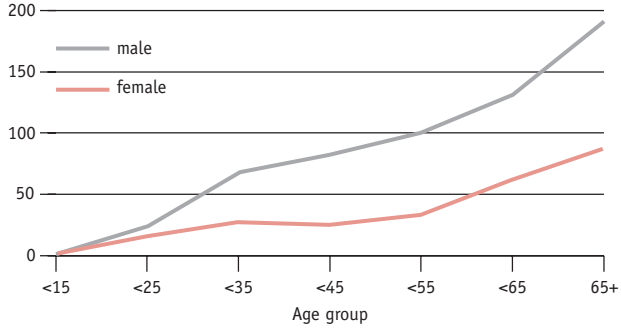
LATEST ESTIMATES[a]		TRENDS	1999	2000	2001	2002
Population	**62 193 347**	DOTS population coverage (%)	59	70	82	100
Global rank (by est. number of cases)	19	Notification rate (all cases/100 000 pop)	49	56	81	80
Incidence (all cases/100 000 pop)	128	Notification rate (new ss+/100 000 pop)	25	29	46	41
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) = 49 581 in 2002

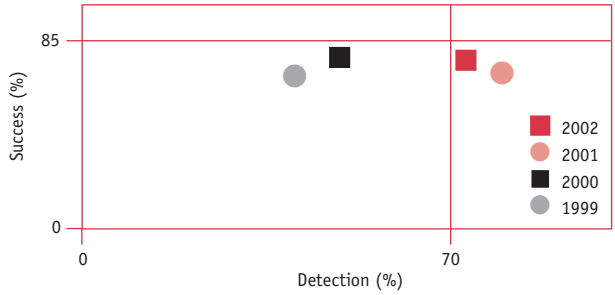


Notification rate by age and sex (new ss+)[b]

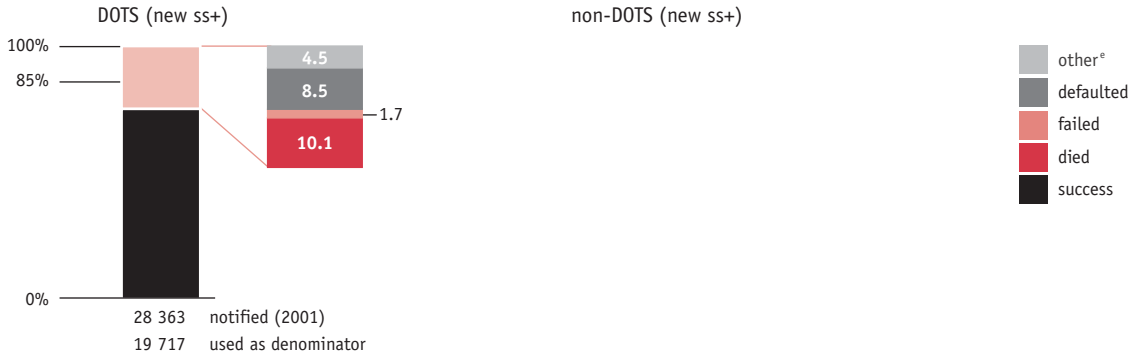


Case types notified[c]

DOTS progress towards targets[d]



Treatment outcomes[c]



Notes

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[a] See Methods for data sources.

[b] The sum of cases notified by age and sex is less than the number of new smear-positive cases notified for some countries.

[c] Non-DOTS is blank for countries which are 100% DOTS, or where no non-DOTS data were reported.

[d] DOTS progress towards targets: DOTS detection rate for given year, DOTS success rate for cohort registered in previous year.

[e] "Other" includes transfer out and not evaluated, still on treatment, and other unknown.

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 introduction 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

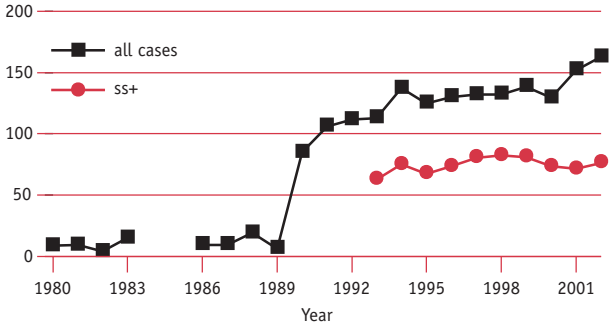
- Second staff from other institutions and from international partners
- Hire 2 more NPOs to be deployed at regional level
- Train laboratory personnel, technical assistants for districts and regions, and supervisors for the supranational reference laboratory
- Develop home-based care for TB in towns and cities
- Strengthen collaboration between the NTP and the national AIDS programme

UGANDA

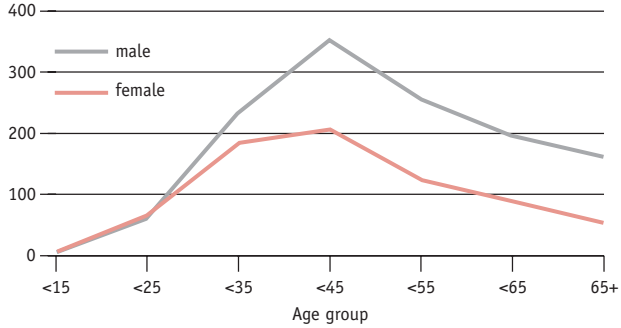
LATEST ESTIMATES[a]		TRENDS	1999	2000	2001	2002
Population	**25 003 513**	DOTS population coverage (%)	100	100	100	100
Global rank (by est. number of cases)	16	Notification rate (all cases/100 000 pop)	139	129	152	163
Incidence (all cases/100 000 pop)	377	Notification rate (new ss+/100 000 pop)	81	73	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)

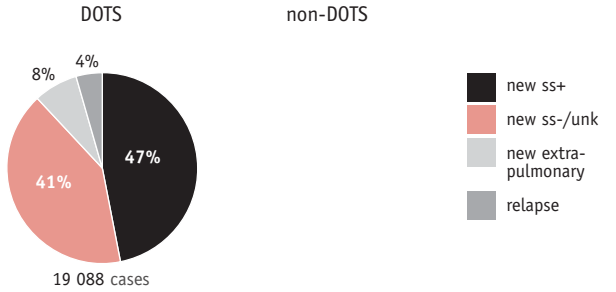
Notification (all cases) = 40 695 in 2002



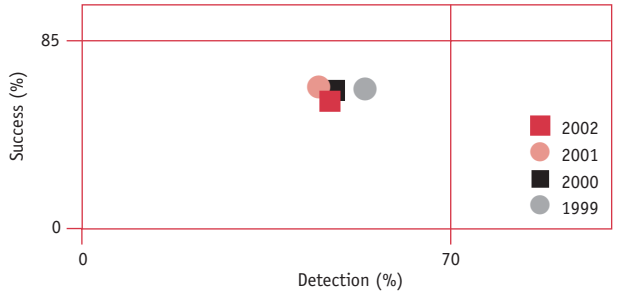
Notification rate by age and sex (new ss+)[b]



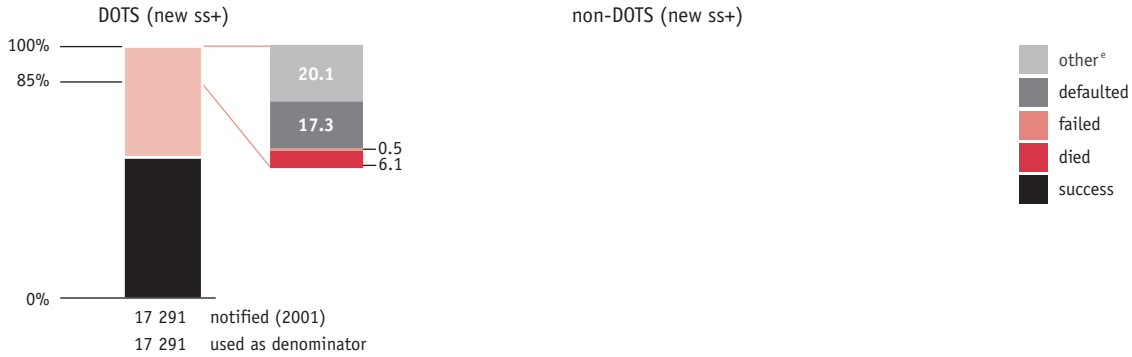
Case types notified[c]



DOTS progress towards targets[d]



Treatment outcomes[c]



Notes

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[b] The sum of cases notified by age and sex is less than the number of new smear-positive cases notified for some countries.

[c] Non-DOTS is blank for countries which are 100% DOTS, or where no non-DOTS data were reported.

[d] DOTS progress towards targets: DOTS detection rate for given year, DOTS success rate for cohort registered in previous year.

[e] "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	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
TOTAL NTP BUDGET	5.3	0.1	1.2	0.5	0.1	3.3
Costs not covered by NTP budget [a]						
Hospital stay	0.2	0.2	—	—	—	—
Clinic visits for DOT and monitoring	0.1	0.1	—	—	—	—
TOTAL COSTS NOT COVERED BY NTP BUDGET	0.3	0.3	—	—	—	—
TOTAL TB CONTROL COSTS	5.6	0.4	1.2	0.5	0.1	3.3

— Indicates zero; NA, not available

[a] 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 decentralizaton, 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.

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

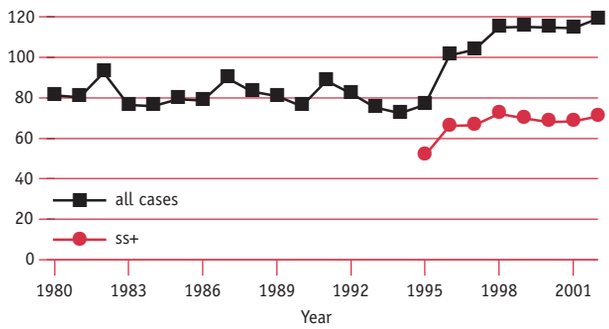
- Strengthen management capacity through training, operational research, and use of Total Quality Management practices
- Revise/develop HDRP to ensure sustainable core of health care staff at all levels
- Educate population through primary health care units and community outreach, involving the People's 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

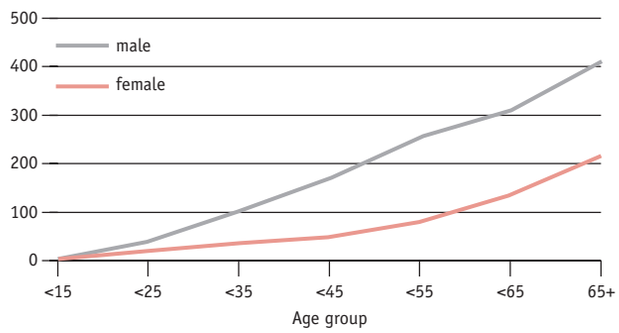
LATEST ESTIMATES[a]		TRENDS	1999	2000	2001	2002
Population	**80 278 208**	DOTS population coverage (%)	99	100	100	100
Global rank (by est. number of cases)	13	Notification rate (all cases/100 000 pop)	115	115	115	119
Incidence (all cases/100 000 pop)	192	Notification rate (new ss+/100 000 pop)	70	68	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)

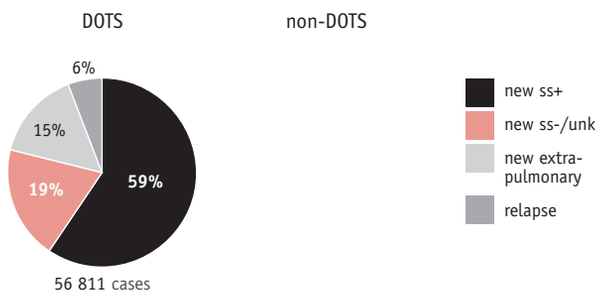
Notification (all cases) = 95 577 in 2002



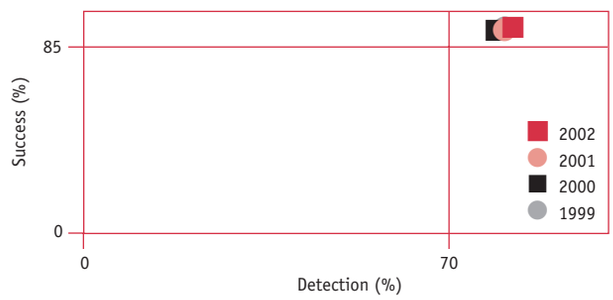
Notification rate by age and sex (new ss+)[b]



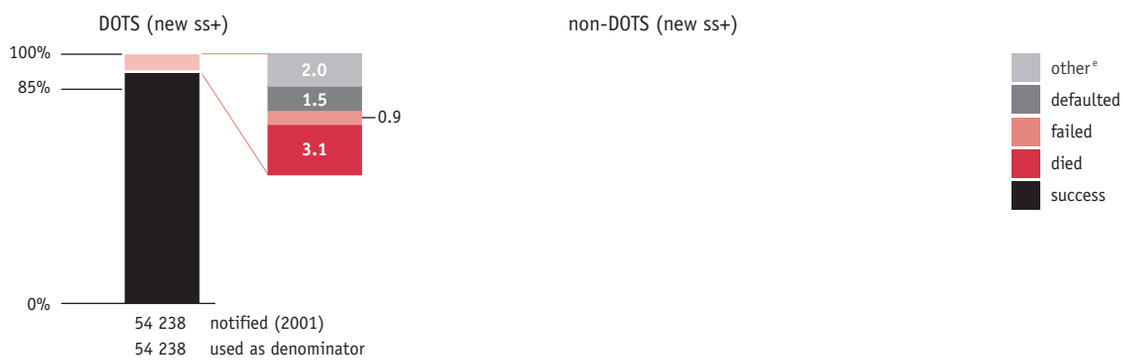
Case types notified[c]



DOTS progress towards targets[d]



Treatment outcomes[c]



Notes

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

[a] See Methods for data sources.

[b] The sum of cases notified by age and sex is less than the number of new smear-positive cases notified for some countries.

[c] Non-DOTS is blank for countries which are 100% DOTS, or where no non-DOTS data were reported.

[d] DOTS progress towards targets: DOTS detection rate for given year, DOTS success rate for cohort registered in previous year.

[e] "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	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	—	—
TOTAL NTP BUDGET	6.5	1.9	3.0	1.6	—	—
Costs not covered by NTP budget [a]						
Hospital stay[b]	6.2	6.2	—	—	—	—
Clinic visits for DOT and monitoring	4.5	4.5	—	—	—	—
TOTAL COSTS NOT COVERED BY NTP BUDGET	10.7	10.7	—	—	—	—
TOTAL TB CONTROL COSTS	17.2	12.6	3.0	1.6	—	—

— Indicates zero; NA, not available
[a] WHO estimates, data not provided by the NTP
[b] 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 officer 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

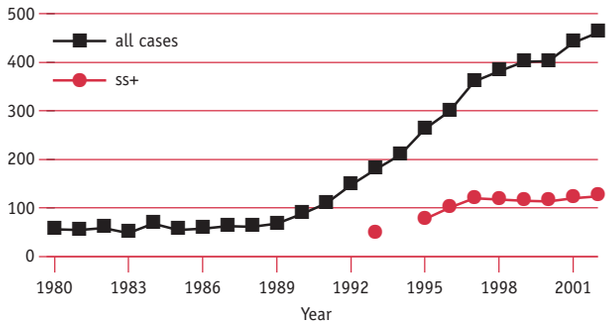
NA indicates not available

ZIMBABWE

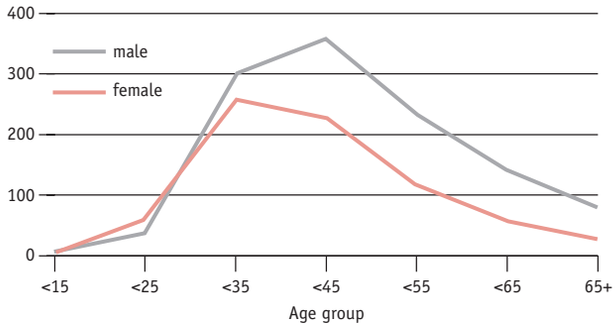
LATEST ESTIMATES[a]		TRENDS	1999	2000	2001	2002
Population	**12 835 125**	DOTS population coverage (%)	12	100	100	100
Global rank (by est. number of cases)	17	Notification rate (all cases/100 000 pop)	401	402	441	461
Incidence (all cases/100 000 pop)	683	Notification rate (new ss+/100 000 pop)	115	114	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)

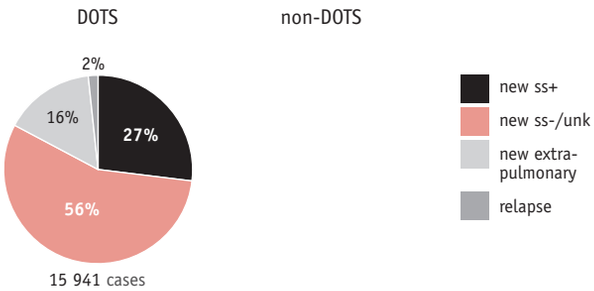
Notification (all cases) = 59 170 in 2002



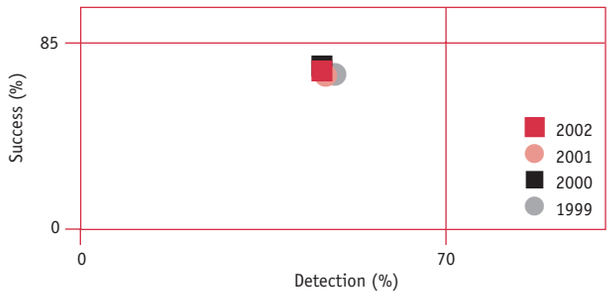
Notification rate by age and sex (new ss+)[b]



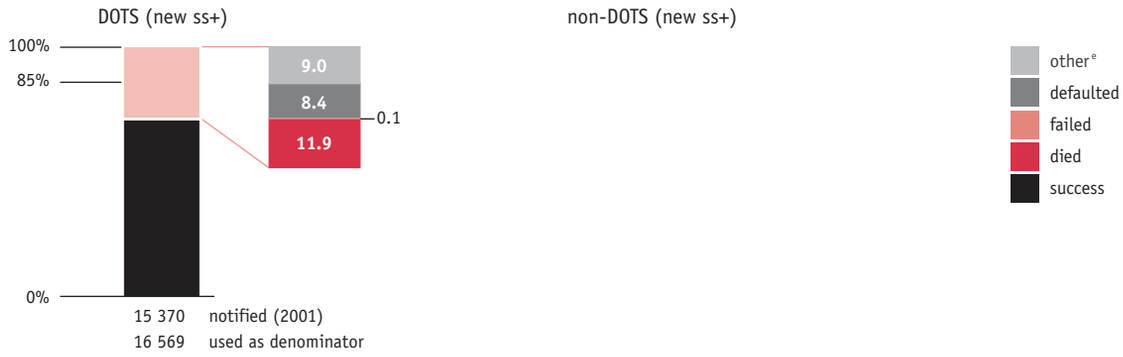
Case types notified[c]



DOTS progress towards targets[d]



Treatment outcomes[c]



Notes

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

[a] See Methods for data sources.

[b] The sum of cases notified by age and sex is less than the number of new smear-positive cases notified for some countries.

[c] Non-DOTS is blank for countries which are 100% DOTS, or where no non-DOTS data were reported.

[d] DOTS progress towards targets: DOTS detection rate for given year, DOTS success rate for cohort registered in previous year.

[e] "Other" includes transfer out and not evaluated, still on treatment, and other unknown.

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 Pharmacetucial 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.

AFRICA

Africa: Summary of TB control policies

COUNTRY	STATUS[a]	MANUAL[b]	MICROSCOPY[c]	MONITORING OF TB SUSPECTS[d]	SCC[e]	DOT[f]	OUTCOME MONITORING[g]
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	**DOTS**	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	**DOTS**	YES					
TOGO	DOTS						
UGANDA	DOTS	YES					
UR TANZANIA	DOTS	YES					
ZAMBIA	**DOTS**	YES					
ZIMBABWE	DOTS	YES					

AFRICA

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													DOTS							non-DOTS		
		Notified TB						Estimated TB				Detection rate		%	Notifications					% of	Notifications		% of
	Pop	All cases		New ss+		New confirmed		All cases		New ss+		All cases	New ss+	of	All cases		New ss+		DDR	pulm	All cases	New ss+	pulm
	thousands	number	rate	number	rate	number	rate	number	rate	number	rate	%	%	pop	number	rate	number	rate	%	cases ss+	number	number	cases ss+
	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w
Algeria	31 266	18 934	61	8 246	26	8 506	27	16 137	52	7 256	23	117	114	100	18 934	61	8 246	26	114	86			
Angola	13 184	29 996	228	18 087	137	18 087	137	44 226	335	19 162	145	68	94	43	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	309		
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	19 833	157	8 511	67	12	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	716	556	84
Cape Verde	454	195	43	111	24	111	24	810	178	363	80	24	31	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	1 318	101	12
Chad	8 348	5 077	61	3 519	42	3 519	42	18 565	222	8 134	97	27	43	98	4 828	58	3 417	41	42	77	249	102	66
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	9 667	59	67 376	412	28 453	174	21	34	74	10 560	65	7 105	43	25	86	3 807	2 562	86
DR Congo	51 201	70 625	138	44 518	87	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	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	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	983	68	2 836	196	1 249	86	55	72	20	1 113	77	532	37	43	53	453	367	85
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	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	86	7	780	64	351	29	18	25	100	139	11	86	7	25	75			
Mozambique	18 537	25 544	138	15 236	82	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	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	8 983	2 340	26
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	42	27	204	130	92	58	46	46								94	42	47
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	20	25	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	2 504	1 143	57
Swaziland	1 069	6 748	631	1 410	132	1 410	132	11 405	1 067	4 525	423	59	31	100	6 748	631	1 410	132	31	24			
Togo	4 801	1 645	34	1 203	25	1 203	25	17 336	361	7 491	156	9	16	35	574	12	421	9	6	93	1 071	782	93
Uganda	25 004	40 695	163	19 088	76	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	12 733	4 657	40
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**	**33 689**	**13 394**	**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-ered	% cured	% compl-eted	% died	% failed	% default	% trans-ferred	% not eval	% success	Regist-ered	% cured	% compl-eted	% died	% failed	% default	% trans-ferred	% not eval	% success	Regist-ered	% cured	% compl-eted	% died	% failed	% default	% trans-ferred	% not eval	% 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
Algeria	8 361	55	29	2	1	5	5	4	84	425	56	16	4	1	5	4	13	72									
Angola	1 191	47	19	2	26	3	2	0	66										119	75	13		6			6	88
Benin	2 298	55	24	6	2	12	1	0	79	289	53	24	7	5	10	2	0	77									
Botswana	4 296	24	53	7	1	6	9	0	78	448	23	51	10	0	9	7	0	73									
Burkina Faso	1 537	57	8	13	3	12	7	0	65	141	59	9	13	5	11	3	0	68									
Burundi	3 465	42	39	4	0	13	1	0	80	92	50	13	15	3	17	1	0	63									
Cameroon	4 695	55	7	5	1	13	1	18	62	291	49	8	8	3	30	1	0	57									
Cape Verde	12	42	0	0	0	58	0	0	42																		
Central African Republic	2 633	30	31	5	3	15	17	0	61	250	28	35	10	3	10	14	0	63	867	18	18	3	9	37	14	0	36
Chad																											
Comoros																											
Congo	4 319	53	13	2	0	20	4	8	66																		
Côte d'Ivoire	6 510	61	13	4	2	11	9	0	73	354	45	12	6	8	22	6	0	57	2 347	56	13	4	2	15	9	0	69
DR Congo	40 884	66	12	6	1	10	5	1	77																		
Equatorial Guinea																											
Eritrea	860	71	9	7	1	7	4	1	80																		
Ethiopia	32 391	61	15	7	1	6	4	7	76	1 505	55	9	7	3	6	2	18	64									
Gabon	849	43	6	4	0	43	4	0	49	208	11	23	6	2	27	1	29	34									
Gambia	861	65	6	6	2	16	5	0	71	87	71	2	13	1	8	5	0	74									
Ghana	7 712	37	5	5	1	12	3	37	42																		
Guinea	4 090	66	8	7	1	9	9	0	74	350	59	6	9	4	14	9	0	65									
Guinea-Bissau	513	33	19	3	0	25	21	0	51	156	9	10	7	1	27	46	0	19	340	41	22	9	0	21	6	0	64
Kenya	30 855	67	13	5	0	8	6	0	80	2 635	68	10	10	1	7	6	0	77									
Lesotho	2 977		71	11	1	5	6	6	71	313		64	19	1	4	4	8	64									
Liberia																											
Madagascar	9 228	60	9	6	1	18	5	0	69	948	59	8	9	2	15	7	0	67	78	27	17	6	0	47	3	0	44
Malawi	8 274	67	3	19	2	6	3	0	70	854	65	4	23	1	5	2	0	69									
Mali	2 797	36	14	6	1	25	4	13	50	322	44	11	7	2	21	6	8	56									
Mauritania																											
Mauritius	123	86	7	2	2	3	0	0	93	2	50				50		0	50									
Mozambique	14 047	75	2	10	1	9	3	0	77	1 470	70	1	12	2	12	3	0	71									
Namibia	4 238	44	24	8	2	15	8	0	68	776	40	25	12	5	12	6	0	65									
Niger																											
Nigeria	17 436	68	11	6	2	12	2	0	79	1 847	62	9	9	6	12	2	0	71									
Rwanda																											
Sao Tome & Principe																			94	24	30	13	0	16	0	17	54
Senegal	6 094	43	9	3	1	20	5	18	53	959	37	6	4	2	23	7	22	43									
Seychelles	12	67	0	17	0	0	17	0	67																		
Sierra Leone	2 683	68	11	5	1	13	1	0	80	74	73	4	8	7	8	0	0	77									
South Africa	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
Swaziland	1 586	14	22	10	0	8	9	37	36	104	6	29	20	1	7	3	35	35									
Togo	982	54	1	9	1	7	2	25	55	88	49	0	8	3	13	1	26	49	247	71	2	12	2	10	3	0	73
Uganda	17 291	28	28	6	1	17	5	15	56	1 249	36	27	11	0	16	6	4	63									
UR Tanzania	24 235	76	4	10	0	4	4	0	81	3 847	46	30	14	1	5	4	0	76									
Zambia	8 847	59	16	12	0	6	7	0	75	1 249	86	9	0	1	2	1	0	95	4 177	49	24	9	1	6	3	7	72
Zimbabwe	16 569	63	7	12	0	8	9	0	71	1 084	54	7	1	9	20	9	0	61									
Region	**378 984**	**58**	**13**	**7**	**1**	**10**	**7**	**4**	**71**	**40 286**	**49**	**13**	**9**	**2**	**13**	**10**	**3**	**62**	**25 591**	**32**	**16**	**6**	**1**	**10**	**11**	**23**	**48**

See explanatory notes, page 129.

AFRICA

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
Cameroon	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																					
Angola	28	90	81	71	43	32	29	40	90	80	68	51	30	9	68	180	161	139	94	62	38
Benin																					
Botswana																					
Burkina Faso																					
Burundi																					
Cameroon																					
Cape Verde																					
Central African Republic	7	9	12	11	9	2	2	9	8	13	8	6	3	2	16	17	25	19	15	5	4
Chad	0	11	14	18	6	5	1	1	7	13	10	12	4	0	1	18	27	28	18	9	1
Comoros																					
Congo																					
Côte d'Ivoire	25	297	505	349	193	90	72	33	268	364	193	87	52	34	58	565	869	542	280	142	106
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																					
Sao Tome & Principe	1	7	6	2	2	2	2	0	6	5	2	3	2	2	1	13	11	4	5	4	4
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																					
Zambia	396	276	604	498	210	121	155	437	416	780	374	210	110	70	833	692	1 384	872	420	231	225
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

AFRICA

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+
Algeria	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	212	162	111	72	3	33	60	124	76	19	19	2	38	91	167	115	56	39
Cameroon	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	11 332	11 428	13 345	13 345	13 507	15 329	16 522	15 324	16 647	18 572	18 250	18 934
Angola	10 117	7 501	7 911	6 625	10 153	8 653	9 363	8 510	8 184	9 587	10 271	11 134	11 272	8 269	7 157	5 143	15 424	15 066	14 296	12 402	16 062	21 713	29 996
Benin	1 835	1 862	1 793	1 804	1 913	2 041	2 162	1 901	2 027	1 941	2 084	2 162	2 420	2 340	2 119	2 332	2 284	2 255	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	2 265	3 061	877	4 547	1 018	1 407	949	1 616	1 497	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	3 952	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									212	139	140	119	108	129	115	123	138	134	132	153	120		
Congo	742	1 214	3 716	4 156	2 776	2 648	3 120	3 473	3 878	4 363	591	618	1 179	1 976	2 992	3 615	4 469	3 417	3 863	5 023	9 239	9 735	9 076
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					181	17	1	11	20	157	260	331	262	309	356	306	319	366	416				
Eritrea											3 699		4 386	11 664	15 505	21 453	5 220	8 321	7 789	6 037	6 652	2 743	2 805
Ethiopia	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		99 329	26 034	41 889	59 105	69 472	72 095	91 101	94 957	110 289
Gabon	865	796	761	752	654	855	769	864	721	912	917	906	926	972	1 034	1 115	951	1 434	1 380	1 598			2 034
Gambia	239	58														1 023	1 242	1 357	1 558	1 514			1 859
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	10 386	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		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				1 948	1 766	1 764	1 393	840		1 753				
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		3 849	3 837	3 788	3 617	3 649	3 067		
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	15 958	15 899	16 609	15 085	16 588	17 158	17 882	18 443	18 842	19 672	21 329	21 158	22 094	25 544
Namibia						4 840	4 427	3 640	2 815	3 703	2 671	2 500	1 756	5 500		1 540	9 625	9 950	11 142	10 026	10 653	12 935	12 698
Niger	717	2 871	754	673	665	698	570	556	631	608	5 200			626	3 784	1 980		3 311	3 419	4 054	4 292		
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				3 054	3 535	4 710	6 112	6 483	6 093	5 473	6 011
Sao Tome & Principe	131	37	40	59	49	40	8	55	13		17	120		97	41				106	96	97	97	94
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		632	1 466	1 665	2 691	2 564	1 955	3 241	3 160	3 270		3 760	4 673	4 793
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				1 098	1 352	1 394		1 531		1 458		2 050	2 364	3 022	3 653	4 167	5 877	6 118	6 748
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	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
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**	**301 683**	**333 842**	**373 550**	**365 432**	**418 530**	**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	37	41	38	45	44	42	45	41	37	33	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	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	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	70
Cape Verde	178	117	132	76	92	82		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									43	27	27	22	19	22	19	20	22	21	20	22	17		
Congo	41	65	193	209	136	125	143	154	166	181	24	24	44	72	105	123	147	109	119	150	268	275	250
Côte d'Ivoire	50	50	54	62	60	55	56	57	56	58	63	62	68	70	100	83	89	92	97	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	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
Gambia	37	9														92	108	114	126	119			134
Ghana	47	35	37	22	15	24	29	42	37	40	42	45	44	52	100	49	58	59	61	54	56	60	57
Guinea		39	30	16	23	25	21	22	30	32	32	36	45	46	46	48	58	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		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				94	86	85	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	207
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	11
Mozambique	62	56	46	46	40	43	62	83	105	120	118	120	106	112	111	112	112	112	115	122	118	121	138
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		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	32
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	83	68	90	96	86	85	91	100	94	92	79	95	89	85
Seychelles	25	0	25	24	15	15	35	20	14	9	58			7		11	20	24	14	27	25	24	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	481
Swaziland		23	483	299				144	171	170		176		161		218	246	308	363	406	563	578	631
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	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	166
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	461
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
Algeria		6 793	5 735	6 556	7 740	7 462	7 845	8 328	7 953	8 246		25	21	23	27	25	26	28	26	26
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			28	29	25	25			31	24
Central African Republic			1 794	1 992	2 267	2 637	2 725		1 382	2 758			53	58	65	74	75		37	72
Chad			2 002	870			2 920			3 519			30	13			38			42
Comoros			103	107	100	99	112	87					17	17	15	15	16	12		
Congo		1 691	2 013	2 505	1 984	2 044	2 222	4 218	4 319	4 207		60	69	83	63	63	66	122	122	116
Côte d'Ivoire	7 012		8 254	8 927	9 093	9 850	10 047	8 497	10 920	9 667	51		57	61	61	64	65	54	68	59
DR Congo	14 924		20 914	24 125	24 609	33 442	34 923	36 123	42 054	44 518	36		47	53	53	71	73	74	84	87
Equatorial Guinea			219	209	226	284							55	51	54	66				
Eritrea					120	135	527	590	702	646					4	4	15	16	18	16
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
Gabon		395	486	263	577	889	916			1 033		37	44	23	49	74	74			79
Gambia			778	743	820	900	861			1 035			70	64	69	73	68			75
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
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			80	75	68	42	53	38		62
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		54	30		46				
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	21		22
Mauritania			2 074		2 519		2 051	1 583					90		104		80	60		
Mauritius			113	99	112	109	122	115	85	86			10	9	10	9	10	10	7	7
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			42	168	184	199	203	207	227	231
Niger	463	1 865	1 492		1 970	2 189	2 631	2 693			5	21	17		20	22	25	25		
Nigeria	1 723		9 476	10 662	11 235	13 161	15 903	17 423	23 410	21 936	2		10	10	11	12	14	15	20	18
Rwanda			1 840	2 034	2 820	4 417	4 298	3 681	3 252	3 956			36	38	48	67	60	48	40	48
Sao Tome & Principe							30	30	41	42							21	20	27	27
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		8	15	17	12	13	14	15	11
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
South Africa			23 112	42 163	54 073	66 047	72 098	75 967	83 808	98 799			56	101	128	154	166	173	189	221
Swaziland			660	2 226			1 781	1 823	1 279	1 410			70	232			173	175	121	132
Togo	545		887	913	935	904	904	984		1 203	15		23	23	23	21	20	22		25
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
UR 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	69	67
Zambia		9 620	10 038	12 072			11 645	12 927	13 024	16 351		105	107	126			114	124	123	153
Zimbabwe	5 331		8 965	11 965	14 512	14 492	14 414	14 392	15 370	15 941	47		76	100	119	117	115	114	120	124
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

The Americas: Summary of TB control policies

COUNTRY	STATUS[a]	MANUAL[b]	MICROSCOPY[c]	MONITORING OF TB SUSPECTS[d]	SCC[e]	DOT[f]	OUTCOME MONITORING[g]
ANGUILLA		NO					
ANTIGUA AND BARBUDA	DOTS						
ARGENTINA	DOTS	YES					
BAHAMAS	DOTS	YES					
BARBADOS	DOTS	YES					
BELIZE	DOTS	YES					
BERMUDA	**DOTS**	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 ≥ 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		
		Notified TB						Estimated TB				Detection rate		%	Notifications					% of	Notifications		% of
	Pop	All cases		New ss+		New confirmed		All cases		New ss+		All cases	New ss+	of	All cases		New ss+		DDR	pulm	All cases	New ss+	pulm
	thousands	number	rate	number	rate	number	rate	number	rate	number	rate	%	%	pop	number	rate	number	rate	%	cases ss+	number	number	cases ss+
	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w
Anguilla	12							3	25	1	11												
Antigua & Barbuda	73	4	6	2	3	2	3	5	7	2	3	83	92	100	4	6	2	3	92	50			
Argentina	37 981	11 546	30	5 495	14	6 182	16	17 569	46	7 827	21	66	70	100	7 459	20	3 956	10	51	65	4 087	1 539	45
Bahamas	310	44	14	32	10	42	14	147	47	65	21	30	50	100	44	14	32	10	50	76			
Barbados	269	5	2	5	2			46	17	21	8	11	24	100	5	2	5	2	24	100			
Belize	251	135	54	71	28	71	28	137	54	61	24	99	117	100	135	54	71	28	117	63			
Bermuda	81							4	4	2	2			100									
Bolivia	8 645	10 201	118	6 829	79			20 242	234	9 101	105	50	75	86	10 201	118	6 829	79	75	83			
Brazil	176 257	81 436	46	41 371	23	45 341	26	110 063	62	49 273	28	74	84	25	8 770	5	4 835	3	10	64	72 666	36 536	62
British Virgin Islands	21	1	5					3	15	1	7	33									1		
Canada	31 271	1 556	5	445	1	835	3	1 911	6	852	3	81	52	100	1 556	5	445	1	52	53			
Cayman Islands	39							2	4	1	2			100									
Chile	15 613	2 448	16	1 412	9	1 883	12	2 806	18	1 260	8	87	112	100	2 448	16	1 412	9	112	89			
Colombia	43 526	11 376	26	7 787	18	8 143	19	19 734	45	8 852	20	58	88	14	1 227	3	808	2	9	81	10 149	6 979	82
Costa Rica	4 094	543	13	328	8	348	8	615	15	275	7	88	119	84	364	9	217	5	79	76	179	111	76
Cuba	11 271	896	8	538	5	625	6	1 311	12	590	5	68	91	100	896	8	538	5	91	72			
Dominica	78	2	3	2	3	2	3	12	16	5	7	16	36	100	2	3	2	3	36	100			
Dominican Republic	8 616	4 040	47	2 179	25	2 230	26	8 149	95	3 600	42	50	61	40	2 831	33	1 532	18	43	67	1 209	647	68
Ecuador	12 810	5 829	46	4 223	33			17 533	137	7 871	61	33	54	37	3 163	25	2 477	19	31	92	2 666	1 746	72
El Salvador	6 415	1 550	24	980	15	980	15	3 862	60	1 730	27	40	57	100	1 550	24	980	15	57	74			
Grenada	80	1	1					4	5	2	2	25									1		
Guatemala	12 036	2 909	24	1 865	15	1 865	15	9 286	77	4 146	34	31	45	100	2 909	24	1 865	15	45	74			
Guyana	764	590	77	138	18	141	18	879	115	388	51	67	36	25	105	14	41	5	11	40	485	97	22
Haiti	8 218	12 066	147	6 188	75	6 188	75	26 224	319	11 350	138	46	55	45	8 090	98	4 681	57	41	68	3 976	1 507	42
Honduras	6 781	4 579	68	2 956	44	2 956	44	5 852	86	2 601	38	78	114	100	4 579	68	2 956	44	114	70			
Jamaica	2 627	106	4	60	2	69	3	198	8	88	3	54	68	100	106	4	60	2	68	65			
Mexico	101 965	17 790	17	11 555	11	11 555	11	33 756	33	15 156	15	53	76	70	17 014	17	11 066	11	73	86	776	489	81
Montserrat	3								9		4			100									
Netherlands Antilles	219	7	3	7	3	7	3	20	9	9	4	35	78								7	7	100
Nicaragua	5 335	2 092	39	1 320	25	1 320	25	3 437	64	1 544	29	61	85	100	2 092	39	1 320	25	85	76			
Panama	3 064	1 514	49	709	23			1 453	47	646	21	104	110	67	1 140	37	568	19	88	61	374	141	43
Paraguay	5 740	2 107	37	1 004	17	1 030	18	4 016	70	1 806	31	52	56	10	170	3	145	3	8	95	1 937	859	53
Peru	26 767	36 092	135	20 533	77	25 998	97	54 164	202	24 305	91	67	84	100	36 092	135	20 533	77	84	76			
Puerto Rico	3 859	129	3	76	2	100	3	260	7	117	3	50	65	100	129	3	76	2	65	70			
Saint Kitts & Nevis	42	3	7	1	2			5	11	2	5	66	49	100	3	7	1	2	49	33			
Saint Lucia	148	17	11	8	5	10	7	25	17	11	7	69	72	100	17	11	8	5	72	80			
St Vincent & Grenadines	119	10	8					34	29	15	13	29		100	10	8							
Suriname	432	93	22	41	9	53	12	293	68	131	30	32	31								93	41	60
Trinidad & Tobago	1 298	133	10	60	5	76	6	174	13	77	6	76	78								133	60	50
Turks & Caicos Islands	20	3	15	2	10	2	10	4	20	2	9	75	112								3	2	67
Uruguay	3 391	536	16	308	9			984	29	442	13	54	70	100	536	16	308	9	70	71			
US Virgin Islands	110							12	11	6	5												
USA	291 038	15 055	5	5 380	2	9 938	3	13 988	5	6 193	2	108	87	100	15 055	5	5 380	2	87	45			
Venezuela	25 226	6 204	25	3 444	14	3 527	14	10 522	42	4 716	19	59	73	88	5 565	22	3 063	12	65	68	639	381	70
Region	**856 915 543**	**233 648**	**27**	**127 354**	**15**	**131 519**	**15**	**369 744**	**43**	**165 142**	**19**	**63**	**77**	**73**	**134 267**	**16**	**76 212**	**9**	**46**	**72**	**99 381**	**51 142**	**63**

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-ered	% cured	% compl-eted	% died	% failed	% default	% trans-ferred	% not eval	% success	Regist-ered	% cured	% compl-eted	% died	% failed	% default	% trans-ferred	% not eval	% success	Regist-ered	% cured	% compl-eted	% died	% failed	% default	% trans-ferred	% not eval	% 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
Anguilla																											
Antigua & Barbuda	1	100						0	100																		
Argentina	3 068	34	30	7	0	6	5	17	64										2 527	24	33	4	0	13	7	19	57
Bahamas	42	64	0	26	0	7	2	0	64																		
Barbados																											
Belize	71	51	15	11	0	20	0	3	66																		
Bermuda	0	0	0	0	0	0	0	0	0										0	0	0	0	0	0	0	0	0
Bolivia	6 672	78	4	4	1	6	4	4	82	804	61	7	5	2	9	6	10	68									
Brazil	1 394	36	32	5	0	9	4	15	67	238	17	30	4	4	19	4	22	47	40 043	16	38	4	0	8	7	26	54
British Virgin Islands																											
Canada	465	32	35	12	0	3	3	16	67																		
Cayman Islands	1	100						0	100																		
Chile	1 303	83		9	1	6	2	0	83	178	73		10	1	14	2	0	73									
Colombia	507	65	19	4	2	6	4	0	85										2 755	51	17	6	2	10	13	0	69
Costa Rica	252	68	4	8	0	6	1	12	72										133	20	27	5	1	23	2	22	47
Cuba	559	93	0	4	1	2		0	93																		
Dominica	1		100					0	100																		
Dominican Republic	373	81	5	4	2	6	2	0	85	139	57	4	5	11	19	4	0	61	2 196	53	24	5	2	14	3	0	76
Ecuador	152	75	7	3	6	5	1	4	82	32	56	3	6	3	31	0	0	59	1 973	54	16	1	2	10	5	12	70
El Salvador	1 003	86	2	5	1	5	1	0	88	158	75	0	8	1	9	7	0	75									
Grenada																											
Guatemala	1 617	72	13	5	1	7	1	0	85	150	61	8	7	3	11	10	0	69									
Guyana	78	82	8	3	0	4	4	0	90	3	67	0	33	0	0	0	0	67	344	31	39	7	4	19	0	0	70
Haiti	3 545	67	9	5	1	7	6	5	75	162	61	8	10	4	9	4	4	69	2 062	54	14	5	1	16	5	5	68
Honduras	2 996	70	16	7	1	4	2	0	86	160	55	15	9	2	7	12	0	70									
Jamaica	82	7	71	10	1	10	1	0	78	3	0	67	0	0	33	0	0	67									
Mexico	14 537	75	8	3	1	4	4	4	83	58	43	12	3	3	7	2	29	55	566	63	12	4	0	5	3	11	75
Montserrat																											
Netherlands Antilles																											
Nicaragua	1 506	71	12	3	2	9	2	0	83	241	64	8	6	2	16	4	0	72									
Panama	537	44	21	9	3	15	8	0	65	146	21	29	16	3	23	7	0	50	134	16	45	6	1	22	10	0	60
Paraguay	152	66	20	6	1	7	1	0	86	31	58	16	3	16	6	0	0	74	763	16	53	4	0	19	3	5	69
Peru	13 524	90	0	2	2	3	1	3	90	1 026	79	0	5	6	6	0	4	79									
Puerto Rico	93		80	16		2	1	1	80																		
Saint Kitts & Nevis																											
Saint Lucia	6	33	17	33		17		0	50	2	50	50					0	100									
St Vincent & Grenadines	10	80	0	0	0	20	0	0	80																		
Suriname																			34	32	29	15	6	12	3	3	62
Trinidad & Tobago																			128	29	43	19	0	7	2	0	72
Turks & Caicos Islands																											
Uruguay	340	85	0	13	1	1	0	0	85																		
US Virgin Islands																											
USA	10 198		70	8		2	3	17	70																		
Venezuela	3 057	80		5	0	10	4	1	80										384	69		2		14	5	9	69
Region	**68 142**	**63**	**17**	**5**	**1**	**5**	**3**	**6**	**81**	**3 531**	**62**	**7**	**6**	**4**	**11**	**4**	**6**	**69**	**54 042**	**23**	**34**	**4**	**1**	**10**	**7**	**21**	**58**

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			1		1					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	663	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	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													1							1	
Saint Lucia			1	1	1	2	1					1	1				1	1	2	3	1
St Vincent & Grenadines																					
Suriname																					
Trinidad & Tobago																					
Turks & Caicos Islands																					
Uruguay	1	33	33	37	36	23	32	1	25	25	20	10	11	21	2	58	58	57	46	34	53
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	28	234	245	161	152	110	99	29	189	182	93	66	62	66	57	423	427	254	218	172	165
Bahamas																					
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									1							1					
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																					
Guyana	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				4						2	1						2	5			
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				1	1	2	2			1				1			1	1	1	2	3
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				1						1							1	1			
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

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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				25						13	6						7	15			
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				13	26	69	57			11				22			5	7	13	33	37
Suriname	3	2	29	37	8	33	19	0	7	5	7	13	0	7	1	4	18	22	11	14	12
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
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	4	0	0	1	0	0	0	0	0	0	0			2		0				0	0
Antigua & Barbuda	8	3	0	1	3	2	7	0	3	3	1	0	6			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	12 309	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
Barbados	64	3	30	17	14	12	7	3	4	5	5	5	6			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			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	85 955		75 759	91 013	87 254	83 309	95 009	78 870	77 899	74 466	81 436
British Virgin Islands																		3				0	1
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	0	0	3	0	5	1	0
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				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	9 685	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	1 662	1 700	1 623	1 485	1 458	1 550
Grenada	17	1	1	6	4	2	1	2	0	4	0	1	3	0	3	4	0	2	2	5	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	8 583	8 514	8 054	8 100		10 237				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				1	2	0	0	0
Netherlands Antilles																						5	7
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	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	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	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			0	0	0	0						17		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			10	4	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
Region	**227 820**	**248 150**	**237 316**	**238 296**	**226 801**	**227 022**	**227 107**	**233 192**	**241 834**	**239 594**	**231 215**	**252 221**	**253 256**	**166 640**	**242 018**	**258 331**	**256 459**	**252 536**	**262 809**	**240 648**	**236 183**	**229 874**	**233 648**
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

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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			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			1	1	2	3	1	1	2	2
Belize	15	22	29	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	121	122	124	118
Brazil	60	69	69	67	66	62	60	58	57	55	50	56	56		48	57	54	50	57	47	45	43	46
British Virgin Islands																		16				0	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	7		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				83	87	131	125	115	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	50	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**	**22**	**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	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	2
Belize	50	36	36	46	32	52	48	44	53	71	25	17	17	21	14	23	20	18	22	28
Bermuda			2	0		0	0	0	0	0			3	0		0	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	79
Brazil		39 167	45 650	44 503	43 490	43 554	41 619	41 186	38 478	41 371		25	28	27	26	26	25	24	22	23
British Virgin Islands					0				0	0					0				0	0
Canada	542		404	156	487	471	395	506	502	445	2		1	1	2	2	1	2	2	1
Cayman Islands	2		0	0	0	2	2	5	1	0	7		0	0	0	6	6	14	3	0
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	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	19	18
Costa Rica		230	245	302	320	353	458	349	385	328		7	7	8	9	9	12	9	10	8
Cuba	565	914	834	835	765	746	720	677	562	538	5	8	8	8	7	7	6	6	5	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	31	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	33
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	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	15
Guyana	51	61	85	71	105	85	178	119	174	138	7	8	11	10	14	11	24	16	23	18
Haiti				3 524	5 497	6 442	6 828	5 887	5 607	6 188				46	71	83	86	74	69	75
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	44
Jamaica	83	61	93	81	84	90	90	90	75	60	3	2	4	3	3	4	4	3	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	11
Montserrat		0				1	2	0	0	0		0				16	41	0	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	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	23
Paraguay	985	873	748	894	859	850	1 041	900	915	1 004	21	19	15	18	17	16	20	16	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	77
Puerto Rico	117		128	110	126	106	106	82	71	76	3		3	3	3	3	3	2	2	2
Saint Kitts & Nevis	2	2	4	2		4	2	0	0	1	5	5	9	5		9	5	0	0	2
Saint Lucia		17	11	22	14	10	9	7	6	8		12	8	16	10	7	6	5	4	5
St Vincent & Grenadines	11	0	5	3	2	3	4	9	3	0	10	0	4	3	2	3	3	8	3	0
Suriname				39	31	32	36	37	35	41				9	7	8	9	9	8	9
Trinidad & Tobago		55	7	58	52	82	87	115	152	60		4	1	5	4	6	7	9	12	5
Turks & Caicos Islands							2		1	2							11		5	10
Uruguay	388	381	349	426	423	374	392	348	340	308	12	12	11	13	13	11	12	10	10	9
US Virgin Islands			2	5									2	5						
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	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	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**	**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

Eastern Mediterranean: Summary of TB control policies

COUNTRY	STATUS[a]	MANUAL[b]	MICROSCOPY[c]	MONITORING OF TB SUSPECTS[d]	SCC[e]	DOT[f]	OUTCOME MONITORING[g]
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 ≥ 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													DOTS							non-DOTS		
		Notified TB						Estimated TB				Detection rate		%	Notifications					% of	Notifications		% of
	Pop	All cases		New ss+		New confirmed		All cases		New ss+		All cases	New ss+	of	All cases		New ss+		DDR	pulm	All cases	New ss+	pulm
	thousands	number	rate	number	rate	number	rate	number	rate	number	rate	%	%	pop	number	rate	number	rate	%	cases ss+	number	number	cases ss+
	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w
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												
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	4 418	934	24
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	10 338	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	4 446	389	13
Region	**502 823 931**	**188 458**	**37**	**74 962**	**15**	**46 333**	**28**	**621 563**	**124**	**278 634**	**55**	**30**	**27**	**78**	**179 594**	**36**	**73 639**	**15**	**26**	**59**	**8 864**	**1 323**	**19**

See explanatory notes, page 129.

Country data for the Eastern Meditrannean, 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-ered	% cured	% compl-eted	% died	% failed	% default	% trans-ferred	% not eval	% success	Regist-ered	% cured	% compl-eted	% died	% failed	% default	% trans-ferred	% not eval	% success	Regist-ered	% cured	% compl-eted	% died	% failed	% default	% trans-ferred	% not eval	% 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																		
Bahrain	23	87	0	13	0	0	0	0	87																		
Djibouti	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									
Iran	5475	80	4	5	3	4	4	0	84	411	71	4	6	3	5	6	5	75									
Iraq	3579	85	4	3	2	4	1	0	89	553	68	7	5	11	8	1	0	75									
Jordan	94	83	3	6	3	4	0	0	86	10	30	30	0	40	0	0	0	60									
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	1 611	63	9	4	4	14	5	0	72									
Oman	107	90	0	7	2	0	2	0	90	3	67	0	0	33	0	0	0	67									
Pakistan	6251	65	11	3	1	13	5	1	77																		
Qatar	77	56	4	4			36	0	60																		
Saudi Arabia	1308	67	9	6	0	14	3	0	77	140	46	19	9	3	13	11	0	65									
Somalia	4646	85	2	4	1	3	1	5	86	398	63	2	5	3	3	1	25	64									
Sudan	11136	51	28	4	1	7	4	6	80	1 776	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	726	34	23	1	0	18	4	19	57
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
Bahrain	0	1	1	2	2	1	5	0	1	1	1	1	0	1	0	2	2	3	3	1	6
Djibouti	20	256	320	124	58	55	25	18	142	136	48	28	19	4	38	398	456	172	86	74	29
Egypt	39	662	774	682	576	303	171	77	424	365	245	254	145	60	116	1086	1139	927	830	448	231
Iran	29	466	505	374	325	298	661	77	558	330	272	292	436	728	106	1024	835	646	617	734	1389
Iraq	47	706	923	308	284	205	158	45	338	288	172	176	129	116	92	1044	1211	480	460	334	274
Jordan	0	8	9	11	12	11	5	0	9	4	3	2	12	5	0	17	13	14	14	23	10
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	963
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				14	25	10	11	1	3
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	87
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	1
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+	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	22	67	81	107	49	40	23
Region	**16**	**39**	**46**	**59**	**30**	**16**	**14**	**6**	**28**	**35**	**48**	**19**	**24**	**9**	**22**	**67**	**81**	**107**	**49**	**40**	**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		20	16	9	12	5	50		16	47	2	13				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	59	51	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	12 662	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	6 846	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	553	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				
Lebanon		67	75	284	410	1 943	2 257	2 478				884	884		940	983	836	701	640	679	571	516	437
Libyan Arab Jamahiriya	718	481	512	610	357	325	276	331	416	265	442	239	1 164			1 440	1 282		1 575	1 615	1 341		
Morocco	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
Oman	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
Pakistan	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
Qatar	257	213	172	206	203	250	220	248	223	191	184	195		200		304	257	212	253	259	279	284	278
Saudi Arabia	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
Somalia				2 838	2 719	2 722	3 079	7 322	2 728	1 323					2 023	2 504	3 920	4 450	4 320	4 802	5 686	6 852	7 279
Sudan	32 971	47 431				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
Syrian Arab Republic	1 689	1 908	1 838	1 867	2 111	2 163	3 942	4 290	4 952	5 504	6 018	5 651	5 437		5 127	4 404	5 200	4 972	5 417	5 447	5 090	4 997	4 766
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		2 211	2 158	2 038	1 945	1 885
United Arab Emirates	522	638	597	507	534	568	464	818	339	308	285	234	227		426		507		773	66	115	74	90
Yemen																14 428	14 364	12 007	12 383	13 027	10 648	13 029	11 677
Region	**521 919**	**514 652**	**433 135**	**234 346**	**171 529**	**186 231**	**230 364**	**288 723**	**271 715**	**250 103**	**229 855**	**295 023**	**83 972**	**190 544**	**107 864**	**121 668**	**145 333**	**136 226**	**233 860**	**171 052**	**137 966**	**165 270**	**188 458**
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						6	15	16	33	46	60
Bahrain	63	73	42	60	52	47	36	27	31	26	24	28	27	21		7	8	7	13	5	3	17	6
Djibouti		667	193		408	593	458	451	429	405	398	535	524	630	593		571	634	604	638	596	617	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	48	46
Saudi Arabia	114	81	79	66	59	31	27	21	16	16	15	13	11	13	14			16	16	16	16	15	14
Somalia				42	41	41	46	107	39	19					28	34	52	57	54	57	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	82		17	31	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	1 668	1 743		1 744	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		1 811	4 229	5 084	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		4 615	5 347	5 373	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	5 240	5 781	3 194	10 320	8 164	8 933	9 908	3 194	3 559	3 895
Jordan	173	161	187	170	136	110	102	89	94	91	173	161	187	170	136	110	102	89	94	91
Kuwait	148	155	175	153	201	185					148	155	175	153	201	185				
Lebanon		148	197	198	206	224	249	202	171	148		148	197	198	206	224	249	202	171	148
Libyan Arab Jamahiriya				515			803	607						515			803	607		
Morocco			14 171	14 278	14 134	13 426	13 420	12 872	12 804	12 914			14 171	14 278	14 134	13 426	13 420	12 872	12 804	12 914
Oman	123	135	135	164	165	156	120	164	156	151	123	135	135	164	165	156	120	164	156	151
Pakistan	11 020		2 578	1 849		14 974	6 248	3 285	10 935	16 265	11 020		2 578	1 849		14 974	6 248	3 285	10 935	16 265
Qatar			60	46	39	69	58	53	77	64			60	46	39	69	58	53	77	64
Saudi Arabia	800				1 568	1 644	1 680	1 595	1 686	1 674	800				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		1 168	1 572	2 894	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		3 728	8 761	8 978	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			1 295	1 523	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	1 006	983	1 243	1 005		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			3 681	4 371	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**

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

Europe: Summary of TB control policies

COUNTRY	STATUS[a]	MANUAL[b]	MICROSCOPY[c]	MONITORING OF TB SUSPECTS[d]	SCC[e]	DOT[f]	OUTCOME MONITORING[g]
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	**DOTS**	YES					
TFYR MACEDONIA	DOTS	YES					
TURKEY	**DOTS**	YES					
TURKMENISTAN	DOTS	YES					
UKRAINE	**DOTS**	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 ≥ 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		
		Notified TB							Estimated TB				Detection rate		%	Notifications					% of	Notifications		% of
	Pop	All cases			New ss+		New confirmed		All cases		New ss+		All cases	New ss+	of	All cases		New ss+		DDR	pulm	All cases	New ss+	pulm
	thousands	number[1]	number[1]	rate	number	rate	number	rate	number	rate	number	rate	%	%	pop	number	rate	number	rate	%	cases ss+	number	number	cases ss+
	a	b'	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w
Albania	3 141	612	594	19	225	7	259	8	863	27	388	12	69	58	30	227	7	93	3	24	68	367	132	56
Andorra	69	5	5	7	2	3	3	4	14	20	6	9	36	32	100	5	7	2	3	32	50			
Armenia	3 072	1 455	1 433	47	511	17	511	17	2 363	77	1 062	35	61	48	100	918	30	295	10	28	42	515	216	42
Austria	8 111	887	871	11	220	3	498	6	1 201	15	537	7	73	41	100	871	11	220	3	41	31			
Azerbaijan	8 297	5 348	5 142	62	1 661	20	1 938	23	6 807	82	3 063	37	76	54	32	2 920	35	1 310	16	43	54	2 222	351	20
Belarus	9 940	5 139	5 139	52					8 252	83	3 704	37	62									5 139		
Belgium	10 296	1 309	1 211	12	419	4	778	8	1 452	14	650	6	83	64	100	1 211	12	419	4	64	46			
Bosnia & Herzegovina	4 126	1 747	1 691	41	526	13			2 466	60	1 110	27	69	47	100	1 691	41	526	13	47	38			
Bulgaria	7 965	3 335	3 335	42	1 007	13	1 253	16	3 808	48	1 713	22	88	59	78	2 043	26	742	9	43	43	1 292	265	31
Croatia	4 439	1 470	1 443	33	437	10	700	16	2 089	47	940	21	69	46								1 443	437	36
Cyprus	796	20	20	3	8	1	11	1	39	5	18	2	51	46	100	20	3	8	1	46	40			
Czech Republic	10 246	1 200	1 156	11	329	3	615	6	1 293	13	581	6	89	57	100	1 156	11	329	3	57	37			
Denmark	5 351	419	403	8	135	3	217	4	701	13	314	6	58	43								403	135	47
Estonia	1 338	713	620	46	203	15	354	26	740	55	330	25	84	61	100	620	46	203	15	61	45			
Finland	5 197	473	449	9	130	3	265	5	531	10	239	5	85	54								449	130	46
France	59 850	6 322	5 709	10	2 276	4	3 084	5	8 087	14	3 605	6	71	63								5 709	2 276	55
Georgia	5 177	6 345	4 490	87	987	19	987	19	4 420	85	1 989	38	102	50	96	4 490	87	987	19	50	32			
Germany	82 414	7 684	6 931	8	1 868	2	3 924	5	8 034	10	3 604	4	86	52	100	6 931	8	1 868	2	52	35			
Greece	10 970	582	570	5	212	2	357	3	2 231	20	999	9	26	21								570	212	45
Hungary	9 923	3 007	2 720	27	556	6	968	10	3 178	32	1 430	14	86	39	100	2 720	27	556	6	39	24			
Iceland	287	8	8	3	2	1	5	2	9	3	4	1	86	48	100	8	3	2	1	48	33			
Ireland	3 911	406	375	10	100	3	173	4	497	13	223	6	75	45								375	100	35
Israel	6 304	511	485	8	164	3	256	4	635	10	285	5	76	58	100	485	8	164	3	58	47			
Italy	57 482	4 212	3 925	7	1 275	2	1 861	3	4 513	8	2 010	3	87	63	21	3 925	7	1 275	2	63	43			
Kazakhstan	15 469	32 936	27 546	178	9 452	61	9 706	63	22 519	146	10 127	65	122	93	100	27 546	178	9 452	61	93	40			
Kyrgyzstan	5 067	6 794	6 613	131	1 587	31	1 587	31	7 176	142	3 229	64	92	49	98	6 482	128	1 456	29	45	39	131	131	100
Latvia	2 329	1 855	1 803	77	636	27	950	41	1 816	78	814	35	99	78	100	1 803	77	636	27	78	48			
Lithuania	3 465	2 844	2 414	70	822	24	1 044	30	2 286	66	1 028	30	106	80	66	1 948	56	634	18	62	48	466	188	56
Luxembourg	447	32	31	7	17	4	27	6	55	12	25	6	56	69	100	31	7	17	4	69	63			
Malta	393	24	24	6	5	1	13	3	25	6	11	3	96	44	100	24	6	5	1	44	26			
Monaco	34	0	0	0	0	0	0	0	1	2	0	1	0	0	0							0	0	
Netherlands	16 067	1 401	1 355	8	330	2	617	4	1 362	8	609	4	100	54	100	1 355	8	330	2	54	39			
Norway	4 514	256	243	5	31	1	113	3	265	6	119	3	92	26	100	243	5	31	1	26	21			
Poland	38 622	10 475	10 069	26	3 060	8	5 161	13	12 393	32	5 573	14	81	55	100	10 069	26	3 060	8	55	33			
Portugal	10 049	4 591	4 381	44	1 976	20	2 522	25	4 718	47	2 094	21	93	94	98	4 381	44	1 976	20	94	65			
Republic of Moldova	4 270	4 149	3 769	88	1 146	27	1 146	27	6 596	154	2 962	69	57	39	70	557	13	557	13	19	100	3 212	589	100
Romania	22 387	34 107	29 752	133	10 703	48	13 852	62	33 148	148	14 915	67	90	72	54	16 374	73	6 086	27	41	49	13 378	4 617	46
Russian Federation	144 082	157 276	128 873	89	27 865	19	28 754	20	182 166	126	81 309	56	71	34	25	17 530	12	5 179	4	6	33	111 343	22 686	22
San Marino	27	1	1	4					2	7	1	3	55		100	1	4							
Serbia & Montenegro	10 535	4 476	4 232	40	402	4	402	4	3 985	38	1 791	17	106	22	40	1 443	14	402	4	22	37	2 789		
- Kosovo		1 443	1 443		402										100	1 443		402			37			
- Serbia & Montenegro		3 033	2 789																			2 789		
Slovakia	5 398	1 053	975	18	202	4	393	7	1 294	24	582	11	75	35	100	975	18	202	4	35	30			
Slovenia	1 986	350	338	17	130	7	231	12	426	21	192	10	79	68	100	338	17	130	7	68	50			
Spain	40 977	7 626	7 283	18	3 317	8	4 702	11	12 346	30	5 480	13	59	61								7 283	3 317	46
Sweden	8 867	412	375	4	109	1	209	2	409	5	184	2	92	59	100	375	4	109	1	59	45			
Switzerland	7 171	658	591	8	123	2	368	5	589	8	261	4	100	47								591	123	27
Tajikistan	6 195	4 052	4 052	65	687	11			6 769	109	3 046	49	60	23	13	100	2	100	2	3	100	3 952	587	100
TFYR Macedonia	2 046	730	686	34	200	10	200	10	849	41	382	19	81	52	50	446	22	143	7	37	43	240	57	39
Turkey	70 318	19 028	18 043	26					22 583	32	10 162	14	80									18 043		
Turkmenistan	4 794	4 635	3 671	77	1 254	26	1 254	26	4 507	94	2 028	42	81	62	35	1 906	40	735	15	36	53	1 765	519	30
Ukraine	48 902	40 175	40 175	82					46 621	95	20 792	43	86		15							40 175		
United Kingdom	59 068	7 557	6 889	12	1 365	2	2 165	4	7 023	12	3 151	5	98	43								6 889	1 365	34
Uzbekistan	25 705	27 009	20 588	80	4 783	19	4 783	19	26 079	101	11 735	46	79	41	41	10 749	42	2 766	11	24	34	9 839	2 017	24
Region	**877 886 918**	**427 711**	**373 497**	**43**	**83 455**	**10**	**99 216**	**11**	**472 228**	**54**	**211 403**	**24**	**79**	**39**	**40**	**134 917**	**15**	**43 005**	**5**	**20**	**40**	**238 580**	**40 450**	**27**

See explanatory notes, page 129.

[1] First column (b'), European definition; second column (b), WHO definition (see page 129).

Country data for Europe, cont'd: treatment outcomes for cases registered in 2001 - WHO TB control strategy DOTS and other non-DOTS control strategies

	New smear-positive cases - DOTS									Retreatment cases - DOTS									New smear-positive cases - non-DOTS								
	Regist-ered	% cured	% compl-eted	% died	% failed	% default	% trans-ferred	% not eval	% success	Regist-ered	% cured	% compl-eted	% died	% failed	% default	% trans-ferred	% not eval	% success	Regist-ered	% cured	% compl-eted	% died	% failed	% default	% trans-ferred	% not eval	% 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
Albania	81	67	31	1	0	1	0	0	98	2	50	0	0	0	50	0	0	50	90	24	61	1	8	1	4	0	86
Andorra	1	100	0	0	0	0	0	0	100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Armenia	284	85	6	2	3	4	1	0	90	46	67	0	0	22	11	0	0	67									
Austria	252	0	64	8	0	6	0	22	64	9	0	44	11	0	0	0	44	44	0	0	0	0	0	0	0	0	0
Azerbaijan	499	63	3	9	14	12	0	0	66	247	33	2	18	25	23	0	0	35	922	83	0	1	5	5	3	2	83
Belarus																											
Belgium	346	21	43	9	0	1	2	23	64	42	19	40	14	0	0	0	26	60									
Bosnia & Herzegovina	539	95	3	0	1	0	1	0	98	71	96	0	1	0	1	1	0	96									
Bulgaria	380	75	12	4	4	3	2	0	87	49	53	24	6	14	2	0	0	78	727	0	0	0	0	0	0	100	0
Croatia																											
Cyprus	25	92	0	0	0	0	8	0	92	1	0	100	0	0	0	0	0	100	0	0	0	0	0	0	0	0	0
Czech Republic	380	54	18	5	0	1	0	21	73	15	47	20	0	0	0	13	20	67	0	0	0	0	0	0	0	0	0
Denmark																			108	56	31	2	0	0	3	7	88
Estonia	212	62	1	14	4	11	0	8	64	125	30	3	10	14	14	0	29	33	0	0	0	0	0	0	0	0	0
Finland																											
France																											
Georgia	1 014	33	34	2	7	14	8	1	67	677	21	24	9	12	27	5	2	45									
Germany	880	44	23	11	0	2	0	20	67	188	40	17	10	2	4	0	27	57	0	0	0	0	0	0	0	0	0
Greece																											
Hungary	583	32	14	16	11	7	0	19	46	136	21	10	16	24	6	0	22	32	0	0	0	0	0	0	0	0	0
Iceland	3	0	67	33	0	0	0	0	67	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ireland																			87	16	40	3	1	6	0	33	56
Israel	288	78	1	9	1	6	3	3	79	25	68	12	8	4	0	0	8	80									
Italy	198	29	11	0	1	3	11	45	40	21	38	14	0	0	0	5	43	52	1 157	0	0	0	0	0	0	100	0
Kazakhstan	8 894	76	2	5	12	4	2	0	78	2 900	62	4	9	16	6	3	0	66	0	0	0	0	0	0	0	0	0
Kyrgyzstan	1 458	73	8	5	6	6	2	0	81	296	63	13	6	6	9	3	0	76	0	0	0	0	0	0	0	0	0
Latvia	661	71	2	10	1	7	0	9	73	213	44	2	12	2	11	0	30	46									
Lithuania	341	75	0	9	3	11	1	1	75	181	44	0	14	5	25	1	12	44	594	70	0	12	3	11	0	3	70
Luxembourg																											
Malta	3	33	67	0	0	0	0	0	100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Monaco																			0	0	0	0	0	0	0	0	0
Netherlands																											
Norway	53	57	30	6	0	4	4	0	87	8	63	38	0	0	0	0	0	100	0	0	0	0	0	0	0	0	0
Poland	180	36	41	6	4	6	4	2	77	27	44	33	11	4	7	0	0	78	2 975	69	7	6	1	6	1	11	76
Portugal	2 042	10	68	5	0	5	4	8	78	242	7	55	10	0	10	6	13	62									
Republic of Moldova	200	60	6	5	19	6	6	0	66	49	49	8	2	12	22	6	0	57	860	0	64	0	0	0	0	36	64
Romania	3 779	62	16	5	7	7	1	2	78	1 496	40	11	12	17	13	1	7	51	7 496	59	15	6	8	8	1	4	74
Russian Federation	4 079	64	3	8	14	6	3	1	67	854	31	18	12	26	6	7	0	48									
San Marino	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Serbia & Montenegro	683	51	37	5	2	4	0	0	88	112	34	31	16	7	8	0	4	65	0	0	0	0	0	0	0	0	0
- Kosovo	421	35	52	4	3	6			87	86	30	40	12	9	9			70									
- Serbia & Montenegro																			262	77	14	5		2	1	1	91
Slovakia	226	84	3	11	0	1	0	1	87	43	63	12	16	2	5	0	2	74	0	0	0	0	0	0	0	0	0
Slovenia	139	24	58	8	1	5	2	2	82	15	27	53	0	0	0	0	20	80	0	0	0	0	0	0	0	0	0
Spain																											
Sweden	106	0	62	12	1	3	3	19	62	7	0	43	14	0	0	14	29	43	0	0	0	0	0	0	0	0	0
Switzerland																											
Tajikistan	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	670	58	14	14	12	0	2	0	72
TFYR Macedonia	128	52	35	0	2	10	0	0	88	19	42	16	0	5	37	0	0	58	36	44	50	0	3	0	0	3	94
Turkey	0	0	0	0	0	0	0	0	0										4 359	0	72	2	0	5	5	16	72
Turkmenistan	658	75	0	4	10	11	0	0	75	530	72	0	7	8	12	1	0	72	585	52	0	14	15	17	0	2	52
Ukraine																											
United Kingdom																			864		77	8	0	5	2	8	77
Uzbekistan	854	56	20	4	12	6	2	0	76																		
Region	**30 449**	**61**	**14**	**6**	**8**	**5**	**2**	**3**	**75**	**8 646**	**47**	**11**	**10**	**14**	**10**	**3**	**4**	**58**	**21 530**	**39**	**27**	**5**	**4**	**6**	**2**	**17**	**67**

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	1	0	1	0	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																					
Croatia	1	18	40	75	77	32	43	0	18	18	20	19	16	54	1	36	58	95	96	48	97
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

EUROPE

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																					
Armenia	0	32	28	43	52	23	12	1	6	11	12	18	4	1	0	19	20	27	34	12	5
Austria	0	2	2	4	8	4	5	0	2	2	1	1	1	3	0	2	2	3	5	3	4
Azerbaijan	0	39	75	53	55	39	7	0	6	13	11	9	9	7	0	22	42	31	32	22	7
Belarus	0	8	20	28	24	19	11	0	2	3	3	2	3	4	0	5	11	15	13	10	6
Belgium	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																					
Netherlands	0	4	5	3	3	1	2	0	3	3	1	1	0	1	0	4	4	2	2	1	1
Norway	0	1	1	1	1	0	1	0	1	2	0	1	0	0	0	1	1	1	1	0	1
Poland	0	3	7	19	24	17	17	0	3	5	6	5	4	12	0	3	6	12	14	10	14
Portugal	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																					
Serbia & Montenegro	1	4	7	6	4	4	5	1	6	7	3	2	4	2	1	5	7	4	3	4	4
Slovakia	0	1	4	9	10	9	11	0	1	2	2	1	2	7	0	1	3	5	6	5	8
Slovenia	0	6	7	16	17	13	8	0	2	5	4	1	3	9	0	4	6	10	9	8	9
Spain	1	7	11	13	12	10	11	1	7	8	4	2	1	3	1	7	9	8	7	5	7
Sweden	0	1	3	2	1	1	1	0	2	2	1	1	0	1	0	2	2	1	1	1	1
Switzerland	0	2	3	2	3	1	2	0	3	3	1	1	0	1	0	3	3	2	2	1	1
Tajikistan	1	21	29	18	22	25	15	1	11	18	12	14	14	3	1	16	24	15	18	19	8
TFYR Macedonia	1	12	11	19	24	24	8	1	11	16	8	3	6	5	1	11	13	14	13	15	6
Turkey																					
Turkmenistan	0	33	66	73	62	43	24	0	23	39	23	29	35	15	0	28	52	47	45	39	19
Ukraine																					
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			707	641	738	655	694	733	604	555	594
Andorra										12	23	24	21	15	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	3 340	2 989	2 620	2 771	2 821	3 036	2 839	1 630	2 480	4 635	4 672	4 654	5 187	4 898	5 142
Belarus	5 954	6 198	5 468	5 509	5 065	4 873	4 128	3 911	3 769	3 708	3 039	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	2 530	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	39	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	587	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	3 769	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	11	14	14	12	16	13	26	30	26	25	11	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		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	2 647	2 631	2 628	2 509	2 427	2 485	2 610	2 727	2 474	2 621	2 460	2 116	1 671	652	892	2 029	1 647	2 143	2 448	2 553	2 779	3 508	4 052
TFYR Macedonia													1 602	1 712	728	786	724	693	620	557	641	648	686
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	24 058	22 946	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
Region	**348 921**	**346 104**	**324 580**	**319 220**	**308 401**	**298 933**	**302 602**	**290 606**	**277 143**	**267 232**	**242 429**	**231 651**	**248 519**	**242 425**	**243 691**	**289 949**	**322 165**	**353 336**	**349 800**	**373 765**	**373 081**	**368 433**	**373 497**
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
percent reporting	94	94	94	94	94	94	94	94	94	96	98	94	96	92	90	98	100	100	100	100	100	100	100

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	39	35	35	31	34	31	33	29	24	21	20	19			22	20	23	21	22	24	19	18	19
Andorra										24	44	44	36	25	38		26	29	12	15	18	15	7
Armenia	24	29	24	22	24	23	25	22	19	18	17	21	7	17	22	35	28	32	46	47	43	45	47
Austria	29	27	26	24	23	19	18	18	18	17	20	18	17	16	16	17	17	17	16	13	15	12	11
Azerbaijan	50	51	51	49	53	57	56	54	48	42	36	38	38	40	37	21	31	58	58	58	64	60	62
Belarus	62	64	56	56	51	49	41	39	37	36	30	36	23	40	42	47	55	59	61	73	68	55	52
Belgium	27	29	27	22	22	20	19	18	16	17	16	15	13	15	15	14	13	12	12	11	12	13	12
Bosnia & Herzegovina	113	111	117	111	115	113	110	106	94	96	95	85	15	18	45	62	65	81	74	76	62	61	41
Bulgaria	37	34	34	32	32	29	28	26	27	26	26	30	36	38	63	39	37	41	50	43	41	48	42
Croatia	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	48	42	40	39	35	30	25	21	20	18	19	20	19	18	19	18	19	18	18	16	14	13	11
Denmark	8	8	7	7	6	6	6	6	6	6	7	6	7	8	10	9	9	11	10	11	11	9	8
Estonia	42	38	38	39	36	35	34	29	30	27	27	26	26	35	42	43	48	53	59	55	58	52	48
Finland	47	46	45	39	37	37	31	29	22	20	15	15	14	11	11	13	13	11	12	11	10	9	9
France	32	30	28	25	22	20	19	18	16	16	16	15	15	17	16	15	13	12	10	10	10	10	10
Georgia	41	42	42	36	35	34	34	34	29	30	28		39	69		30	66	159	119	91	84	77	87
Germany	38	35	33	30	26	26	23	22	21	19	18	17	18	18	16	15	14	14	13	12	11	8	9
Greece	56	75	53	39	20	16	16	12	9	11	9	7	9			9	9	7	11	9	6	5	5
Hungary	51	50	48	47	42	46	43	39	38	36	35	35	38	41	41	42	43	42	40	35	31	29	30
Iceland	11	10	11	10	11	5	5	5	6	7	7	6	6	4	7	4	4	4	6	4	5	4	3
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	7	6	6	6	6	9	6	4	5	4	5	11	7	8	8	7	7	7	11	8	9	9	8
Italy	6	6	7	8	6	7	7	6	6	7	7	7	8	8	10	10	7	8	10	8	6	7	7
Kazakhstan	97	92	90	86	80	78	81	81	82	80	65	64	65	62	63	68	85	99	129	158	165	169	178
Kyrgyzstan	54	56	54	51	51	52	52	50	51	49	52	57	58	54	60	74	89	111	120	132	126	133	131
Latvia	48	45	43	42	41	47	38	36	35	32	33	35	36	38	44	62	72	82	90	79	84	85	78
Lithuania	48	47	43	42	40	41	39	38	36	37	39	42	43	52	59	66	74	83	86	80	76	75	70
Luxembourg	20	12	11	11	13	11	12	13	4	12	13	13	6	9	8	8	10	9	10	9	10	7	7
Malta	7	8	4	7	4	3	4	4	3	4	4	7	8	7	7	3	7	3	4	6	4	4	6
Monaco	4	0	0	0	0	4	7	7	3	3	3	0	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	12	11	11	10	9	9	8	7	7	6	7	7	7	6	6	5	5	5	6	5	5	6	5
Poland	73	67	65	64	61	58	55	52	49	43	42	43	43	44	43	41	40	36	34	31	28	26	26
Portugal	70	74	74	71	69	69	66	71	64	67	63	60	60	55	57	56	53	51	53	46	42	43	45
Republic of Moldova	69	70	78	69	61	65	71	66	58	52	40	44	42	56	60	67	68	67	61	63	69	84	88
Romania	61	61	61	60	57	56	56	58	61	63	70	67	78	89	94	103	107	106	114	116	122	127	138
Russian Federation	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											4	4		12	8	8	0	4	0	0	4	0	4
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	13	15	21	24	26	28	36	24	22	21	19	23	25	24		22	21	23	22	21	20	17	18
Sweden	11	11	9	10	9	8	8	6	6	7	7	6	7	7	6	6	6	5	5	5	5	4	4
Switzerland	18	19	18	17	15	15	13	15	18	16	19	16	14	13	13	12	11	10	10	11	8	8	8
Tajikistan	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													83	88	37	40	37	35	31	28	32	32	36
Turkey	80	85	55	58	54	60	59	56	50	47	42	43	43			36	32	39	39	33	26	25	26
Turkmenistan	59	55	52	50	51	50	49	58	55	61	63	63	53	69		46	48	78	86	90	87	84	77
Ukraine	52	51	49	48	48	47	45	43	40	39	32	32	35	38	40	42	46	56	55	66	66	75	0
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		250	139	173	241	212	168	171	171	225		8	4	5	8	7	5	5	5	7
Andorra	15	24		8	17	1	4	1	3	2	25	38		12	26	2	6	2	4	3
Armenia		319	436	327	400	475	576	621	572	511		9	13	10	12	15	18	20	19	17
Austria			662	580	370		323	324	262	220			8	7	5		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
Belarus	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	
Belgium	484	427	400	364	434	418	403	409	472	419	5	4	4	4	4	4	4	4	5	4
Bosnia & Herzegovina			865	927	803	640	786	759	800	526			25	27	23	17	20	19	20	13
Bulgaria		3 096	1 087	903	1 037	1 325	1 697	2 524	897	1 007		37	13	11	13	16	21	31	11	13
Croatia			1 204	1 228	1 073	1 129	748	0	421	437			27	28	24	26	17	0	9	10
Cyprus			6	3	19	20	9	4	0	8			1	0	2	3	1	1	0	1
Czech Republic	548	524	487	586	481	545	449	420	391	329	5	5	5	6	5	5	4	4	4	3
Denmark	243	120	128	97	114	132	172	171	127	135	5	2	2	2	2	2	3	3	2	3
Estonia	303	347	369	240	269	299	274	255	212	203	20	24	26	17	19	21	20	19	16	15
Finland			244	240	186	188	179	205	150	130			5	5	4	4	3	4	3	3
France	4 455	3 196	3 449	3 002	2 430		2 325	1 815	2 398	2 276	8	6	6	5	4		4	3	4	4
Georgia			221	482	595	547	746	601	1 014	987			4	9	11	10	14	11	19	19
Germany	4 730	4 177	3 852	3 689	3 346	3 124	2 918	0	1 935	1 868	6	5	5	5	4	4	4	0	2	2
Greece					285	313	143	235	213	212					3	3	1	2	2	2
Hungary	1 905	1 357	796	1 066	702	667	660	412	546	556	19	13	8	10	7	7	7	4	5	6
Iceland		6	2	1	4	2	2	1	3	2		2	1	0	1	1	1	0	1	1
Ireland				339	123	116	117	138	123	100				9	3	3	3	4	3	3
Israel	150	129		147	207	221	170	17	172	164	3	2		3	4	4	3	0	3	3
Italy		1 441	1 413	1 738	1 903	2 361	1 277	687	1 361	1 275		3	2	3	3	4	2	1	2	2
Kazakhstan			3 022	4 290	4 332	6 180	6 977	8 903	9 079	9 452			18	26	27	39	44	57	58	61
Kyrgyzstan		681	832	991	1 536	830	1 642	1 296	0	1 587		15	18	21	33	17	34	26	0	31
Latvia	470		504	575	634	668	588	637	661	636	18		20	23	26	28	25	27	28	27
Lithuania	688		979	1 121	1 200	787	787	776	935	822	19		27	32	34	22	22	22	27	24
Luxembourg				29	31	24		21	11	17				7	7	6		5	2	4
Malta	13	6	5	5	3	6	9	5	3	5	4	2	1	1	1	2	2	1	1	1
Monaco				0	0	0	2	0	0	0				0	0	0	6	0	0	0
Netherlands	1 063		575	358	312	254	308	289	307	330	7		4	2	2	2	2	2	2	2
Norway		86	62	103	100	49	21	37	59	31		2	1	2	2	1	0	1	1	1
Poland	7 606	4 000	6 955	6 819	3 497	3 502	3 177	3 180	3 155	3 060	20	10	18	18	9	9	8	8	8	8
Portugal		2 072	2 019	1 938	1 628	2 016	1 801	1 863	2 042	1 976		21	20	20	16	20	18	19	20	20
Republic of Moldova	615	704	665	219	397	477	609	651	1 060	1 146	14	16	15	5	9	11	14	15	25	27
Romania	9 339	10 385	10 469	10 359	11 666	10 841	10 317	10 202	11 184	10 703	41	46	46	46	52	48	46	45	50	48
Russian Federation		30 389	37 512	42 534	42 094	42 219	21 744	27 467	26 605	27 865		20	25	29	29	29	15	19	18	19
San Marino				0	1	0	0	1	0	0				0	4	0	0	4	0	0
Serbia & Montenegro			1 497	1 783	1 702	1 873	2 517	0	461	402			14	17	16	18	24	0	4	4
Slovakia	882	409	788	760	283	303	246	236	226	202	17	8	15	14	5	6	5	4	4	4
Slovenia	361	294	303	221	156	157	165	145	139	130	18	15	15	11	8	8	8	7	7	7
Spain			2 605			1 906		3 423	2 456	3 317			7			5		8	6	8
Sweden	312	106	102	90	94	97	117	118	105	109	4	1	1	1	1	1	1	1	1	1
Switzerland	528	507	185	172	144	165	98	118	116	123	8	7	3	2	2	2	1	2	2	2
Tajikistan			1 042	232	373	435	0	434	719	687			18	4	6	7	0	7	12	2
TFYR Macedonia			319	209	192	179	122	167	164	200			16	11	10	9	6	8	8	10
Turkey			4 383	2 816	3 439	3 692	4 124	4 315	4 444				7	4	5	6	6	6	6	0
Turkmenistan	472		544	557	764	790	964	1 017	1 243	1 254	12		13	13	17	18	21	22	26	26
Ukraine	8 314	8 471	8 263	7 827	9 533	10 586	10 412	10 738	0		1 6	16	16	15	19	21	21	22	0	0
United Kingdom	283	270		4 147	844	1 342	797	1 204	946	1 365	0	0		7	1	2	1	2	2	2
Uzbekistan		7 487	2 735	3 350	3 388	3 504	3 977	3 825	4 608	4 783		34	12	14	14	15	16	15	18	19
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

South-East Asia: Summary of TB control policies

COUNTRY	STATUS[a]	MANUAL[b]	MICROSCOPY[c]	MONITORING OF TB SUSPECTS[d]	SCC[e]	DOT[f]	OUTCOME MONITORING[g]
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	**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 South-East Asia: notification, detection and DOTS coverage, 2002

	Country information													DOTS							non-DOTS		
		Notified TB						Estimated TB				Detection rate		%	Notifications					% of	Notifications		% of
	Pop	All cases		New ss+		New confirmed		All cases		New ss+		All cases	New ss+	of	All cases		New ss+		DDR	pulm	All cases	New ss+	pulm
	thousands	number	rate	number	rate	number	rate	number	rate	number	rate	%	%	pop	number	rate	number	rate	%	cases ss+	number	number	cases ss+
	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w
Bangladesh	143 809	81 822	57	46 771	33	46 771	33	317 839	221	143 004	99	26	33	95	71 637	50	45 701	32	32	70	10 185	1 070	13
Bhutan	2 190	1 089	50	364	17	364	17	2 577	118	1 159	53	42	31	100	1 089	50	364	17	31	49			
DPR Korea	22 541	40 159	178	18 576	82	18 576	82	36 010	160	16 205	72	112	115	66	30 812	137	14 290	63	88	52	9 347	4 286	52
India	1 049 549	1 060 951	101	395 833	38	395 833	38	1 761 339	168	787 162	75	60	50	52	549 700	52	245 135	23	31	55	511 251	150 698	33
Indonesia	217 131	155 188	71	76 230	35			556 625	256	250 256	115	28	30	98	155 188	71	76 230	35	30	51			
Maldives	309	125	40	60	19			145	47	65	21	86	92	100	125	40	60	19	92	67			
Myanmar	48 852	57 012	117	24 162	49	24 162	49	75 030	154	33 211	68	76	73	88	57 012	117	24 162	49	73	57			
Nepal	24 609	30 359	123	13 714	56	13 714	56	46 714	190	20 931	85	65	66	89	29 423	120	13 307	54	64	59	936	407	57
Sri Lanka	18 910	8 939	47	4 297	23	4 297	23	10 280	54	4 623	24	87	93	73	7 400	39	3 643	19	79	66	1 539	654	55
Thailand	62 193	49 581	80	25 593	41			79 503	128	35 246	57	62	73	100	49 581	80	25 593	41	73	61			
Timor-Leste	739	2 760	374	1 090	148			4 103	556	1 845	250	67	59	78	2 760	374	1 090	148	59	48			
Region	**1590 832 546**	**1 487 985**	**94**	**606 690**	**38**	**503 717**	**32**	**2 890 166**	**182**	**1 293 706**	**81**	**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-ered	% cured	% compl-eted	% died	% failed	% default	% trans-ferred	% not eval	% success	Regist-ered	% cured	% compl-eted	% died	% failed	% default	% trans-ferred	% not eval	% success	Regist-ered	% cured	% compl-eted	% died	% failed	% default	% trans-ferred	% not eval	% 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
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	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	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: 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+
Bangladesh	2	30	55	84	111	153	162	2	22	37	36	42	33	37	2	26	46	61	77	92	99
Bhutan	1	24	35	32	35	42	43	1	25	27	22	27	9	20	1	24	31	27	31	25	31
DPR Korea	7	82	111	147	244	119	123	5	62	87	97	142	80	63	6	72	99	122	193	99	89
India	1	39	64	81	92	93	60	2	30	41	34	29	24	14	2	35	53	59	62	58	35
Indonesia	2	36	55	61	79	87	58	2	35	47	48	51	45	21	2	36	51	54	65	64	38
Maldives	0	33	42	0	11	84	142	2	25	25	29	51	19	39	1	29	34	14	31	54	93
Myanmar	1	44	98	137	143	131	103	1	33	49	58	60	61	44	1	38	73	97	101	95	71
Nepal	3	79	95	131	181	253	179	4	52	61	63	62	70	41	3	66	78	98	122	159	105
Sri Lanka	0	16	26	46	70	73	56	1	18	17	15	16	24	16	1	17	22	31	45	51	36
Thailand	0	23	69	82	100	131	192	1	16	27	25	33	62	88	1	20	48	53	65	95	134
Timor-Leste	9	135	312	262	353	299	336	14	158	390	207	317	209	116	11	145	343	235	336	255	222
Region	**1**	**38**	**64**	**82**	**97**	**101**	**75**	**2**	**30**	**42**	**38**	**37**	**33**	**22**	**2**	**34**	**53**	**60**	**67**	**66**	**47**

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 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	19 804	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
Region	**837 901**	**915 952**	**1 076 211**	**1 244 819**	**1 275 299**	**1 323 509**	**1 413 418**	**1 520 444**	**1 667 348**	**1 735 860**	**1 719 365**	**1 747 252**	**1 322 709**	**1 287 176**	**1 298 759**	**1 400 850**	**1 470 352**	**1 308 981**	**1 279 041**	**1 464 312**	**1 414 228**	**1 414 141**	**1 487 985**
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	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	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					3 980	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			20	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

The Western Pacific: Summary of TB control policies

COUNTRY	STATUS[a]	MANUAL[b]	MICROSCOPY[c]	MONITORING OF TB SUSPECTS[d]	SCC[e]	DOT[f]	OUTCOME MONITORING[g]
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	**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 the Western Pacific: notification, detection and DOTS coverage, 2002

	Country information													DOTS							non-DOTS		
		Notified TB						Estimated TB				Detection rate		%	Notifications					% of	Notifications		% of
	Pop	All cases		New ss+		New confirmed		All cases		New ss+		All cases	New ss+	of	All cases		New ss+		DDR	pulm	All cases	New ss+	pulm
	thousands	number	rate	number	rate	number	rate	number	rate	number	rate	%	%	pop	number	rate	number	rate	%	cases ss+	number	number	cases ss+
	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w
American Samoa	60	2	3	1	2			18	30	8	14	11	12	100	2	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								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	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-ered	% cured	% compl-eted	% died	% failed	% default	% trans-ferred	% not eval	% success	Regist-ered	% cured	% compl-eted	% died	% failed	% default	% trans-ferred	% not eval	% success	Regist-ered	% cured	% compl-eted	% died	% failed	% default	% trans-ferred	% not eval	% 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
American Samoa	2		100					0	100	1					100		0	0									
Australia	133	18	48	10	2	4	4	15	66	4	0	50	25	0	25	0	0	50	70	20	59	1	0	0	4	16	79
Brunei Darussalam	147	44	12	9	1	3	32	0	56																		
Cambodia	14 277	89	3	4	0	3	1	0	92	707	87	4	5	1	2	1	0	92									
China	176 476	94	2	1	1	1	1	1	96	35 991	88	5	2	2	1	1	1	93	14 024	77	9	1	3	5	2	2	86
China, Hong Kong SAR	1 450	72	6	4	9	3	3	3	78	209	57	8	8	9	10	3	5	65	407	4	4	26	1	0	6	58	9
China, Macao SAR	153	82	3	3		3	2	6	86	47	64	19	4		6	2	4	83									
Cook Islands	1	100						0	100																		
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						0	100									
Japan	6 026	51	23	11	5	2		7	75	711	50	18	10	7	3		11	68	4 108	18	16	1	4	0		61	34
Kiribati	71	79	7	3	1	1	0	8	86	2	100						0	100									
Lao PDR	1 484	67	10	8	1	8	3	4	77	99	41	10	16	2	9	3	18	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	100	20	40	35	15	0	10	0	0	75									
Mongolia	1 631	83	3	2	4	4	3	0	87	113	54	18	7	14	2	5	0	72									
Nauru	2	100						0	100																		
New Caledonia	19	84		11		5		0	84																		
New Zealand	90		9	0		0	0	91	9	0	0	0	0	0	0	0	0	0									
Niue																											
Northern Mariana Is	19		74				26	0	74																		
Palau	1	100						0	100																		
Papua New Guinea	469	45	22	3	0	23	3	4	67	826	23	36	0	12	25	2	1	60									
Philippines	55 402	74	13	2	1	6	3	0	88																		
Rep. Korea																			5 863	77	1	1	1	3	12	4	79
Samoa	22	41	36	18	0	0	0	5	77																		
Singapore	451		88	6	0	5	1	1	88										400		66	21	1	11	1	1	66
Solomon Islands	118	66	23	1	0	7	0	3	89																		
Tokelau																											
Tonga	12	67	25	8	0	0	0	0	92	1	100						0	100									
Tuvalu																											
Vanuatu	48	65	23	10	2	0	0	0	88										9	22	67	0	0	0	11	0	89
Viet Nam	54 238	91	2	3	1	1	2	0	93	5 895	80	5	5	6	2	2	0	85									
Wallis & Futuna Is	1	100						0	100																		
Region	321 230	86	7	2	1	2	1	1	93	44 627	85	6	3	3	2	1	1	91	24 960	65	9	2	3	4	4	13	74

See explanatory notes, page 129.

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Country data for the Western Pacific, 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+
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	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		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			1								1						1	1			
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								0	1						0	1					
Northern Mariana Is	1	2	3	7	10	5	2	0	9	10	3	1	0	0	1	11	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		1			4		10		1	1	1		1	4		2	1	1	4	1	14
Tuvalu																					
Vanuatu	0	7	1	3	7	2	1	0	2	1	5	0	2	0	0	9	2	8	7	4	1
Viet Nam	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
Wallis & Futuna Is														1							1
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, 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+
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
Region	**132**	**2 288**	**3 799**	**3 712**	**3 497**	**2 929**	**4 423**	**112**	**1 809**	**2 376**	**1 545**	**1 183**	**1 044**	**2 604**	**244**	**4 097**	**6 175**	**5 257**	**4 680**	**3 973**	**7 027**

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																					
Australia	0	1	1	2	1	1	3	0	1	1	1	0	0	2	0	1	1	1	1	1	2
Brunei Darussalam	4	46	44	26	31	103	269	0	35	25	33	35	104	130	2	40	34	29	33	104	198
Cambodia	2	53	172	297	428	700	1064	2	40	130	227	359	483	419	2	47	151	259	390	571	638
China	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	13	31	14		10	10	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		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		1 145	899	1 073	1 043	980	1 013
Brunei Darussalam	196	285	245	276	256	238	212	189	126	128	143		180	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	151 564	226 899	265 095	251 600	304 639	310 607	375 481	345 000	320 426	344 218	363 804	515 764	504 758	466 394	445 704	449 518	454 372	470 221	462 609
China, Hong Kong SAR	8 065	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		402	570	575	465		449	465	388
Cook Islands	37	10	19	29	20	36	17	16	20	1	1	8	12	6	4		0	0	1	3	2	2	1
Fiji	210	180	163	185	165	230	199	173	162	218	226	247	240	183	280	203	200	171	166	192	144	183	150
French Polynesia	76	66	65	78	80	78	85	80	63	73	59	49	83	78	89		86	91	105	93	62	62	66
Guam	55	41	49	48	54	37	49	34	41	75			60	70	94						54	63	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		327	464	276	255	252	189	196
Lao PDR	7 630		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		26	52	61			59		49	41	34	56	51
Micronesia			67	73	75	66	60	98	77	68	367	350	111	151	173	172	126	107	123		91	104	127
Mongolia	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
Nauru	0	2	8	0	0	0	8	6	8	0	7				4					2	4	3	5
New Caledonia	108	128	120	171	144	104	98	74	111	128	143	140	140	104	97	87	104	88	90	78	94	61	65
New Zealand	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		2	1	2	0	2	0	0	1	0	0	4
Northern Mariana Is		26	75	74	58	64	16	56	27	28	28		67		46	48	51	93	97	66	75	58	53
Palau	17	10	17	14	20	26	13	38	17	3		6	4	25	41	19	5	15		32			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	21 782	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		0	2	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			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	87 468	88 879	89 792	90 728	95 577
Wallis & Futuna Is	23	24	5	17	14	14		34	1	30		22	4	11	11	6	8	14					19
Region	**358 462**	**357 326**	**463 554**	**464 176**	**542 985**	**617 164**	**653 839**	**657 006**	**718 438**	**743 905**	**895 982**	**762 861**	**756 458**	**720 792**	**726 339**	**820 735**	**876 717**	**872 310**	**836 602**	**824 453**	**791 457**	**810 818**	**808 114**
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

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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		0	11	5	7	5	5	3
Australia	10	9	8	8	8	7	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
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	24	23	27	27	33	29	27	29	30	42	41	38	36	36	36	37	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	5	16	11	11	5
Fiji	33	28	24	27	24	32	28	24	23	30	31	34	33	24	37	26	26	22	21	24	18	22	18
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
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
Lao PDR	238		141	137	185	118	41	91	186	73	44	46	23	47	25	18	30	39	43	47	42	45	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		98	81	67	108	97
Micronesia			86	90	90	77	68	109	84	72	381	354	110	146	164	161	117	99	115		85	97	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	49	0	0	203
Northern Mariana Is		140	370	331	233	232	52	164	72	69	64		137		87	87	88	153	152	99	107	79	70
Palau	140	81	135	108	151	191	93	266	117	20		39	25	153	245	111	28	83		170			55
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	
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
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	78	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	36	35	35	33
Marshall Islands	12			12		11	17	11	15	18	26			25		22	34	22	29	34
Micronesia			9	14	9	14		15	8	22			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	6	19	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	47	0	0	49	0	0	51
Northern Mariana Is			14	26	21	26	15	27	19	21			25	45	34	41	22	39	26	28
Palau	8	11	9	4	7		20			9	49	66	52	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	68	71
Wallis & Futuna Is			3	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
	notified	registered	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			

	Number of cases		% of notif
	notified	registered	registered
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
	notified	registered	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

	Number of cases		% of notif
	notified	registered	registered
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	54	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																

continued…

Trends in treatment success and DOTS detection rates, 1994-2002, cont'd

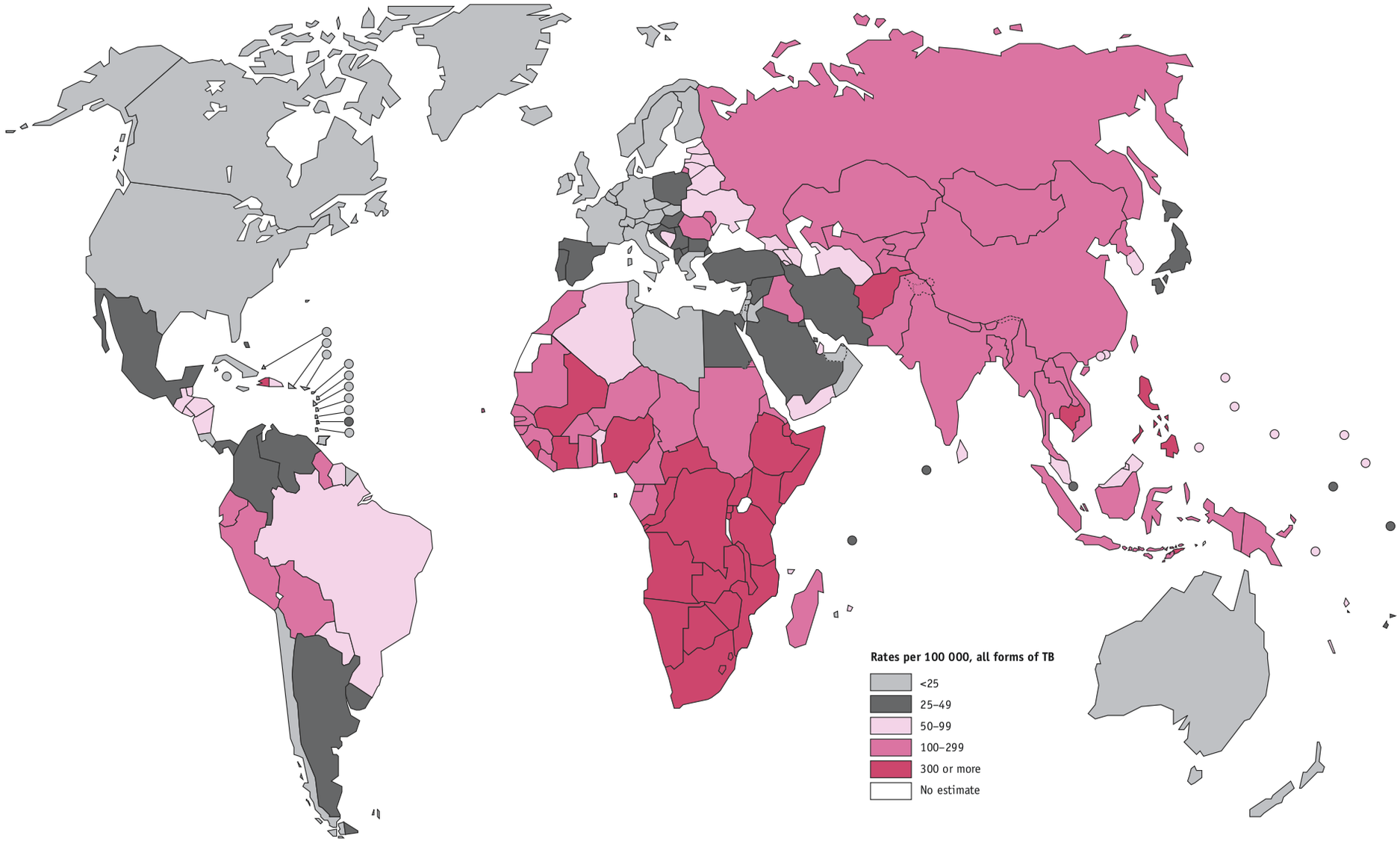
	DOTS treatment success (%)								DOTS detection rate (%)							
	1994	1995	1996	1997	1998	1999	2000	2001	1995	1996	1997	1998	1999	2000	2001	2002
Syrian Arab Republic			92	88	88	84	79	81			8	21	29	42	43	42
Tajikistan																3
TFYR Macedonia							86	88							42	37
Thailand			78	62	68	77	69	75		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	36
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

1. Estimated TB incidence rates, 2002



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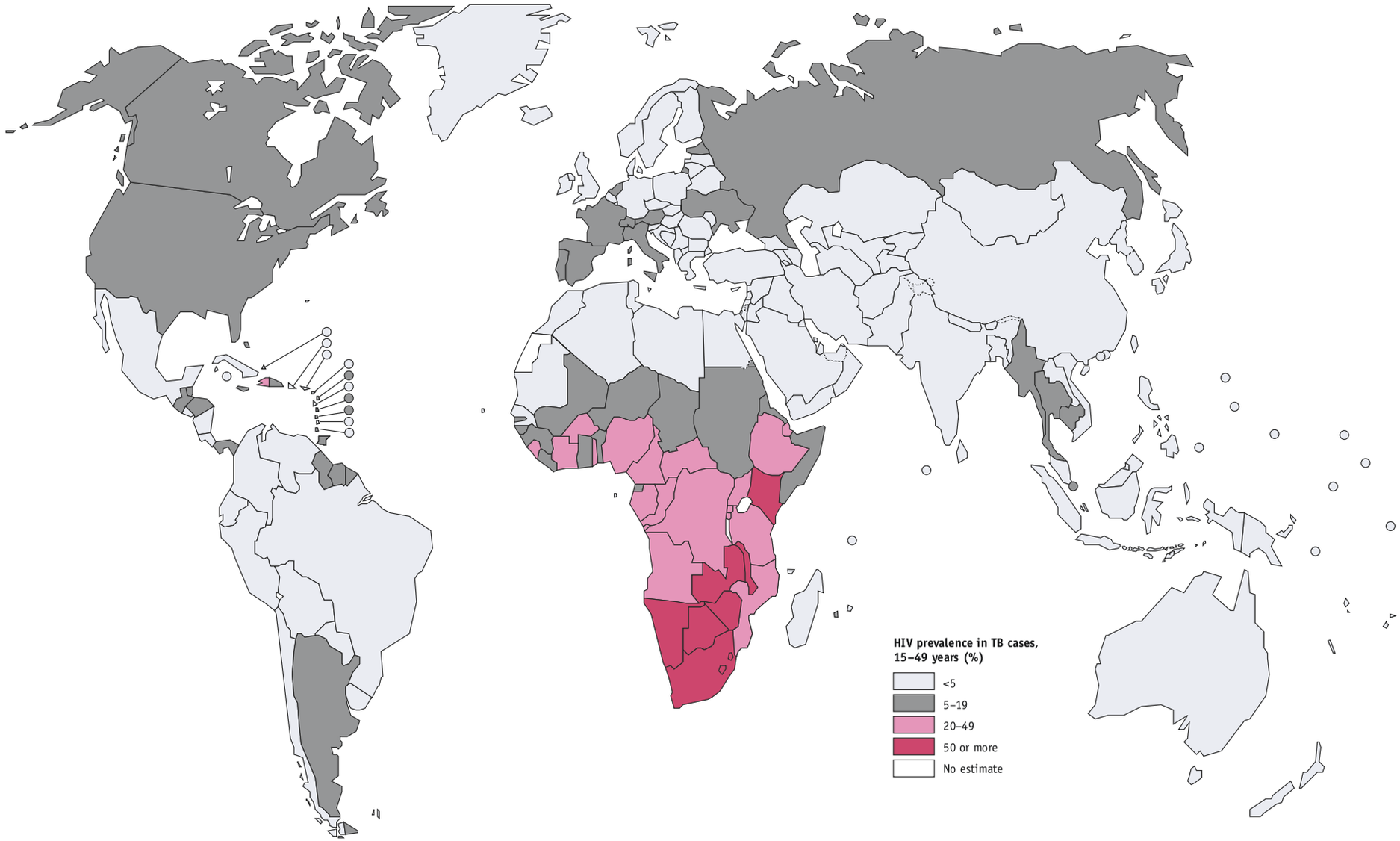
2. Estimated HIV prevalence in TB cases, 2002



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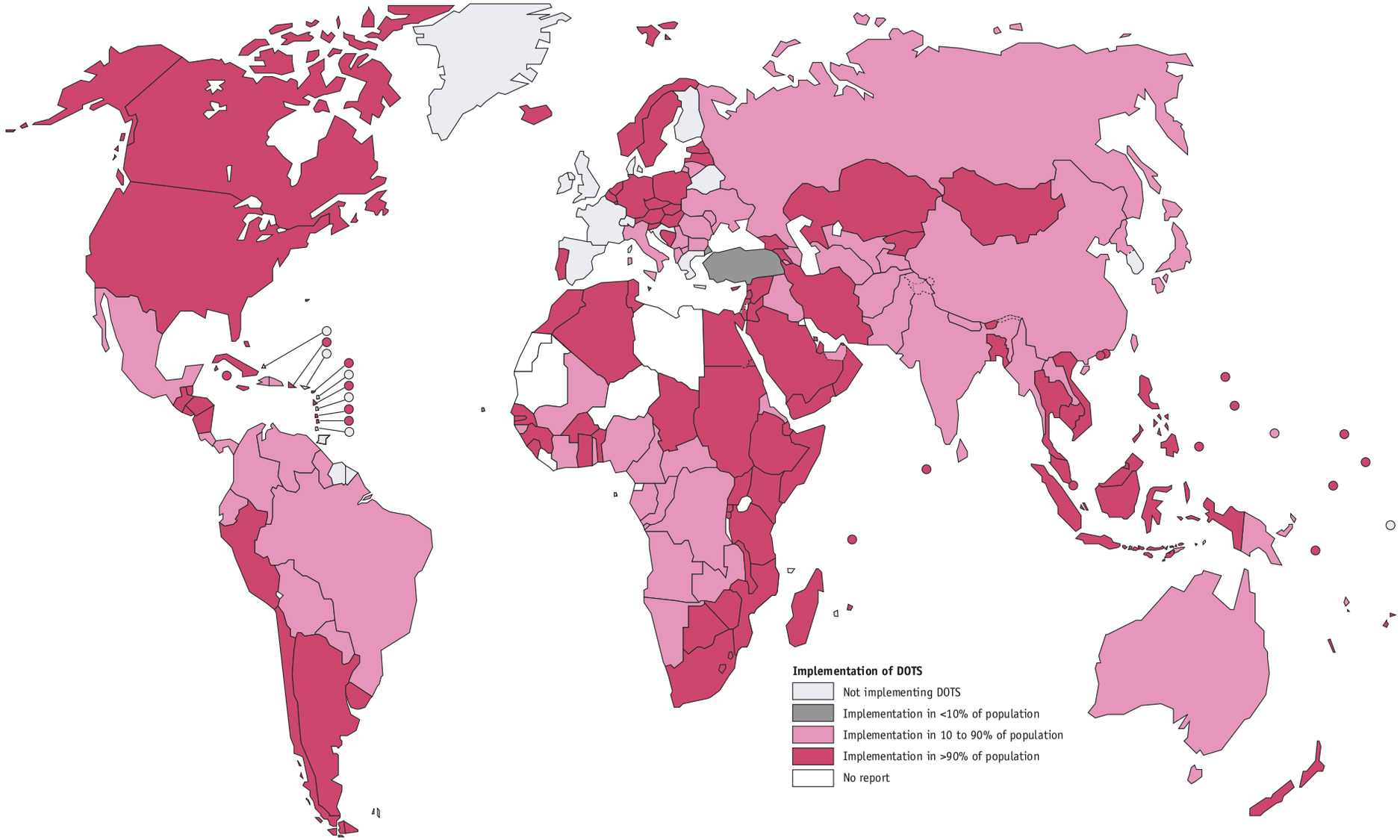
3. Implementation of DOTS, 2002



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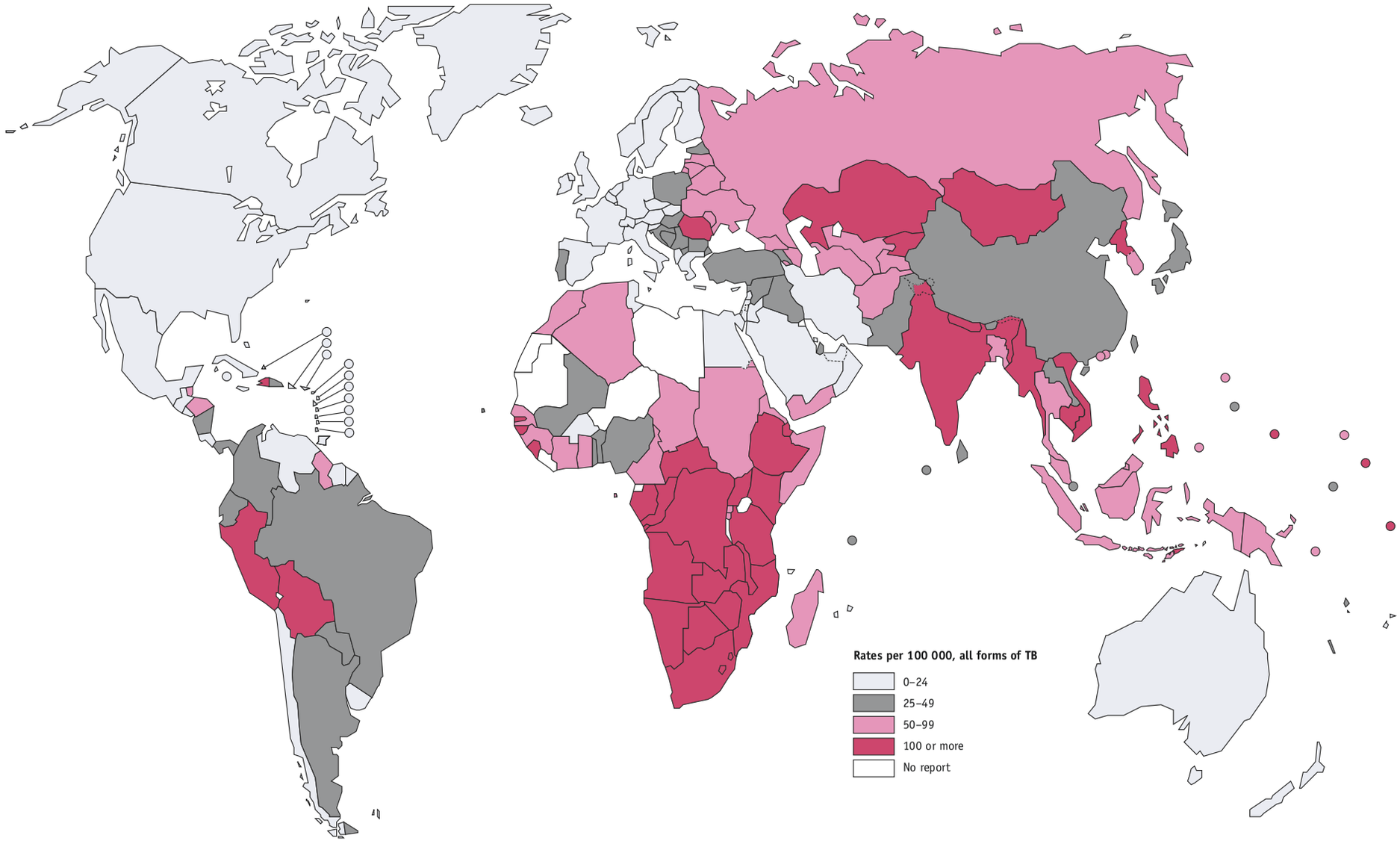
4. Tuberculosis notification rates, 2002



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