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Global Tuberculosis Control

SURVEILLANCE, PLANNING, FINANCING

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Cover: A primary aim of this report is to assess whether national TB control programmes reached the target of 70% case detection by the end of 2005. The coloured lines on the cover represent the increases in case detection in selected high-burden countries and regions between 1995 and 2005, based on data in Table 11. The countries that met the target are identified in the main text and annexes.

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Abbreviations

ACSM	Advocacy, communication and social mobilization
AFB	Acid-fast bacilli
AFR	WHO African Region
AFRO	WHO Regional Office for Africa
AIDS	Acquired immunodeficiency syndrome
AMR	WHO Region of the Americas
AMRO	WHO Regional Office for the Americas
ART	Antiretroviral therapy
BPHS	Basic package of health-care services
CAREC	Caribbean Epidemiology Centre
CDC	Centers for Disease Control and Prevention
CHW	Community health worker
CIDA	Canadian International Development Agency
CPT	Co-trimoxazole preventive therapy
CTBC	Community-based TB care
DoH	Department of Health
DOT	Directly observed treatment
DOTS	The internationally recommended strategy for TB control
DRS	Drug resistance surveillance or survey
DST	Drug susceptibility testing
EMR	WHO Eastern Mediterranean Region
EMRO	WHO Regional Office for the Eastern Mediterranean
EQA	External quality assurance
EUR	WHO European Region
EURO	WHO Regional Office for Europe
FDC	Fixed-dose combination (or FDC anti-TB drug)
FIDELIS	Fund for Innovative DOTS Expansion, managed by IUATLD
GDF	Global TB Drug Facility
GFATM	Global Fund to Fight AIDS, Tuberculosis and Malaria
GLC	Green Light Committee
Global Plan	*The Global Plan to Stop TB, 2006–2015*
GLRA	German Leprosy and TB Relief Association
GNI	Gross national income
GTZ	Deutsche Gesellschaft für Technische Zusammenarbeit (German society for technical co-operation)
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
HRD	Human resources development
ICDDR	International Centre for Diarrhoeal Diseases and Research
IEC	Information, education, communication
IHC	Integrated HIV Care (a programme of the Union)
IPT	Isoniazid preventive therapy
ISAC	Intensified support and action in countries, an emergency initiative to reach targets for DOTS implementation by 2005
JICA	Japan International Cooperation Agency
KAP	Knowledge, attitudes and practices
LACEN	Brazilian public health laboratories
LGA	Local government area
LHW	Lady health workers
MDG	Millennium Development Goal
MDR	Multidrug resistance (resistance to isoniazid and rifampicin)
MDR-TB	Multidrug-resistant tuberculosis
MoH	Ministry of Health
NAP	National AIDS control programme or equivalent
NGO	Nongovernmental organization
NRHM	National Rural Health Mission
NRL	National reference laboratory
NTP	National tuberculosis control programme or equivalent
PAHO	Pan-American Health Organization
PAL	Practical Approach to Lung Health
PATH	Program for Appropriate Technology in Health
PHC	Primary health care
PhilTIPS	Philippine Tuberculosis Initiatives for the Private Sector
PPM	Public–private or public–public mix
RIT/JATA	Research Institute of Tuberculosis, Japanese Anti-tuberculosis Association
SEAR	WHO South-East Asia Region
SEARO	WHO Regional Office for South-East Asia
SILTB	Brazilian laboratory information system
SINAN	Brazilian health information system
SWAp	Sector-wide approach
TB	Tuberculosis
TB CAP	Tuberculosis Control Assistance Program
UNAIDS	Joint United Nations Programme on HIV/AIDS
UNDP	United Nations Development Programme
UNHCR	United Nations High Commission for Refugees
the Union	International Union Against Tuberculosis and Lung Disease
USAID	United States Agency for International Development
VCT	Voluntary counselling and testing for HIV infection
WHO	World Health Organization
WPR	WHO Western Pacific Region
WPRO	WHO Regional Office for the Western Pacific
XDR-TB	TB due to MDR strains that are also resistant to a fluoroquinolone and at least one second-line injectable agent (amikacin, kanamycin and/or capreomycin)

Key findings

The global TB epidemic

TB is still a major cause of death worldwide, but the global epidemic is on the threshold of decline

1. There were an estimated 8.8 million new TB cases in 2005, 7.4 million in Asia and sub-Saharan Africa. A total of 1.6 million people died of TB, including 195 000 patients infected with HIV.

2. TB prevalence and death rates have probably been falling globally for several years. In 2005, the TB incidence rate was stable or in decline in all six WHO regions, and had reached a peak worldwide. However, the total number of new TB cases was still rising slowly, because the case-load continued to grow in the African, Eastern Mediterranean and South-East Asia regions.

DOTS and the Stop TB Strategy

Most government health services now recognize that TB control must go beyond DOTS, but the broader Stop TB Strategy is not yet fully operational in most countries

3. More than 90 million TB patients were reported to WHO between 1980 and 2005; 26.5 million patients were notified by DOTS programmes between 1995 and 2005, and 10.8 million new smear-positive cases were registered for treatment by DOTS programmes between 1994 and 2004.

4. DOTS, which underpins the Stop TB Strategy, was being applied in 187 countries in 2005; 89% of the world's population lived in areas where DOTS had been implemented by public health services.

5. A total of 199 countries/areas reported 5 million episodes of TB in 2005 (new patients and relapses); 2.3 million new pulmonary smear-positive patients were reported by DOTS programmes in 2005, and 2.1 million were registered for treatment in 2004.

6. Skilled and highly-motivated staff are central to any public health programme, and yet the plans for human resource development made by national TB control programmes (NTPs) in 2005–2006 were highly variable in quality. In particular, 7 of the 22 high-burden countries (HBCs), including 5 African countries, had plans that were limited in scope or under development.

7. Prompt diagnosis and effective treatment require fully-functioning laboratories and reliable drug supplies. Despite some improvements, NTPs in all WHO regions reported drug stock-outs, too few laboratories, weak quality control, and limited facilities to carry out culture and drug susceptibility testing. Many NTPs asked for further technical assistance from external agencies.

8. Nearly 5 million TB patients were notified under DOTS in 2005, and the total number diagnosed and treated in 2006 is expected to be roughly in line with the Global Plan to Stop TB (2006–2015). However, smear-positive case detection rates by DOTS programmes varied among WHO regions in 2005, from 35% (Europe) to 76% (Western Pacific), and these variations are likely to persist into 2006.

9. The numbers of HIV-positive and multidrug-resistant TB (MDR-TB) patients diagnosed and treated in 2005, although increasing, were far lower than proposed in the Global Plan for 2006. HIV testing for TB patients is increasing quickly in the African Region, but little effort has yet been made to screen HIV-infected people for TB, though this is a relatively efficient method of case-finding. Facilities to diagnose and treat MDR-TB, including extensively drug-resistant TB (XDR-TB), are not yet widely available; the scale of the XDR-TB problem globally is not yet known.

10. The treatment success rate for MDR-TB patients in projects approved by the Green Light Committee (GLC) was close to 60%, and higher than in non-GLC projects.

11. The Stop TB Strategy is a mechanism for building links between NTPs, health-care providers and communities. The connections being made through community-based TB care, public–private mix DOTS and the Practical Approach to Lung Health have been shown, on a small to medium scale, to improve access to diagnosis and treatment. However, no country has yet succeeded in making all of these activities fully operational at national scale.

12. Few NTPs have an overview of TB research in their countries, and few have the skilled staff and funding needed to carry out essential operational research.

Financing TB control

Although the funds available for TB control have increased enormously since 2002, reaching US$ 2.0 billion in 2007, interventions on the scale required by the Global Plan to Stop TB would cost an extra US$ 1.1 billion in 2007

13. The financial analyses included in this report are based on data from 90 countries that together accounted for 90% of all new TB cases in 2005, including all 22 HBCs and 84 of the countries considered in the Global Plan.

14. For all 90 countries analysed, the NTP budgets reported for 2007 amount to US$ 1.6 billion, with total costs (NTP budgets plus the cost of general health system staff and infrastructure used for anti-TB treatment) of

US$ 2.3 billion, and US$ 2.0 billion available (i.e. a reported funding gap of US$ 0.3 billion).

15. If country plans were in line with the Global Plan, the funding gap would be much larger than reported in 2007. To implement the Global Plan in 84 countries would cost US$ 3.1 billion in 2007, or US$ 1.1 billion more than was available. The difference between the Global Plan and funds available in the 22 HBCs is US$ 0.8 billion.

16. The Global Plan is more costly than country budgets primarily because it anticipates greater activity on TB/HIV management and on advocacy, communication and social mobilization (ACSM), especially in the African and South-East Asia regions. While some of the costs of collaborative TB/HIV activities are covered by HIV/AIDS control programmes (e.g. for antiretroviral therapy), NTPs are proposing to do less than described in the Global Plan. The Global Plan includes a large budget for ACSM but, in the absence of systematic guidance in 2006 (to be published in 2007), NTP budgets were typically small and activities uneven.

17. Budgetary trends over the period 2002–2007 can be assessed for the 22 HBCs. NTP budgets grew from just over US$ 500 million in 2002 to US$ 1.25 billion in 2007. Total costs increased from US$ 644 million in 2002 to US$ 1.65 billion in 2007. Funding has increased from US$ 644 million in 2002 to US$ 1.4 billion in 2007 (US$ 241 million from donors, including US$ 168 million from the Global Fund to Fight AIDS, Tuberculosis and Malaria (GFATM) and US$ 1.2 billion from national governments).

18. In 2007, six countries accounted for three-quarters of the NTP budgets reported by HBCs: Brazil, the Russian Federation, China, South Africa, India and Indonesia.

19. Between 2002 and 2007, there were big increases in domestic funding in China, the Russian Federation and South Africa; in other countries, most of the increased funding came from the GFATM.

20. In 2005, 11 HBCs (of 19 that provided data) spent 90% or more of the funds available, including Brazil, China, India, Myanmar and Viet Nam. Afghanistan and Pakistan spent less than half of the available funds. Kenya, Mozambique and UR Tanzania spent at least two-thirds of their funds in 2005, as compared with less than half in 2004.

21. Greater expenditure was strongly associated with improved case-finding in Bangladesh, China, DR Congo, India, Indonesia, Kenya, Myanmar and Nigeria. But there was no systematic relationship between incremental expenditure and improved case detection across all HBCs. The relationship between spending and case-finding needs to be investigated and understood country by country.

22. Most NTPs in HBCs have medium-term (e.g. five-year) strategic plans for TB control. These are in line with the Global Plan in a few countries, including Brazil, China (with the exception of MDR-TB treatment), Kenya, the Philippines and Viet Nam. Other countries need budgets that are more closely aligned with the Global Plan.

Towards goals and targets

More than 26 million TB patients have been treated under DOTS, but the world's TB control programmes narrowly missed the 2005 targets for case detection and cure, and are not yet on course to meet the Millennium Development Goals by 2015

23. WHO's 2005 targets for DOTS programmes of 70% case detection and 85% cure were narrowly missed globally: case detection was 60% (95%CL 52–69%); treatment success was 84%. However, both targets were achieved in the Western Pacific Region, and treatment success exceeded 85% in the South-East Asia Region.

24. Twenty-six countries achieved both targets, including China, the Philippines and Viet Nam; 67 countries achieved at least 70% case detection in 2005, and 57 countries reported a treatment success of 85% or more in the 2004 cohort.

25. If the global TB incidence rate is indeed falling, Millennium Development Goal 6 (Target 8) has already been satisfied, more than 10 years before the 2015 deadline.

26. Although the TB burden may be falling globally, the decline is not fast enough to meet the impact targets set by the Stop TB Partnership – to halve the 1990 prevalence and death rates by 2015. The Region of the Americas and the South-East Asia and Western Pacific regions are on track to reach these targets; the African, Eastern Mediterranean and European regions are not. Countries and regions are more likely to reach these targets if they can increase budgets and step up activities in line with the Global Plan.

27. Procedures for collecting financial and epidemiological data, and other information about programme performance, must be systematically improved. Comprehensive surveillance and monitoring, and well-designed surveys, are a prerequisite for the accurate evaluation of progress in TB control.

Principales constatations

Épidémie mondiale

La tuberculose reste l'une des principales causes de mortalité dans le monde, mais l'épidémie mondiale est sur le point de décliner.

1. Selon les estimations, il y a eu 8,8 millions de nouveaux cas de la tuberculose dans le monde, dont 7,4 millions en Asie et en Afrique subsaharienne. Au total, 1,6 millions de personnes sont mortes de la tuberculose, dont 195 000 patients infectés par le VIH.

2. La prévalence de la tuberculose et les taux de mortalité ont probablement diminué à l'échelle mondiale pendant plusieurs années. En 2005, l'incidence est restée stable ou a diminué dans les six régions de l'OMS, un pic mondial ayant été atteint. Toutefois, le nombre total de nouveaux cas de tuberculose a continué d'augmenter lentement à cause des chiffres observés dans les régions de l'Afrique, de la Méditerranée orientale et de l'Asie du Sud-Est.

DOTS et la stratégie Halte à la tuberculose

La plupart des services publics de santé reconnaissent désormais que la lutte antituberculeuse doit aller au-delà du DOTS, mais la stratégie Halte à la tuberculose, plus globale, n'est pas encore pleinement opérationnelle dans la plupart des pays.

3. Plus de 90 millions de cas ont été notifiés à l'OMS de 1980 à 2005 ; 26,5 millions ont été notifiés par les programmes DOTS entre 1995 et 2005 ; 10,8 millions de nouveaux cas à frottis positif ont été inscrits pour le traitement dans le cadre de programmes DOTS entre 1994 et 2004.

4. Le DOTS, fondement de la stratégie Halte à la tuberculose, a été appliqué dans 187 pays en 2005 ; 89% de la population mondiale vivait dans des régions où les services publics de santé le mettaient en œuvre.

5. Au total, 199 pays et territoires ont notifiés 5 millions d'épisodes de tuberculose en 2005 (nouveaux cas ou rechutes) ; les programmes DOTS ont signalé 2,3 millions de nouveaux cas de tuberculose pulmonaire à frottis positif en 2005 et 2,1 millions ont été enregistrés pour le traitement en 2004.

6. Disposer de personnel qualifié et très motivé est essentiel dans un programme de santé publique et pourtant, les plans de développement des ressources humaines élaborés par les programmes nationaux de lutte antituberculeuse (PNT) en 2005–2006 étaient de qualité très variable. Sur les 22 pays fortement touchés, 7 (dont 5 pays africains) avaient des plans avec une portée limitée ou en cours d'élaboration.

7. Pour un diagnostic rapide et un traitement efficace, il faut des laboratoires pleinement opérationnels et un approvisionnement fiable en médicaments. Pourtant, malgré certaines améliorations, dans toutes les régions de l'OMS des PNT ont signalé des ruptures de stock, un nombre trop faible de laboratoires, une faiblesse des contrôles de qualité et un nombre limité d'établissements pouvant faire des cultures et des tests de sensibilité aux médicaments. De nombreux programmes ont demandé une assistance technique à des organismes externes.

8. Dans le cadre du DOTS, près de 5 millions de patients ont été notifiés en 2005 et on s'attend à ce que le nombre total de cas diagnostiqués et traités en 2006 soit globalement conforme au Plan mondial « Halte à la tuberculose » 2006–2015. Toutefois, la détection des cas à frottis positif par les programmes DOTS a été variable selon les régions de l'OMS en 2005, de 35% (Europe) à 76% (Pacifique occidental). Ces variations devraient persister en 2006.

9. Bien qu'en augmentation, le nombre de patients VIH positifs et ceux présentant une tuberculose à bacilles multirésistants diagnostiqués et traités en 2005 a été beaucoup plus bas que celui envisagé par le Plan mondial pour 2006. Le dépistage du VIH chez les patients tuberculeux se développe rapidement dans la Région africaine, mais peu d'efforts ont été faits pour dépister la tuberculose chez les personnes infectées par le VIH, bien qu'il s'agisse d'une méthode relativement efficace de détection des cas. Les établissements pour diagnostiquer et traiter les tuberculoses à bacilles multirésistants, y compris les tuberculoses à bacilles ultrarésitants, sont peu nombreux; on ne connaît pas encore la véritable ampleur du problème posé par les tuberculoses à bacilles ultrarésistants.

10. Le taux de réussite des traitements pour les patients atteints de tuberculose à bacilles multirésistants dans les projets approuvés par le Comité Feu Vert (CFV) est près de 60%, ce qui est plus élevé que dans les projets hors de ce cadre.

11. La stratégie Halte à la tuberculose est un dispositif pour établir des liens entre les PNT, les acteurs du secteur de santé et les communautés. Les connexions établies par l'intermédiaire des soins de la tuberculose dans les communautés, par le DOTS associant le public et le privé ou encore par l'approche pratique de la santé respiratoire (APSR) ont réussi, à petite ou moyenne échelle, à améliorer l'accès au diagnostic et au traitement. Pour autant, aucun pays n'est encore parvenu à rendre toutes ces activités pleinement opérationnelles à l'échelle nationale.

12. Peu de PNT ont une vue d'ensemble de la recherche sur la tuberculose dans leur pays et peu ont le personnel qualifié et les financements nécessaires pour mener à bien des travaux essentiels de recherche opérationnelle.

Financement de la lutte antituberculeuse

Bien que les fonds disponibles se soient considérablement accrus depuis 2002 et atteignent US $2 milliards en 2007, il faudra disposer de US $1,1 milliard de plus pour exécuter les interventions de l'ampleur requise par le Plan mondial « Halte à la tuberculose » en 2007.

13. Les analyses financières données dans ce rapport reposent sur les données provenant de 90 pays, cumulant 90% des nouveaux cas en 2005, dont les 22 pays fortement touchés et 84 des pays étudiés dans le Plan mondial.

14. Pour l'ensemble des 90 pays analysés, le total des budgets des PNT indiqués pour 2007 se monte à US $1,6 milliard, avec un coût total de US $2,3 milliards (budgets des PNT plus les coûts des personnels des services de santé généraux et des infrastructures utilisés pour les traitements de la tuberculose), alors que la somme disponible est de US $2,0 milliards (il y a ainsi un déficit de financement de US $0,3 milliards).

15. Si les plans des pays étaient conformes au Plan mondial, le déficit de financement serait encore plus important que le chiffre indiqué pour 2007. La mise en œuvre du Plan mondial dans 84 pays coûterait US $3,1 milliards en 2007, soit 1,1 milliard de plus que ce dont on dispose. Pour les 22 pays fortement touchés, l'écart entre le Plan mondial et les fonds disponibles est de US $0,8 milliard.

16. Le Plan mondial est plus coûteux que les budgets des pays en premier lieu parce qu'il anticipe une activité plus importante pour la prise en charge de la tuberculose et du VIH, et pour le plaidoyer, la communication et la mobilisation sociale, en particulier dans les régions de l'Afrique et de l'Asie du Sud-Est. Si certains des coûts des activités de collaboration pour la lutte contre la tuberculose et le VIH sont couverts par les programmes de lutte contre le VIH/SIDA (par exemple les traitements antirétroviraux), les PNT proposent de faire moins que ce qui est décrit dans le Plan mondial. Ce dernier prévoit un budget important pour les activités de plaidoyer, communication et mobilisation sociale mais, en l'absence d'orientations systématiques en 2006 (devant être publiées en 2007), les budgets des PNT étaient réduits et les activités menées inégales.

17. On peut évaluer les tendances budgétaires sur la période 2006–2007 pour les 22 pays fortement touchés. Les budgets des PNT sont passés d'un peu plus de US $500 millions en 2002 à US $1,25 milliard en 2007, les coûts totaux de US $644 millions en 2002 à US $1,65 milliard en 2007 et les financements de US $644 millions en 2002 à US $1,4 milliard en 2007 (US $241 millions des donateurs, dont US $168 millions du Fonds mondial de lutte contre le SIDA, la tuberculose et le paludisme (Fonds mondial), et US $1,2 milliard des gouvernements nationaux).

18. En 2007, six pays ont représenté à eux seuls les trois quarts du budget total des PNT indiqués pour les pays fortement touchés : le Brésil, la Fédération de Russie, la Chine, l'Afrique du Sud, l'Inde et l'Indonésie.

19. Entre 2002 et 2007, on a observé une forte augmentation des financements nationaux en Chine, en Fédération de Russie et en Afrique du Sud ; dans les autres pays, la plupart de l'augmentation provenait du Fonds mondial.

20. En 2005, 11 pays fortement touchés (sur les 19 ayant fourni des données) ont dépensé au moins 90% des fonds disponibles, parmi lesquels le Brésil, la Chine, l'Inde, le Myanmar et le Viet Nam. L'Afghanistan et le Pakistan ont dépensé moins de la moitié des fonds disponibles. Le Kenya, le Mozambique et la République-Unie de Tanzanie en ont dépensé au moins les deux tiers, contre moins de la moitié en 2004.

21. Il y a une forte corrélation entre l'augmentation des dépenses et l'amélioration de la détection des cas au Bangladesh, en Chine, en République démocratique du Congo, en Inde, en Indonésie, au Kenya, au Myanmar et au Nigéria. Mais il n'y a pas de relation systématique entre l'augmentation des dépenses et l'amélioration de la détection des cas dans l'ensemble des pays fortement touchés. Cette relation devra être étudiée et comprise pays par pays.

22. La plupart des PNT des pays fortement touchés ont des plans stratégiques de lutte à moyen terme (5 ans par exemple). Dans quelques pays, Brésil, Chine (à l'exception du traitement de la tuberculose MR), Kenya, Philippines et Viet Nam, ils sont conformes au Plan mondial. Les autres pays doivent aligner davantage leur budget sur ce que prévoit le Plan mondial.

Réalisation des buts et des cibles

Plus de 26 millions de patients ont été traités avec le DOTS, mais les programmes de lutte dans le monde ont manqué de peu les cibles fixées pour la détection des cas et la guérison en 2005 et ne sont toujours pas dans les temps pour réaliser les objectifs du Millénaire pour le développement d'ici à 2015.

23. Les cibles fixées par l'OMS aux programmes DOTS pour 2005, soit la détection de 70% des cas et un taux de réussite des traitements de 85%, ont été manquée de peu à l'échelle mondiale : la détection des cas a été 60% (IC 95% : 52–69%) et le taux de réussite des trai-

tements de 84%. Cependant, ces deux cibles ont été atteintes dans la Région du Pacifique occidental et le taux de réussite a dépassé les 85% en Asie du Sud-Est.

24. Vingt-six pays ont atteint les deux cibles, dont la Chine, les Philippines et le Viet Nam ; 67 pays ont atteint au moins 70% de détection des cas en 2005 et 57 pays ont notifiés des taux de réussite des traitements d'au moins 85% pour la cohorte 2004.

25. Si l'incidence mondiale est bien en train de diminuer, alors l'objectif 6 du Millénaire pour le développement (cible 8) a déjà été atteint, plus de 10 ans avant la date butoir de 2015.

26. Bien que la charge de la tuberculose semble diminuer à l'échelle mondiale, cette baisse n'est pas assez rapide pour atteindre les cibles fixées par le partenariat Halte à la tuberculose : réduire de moitié la prévalence et le taux de mortalité d'ici à 2015 par rapport à 1990. Les régions des Amériques, de l'Asie du Sud-Est et du Pacifique occidental sont dans les temps pour y parvenir ; les régions de l'Afrique, de la Méditerranée orientale et de l'Europe ne le sont pas. Les pays et les régions auront de plus grandes chances d'atteindre les cibles s'ils peuvent augmenter les budgets et renforcer les activités, en accord avec le Plan mondial.

27. Les procédures de collecte des données financières, épidémiologiques et des informations sur le fonctionnement des programmes doivent être améliorées. Un système global de surveillance et de suivi, ainsi que des enquêtes bien conçues, sont les conditions indispensables à une évaluation précise des progrès de la lutte antituberculeuse.

Resultados principales

La epidemia mundial de tuberculosis

La tuberculosis (TB) sigue siendo una importante causa de muerte en todo el mundo, pero la epidemia mundial está a punto de empezar a disminuir

1. Se calcula que en 2005 hubo 8,8 millones de nuevos casos de TB, de los cuales 7,4 millones en Asia y África subsahariana. La TB causó la muerte de 1,6 millones de personas, entre ellas 195 000 infectadas por el VIH.

2. Las tasas mundiales de prevalencia y mortalidad de la TB probablemente han estado en descenso durante varios años. En 2005, la tasa de incidencia se mantuvo estable o disminuyó en las seis regiones de la OMS y en todo el mundo. Sin embargo, el número absoluto de nuevos casos siguió aumentando lentamente, debido a su aumento en las regiones de África, Mediterráneo Oriental y Asia Sudoriental.

El DOTS y la estrategia Alto a la Tuberculosis

La mayoría de los servicios de salud estatales reconocen que la lucha contra la TB debe ir más allá del DOTS, pero la estrategia más amplia de Alto a la Tuberculosis todavía no está en pleno funcionamiento en la mayoría de los países

3. Entre 1980 y 2005 se notificaron a la OMS más de 90 millones de casos de TB; entre 1995 y 2005 los programas de DOTS notificaron 26,5 millones de casos, y entre 1994 y 2004 registraron 10,8 millones de nuevos casos bacilíferos en tratamiento.

4. En 2005, el DOTS, sobre el que asienta la estrategia Alto a la Tuberculosis, se estaba aplicando en 187 países; el 89% de la población mundial vivía en zonas donde los servicios de salud públicos habían puesto en práctica el DOTS.

5. En 2005 se notificaron 5 millones de episodios de TB (casos nuevos y recidivas) en 199 países o zonas; los programas de DOTS notificaron 2,3 millones de nuevos casos de TB pulmonar bacilífera, y en 2004 se registraron 2,1 millones de casos en tratamiento.

6. La existencia de personal capacitado y muy motivado es fundamental para todo programa de salud pública, pero los planes de desarrollo de recursos humanos elaborados por los programas nacionales de lucha contra la TB (PNT) en 2005–2006 tuvieron una calidad muy variable. De los 22 países con alta carga de TB (PAC), siete (entre ellos cinco africanos) tenían planes de alcance reducido o que aún estaban en desarrollo.

7. El diagnóstico rápido y el tratamiento eficaz requieren laboratorios que funcionen a pleno rendimiento y un suministro fiable de medicamentos. A pesar de algunas mejoras, hubo en todas las regiones de la OMS PNT que notificaron agotamiento de las existencias de medicamentos, escasez de laboratorios, control deficiente de la calidad y escasez de servicios donde se pudieran realizar cultivos y pruebas de sensibilidad a los antibióticos. Muchos PNT pidieron más asistencia técnica a organismos externos.

8. En 2005 los programas de DOTS notificaron cerca de 5 millones de pacientes con TB, y se espera que el número total de casos diagnosticados y tratados en 2006 se ajuste aproximadamente al Plan Mundial para Detener la Tuberculosis 2006-2015. Sin embargo, la tasa de detección de casos bacilíferos en los programas de DOTS en 2005 osciló en las diferentes regiones de la OMS entre el 35% en Europa y el 76% en el Pacífico Occidental, y es probable que estas variaciones persistan en 2006.

9. El número de pacientes VIH-positivos y de pacientes con TB multirresistente diagnosticados y tratados en 2005 aumentó, pero siguió siendo muy inferior al propuesto en el Plan Mundial para 2006. La realización de pruebas de detección del VIH en pacientes con TB está aumentando rápidamente en la Región de África, pero los esfuerzos realizados para detectar la TB en pacientes infectados por el VIH han sido escasos, a pesar de que se trata de un método relativamente eficiente de identificación de casos. Todavía no existe una amplia disponibilidad de servicios que permitan diagnosticar y tratar la TB multirresistente, incluyendo la TB extremadamente resistente (XDR-TB); tampoco se conoce la magnitud mundial del XDR-TB problema.

10. La tasa de éxito del tratamiento de los pacientes con TB multirresistente en proyectos aprobados por el Comité Luz Verde estuvo cerca al 60%, cifra más elevada que la registrada en proyectos no aprobados por dicho comité.

11. La estrategia Alto a la Tuberculosis es un mecanismo para establecer vínculos entre los PNT, los proveedores de salud y las comunidades. A pequeña o mediana escala, se ha demostrado que las conexiones establecidas a través de la atención antituberculosa en la comunidad (DOTS comunitario), la participación mixta publicoprivada en el DOTS (PPM) y el Enfoque práctico de la salud pulmonar (PAL) han mejorado el acceso al diagnóstico y al tratamiento. Sin embargo, todavía no ha habido ningún país que haya conseguido poner todas estas actividades en pleno funcionamiento a escala nacional.

12. Pocos PNT tienen una visión general de la investigación sobre la TB en sus países, y pocos disponen de la financiación y del personal capacitado necesarios para llevar a cabo investigaciones operativas esenciales.

Financiación de la lucha contra la TB

Aunque los fondos disponibles para la lucha contra la TB han aumentado muchísimo desde 2002 y alcanzado los US$ 2000 millones en 2007, las intervenciones a la escala que requiere el Plan Mundial para Detener la Tuberculosis costarían US$ 1100 millones más en 2007

13. Los análisis financieros que figuran en este informe se basan en los datos de 90 países que representan el 90% de los nuevos casos de TB estimados en 2005, y entre los cuales se encuentran los 22 PAC y 84 de los países considerados en el Plan Mundial.

14. En los 90 países analizados, los presupuestos de los PNT para 2007 ascienden a US$ 1600 millones, y el costo total (presupuestos de los PNT más costos de personal y de infraestructura del sistema de salud general utilizados para el tratamiento de la TB) a US$ 2300 millones. Teniendo en cuenta que los fondos disponibles son US$ 2000 millones, el déficit financiero es de US$ 300 millones.

15. Si los planes de los países coincidieran con el Plan Mundial, el déficit financiero en 2007 sería mucho más elevado. El Plan Mundial en 84 países costaría US$ 3100 millones en 2007, esto es, US$ 1100 millones más que los fondos disponibles. La diferencia entre el Plan Mundial y los fondos disponibles en los 22 PAC es de US$ 800 millones.

16. El costo del Plan Mundial es superior al de los presupuestos de los países, sobre todo porque prevé más actividades en el manejo de TB/VIH y de promoción, comunicación y movilización social (ACSM), especialmente en las regiones de África y Asia Sudoriental. Aunque algunos costos de las actividades colaborativas TB/VIH son cubiertas por los programas de lucha contra el VIH/SIDA (p.ej., el tratamiento antirretrovírico), los PNT se proponen llevar a cabo menos actividades que las previstas en el Plan Mundial. El Plan Mundial prevé un gran presupuesto para actividades de promoción, comunicación y movilización social, pero en ausencia de orientación sistemática en 2006 (se publicará en 2007), los presupuestos de los PNT fueron generalmente pequeños y las actividades desiguales.

17. En los 22 PAC se pueden evaluar las tendencias presupuestarias en el periodo 2002–2007. Los presupuestos de los PNT aumentaron de poco más de US$ 500 millones en 2002 a US$ 1250 millones en 2007. Los costos totales aumentaron de US$ 644 millones en 2002 a US$ 1650 millones en 2007. La financiación aumentó de US$ 644 millones en 2002 a US$ 1400 millones en 2007 (US$ 241 millones de los donantes, incluidos US$ 168 millones del Fondo Mundial de Lucha contra el SIDA, la Tuberculosis y la Malaria, y US$ 1200 millones de los gobiernos nacionales).

18. En 2007, tres cuartos de los presupuestos de los PNT de los PAC correspondieron a seis países: Brasil, China, la Federación de Rusia, la India, Indonesia y Sudáfrica.

19. Entre 2002 y 2007 hubo grandes aumentos de la financiación nacional en China, la Federación de Rusia y Sudáfrica; en otros países, la mayor parte del aumento de la financiación procedió del Fondo Mundial de Lucha contra el SIDA, la Tuberculosis y la Malaria.

20. En 2005, 11 de los 19 PAC que proporcionaron datos, entre ellos Brasil, China, la India, Myanmar y Viet Nam, gastaron el 90% o más de los fondos disponibles. Afganistán y Pakistán gastaron menos de la mitad de esos fondos. Kenya, Mozambique y la República Unida de Tanzanía gastaron al menos dos tercios de sus fondos en 2005, en comparación con menos de la mitad en 2004.

21. El aumento del gasto se asoció estrechamente al aumento de la detección de los casos en Bangladesh, China, la India, Indonesia, Kenya, Myanmar, la República Democrática del Congo y Nigeria. Sin embargo, no hubo una relación sistemática entre el aumento del gasto y la mejora de la detección de los casos en todos los PAC. La relación entre el gasto y la detección de los casos tiene que investigarse y analizarse país por país.

22. Los PNT de la mayoría de los PAC tienen planes estratégicos a plazo medio (p.ej., 5 años) para el control de la TB. En un pequeño número de países, como Brasil, China (con la excepción del tratamiento de la TB multirresistente), Kenya, Filipinas y Viet Nam, esos planes se ajustan al Plan Mundial. Otros países necesitan un mayor acercamiento entre sus presupuestos y el Plan Mundial.

Los progresos hacia los objetivos y metas

Más de 26 millones de pacientes con TB han sido tratados bajo DOTS, pero los programas de lucha contra la TB por poco no han alcanzado las metas mundiales de detección y curación para 2005,y no están en el buen camino para lograr los Objetivos de Desarrollo del Milenio para 2015

23. Las metas mundiales de la OMS para 2005, consistentes en lograr la detección de un 70% de los casos y la curación del 85% en los programas de DOTS, no se alcanzaron por poco: la detección de casos fue del 60% (IC95%: 52%–69%) y el éxito del tratamiento del 84%. No obstante, en la Región del Pacífico Occidental se alcanzaron ambas metas, y en la Región de Asia Sudoriental el éxito del tratamiento superó el 85%.

24. En 26 países, entre ellos China, Filipinas y Viet Nam, se alcanzaron ambas metas; en 67 se logró detectar al menos el 70% de los casos en 2005, y en 57 se logró el éxito del tratamiento en el 85% o más de los casos de la cohorte de 2004.

25. Si la tasa mundial de incidencia de la TB está efectivamente disminuyendo, ya se ha cumplido el Objetivo de Desarrollo del Milenio número 6 (Meta 8), más de 10 años antes de la fecha prevista (2015).

26. Aunque la carga de TB puede estar disminuyendo a nivel mundial, la disminución no es suficientemente rápida como para que se puedan alcanzar las metas de impacto fijadas por la Alianza Alto a la Tuberculosis: reducir las tasas de prevalencia y mortalidad de 1990 a la mitad en 2015. Las regiones de las Américas, Asia Sudoriental y Pacífico Occidental están en el buen camino para alcanzar estas metas, pero no ocurre lo mismo con las de África, Europa y Mediterráneo Oriental. La probabilidad de que los países y regiones alcancen estas metas aumentará si consiguen aumentar los presupuestos y ajustar sus actividades al Plan Mundial.

27. Hay que lograr una mejora sistemática de los procedimientos de recopilación de datos financieros y epidemiológicos, así como de otras informaciones sobre el desempeño de los programas. La vigilancia y monitorización integrales y las encuestas bien diseñadas son requisitos imprescindibles para una evaluación precisa de los progresos realizados en materia de control de la TB.

Introduction

Global Tuberculosis Control 2007, the eleventh annual report in the series, marks a watershed in the epidemiology and control of tuberculosis (TB). With the latest surveillance data (for 2005), we can ask whether national TB control programmes (NTPs) around the world met the 2005 targets of 70% case detection and 85% cure set by the World Health Assembly.[1,2] Looking forward from 2006, we can consider how effectively the Stop TB Strategy[3] was launched in its first year, through implementation of *The Global Plan to Stop TB, 2006–2015*.[4] And, as international debate about TB control focuses more on epidemiological impact (as the consequence of implementation), we can assess whether countries with a high burden of TB, regions of the World Health Organization (WHO) and the world as a whole are on track to meet the United Nations Millennium Development Goals (MDGs) for TB by 2015.

To satisfy these general aims we present, as usual, WHO's assessment of the scale and direction of the epidemic, expressed in terms of incidence, prevalence and deaths for 22 high-burden countries (HBCs), for the six WHO regions, for selected subregions and for the entire world. Within the framework of the MDGs, the principal target for TB control is to ensure that the global incidence rate is falling by 2015.[5] Supplementary targets, endorsed by the Stop TB Partnership, are to halve the 1990 prevalence and death rates by 2015.[6] The tables and annexes in this report therefore give estimates of all three key indicators and their trends, for all countries and regions, in 1990 and 2005.

The principal mechanism for achieving these impact targets is the treatment of patients with active TB, following the Stop TB Strategy. The new strategy embraces the fundamentals of TB control originally framed as DOTS, but extends the reach of control activities into other key areas. These include the well-known problems of multidrug-resistant TB, or MDR-TB (and now also extensively drug-resistant TB[7]) and of TB associated with the human immunodeficiency virus (HIV). But the strategy also broadens the remit of NTPs by placing the task of TB control in the context of health system performance, by encouraging the participation of all health-care providers (not just those working for government health institutions), by empowering TB patients and communities who suffer from TB and by promoting research. This report therefore presents, in addition to case notifications and treatment outcomes, an overview of the progress being made by NTPs on all components of the Stop TB Strategy, linking the activities in countries with funding sources, costs, budgets and expenditures.

Between 1980 and 2005, 90 million TB patients were registered in national surveillance systems and reported to WHO, and more than 26 million were notified by DOTS programmes since 1995. This vast body of surveillance data suggests that the global TB incidence rate peaked sometime between 2000 and 2005, although the total number of new cases is still rising each year. If that assessment is correct, the global TB epidemic is now on the threshold of decline.

To establish and verify key observations on the TB epidemic, WHO compiles and analyses more information each year. With each annual round of data collection, our epidemiological assessments are based on better surveillance and survey data. Planning for TB control, and reports on the process of planning and implementation, are more comprehensive and better targeted to the needs of national control programmes. The financial monitoring system accounts, with increasing accuracy, for the money raised and spent on TB control each year. In short, *Global Tuberculosis Control 2007* presents the best possible overview of progress in reducing the immense burden of TB worldwide.

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1 Resolution WHA44.8. Tuberculosis control programme. In: *Handbook of resolutions and decisions of the World Health Assembly and the Executive Board*. Volume III, 3rd ed. (1985–1992). Geneva, World Health Organization, 1993 (WHA44/1991/REC/1).

2 *Stop Tuberculosis Initiative. Report by the Director-General*. Fifty-third World Health Assembly. Geneva, 15–20 May 2000 (A53/5, 5 May 2000; available at www.who.int/gb/ebwha/pdf_files/WHA53/ea5.pdf).

3 Raviglione MC, Uplekar MW. WHO's new Stop TB Strategy. *Lancet*, 2006, 367:952–955.

4 *The Global Plan to Stop TB, 2006–2015* was launched by the Stop TB Partnership in January 2006. It describes how the Stop TB Strategy should be implemented over the next decade, including associated costs, and the expected epidemiological impact in seven regions of the world.

5 The Millennium Development Goals are described in full at unstats.un.org/unsd

6 Dye C et al. Targets for global tuberculosis control. *International Journal of Tuberculosis and Lung Disease*, 2006, 10:460–462.

7 See: XDR-TB, extensively drug-resistant tuberculosis, at www.who.int/tb/xdr/en/index.html

Methods

Monitoring progress in TB control (1995–2005)

Goals, targets and indicators for TB control

The target and indicators for TB control, defined within the framework of the MDGs, have been supplemented and endorsed by the Stop TB Partnership (Table 1).[1] These will be used to measure progress made under the Stop TB Strategy,[2] which extends and enhances the DOTS strategy (Tables 2, 3). The Global Plan to Stop TB[3] describes how the Stop TB Strategy should be implemented over the decade 2006–2015.

This report focuses on the five principal indicators that are used to measure the implementation and impact of TB control: case detection and treatment success, and incidence, prevalence and deaths. The objective of reducing incidence is made explicit by MDG Target 8; the targets of 70% case detection and 85% treatment success were set by WHO's World Health Assembly;[4] the targets for prevalence and deaths are based on a resolution of the year 2000 meeting of the Group of Eight (G8) industrialized countries, held in Okinawa, Japan. The targets for case detection and treatment success should have been reached by the end of 2005. This report presents the best possible assessment, based on case reports to the end of 2005, of whether the targets were reached in the world as a whole, and in each WHO region and country.

Data collection and verification

Every year, WHO requests information from NTPs or relevant public health authorities in 212 countries or territories[5] via a standard data collection form.[6] The latest form was distributed in mid-2006. The section dealing with monitoring and surveillance asked for data including the following: whether the elements of DOTS and the Stop TB Strategy were being implemented during 2005; DOTS population coverage in 2005; TB case notifications in 2005 (from DOTS and non-DOTS areas, each with 12 categories; new pulmonary smear-positive cases by age and sex); TB patients tested for HIV and MDR-TB in 2005; and treatment outcomes for TB patients registered during 2004 (DOTS, non-DOTS, HIV-infected, each with 7 categories) and MDR-TB patients registered during 2002

TABLE 1

Goals, targets and indicators for TB control

MILLENNIUM DEVELOPMENT GOAL 6	
Combat HIV/AIDS, malaria and other diseases	
Target 8:	Have halted by 2015 and begun to reverse the incidence of malaria and other major diseases
Indicator 23:	Prevalence and death rates associated with tuberculosis
Indicator 24:	Proportion of tuberculosis cases detected and cured under DOTS (the internationally recommended strategy for TB control)
STOP TB PARTNERSHIP TARGETS	
By 2005:	At least 70% of people with sputum smear-positive TB will be diagnosed (i.e. under the DOTS strategy), and at least 85% cured. These are targets set by the World Health Assembly of WHO.
By 2015:	The global burden of TB (per capita prevalence and death rates) will be reduced by 50% relative to 1990 levels.
By 2050:	The global incidence of active TB will be less than 1 case per million population per year.

TABLE 2

Components of the Stop TB Strategy

1. **Pursuing high-quality DOTS expansion and enhancement**
   a. Political commitment with increased and sustained financing
   b. Case detection through quality-assured bacteriology
   c. Standardized treatment with supervision and patient support
   d. An effective drug supply and management system
   e. Monitoring and evaluation system, and impact measurement
2. **Addressing TB/HIV, MDR-TB and other challenges**
   — Implement collaborative TB/HIV activities
   — Prevent and control MDR-TB
   — Address prisoners, refugees, other high-risk groups and special situations
3. **Contributing to health system strengthening**
   — Actively participate in efforts to improve system-wide policy, human resources, financing, management, service delivery and information systems
   — Share innovations that strengthen health systems, including the Practical Approach to Lung Health (PAL)
   — Adapt innovations from other fields
4. **Engaging all care providers**
   — Public–Public and Public–Private Mix (PPM) approaches
   — Implement International Standards for Tuberculosis Care
5. **Empowering people with TB, and communities**
   — Advocacy, communication and social mobilization
   — Community participation in TB care
   — Patients' Charter for Tuberculosis Care
6. **Enabling and promoting research**
   — Programme-based operational research
   — Research to develop new diagnostics, drugs and vaccines

[1] Dye C et al. Targets for global tuberculosis control. *International Journal of Tuberculosis and Lung Disease*, 2006, 10:460–462.
[2] Raviglione MC, Uplekar MW. WHO's new Stop TB Strategy. *Lancet*, 2006, 367:952–955.
[3] *The Global Plan to Stop TB, 2006–2015*. Geneva, Stop TB Partnership and World Health Organization, 2006 (WHO/HTM/STB/2006.35).
[4] Resolution WHA44.8. Tuberculosis control programme. In: *Handbook of resolutions and decisions of the World Health Assembly and the Executive Board*. Volume III, 3rd ed. (1985–1992). Geneva, World Health Organization, 1993 (WHA44/1991/REC/1).
[5] Serbia and Montenegro were treated as separate countries from 2005 onwards, increasing the 2004 total by one.
[6] Posted at www.who.int/tb/country/en/

TABLE 3

Technical elements of the DOTS strategy

Case detection through quality-assured bacteriology Case detection among symptomatic patients self-reporting to health services, using sputum smear microscopy. Sputum culture is also used for diagnosis in some countries, but direct sputum smear microscopy should still be performed for all suspected cases.
Standardized treatment with supervision and patient support 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 re-treatment regimen. In countries that have consistently documented high rates of treatment success, DOT 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.
An effective drug supply and management system Establishment and maintenance of a system to supply all essential anti-TB drugs and to ensure no interruption in their availability.
Monitoring and evaluation system, and impact measurement Establishment and maintenance of a standardized recording and reporting system, allowing assessment of treatment results (see Tables 4, 5).

(GLC-approved and other, each with 3 categories). The main case definitions are given in Table 5.

The data collection form used in the WHO European Region asked for additional data, including a breakdown of all TB cases by age, geographical origin (e.g. born outside country/non-citizen) and mycobacterial culture result; all TB cases by HIV serostatus and age; and HIV-positive TB cases by sex and age. For NTPs in the 63 countries that account for 98% of all HIV-infected TB patients, the data collection form was extended to obtain further information about TB linked to HIV infection (see **Collaborative TB/HIV activities**).

As NTPs respond to WHO, they are also asked to update information for earlier years if they are able to do so. As a result of such revisions, the data (case notifications, treatment outcomes, etc.) presented in this report for years preceding 2004 and 2005 may differ from those published in previous reports.

The standard data collection form is used to compile aggregated national data. The process of national and international reporting is distinct from WHO's recommendations about procedures for recording and reporting data by NTPs within countries, from district level upwards.[1]

Completed forms are collected and reviewed at all levels of WHO, by country offices, regional offices and at headquarters. An acknowledgement form that tabulates all submitted data is sent back to the NTP correspondent in order to complete any missing responses and to resolve any inconsistencies. Then, using the complete set of data for each country, we construct a profile that tabulates all key indicators, including epidemiological and financial data and estimates, and this too is returned to each NTP for review. In the WHO European Region only, data collection and verification are performed jointly by the regional office and a WHO collaborating centre, EuroTB (Paris). EuroTB subsequently publishes an annual report with additional analyses, using more detailed data for the European Region (www.eurotb.org).

High-burden countries, WHO regions and other subregions of the world

Much of the data submitted to WHO is shown, country by country, in the annexes of this report. The analysis and interpretation that precede these annexes focus on 22 HBCs and the six WHO regions. The 22 HBCs account for approximately 80% of the estimated number of new TB cases (all forms) arising worldwide each year. These countries are the focus of intensified efforts in DOTS expansion (Annex 1). The HBCs are not necessarily those with the highest incidence rates per capita; many of the latter are medium-sized African countries with high rates of TB/HIV coinfection. The WHO regions are the African Region, the Region of the Americas, the Eastern Mediterranean Region, the European Region, the South-East Asia Region and the Western Pacific Region. All essential statistics are summarized for each of these regions and globally. However, to make clear the differences in epidemiological trends within regions, we divide the African Region into countries with low and high rates of HIV infection ("high" is an infection rate of ≥4% in adults aged 15–49 years, as estimated by UNAIDS in 2004). We also distinguish central from eastern Europe (countries of the former Soviet Union plus Bulgaria and Romania), and combine western European countries with the other established market economies. The countries within each of the resulting nine subregions are listed in the legend to Figure 5.

Implementation of DOTS and the Stop TB Strategy

DOTS remains central to the public health approach to TB control, which is now presented as the Stop TB Strategy (Table 2). Before the launch of the strategy during 2006, NTPs reporting to WHO were classified as either DOTS or non-DOTS, based on the elements listed in Tables 2 and 3. To be classified as DOTS in this report, a country must have officially accepted and adopted the strategy in 2005, and must have implemented the four technical components of DOTS in at least part of the country (Annex 2). Based on NTP responses to standard questions about policy – and usually on further discussion with the NTP – we have accepted or revised each country's own determination of its DOTS status.

[1] Revised procedures for recording and reporting at district level are described at www.who.int/tb/publications/recording_and_reporting_draft/en/index.html

DOTS coverage

Coverage is defined as the percentage of the national population living in areas where health services have adopted DOTS. "Areas" are the lowest administrative or basic management units[1] in the country (townships, districts, counties, etc.). If an area (with its one or more health facilities) is considered by the NTP to have been a DOTS area in 2005, then all the cases registered and reported by the NTP in that area are considered DOTS cases, and the population living within the boundaries of that area counts towards the national DOTS coverage. In some cases, treatment providers that are not following DOTS guidelines (e.g. private practitioners, or public health services outside the NTP such as those within prisons) notify cases to the NTP. These cases are considered non-DOTS cases, even if they are notified from within DOTS areas. However, when certain groups of patients treated by DOTS services receive special regimens or management (e.g. nomads placed on longer courses of treatment), these are considered DOTS cases. Where possible, additional information about these special groups of patients is provided in the country notes in Annex 2. Ideally, the DOTS coverage in any one year should be calculated by evaluating the number of person-years covered in each quarter, and then summing across the four quarters of the year (although some countries simply report the population coverage achieved by the end of the year).

DOTS coverage calculated as described above is a crude indicator of the actual proportion of people who have access to DOTS services, but it is easy to calculate and is most useful during the early stages of DOTS expansion. As a measure of patient access to diagnosis and treatment under DOTS, coverage is an approximation, and usually an overestimate. Where countries are able to provide more precise information about access to DOTS services, this information is reported in the country notes of Annex 2. The case detection rate (defined below) is a more precise measure of DOTS implementation but is also more demanding of data.

Estimating TB incidence, prevalence and death rates

Estimates of TB incidence, prevalence and deaths are based on a consultative and analytical process. They are revised annually to reflect new information gathered through surveillance (case notifications and death registrations) and from special studies (including surveys of the prevalence of infection and disease). The details of estimation are described elsewhere.[2,3,4] In brief, estimates of incidence (number of new cases arising each year) for each country are derived using one or more of four approaches, depending on the available data:

$$\text{incidence} = \frac{\text{case notifications}}{\text{proportion of cases detected}} \qquad (1)$$

$$\text{incidence} = \frac{\text{prevalence}}{\text{duration of condition}} \qquad (2)$$

$$\text{incidence} = \text{annual risk of infection} \times \text{Stýblo coefficient} \qquad (3)$$

$$\text{incidence} = \frac{\text{deaths}}{\text{proportion of incident cases who die}} \qquad (4)$$

The Stýblo coefficient in equation (3) is taken to be a constant, with an empirically derived value in the range 40–60, relating risk of infection (% per year) to the incidence of sputum smear-positive cases (per 100 000 per year). Given two of the quantities in any of these equations, we can calculate the third, and these formulae can be rearranged to estimate incidence, prevalence and death rates. The available data differ from country to country, and not all methods can be applied in every country.

Among all new, HIV-negative TB patients, 45% are assumed to be smear-positive (ranging uniformly between 40% and 50% in uncertainty analysis). Among HIV-positive TB patients, the fraction is smaller (35%, range 30–40%). Because most NTPs still do not routinely test TB patients for HIV infection, we have used, for all countries, an indirect estimate of the prevalence of HIV among new TB patients, calculated from:

$$\text{prevalence of HIV in new TB patients} = \frac{p_{\text{HIV}} \times \text{IRR}}{1 + p_{\text{HIV}}(\text{IRR} - 1)} \qquad (5)$$

where p_{HIV} is HIV prevalence in the adult population (15–49 years) and IRR is the incidence rate ratio, i.e. the TB incidence rate in HIV-infected adults divided by the TB incidence rate in HIV-uninfected adults. IRR takes values of 30 (range 21–39, with a triangular distribution in uncertainty analysis) for the established market economies and 6.0 (range 3.5–8.0) for all other countries.[5]

1 The basic management unit is defined in terms of management, supervision, and monitoring responsibility. It may have several treatment facilities, one or more laboratories, and one or more hospitals. The defining aspect is the presence of a manager or coordinator who oversees TB control activities for the unit and who maintains a master register of all TB patients being treated, which is used to monitor the programme and report on indicators to higher levels.

2 Dye C et al. Global burden of tuberculosis: estimated incidence, prevalence and mortality by country. *Journal of the American Medical Association*, 1999, 282:677–686.

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

4 Dye C et al. Evolution of tuberculosis control and prospects for reducing tuberculosis incidence, prevalence, and deaths globally. *Journal of the American Medical Association*, 2005, 293:2767–2775.

5 Corbett EL et al. The growing burden of tuberculosis: global trends and interactions with the HIV epidemic. *Archives of Internal Medicine*, 2003, 163:1009–1021. The estimated IRR of 30 for the established market economies was reduced from the original estimate of 60 based on 2001 data published by the United States Centers for Disease Control and Prevention. The estimate of 6 for all other countries was reviewed with a new compilation of data, made in January 2007, from approximately 200 studies. The new analysis gave a point estimate of IRR close to 6, on which basis we retained the original estimate used by Corbett et al. Further details are available from tbdocs@who.int

For each country, estimates of incidence for each year during the period 1995–2005 were made as follows. We first selected a reference year for which we have a best estimate of incidence; this may be the year in which a survey was carried out, or the year for which incidence was first estimated. We then use the series of case notifications (all new and relapse cases) to determine how incidence changed before and after that reference year. The time series of estimated incidence rates is constructed from the notification series in one of two ways: if the rate of change of case notifications is roughly constant through time, we fitted exponential trends to the notification series (subregions Africa low-HIV, Latin America, South-East Asia, Western Pacific); if the rate varies through time (subregions Africa high-HIV, Central Europe, Eastern Europe, Eastern Mediterranean, Established Market Economies), we used a three-year moving average of the notification rates. If the notifications for any country are considered to be an unreliable guide to trend (e.g. because reporting effort is known to have changed; or because reports are clearly erratic, changing in a way that cannot be attributed to TB epidemiology), we applied the aggregated trend for all other countries from the same epidemiological region that have reliable data. For some countries, we used an assessment of the trend in incidence based on risk of infection derived from other sources (tuberculin surveys for China and Nepal). For those countries that have no reliable data from which to assess trends in incidence (e.g. for countries such as Iraq and Pakistan, for which data are hard to interpret, and which are atypical within their own regions), we assumed that incidence is stable.

Estimates of incidence form the denominator of the case detection rate. Trends in incidence are governed by underlying epidemiological processes, modified by control programmes. The impact of control on prevalence is determined by the trend in incidence and by the estimated reduction in the duration of the condition, e.g. smear-positive disease.

The prevalence of TB is calculated from the product of incidence and duration of disease (rearranging equation 2), and the TB mortality rate from the product of incidence and case fatality (proportion of incident cases who ever die from TB; equation 4). The duration of disease and the case fatality are estimated, country by country, for patients treated within or outside DOTS programmes and for patients who receive no recognized anti-TB treatment. Because the duration of disease and case fatality are typically shorter for patients treated under DOTS than for patients who are treated elsewhere or untreated, the average duration of disease and average case fatality decrease as the proportion of patients treated under DOTS increases.[1,2,3]

Where population sizes are needed to calculate TB indicators, we use the latest revision of estimates provided by the United Nations Population Division.[4] These estimates sometimes differ from those made by the countries themselves, some of which are based on more recent census data. The estimates of some TB indicators, such as the case detection rate, are derived from data and calculations that use only rates per capita, and discrepancies in population sizes do not affect these indicators. Where rates per capita are used as a basis for calculating numbers of TB cases, these discrepancies sometimes make a difference. Some examples of important differences are given in the country notes in Annex 2.

Because accurate measurement is crucial in the evaluation of epidemic trends, Table 4 provides some methodological guidance, based on a review by a WHO panel of experts in June 2006. Table 4 can be read in conjunction with the list of countries that have done, or are planning, infection (tuberculin) and disease prevalence surveys, and with the set of countries that now register deaths by cause and provide these data to WHO (including TB; Annex 3).

Case notification and case detection

Sputum 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. As a measure of the quality of diagnosis, we calculate the proportion of new smear-positive cases out of all new pulmonary cases, which has an expected value of at least 65% in areas with negligible HIV prevalence.[5]

The term "case notification", as used here, means that TB is diagnosed in a patient and is reported within the national surveillance system, and then to WHO. While the emphasis is on new smear-positive cases, we also present the numbers of all TB cases reported – smear-positive and smear-negative pulmonary cases – in addition to those in whom extrapulmonary disease is diagnosed. The number of cases notified in any year is the sum of new and relapse cases. Case reports that represent a second registration of the same patient/episode (i.e. re-treatment after failure or default) are presented separately.

The case detection rate is calculated as the number of cases notified divided by the number of cases estimated for that year, expressed as a percentage. Detection is presented in four main ways: (a) for new smear-positive cases

1 Dye C et al. Global burden of tuberculosis: estimated incidence, prevalence and mortality by country. *Journal of the American Medical Association*, 1999, 282:677–686.

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

3 Dye C et al. Evolution of tuberculosis control and prospects for reducing tuberculosis incidence, prevalence, and deaths globally. *Journal of the American Medical Association*, 2005, 293:2767–2775.

4 *World population prospects – the 2002 revision*. New York, United Nations Population Division, 2003.

5 *Tuberculosis handbook*. Geneva, World Health Organization, 1998 (WHO/TB/98.253).

TABLE 4

Methods to measure progress in TB control: recommendations of a WHO task force (June 2006)[a]

Routine TB surveillance and monitoring

- Routine surveillance (all reported cases) and monitoring (treatment outcomes) should be considered the ultimate method of evaluating TB epidemiology and control.
- All national TB control programmes (NTPs) should strengthen and evaluate the performance of systems for reporting TB cases so that the data reflect, to a close approximation, the true incidence of TB and its time trend. The process of evaluation should be supported by appropriate operational research studies.
- The analysis of disaggregated surveillance data should be encouraged (e.g. clinic, district, province; by age, sex, etc.) so as to draw out the maximum information on the TB epidemic and the impact of control measures.
- Appropriate computer software should be developed and implemented to improve routine recording and reporting.

Surveys of disease prevalence

- Countries with high and intermediate TB burdens are encouraged to carry out one or a series of disease prevalence surveys if these are likely to be beneficial in assessing prevalence and trends, and/or optimizing planning for TB control. The decision to carry out a prevalence survey in any country should be guided by criteria (to be further defined), which will include:
  - Poor information on burden and trends of TB disease
  - Functional TB control programme that can utilize survey results to guide implementation of control activities
  - High HIV burden
  - Weak or poorly informative surveillance system
  - Available experience and expertise (national and/or international)
  - Willingness of the NTP to support national prevalence surveys
  - Full participation of population to be surveyed
  - Logistic feasibility and security for field staff

Surveys of infection prevalence

- Acknowledging the importance of measuring infection, but understanding the limitations of the tuberculin technique, tuberculin skin test surveys (TSTs) are recommended only in settings where they are likely to be informative about the prevalence and risk of infection and its trend. A TST is not guaranteed to give interpretable results in any setting, but is more likely to be useful for measuring trends, and where there is:
  - data on infection prevalence from previous surveys
  - a firm plan to repeat surveys
  - a high risk of infection
  - capacity to ensure strict adherence to standardized methodology
- In view of the evidence provided by tuberculin surveys conducted in the past decade, it is no longer generally advisable to estimate the incidence of TB (smear-positive cases) from the annual risk of infection by applying the Styblo rule (incidence of ss+ TB increases by 50/100 000 population for every 1% increase in annual risk of infection). However, the rule appears still to apply in some countries, notably India, and WHO estimates for some countries have, in the absence of better information, been derived by this method.

Evaluating TB mortality

- The accuracy of the current cohort monitoring system in correctly capturing deaths among TB patients should be reviewed and optimized.
- The study of TB mortality in the general population (i.e. outside treatment cohorts) should be undertaken in the context of studies of all causes of death.
  - Vital registration. NTPs should ensure linkages and cross-referencing of data from cohort monitoring with data from available and developing death registration systems, thereby improving vital statistics.
  - Verbal autopsy. Further evaluations are needed to establish the reliability and validity of verbal autopsies as a way of evaluating TB deaths in the general population, and their feasibility within general cause-of-death surveys.

[a] The full set of recommendations is available at www.who.int/tb/country/en/

(excluding relapses); (b) for all new cases (all clinical forms of TB, excluding relapses); (c) for DOTS programmes only; or (d) for cases notified from all sources (DOTS and non-DOTS areas). For new smear-positive cases aggregated as in (c) and (d):

$$\text{DOTS case detection rate} = \frac{\text{annual new smear-positive notifications (DOTS)}}{\text{estimated annual new smear-positive incidence (country)}} \quad (6)$$

$$\text{Case detection rate} = \frac{\text{annual new smear-positive notifications (country)}}{\text{estimated annual new smear-positive incidence (country)}} \quad (7)$$

The target of 70% case detection applies to the DOTS case detection rate in formula (6). Even when a country is not 100% DOTS, we use the incidence estimated for the whole country as the denominator of the case detection rate, as in equation (6). The DOTS detection rate and the case detection rate for the whole country are identical when a country reports only from DOTS areas. This generally happens when DOTS coverage is 100%, but in some countries where DOTS is implemented in only part of the country, no TB notifications are received from the non-DOTS areas. Furthermore, in some countries where DOTS coverage is 100%, patients may seek treatment from non-DOTS providers that, in some cases, notify TB cases to the national authorities.

Although these indices are termed "rates", they are actually ratios. The number of cases notified is usually smaller than the 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 existing cases, if there has been over-reporting (e.g. double-counting) or over-diagnosis, or if estimates of incidence are too low. If the expected number of cases per year is very low (e.g. less than one), the case detection rate can vary markedly from year to year because of chance. Whenever this index comes close to or exceeds 100%, we attempt to investigate, as part of the joint planning and evaluation process with NTPs, which of these explanations is correct.

The ratio of the DOTS case detection rate to coverage is an estimate of 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. The detection rate within DOTS areas should exceed 70% as DOTS coverage increases within any country. The value of this indicator is low when the DOTS programme has been poorly imple-

mented, when access to DOTS is limited, or when TB incidence in DOTS areas has been overestimated. 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.

Outcomes of treatment

Treatment success in DOTS programmes is the percentage of new smear-positive patients who are cured (negative on sputum smear examination), plus the percentage who complete a course of treatment, without bacteriological confirmation of cure (Table 5). Cure and completion are among the six mutually exclusive treatment outcomes.[1] The sum of cases assigned to these outcomes, plus any additional cases registered but not assigned to an outcome, adds up to 100% of cases registered (i.e. the treatment cohort).

We also compare the number of new smear-positive cases registered for treatment (for this report, in 2004) with the number of cases notified as smear-positive (also in 2004). All notified cases should be registered for treatment, and the numbers notified and registered should therefore be the same (discrepancies arise, for example, when subnational reports are not received at national level). If the number registered for treatment is not provided, we take as the denominator for treatment outcomes the number notified for that cohort year. If the sum of the six outcome categories is greater than the number registered (or the number notified), we use this sum as the denominator.

The number of patients presenting for a second or subsequent course of treatment, and the outcome of further treatment, are indicative of NTP performance and levels of drug resistance. We present in this report, where data are available, the numbers of patients registered for re-treatment, and the outcomes of re-treatment, for each of four registration categories: smear-positive re-treatment after relapse; failure; default; and other re-treatment (including pulmonary smear-negative and extrapulmonary).

The assessment of treatment outcomes for a given calendar year always lags case notifications by one year, to ensure that all patients registered during that calendar year have completed treatment. For MDR-TB patients, who have longer treatment regimens, the lag is three years. A DOTS country must report treatment outcomes, unless

[1] *Treatment of tuberculosis: guidelines for national programmes*. 3rd ed. Geneva, World Health Organization, 2003 (WHO/CDS/TB/2003.313).

TABLE 5

Definitions of tuberculosis cases and treatment outcomes

A. DEFINITIONS OF TUBERCULOSIS CASES

CASE OF TUBERCULOSIS A patient in whom tuberculosis has been confirmed by bacteriology or diagnosed by a clinician.

DEFINITE CASE A patient with positive culture for the *Mycobacterium tuberculosis* complex. In countries where culture is not routinely available, a patient with two sputum smears positive for acid-fast bacilli (AFB+) is also considered a definite case.

PULMONARY CASE A patient with tuberculosis disease involving the lung parenchyma.

SMEAR-POSITIVE PULMONARY CASE A patient with 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 a clinician; or one sputum specimen AFB+ and culture positive for *M. tuberculosis*.

SMEAR-NEGATIVE PULMONARY CASE A patient with pulmonary tuberculosis not meeting the above criteria for smear-positive disease. Diagnostic criteria should include: at least three sputum smear examinations negative for AFB; and radiographic abnormalities consistent with active pulmonary tuberculosis; and no response to a course of broad-spectrum antibiotics; and a decision by a clinician to treat with a full course of antituberculosis chemotherapy; or positive culture but negative AFB sputum examinations.

EXTRAPULMONARY CASE A patient with tuberculosis of organs other than the lungs (e.g. pleura, lymph nodes, abdomen, genitourinary 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 antituberculosis chemotherapy. A patient in whom both pulmonary and extrapulmonary tuberculosis has been diagnosed should be classified as a pulmonary case.

NEW CASE A patient who has never had treatment for tuberculosis or who has taken antituberculosis drugs for less than one month.

RELAPSE CASE A patient previously declared cured but with a new episode of bacteriologically positive (sputum smear or culture) tuberculosis.

RE-TREATMENT CASE A patient previously treated for tuberculosis, undergoing treatment for a new episode, usually of bacteriologically-positive tuberculosis.

B. DEFINITIONS OF TREATMENT OUTCOMES

(expressed as a percentage of the number registered in the cohort)

CURED A patient who was initially smear-positive and who was smear-negative in the last month of treatment and on at least one previous occasion.

COMPLETED TREATMENT A patient who completed treatment but did not meet the criteria for cure or failure. This definition applies to pulmonary smear-positive and smear-negative patients and to patients with extrapulmonary disease.

DIED A patient who died from any cause during treatment.

FAILED A patient who was initially smear-positive and who remained smear-positive at month 5 or later during treatment.

DEFAULTED A patient whose treatment was interrupted for 2 consecutive months or more.

TRANSFERRED OUT A patient who transferred to another reporting unit and for whom the treatment outcome is not known.

SUCCESSFULLY TREATED A patient who was cured or who completed treatment.

COHORT A group of patients in whom TB has been diagnosed, and who were registered for treatment during a specified time period (e.g. the cohort of new smear-positive cases registered in the calendar year 2004). This group forms the denominator for calculating treatment outcomes. The sum of the above treatment outcomes, plus any cases for whom no outcome is recorded (e.g. "still on treatment" in the European Region) should equal the number of cases registered. Some countries monitor outcomes among cohorts defined by smear and/or culture, and define cure and failure according to the best laboratory evidence available for each patient.

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.

NTPs 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.

Stop TB Strategy: implementation and planning (2005–2007)

The information on implementing and planning the Stop TB Strategy presented and analysed in this report reflects activities mostly carried out in the 2005–2006 fiscal year and planned for the 2006–2007 fiscal year (see also **Financing TB control**). For this report, HBC activities and plans were monitored mainly through a questionnaire on Stop TB Strategy implementation sent by WHO to NTP managers of the 22 HBCs in May 2006. The questionnaire[1] was structured around the components of the Stop TB Strategy and included questions on: DOTS expansion and enhancement; laboratory and diagnostic services; human resource development; drug management; monitoring and evaluation system, and impact measurement; collaborative TB/HIV activities; drug-resistant TB; special populations and other high-risk groups; health system strengthening and TB control; Practical Approach to Lung Health (PAL); public–public and public–private mix (PPM) approaches; International Standards for Tuberculosis Care;[2] advocacy, communication and social mobilization (ACSM); community TB care; Patients' Charter for Tuberculosis Care;[3] operational research; Global Fund to Fight AIDS, Tuberculosis and Malaria (GFATM); and technical and financial partners.

Other mechanisms were used to clarify or complement responses provided in the questionnaire. These mechanisms included direct discussion with NTP managers, e-mail and telephone communication with NTPs, consultation with international technical agencies, monitoring missions, comprehensive programme reviews, applications to the GFATM, regional NTP managers' meetings, and the annual meeting of the DOTS Expansion, TB/HIV and MDR-TB working groups of the Stop TB Partnership.

Implementation of the Stop TB Strategy in non-HBCs was monitored through analysis of the responses to the Stop TB Strategy questions in the standard data collection form (see **Monitoring progress in TB control**) sent by WHO to all countries. Each component of the Stop TB Strategy was covered in the data collection form but in less detail than the questionnaire.

In developing the country profiles (Annex 1), WHO staff worked closely with NTP managers of the 22 HBCs to:

- assess the main national TB control activities carried out and planned, focusing on improving political commitment, expanding access to DOTS, strengthening laboratory and diagnostic services, ensuring human resource development, strengthening drug management, and improving programme monitoring and supervision;
- summarize progress made by the end of 2006 in implementing, or scaling up, national plans for DOTS expansion;
- identify challenges to reaching the targets for case detection and treatment success;
- determine the status of collaborative TB/HIV activities;
- assess levels of drug resistance and activities planned to address MDR-TB, including mechanisms of drug-resistance surveillance, MDR-TB diagnosis and treatment policies, and the availability of second-line anti-TB drugs;
- identify action plans of the NTP for high-risk groups and special populations;
- describe the contribution of TB control activities to the strengthening of health systems;
- determine the status of additional strategies to expand DOTS, including community participation in TB care, ACSM strategies, and PPM approaches;
- describe the level of operational research carried out and reported;
- review and revise the list of partners supporting DOTS implementation and expansion.

Addressing TB/HIV, MDR-TB and other challenges

Collaborative TB/HIV activities

The WHO policy on collaborative TB/HIV activities[4] emphasizes three areas. First, organizational structures should be put in place to plan and manage collaborative TB/HIV activities. Second, people should be screened for TB when they test positive for HIV and again whenever they attend the health services. If they have active TB they should be treated; if they have latent infection but not active TB they should be given isoniazid preventive therapy (IPT). Third, all TB patients should be given counselling about HIV and encouraged to have an HIV test; if they are HIV-positive they should be offered co-trimoxazole preventive therapy (CPT) and should be assessed for, and started on, antiretroviral therapy (ART) as soon as possible.

In order to assess the extent to which collaborative TB/HIV activities are being implemented, NTP managers were asked if they had a national policy of testing TB

[1] Posted at www.who.int/tb/country/en/

[2] Hopewell PC et al. International standards for tuberculosis care. *Lancet Infectious Diseases*, 2006, 6:710–725.

[3] Posted at www.who.int/tb/publications/2006/istc/en/index.html

[4] *Interim policy on collaborative TB/HIV activities*. Geneva, World Health Organization, 2004 (WHO/HTM/TB/2004.330; WHO/HTM/HIV/2004.1; available at whqlibdoc.who.int/hq/2004/WHO_HTM_TB_2004.330. pdf).

patients for HIV in 2005 and to report on the number who were tested for HIV, the number who tested positive, the number who started CPT and ART in 2004 and 2005, as well as the number who are expected to be started on ART in 2006 and 2007. In the 63 countries that account for 98% of the total number of HIV-infected TB cases, NTP managers were also asked for information about their policy on TB/HIV management, and for data on screening for TB and the provision of IPT to people with HIV in 2005. These countries included 58 for which the estimated HIV prevalence in adults aged 15–49 years was greater than 1% in 2004,[1] plus Brazil, India, Indonesia, the Russian Federation and Viet Nam, which are among the 41 countries with the highest numbers of HIV-infected TB patients.[2]

The data were reviewed at WHO regional offices and at headquarters, and an attempt was made to resolve inconsistencies and to obtain missing data in discussions with NTP managers. Because data have now been collected since 2002, time trends in TB/HIV activities are also discussed. Indicators for monitoring and evaluating collaborative TB/HIV activities are available from WHO.[3]

MDR-TB surveillance and control

In 2006, the standard data collection form asked for the following information on MDR-TB surveillance and control:

- whether the management of MDR-TB patients is among the activities of the NTP;
- if practice follows WHO guidelines on the management of drug-resistant TB and, if not, whether the NTP plans to start treating MDR-TB patients in the next two years;
- the number of new and re-treatment patients registered in 2005 who received drug susceptibility testing (DST) at the start of treatment;
- the number of laboratory-confirmed cases of MDR-TB identified among new and re-treatment patients in whom TB was diagnosed in 2005;
- the number of MDR-TB patients expected to be treated in 2006 and 2007;
- treatment outcomes among new, re-treatment and other MDR-TB patients registered in 2002 in GLC-approved and non-GLC approved countries or areas.

In addition to the standard data collection form, the questionnaire on implementation of the Stop TB Strategy sent to HBCs provided further information on plans for drug resistance surveillance (DRS) and MDR-TB diagnosis and treatment, and identified the principal obstacles to implementing these activities.

Besides this information, this report includes data on the prevalence of drug resistance among TB patients collected through the WHO/IUATLD Global Project on Antituberculosis Drug Resistance Surveillance (Global DRS Project), which began in 1994.[4] The project carries out surveys of drug resistance, using established and agreed methods, among patients who present to clinics, hospitals and other health institutions. The fourth report on the global magnitude and trends of drug resistant TB will be published by mid-2007. The profiles of the 22 HBCs (Annex 1) contain estimates of the national prevalence of MDR-TB among both new and previously treated TB patients, based on survey data for those countries participating in the Global DRS Project and for which data are considered reliable. For those countries that have not carried out surveys, or that do not have representative data on new or previously-treated cases, the figures given in the country profiles are estimates based on a regression model described in detail elsewhere.[5]

This report also summarizes the projects approved by the Green Light Committee (GLC) in 2006 for access to quality-assured, second-line anti-TB drugs at reduced prices and independent external monitoring.

Financing TB control (2002–2007)

Financial analysis was introduced into the annual WHO report on global TB control in 2002. The main developments in the 2007 report are that (a) financial data are presented according to the six components of the Stop TB Strategy and/or the (related) cost categories used in the Global Plan, and (b) there is more detailed analysis of how funding needs reported by countries compare with the funding needs set out in the Global Plan. The report has seven objectives:

- for each HBC, and for all HBCs combined, to present and assess total NTP budgets and expenditures for the period 2002–2007, with breakdowns by funding source and line item;
- for each HBC and for all HBCs combined, to present and assess the total cost of TB control to government health services[6] for the period 2002–2007, with breakdowns by funding source and line item;
- for each HBC, to estimate and compare per patient costs, budgets and available funding for the period 2002–2007 and per patient expenditures for 2002–2005;
- for each HBC, to assess whether increased spending on TB control is resulting in an increase in the number of cases detected and treated in DOTS programmes;

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1 HIV prevalence estimates for 2004 (unpublished data). Geneva, UNAIDS.

2 Questionnaires are available at www.who.int/tb/country/en/

3 *A guide to monitoring and evaluation for collaborative TB/HIV activities*. Geneva, World Health Organization, 2004 (WHO/HTM/TB/2004.342 and WHO/HIV/2004.09; available at whqlibdoc.who.int/hq/2004/WHO_ HTM_TB_2004.342.pdf).

4 The WHO/IUATLD Global Project on Anti-tuberculosis Drug Resistance Surveillance. *Anti-tuberculosis drug resistance in the world. Third global report*. Geneva, World Health Organization, 2003 (WHO/HTM/TB/2004.343; more information about the project can be found at: www.who.int/tb/dots/dotsplus/surveillance/en/index.html).

5 Zignol M et al. Global incidence of multidrug-resistant tuberculosis. *Journal of Infectious Diseases*, 2006, 194:479–485.

6 i.e. including costs not reflected in NTP budget data.

- to assess the contribution of the GFATM to funding for TB control;
- for countries other than the HBCs, to quantify NTP budgets and total TB control costs in 2007, with breakdowns by funding source and line item;
- for the HBCs and other countries, to compare funding requirements reported by countries with the funding needs for 2006 and 2007 set out in the Global Plan.

Data collection

We collected data from five main sources: NTPs, the WHO-CHOICE team,[1] GFATM proposals and databases, previous WHO reports in this series, and epidemiological and financial analyses carried out for the Global Plan.[2] In 2006, data were collected directly from countries using a two-page questionnaire included in the standard WHO data collection form. NTP managers were asked to complete three tables. The first two tables required a summary of the NTP budget for fiscal years 2006 and 2007, in US$, by line item and source of funding (including a column for funding gaps). The third table requested NTP expenditure data for 2005, by line item and source of funding. The form also requested information about infrastructure dedicated to TB control and the ways in which general health infrastructure is used for TB control (e.g. the number of dedicated TB beds available, the number of outpatient visits that patients need to make to a health facility during treatment and the average length of stay when patients are admitted to hospital). We also asked for an estimate of the number of patients who would be treated in 2006 and 2007, for (a) smear-positive and (b) smear-negative and extrapulmonary cases combined.

Line items for the budget tables were revised from those used in previous years, to bring reporting of financial data in line with the Stop TB Strategy and to allow for comparisons with the cost categories used in the Global Plan. A total of 10 line items were defined: first-line drugs; dedicated NTP staff; routine programme management and supervision activities; laboratory supplies and equipment; second-line drugs for MDR-TB; management of MDR-TB (budget excluding second-line drugs); collaborative TB/HIV activities; ACSM, and community-based care; operational research; and all other budget lines for TB (e.g. technical assistance). The relationship of these items to the Stop TB Strategy and the Global Plan and the categories used for presentation of financial analyses in this report are shown in Table 6.

Data entry and analysis

High-burden countries

Data entry and analysis focused on the 22 HBCs. We created a standardized Microsoft Excel workbook, with one worksheet for each country. Additional worksheets were included for summary analyses and for the data required as inputs to the country-specific analyses (e.g. notification data, unit costs for bed-days and outpatient clinic visits). For each country worksheet, 10 tables and related figures were created:

- NTP budget line items in 2006 and 2007, according to the 10 categories used in the 2006 round of data collection;
- NTP budget by line item for each year 2002–2007. Line items were grouped to allow for comparisons with the Global Plan and the Stop TB Strategy. This grouping, both for the budget categories used in 2006 and for those used in 2002–2005, is explained in Table 6. This was supplemented by an additional table for the NTP budget 2002–2005, according to the detailed line items used in 2002–2005;
- NTP budget by source of funding for each year 2002–2007, with the funding sources defined according to the 2006 data collection form, i.e. government (excluding loans), loans, GFATM, grants (excluding GFATM) and budget gap;
- NTP expenditures by source of funding for 2002–2005, with funding sources as defined for NTP budgets;
- NTP expenditures by line item for 2002–2005, with line items defined according to the budget categories used for reporting in the 2005 round of data collection, i.e. first-line drugs, second-line drugs, dedicated NTP staff, initiatives to increase case detection and cure rates, collaborative TB/HIV activities, buildings/equipment/vehicles, and other. These categories were retained for expenditure data to allow direct comparison with budget data reported for 2005;
- total TB control costs by funding source for each year 2002–2007, with funding sources as defined for NTP budgets;
- total TB control costs by line item for each year 2002–2007, with line items defined as NTP budget items, hospitalization and clinic visits;
- per patient costs, NTP budget, available funding, expenditures and budget for first-line drugs;
- comparison of total costs based on the country report, with total costs implied by the Global Plan;
- comparison of NTP budget, available funding and expenditure for 2003–2005 by line item.[3]

Budget data for 2006 and 2007 were taken from the 2006 data collection form. Budget data for 2005 were taken from the 2005 data collection form. Budget data for 2002–2004 were taken from the 2005 annual report. Expenditure data for 2002, 2003, 2004 and 2005 were based on the 2003, 2004, 2005 and 2006 data collection forms, respectively.

[1] The WHO-CHOICE (CHOosing Interventions that are Cost-Effective) team conducts work on the costs and effects of a wide range of health interventions.

[2] *The Global Plan to Stop TB, 2006–2015: methods used to assess costs, funding and funding gaps*. Geneva, Stop TB Partnership and World Health Organization, 2006 (WHO/HTM/STB/2006.38).

[3] Expenditure data are available for a larger set of countries in 2003 compared with 2002. For this reason, comparisons are with 2003.

TABLE 6

Categories used for presentation of financial analyses in this report and their relationship to the Stop TB Strategy, the Global Plan, budget lines used on the WHO data collection form and budget lines used in previous WHO reports

CATEGORIES USED FOR FINANCIAL ANALYSES IN THIS REPORT THAT COVER THE PERIOD 2002–2007	STOP TB STRATEGY	GLOBAL PLAN	BUDGET LINES IN 2006 DATA COLLECTION FORM	BUDGET LINES PRIOR TO 2006
DOTS	Component 1	DOTS	First-line drugs; NTP staff; routine programme management and supervision activities; laboratory supplies and equipment	First-line drugs; NTP staff; buildings, vehicles, equipment; all other budget lines for TB
MDR-TB	Component 2	MDR-TB/ DOTS-Plus	Second-line drugs for MDR-TB; management of MDR-TB (excluding second-line drugs)	Second-line drugs
TB/HIV		TB/HIV	Collaborative TB/HIV activities	Collaborative TB/HIV activities
New approaches: PPM/PAL/ community TB care/ACSM	Components 3–5	New approaches to DOTS	PPM and PAL; ACSM and community TB care	New initiatives to increase case detection and cure rates
		ACSM		
Operational research	Component 6	Not included as specific categories	Operational research	Not included as specific category
Other	Not applicable		All other budget lines for TB (e.g. technical assistance)	"Other" category existed; for this report it is included under DOTS

Total TB control costs were estimated by adding costs for hospitalization and outpatient clinic visits to either NTP expenditures (for 2002–2005) or NTP budgets (for 2006–2007). Expenditures were used in preference to budgets for 2002–2005 because they reflect actual costs, whereas budgets can be higher than actual expenditures (for example, when large budgetary funding gaps exist or when the NTP does not spend all the available funding). When expenditures are known for 2006 and 2007, they will be used instead of budget data to calculate, retrospectively, the total cost of TB control in these years. For some HBCs, expenditures were not available for 2002–2005. When this was the case, we generally estimated expenditures based on available funding, which was calculated as the total budget minus the funding gap. The exception was South Africa, which reported budget and expenditure data for the first time in 2006. In previous annual reports, costs in South Africa were based on costing studies undertaken in the mid to late 1990s. Given the availability of new information from the 2006 round of data collection, we revised previous cost estimates for 2002–2004 by assuming that per patient costs in these years would be as for 2006. Total costs were then estimated by multiplying total notifications in each year by the estimated cost per patient treated. This produces lower estimates of total costs for South Africa, and explains differences in the total costs figures previously reported for the 22 HBCs during the period 2002–2006.

The total cost of outpatient clinic visits was estimated in two steps. First, the unit cost (in US$)[1] of a visit was multiplied by the average number of visits required per patient (estimated on the WHO data collection form), to give the cost per patient treated. This was done separately for (a) new smear-positive cases and (b) new smear-negative and extrapulmonary cases. Second, we multiplied the cost per patient treated by the number of patients notified (for 2002–2005) or the number of patients whom the NTP expects to treat (for 2006–2007). The total costs for the two categories of patient were then summed. The cost of hospitalization was generally calculated in the same way, replacing the unit cost of a clinic visit with the unit cost of a bed-day. The procedure differed for eight countries that have dedicated TB beds, and where the total cost of these beds is higher than when the total cost is estimated by multiplying bed-days per patient by the number of patients treated (this applied to Bangladesh, Brazil, Cambodia, India, Myanmar, the Russian Federation, UR Tanzania and Zimbabwe). We assumed that all clinic visits and hospitalization are funded by the government, because staff and facility infrastructure are the major inputs included in the unit cost estimates, and these are typically not funded by donors.

Per patient costs, budgets, available funding and expenditures were calculated by dividing the relevant total by the number of cases notified (for 2002–2005) and the number of patients whom the NTP expects to treat (for 2006–2007). Since the total costs of TB control for 2002–2005 were based on expenditure data, it is possible for the total TB control cost per patient treated to be less than the NTP budget per patient treated when the funding gap

[1] Average costs in the WHO-CHOICE database are reported in local currency units. These were converted into US$ using exchange rate data provided in the IMF *International financial statistics yearbook*. Washington, DC, International Monetary Fund, 2003.

is large or there is a significant budgetary under-spend. In addition, for 2002–2005, expenditures per patient were sometimes higher than the available funding per patient. This can occur when the NTP budget funding gap is reduced after the reporting of budget data to WHO (since available funding is estimated as the total budget minus the funding gap). To try to eliminate this problem, the data collection form has allowed countries to update budget data reported in the previous round of data collection since 2005 (for example in the 2005 round of data collection, countries were able to update 2005 budget data originally reported in 2004; in the 2006 round of data collection, countries were able to update 2006 budget data originally reported in 2005).

Costs based on country reports reflect actual country plans for TB control. To address the question of whether these costs are in line with the Global Plan, we converted the regional costs that appear in the Global Plan into estimates for individual countries. While these costs should be seen as approximations only, they can be used to identify important similarities and differences between country reports and the Global Plan. Differences may occur if the intervention coverage and rates of scale-up (e.g. number of TB patients to be treated or number of HIV-positive TB patients to be enrolled on ART) planned by countries in 2006 and 2007 are more or less ambitious than the projections included in the Global Plan, and/or if country-specific budget development is based on input prices that are more or less than the average regional prices used in the Global Plan. A further reason for discrepancies is that, while the Global Plan includes the full cost of collaborative TB/HIV activities, the budget for these activities that is reported by NTPs includes only the budget managed by the NTP, and not the budget for such activities that is managed by the national AIDS programme. Table 7 summarizes the methods used to convert regional costs as they appear in the Global Plan into estimates for individual countries.

All budget and expenditure data are reported in nominal prices (i.e. not adjusted for inflation) rather than constant prices (i.e. all prices adjusted to a common year) for two reasons. First, this means that values given for individual countries in *Global tuberculosis control* reports for the years 2002–2006 do not have to be adjusted, which makes it easier for country staff to review the data for previous years. Second, the adjustment makes only a small difference to the numbers reported (about 11% to 2002 values for total costs and less for other years).

Once the data were entered, any queries were discussed with NTP staff and the appropriate WHO regional and country office, and a final set of charts was produced. Six of these charts appear in the profiles for each country at Annex 1: NTP budget by line item 2002–2007, with line items as defined in the first column of Table 6; NTP budget line items in 2007, according to the line items used in the 2006 round of data collection; NTP budget by funding source 2002–2007; total TB control costs by line item 2002–2007; per patient costs, budgets, available funding, expenditures and budget for first-line drugs 2002–2007; and costs according to country reports compared with costs implied by the Global Plan for 2006 and 2007.[1] In some instances, the review process led to revisions to data included in previous annual reports. For this reason, figures sometimes differ from those published in the 2002–2006 reports.

To assess whether increased spending on TB control has resulted in an increase in the number of cases detected and treated in DOTS programmes, we compared the change in total NTP expenditures between 2003 and 2005 with the change between 2003 and 2005 in (a) the total number of TB cases treated in DOTS programmes and (b) the total number of new smear-positive cases treated in DOTS programmes. This was done for all HBCs for which the necessary data existed (not all countries have reported expenditure data for both years).

Finally, we compared the total costs of TB control with total government health expenditure.[2] We also examined the association between GNI (gross national income) per capita in 2005 and government contributions to total NTP budgets and TB control costs. Data on GNI per capita were taken from *World development indicators 2005*.[3]

Other countries

For countries other than the HBCs, we used the data provided on the 2006 data collection form to assess NTP budgets by region in 2007, and compared these data with the budgets reported by the HBCs. Only countries that submitted complete data of sufficient quality (e.g. data whose subtotals and totals were consistent by both line item and funding source) were used.

We also made estimates of the costs implied by the Global Plan for the 172 countries in the regions covered by the plan, as described above for the 22 HBCs. We then aggregated these values for each WHO region for the subset of countries that (a) provided a complete budget report to WHO and (b) were included in the Global Plan. The total number of countries meeting both criteria was 62. We then compared these aggregated values to costs according to country reports.

GFATM contribution to TB control

We evaluated GFATM funding for both HBCs and other countries, as announced after the first six rounds of funding. We assessed total approved funding at the end of 2006, disbursements to the end of 2006, the time taken between approval of a proposal and the signature of grant agreements, and the time taken between the signing of the grant agreement and the first disbursement of funds.

[1] A full set of charts and data is available upon request to tbdocs@who.int

[2] See www.who.int/nha/country/en

[3] Accessed in December 2006: devdata.worldbank.org/data-query

TABLE 7

Methods used to allocate regional costs in the Global Plan to individual countries

COUNTRY	NUMBERS OF PATIENTS			COSTS					
	NUMBER OF SS+ AND SS–/EP PATIENTS TREATED IN DOTS PROGRAMMES	NUMBER OF MDR-TB PATIENTS TREATED IN "DOTS-PLUS" PROGRAMMES	NUMBER OF HIV+ TB PATIENTS ENROLLED ON ART	NTP BUDGET FOR DOTS, EXCLUDING NEW APPROACHES	NTP BUDGET FOR NEW APPROACHES TO DOTS IMPLEMENTATION	BUDGET FOR ACSM	BUDGET FOR ART FOR HIV+ TB PATIENTS, AND OTHER TB/HIV COLLABORATIVE ACTIVITIES	NTP BUDGET FOR MDR-TB TREATMENT	COSTS ASSOCIATED WITH UTILIZATION OF GENERAL HEALTH SERVICES, FINANCED FROM GENERAL HEALTH FACILITY BUDGETS
Afghanistan Bangladesh Cambodia China India Indonesia Myanmar Pakistan Philippines Thailand Viet Nam	Global Plan regional numbers allocated to each country according to its share of the regional burden of TB (in 2004).	Global Plan regional numbers allocated to each country according to its estimated share of the regional burden of MDR-TB cases in 2003 (source: DOTS-Plus Working Group).	Estimates were made for each country as a joint effort by the Stop TB Partnership and UNAIDS for the Global Plan. Country-specific numbers were therefore already available and no allocation process was required.	The NTP budget per patient in each country in 2005 was used in the Global Plan to estimate a budget per patient for the region as a whole, with each country weighted according to its share of regional cases. To return to country-specific estimates, we used the NTP budget per patient in each country that was used in the Global Plan. This is the NTP budget reported in the 2005 WHO TB control report, excluding second-line drugs and collaborative TB/HIV activities. The NTP budget for each country that underpinned the Global Plan regional calculations was then multiplied by the number of cases to be treated (estimated as explained in column 2).	Global Plan cost estimates were first made for a standard population of 500 000, or in the case of culture and DST laboratories for a population of 5 million, based on regional unit prices. These unit costs were then multiplied by a factor according to the size of the regional population to be covered (e.g. if the population to be covered was 100 million, the unit cost was multiplied by 200, or by 20 in the case of culture and DST laboratories). To estimate costs for each country, Global Plan costs for each region were allocated to each country according to its share of the regional population.		The number of TB/HIV patients on ART was multiplied by the unit cost of providing ART, estimated by UNAIDS for each country as part of the development of the Global Plan. For other activities, the number of patients was allocated to a country according to its share of the regional TB/HIV burden and then multiplied by the country-specific unit cost used in the Global Plan.	Calculated as the number of MDR-TB cases to be treated multiplied by a country-specific unit cost. Country-specific unit costs estimated by adjusting the regional cost used in the Global Plan according to GNI per capita (except for the cost of drugs, which were assumed to be the same in all countries).	Calculated on a per patient basis for each country according to the inputs reported in the 2006 WHO data collection form. Unit costs for hospitalization and outpatient visits are WHO country-specific estimates as opposed to the DCPP regional estimates used in the Global Plan. Costs for diagnostic tests among TB suspects were included in the Global Plan, but were not included in the country-specific estimates because there are no comparative data from countries (the number of such tests is not requested on the WHO data collection form).
Brazil Russian Federation	Global Plan regional numbers allocated to each country according to its share of the regional burden of TB (in 2004), then adjusted according to target level of DOTS population coverage set out in the Global Plan.								
DR Congo Ethiopia Kenya Mozambique Nigeria South Africa Uganda UR Tanzania Zimbabwe	Global Plan regional numbers allocated to each country according to its share of regional cases treated under DOTS (in 2004).								

ART indicates antiretroviral therapy; DOTS-Plus, the term used for the management of MDR-TB patients according to international guidelines at the time of the development of the Global Plan; DST, drug susceptibility testing; HIV+, HIV-positive; NTP, national tuberculosis control programme; ss+, sputum smear-positive; ss–, sputum smear-negative; EP, extrapulmonary.

We also assessed how the total value of grants awarded for TB control has evolved between rounds 1 and 6, and the approval rate. The approval rate was calculated as the number of proposals considered by the GFATM Technical Review Panel in each round, divided by the number of proposals approved in each round (including proposals approved after appeal). This approval rate was compared with applications for malaria and HIV/AIDS.

Results

Monitoring progress in TB control

Countries reporting to WHO

By the end of 2006, 199 of 212 countries and territories reported case notifications for 2005 and/or treatment outcomes for patients registered in 2004 (Annex 2). These countries include 99.9% of the world's population. Reports were submitted by all 22 HBCs. The countries that did not report included 10 Caribbean islands, Equatorial Guinea, Monaco and San Marino.

Case notifications and incidence estimates

The 199 countries reporting to WHO notified 5.1 million new and relapse cases, of which 2.4 million (47%) were new smear-positive cases (Table 8; Figure 1). Of these notifications, 4.9 million were from DOTS areas, including 2.3 million new smear-positive cases. A total of 26.5 million new and relapse cases, and 13.0 million new smear-positive cases, were notified by DOTS programmes between 1995 and 2005. Based on surveillance and survey data, we estimate that there were 8.8 million new cases of TB in 2004 (136 per 100 000), including 3.9 million (60 per 100 000) new smear-positive cases (Table 9; Figures 2, 3).

Comparing different parts of the world, the African Region (23%), South-East Asia Region (35%) and Western Pacific Region (25%) together accounted for 83% of all notified new and relapse cases and similar proportions of new smear-positive cases in 2005. Because DOTS has emphasized diagnosis by sputum smear microscopy, 48% of all new and relapse cases were new smear-positive (approximately 45% expected) in DOTS areas, compared with 36% elsewhere. Among new pulmonary cases reported by DOTS programmes, 59% were new smear-positive (a minimum of 65% expected), compared with 46% elsewhere (Table 8). The proportion of smear-positive cases among pulmonary cases reported under DOTS conforms with expectations and so, therefore, does the proportion of smear-negative cases.

In ranking countries by the estimated number of incident cases, 22 countries have been given special attention (Table 8). The magnitude of the TB burden within countries can also be expressed as the incidence rate per 100 000 population. Among the 15 countries with the highest estimated TB incidence rates, 12 are in Africa (Figure 4). The high incidence rates estimated for the African countries in this list are partly explained by the relatively high rates of HIV coinfection. Where HIV infection rates are higher in adult populations, they are also estimated to be higher among new TB patients. Figure 5 maps the distribution of HIV among TB patients,

FIGURE 1

Tuberculosis notification rates, 2005

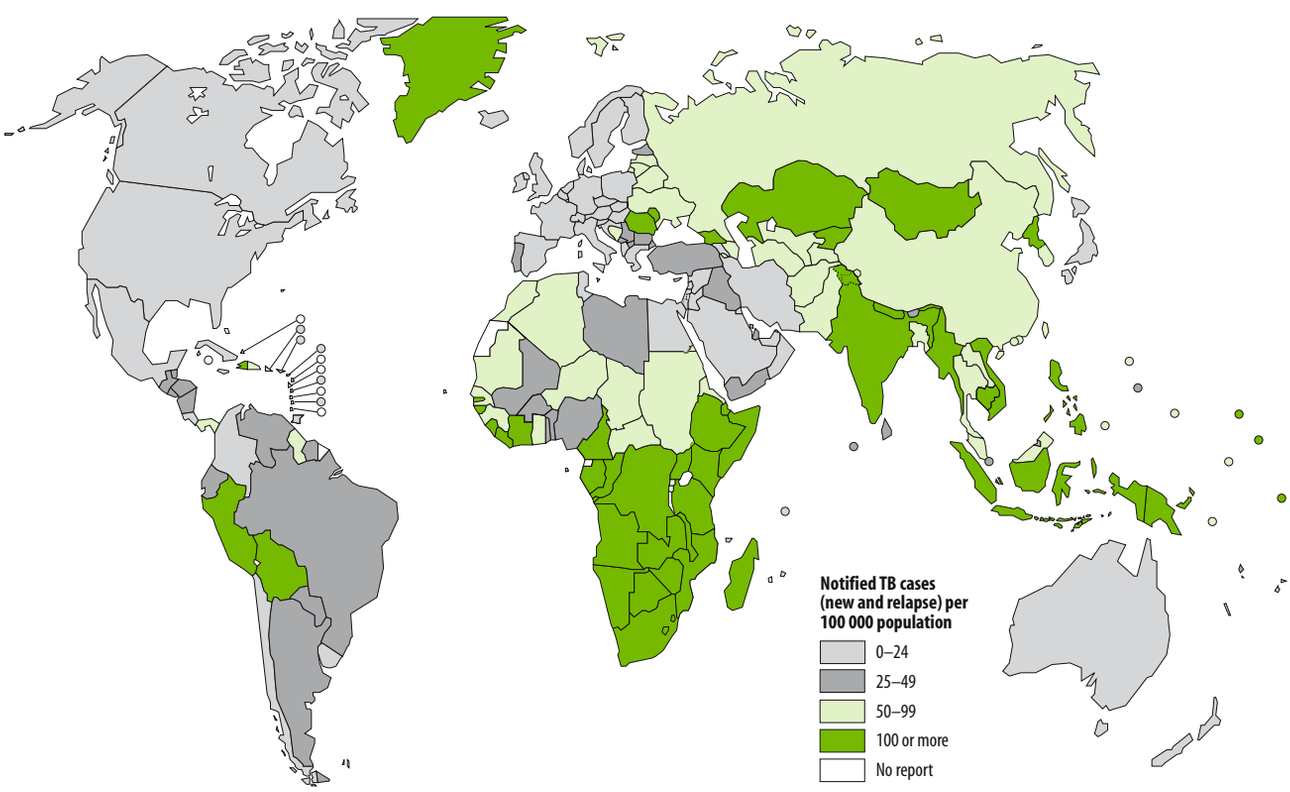


TABLE 8

Case notifications, 2005

		NEW AND RELAPSE CASES		NEW CASES: SMEAR-POSITIVE		NEW CASES: SMEAR-NEGATIVE/ UNKNOWN		NEW CASES: EXTRAPULMONARY		RE-TREATMENT CASES EXCLUDING RELAPSE		OTHER[a]		% OF NEW PULMONARY CASES SMEAR-POSITIVE[b]	
		DOTS	WHOLE COUNTRY	DOTS	WHOLE COUNTRY	DOTS	WHOLE COUNTRY	DOTS	WHOLE COUNTRY	DOTS	WHOLE COUNTRY	DOTS	WHOLE COUNTRY	DOTS	WHOLE COUNTRY
1	India	1 146 599	1 156 248	506 852	508 890	392 390	399 066	170 948	171 838	148 495	148 580	–	–	56	56
2	China	894 428	–	472 719	–	329 157	–	42 845	–	90 780	–	5 301	–	59	–
3	Indonesia	254 601	–	158 640	–	85 373	–	6 142	–	4 446	–	–	–	65	–
4	Nigeria	62 598	–	35 048	–	22 705	–	2 836	–	2 858	–	1 392	–	61	–
5	Bangladesh	123 118	–	84 848	–	23 076	–	11 318	–	–	–	–	–	79	–
6	Pakistan	137 574	–	47 154	–	65 392	–	22 411	–	2 640	–	–	–	42	–
7	South Africa	260 162	270 178	119 906	125 460	73 551	76 680	38 786	39 739	31 559	32 289	–	–	62	62
8	Ethiopia	124 262	–	38 525	–	39 816	–	43 675	–	873	–	–	–	49	–
9	Philippines	137 100	–	81 647	–	50 347	–	1 149	–	–	–	–	–	62	–
10	Kenya	102 680	–	40 389	–	43 772	–	15 265	–	5 721	–	–	–	48	–
11	DR Congo	97 075	–	65 040	–	9 959	–	18 494	–	1 909	–	574	–	87	–
12	Russian Federation	82 643	127 930	22 690	32 605	47 151	74 301	6 776	12 320	6 433	28 617	–	–	32	30
13	Viet Nam	94 994	–	55 570	–	16 429	–	16 670	–	976	–	–	–	77	–
14	UR Tanzania	61 022	–	25 264	–	20 810	–	13 094	–	3 178	–	–	–	55	–
15	Brazil	51 452	80 209	26 224	42 093	15 898	23 990	7 229	11 037	3 159	6 548	–	466	62	64
16	Uganda	41 040	–	20 559	–	15 040	–	3 780	–	769	–	–	–	58	–
17	Thailand	57 895	–	29 762	–	18 837	–	7 501	–	–	–	–	–	61	–
18	Mozambique	33 231	–	17 877	–	9 184	–	4 771	–	487	–	–	–	66	–
19	Myanmar	107 009	–	36 541	–	35 601	–	30 252	–	982	–	–	–	51	–
20	Zimbabwe	50 454	–	13 155	–	29 074	–	6 721	–	4 437	–	–	–	31	–
21	Cambodia	35 535	–	21 001	–	7 057	–	6 759	–	588	–	–	–	75	–
22	Afghanistan	21 844	–	9 949	–	6 085	–	4 954	–	–	–	–	–	62	–
High-burden countries		**3 977 316**	**4 071 025**	**1 929 360**	**1 962 736**	**1 356 704**	**1 401 751**	**482 376**	**493 571**	**310 290**	**336 678**	**7 267**	**7 733**	**59**	**58**
	AFR	1 168 502	1 186 800	538 816	550 001	359 987	364 789	207 438	208 979	64 805	65 883	–	2 649	60	60
	AMR	187 380	227 616	101 786	124 788	45 154	55 740	28 083	33 298	8 725	12 442	1 640	2 106	69	69
	EMR	276 707	282 945	112 617	112 804	97 664	99 392	62 974	63 282	5 252	–	–	53	54	
	EUR	270 290	365 346	70 229	96 101	111 802	157 334	29 792	49 831	33 935	60 719	194	413	39	38
	SEAR	1 779 496	1 789 186	855 306	857 371	587 502	594 185	241 438	242 332	162 573	162 661	189	202	59	59
	WPR	1 238 180	1 274 266	661 390	671 719	431 865	447 749	80 958	87 584	95 742	99 053	6 511	10 125	60	60
Global		**4 923 555**	**5 126 159**	**2 340 214**	**2 412 784**	**1 633 974**	**1 719 189**	**650 683**	**686 306**	**371 032**	**406 010**	**11 183**	**15 495**	**59**	**58**

– Indicates all cases notified as DOTS, no additional cases notified as non-DOTS.

[a] Cases not included elsewhere in table.

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

FIGURE 2

Estimated numbers of new TB cases, 2005

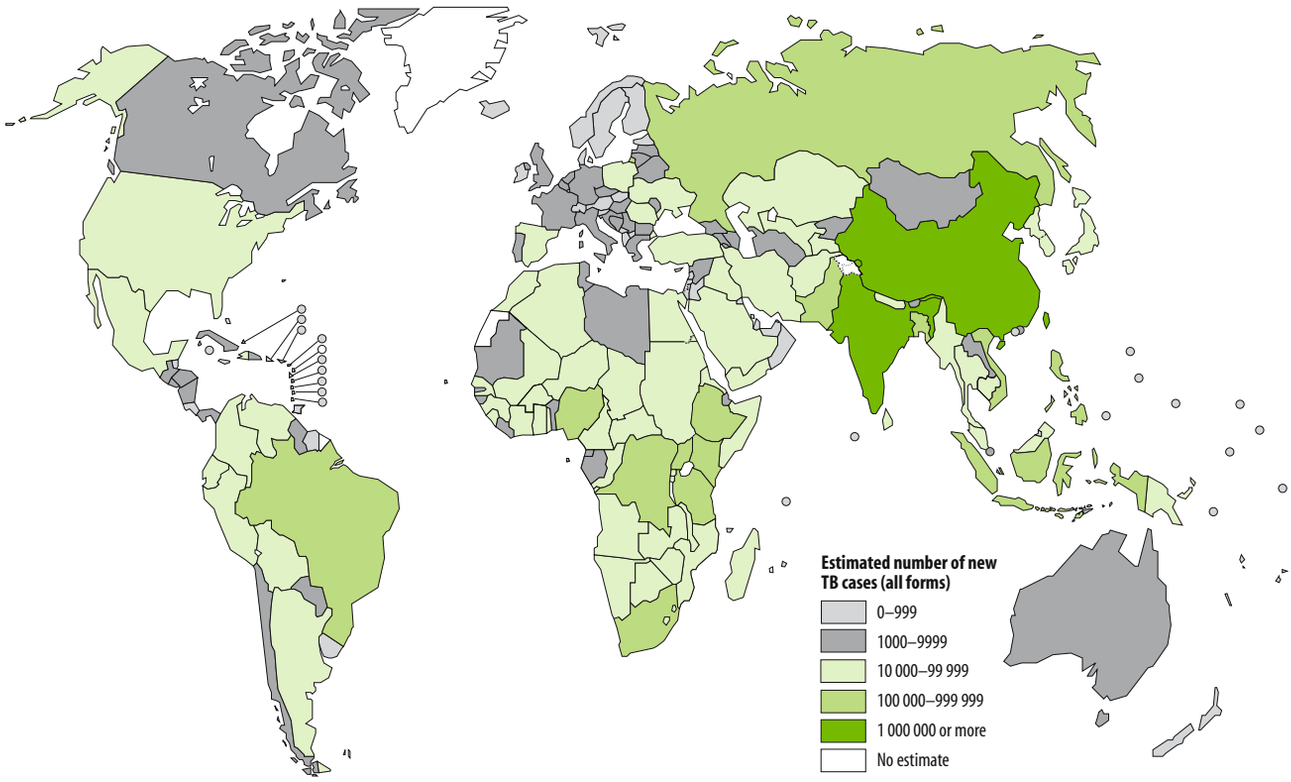


FIGURE 3

Estimated TB incidence rates, 2005

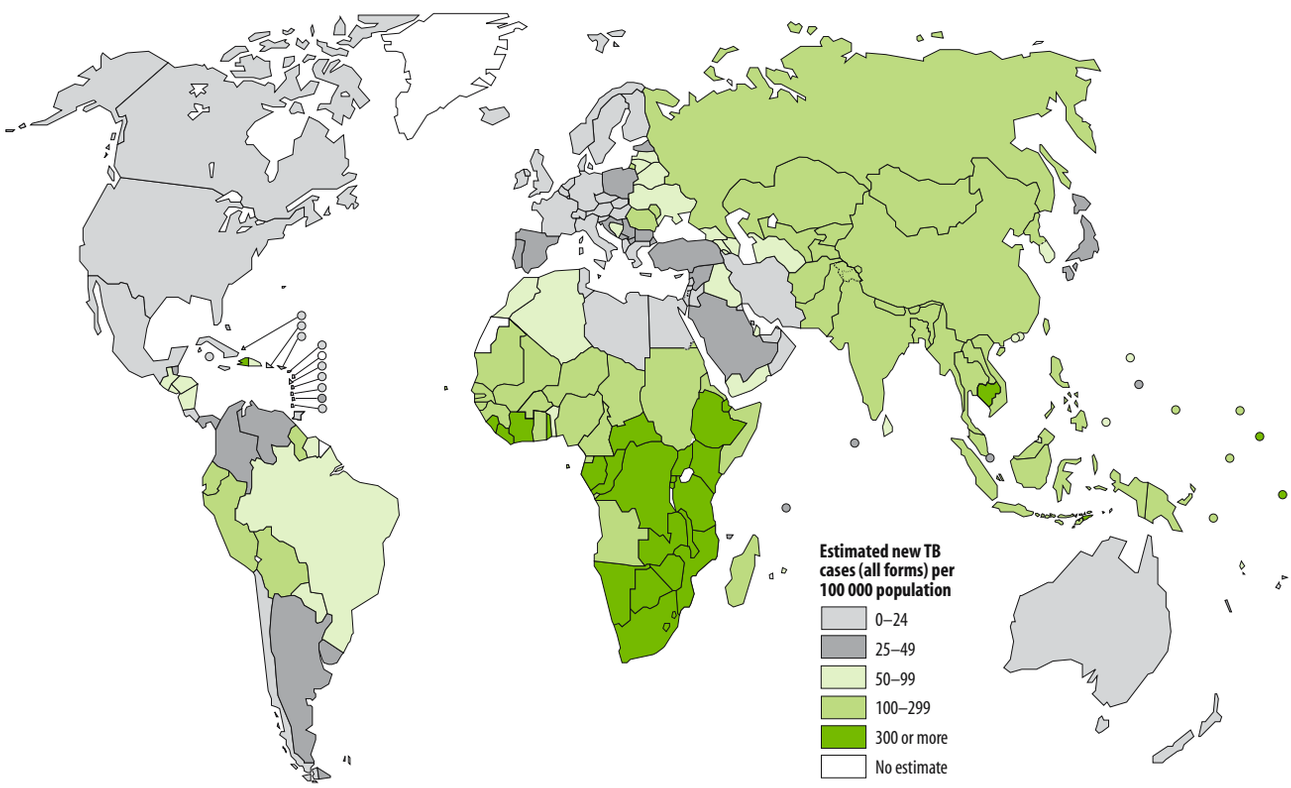


TABLE 9

Estimated TB burden, 2005

			INCIDENCE[a]				PREVALENCE		MORTALITY		HIV PREV. IN INCIDENT TB CASES[b]
			ALL FORMS		SMEAR-POSITIVE		ALL FORMS		ALL FORMS		
		POPULATION 1000s	NUMBER 1000s	PER 100 000 POP PER YEAR	NUMBER 1000s	PER 100 000 POP PER YEAR	NUMBER 1000s	PER 100 000 POP	NUMBER 1000s	PER 100 000 POP PER YEAR	%
1	India	1 103 371	1 852	168	827	75	3 299	299	322	29	5.2
2	China	1 315 844	1 319	100	593	45	2 737	208	205	16	0.5
3	Indonesia	222 781	533	239	240	108	584	262	92	41	0.8
4	Nigeria	131 530	372	283	162	123	704	536	100	76	19
5	Bangladesh	141 822	322	227	145	102	575	406	66	47	0.1
6	Pakistan	157 935	286	181	129	82	468	297	59	37	0.6
7	South Africa	47 432	285	600	116	245	242	511	34	71	58
8	Ethiopia	77 431	266	344	118	152	423	546	56	73	11
9	Philippines	83 054	242	291	109	131	374	450	39	47	0.1
10	Kenya	34 256	220	641	94	276	321	936	48	140	28
11	DR Congo	57 549	205	356	90	156	311	541	42	73	17
12	Russian Federation	143 202	170	119	76	53	214	150	28	20	6.2
13	Viet Nam	84 238	148	175	66	79	198	235	19	23	3.0
14	UR Tanzania	38 329	131	342	56	147	190	496	29	75	29
15	Brazil	186 405	111	60	49	26	142	76	15	7.5	14
16	Uganda	28 816	106	369	46	158	161	559	26	91	30
17	Thailand	64 233	91	142	41	63	131	204	12	19	7.6
18	Mozambique	19 792	89	447	37	185	118	597	24	124	50
19	Myanmar	50 519	86	171	38	76	86	170	8	15	7.1
20	Zimbabwe	13 010	78	601	32	245	82	631	17	130	60
21	Cambodia	14 071	71	506	32	226	99	703	12	87	6.0
22	Afghanistan	29 863	50	168	23	76	86	288	10	35	0.0
High-burden countries		**4 045 482**	**7 033**	**174**	**3 117**	**77**	**11 546**	**285**	**1 265**	**31**	**10**
	AFR	738 083	2 529	343	1 088	147	3 773	511	544	74	28
	AMR	890 757	352	39	157	18	448	50	49	5.5	7.9
	EMR	541 704	565	104	253	47	881	163	112	21	2.1
	EUR	882 395	445	50	199	23	525	60	66	7.4	4.6
	SEAR	1 656 529	2 993	181	1 339	81	4 809	290	512	31	3.9
	WPR	1 752 283	1 927	110	866	49	3 616	206	295	17	1.0
Global		**6 461 751**	**8 811**	**136**	**3 902**	**60**	**14 052**	**217**	**1 577**	**24**	**11**

[a] All estimates include TB in people with HIV.
[b] Prevalence of HIV in incident TB cases in adults aged 15–49 years.

FIGURE 4

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 in adults aged 15–49 years (green bars), 2005

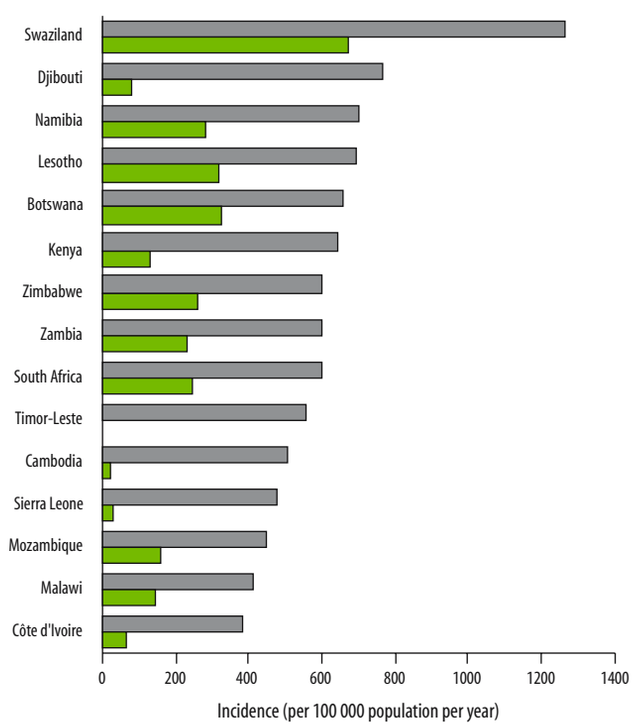
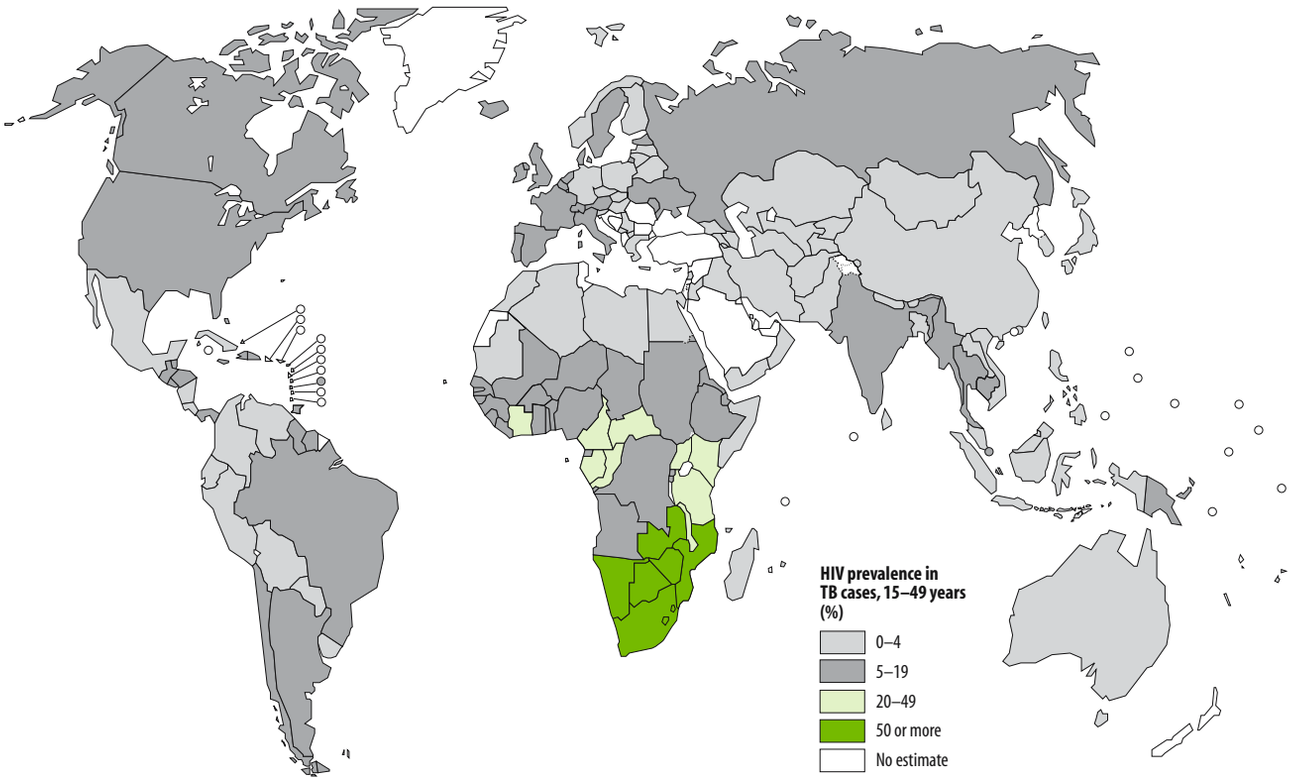


FIGURE 5

Estimated HIV prevalence in new adult TB cases, 2005



showing the relatively high rates in countries of eastern and southern Africa (subregion African – high HIV). Some countries have small populations but high rates of HIV infection; in Swaziland, for example, 75% of TB patients were estimated to be HIV-positive in 2005. Figure 6 shows how the number of HIV-infected TB patients varies among countries and regions. South Africa, with 0.7% of the world's population, had 19% of all cases of TB in adult HIV-positive people in 2005, while 10% of cases lived in India. The rest of the African Region accounted for a further 61% of HIV-infected TB cases in 2005.

Using the time series of notifications of all TB cases from countries thought to have reliable data, and scaling by the estimated rates of case detection, we have estimated the trends in TB incidence (all forms of TB) for nine epidemiologically different subregions of the world (subdivisions of the six WHO regions) for the period 1990 to 2005 (Figure 7). In six of the nine subregions the incidence rate was stable or falling for most of this period. In subregions Africa – high HIV and Eastern Europe, incidence rates increased for most of the period since 1990 but now appear to have stabilized or begun to fall.

In subregion Africa – high HIV, the annual change in TB incidence runs almost parallel to the change in HIV prevalence. Since 1990, both HIV prevalence and TB incidence have been increasing more slowly each year and, by 2005, both indicators were falling (rates of change negative; Figure 8). The time series of estimates for some

FIGURE 6

Geographical distribution of HIV-positive TB cases, 2005.
For each country or region, the number of incident TB cases arising in people with HIV is shown as a percentage of the global total of such cases. AFR* is all countries in the WHO African Region except those shown separately; AMR* excludes Brazil; EUR* excludes the Russian Federation; SEAR* excludes India.

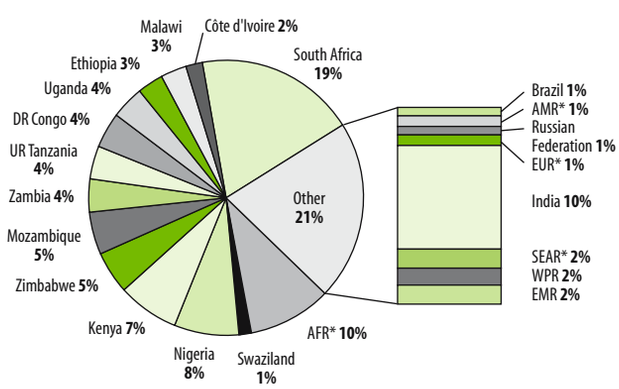


FIGURE 7

Trends in estimated TB incidence rates (per 100 000 per year, all forms, black lines), and the estimated annual change in incidence rates (green lines), for nine subregions and the world, 1990–2005. For each subregion, series are constructed with data from countries (shown in bold, facing page) whose surveillance systems are reliable enough to determine the national and sub-regional trends in incidence.

FIGURE 7

AFRICA – COUNTRIES WITH HIGH HIV PREVALENCE: **Botswana**, **Burkina Faso**, **Burundi**, **Cameroon**, Central African Rep, Chad, Congo, Côte d'Ivoire, DR Congo, Equatorial Guinea, Ethiopia, **Gabon**, **Kenya**, **Lesotho**, Liberia, **Malawi**, Mozambique, Namibia, Nigeria, Rwanda, South Africa, **Swaziland**, **Uganda**, **UR Tanzania**, **Zambia**, **Zimbabwe**.

AFRICA – COUNTRIES WITH LOW HIV PREVALENCE: Algeria, Angola, Benin, Cape Verde, Comoros, Eritrea, Gambia, Ghana, Guinea, Guinea-Bissau, **Madagascar**, **Mali**, Mauritania, Mauritius, Niger, Sao Tome & Principe, Senegal, Seychelles, **Sierra Leone**, **Togo**.

CENTRAL EUROPE: **Albania**, Bosnia & Herzegovina, Croatia, Cyprus, **Hungary**, Montenegro, **Poland**, Serbia, **Slovakia**, **Slovenia**, TFYR Macedonia, **Turkey**.

EASTERN EUROPE: **Armenia**, Azerbaijan, **Belarus**, **Bulgaria**, **Estonia**, Georgia, **Kazakhstan**, **Kyrgyzstan**, **Latvia**, **Lithuania**, Rep Moldova, **Romania**, **Russian Federation**, **Tajikistan**, **Turkmenistan**, **Ukraine**, **Uzbekistan**.

EASTERN MEDITERRANEAN: Afghanistan, Bahrain, Djibouti, Egypt, **Iran (Islamic Republic of)**, Iraq, **Jordan**, Kuwait, **Lebanon**, Libyan Arab Jamahiriya, **Morocco**, **Oman**, Pakistan, **Qatar**, **Saudi Arabia**, Somalia, Sudan, **Syrian Arab Rep**, **Tunisia**, United Arab Emirates, West Bank & Gaza Strip, Yemen.

ESTABLISHED MARKET ECONOMIES: Andorra, **Australia**, Austria, **Belgium**, Canada, **Czech Rep**, Denmark, **Finland**, France, **Germany**, Greece, **Iceland**, **Ireland**, Israel, Italy, Japan, Luxembourg, Malta, Monaco, Netherlands, **New Zealand**, Norway, **Portugal**, San Marino, **Singapore**, Spain, **Sweden**, **Switzerland**, **United Kingdom**, **United States**.

LATIN AMERICA: Anguilla, **Antigua & Barbuda**, **Argentina**, Bahamas, Barbados, Belize, **Bermuda**, **Bolivia**, Brazil, British Virgin Is, Cayman Is, **Chile**, **Colombia**, Costa Rica, **Cuba**, **Dominica**, Dominican Republic, Ecuador, **El Salvador**, **Grenada**, **Guatemala**, Guyana, Haiti, **Honduras**, **Jamaica**, **Mexico**, Montserrat, Netherlands Antilles, **Nicaragua**, Panama, **Paraguay**, **Peru**, **Puerto Rico**, **St Kitts & Nevis**, **St Lucia**, **St Vincent & the Grenadines**, Suriname, Trinidad & Tobago, Turks & Caicos Is, **Uruguay**, US Virgin Is, **Venezuela**.

SOUTH-EAST ASIA: Bangladesh, **Bhutan**, DPR Korea, **India**, Indonesia, Maldives, Myanmar, Nepal, Sri Lanka, Thailand, Timor-Leste.

WESTERN PACIFIC: American Samoa, Brunei Darussalam, Cambodia, **China**, **China Hong Kong SAR**, China Macao SAR, Cook Is, Fiji, French Polynesia, Guam, Kiribati, Lao PDR, **Malaysia**, Marshall Is, Micronesia, Mongolia, Nauru, New Caledonia, Niue, N Mariana Is, Palau, Papua New Guinea, Philippines, **Rep Korea**, Samoa, Solomon Is, Tokelau, Tonga, Vanuatu, Viet Nam, Wallis & Futuna Is.

FIGURE 8

Annual changes (%) in estimated HIV prevalence rate (15–49 years old, green line) and the TB case notification rate (black line, see figure 7) for sub-region Africa high-HIV.
Changes are to the year marked from the preceding year, 1990–1 et seq. Estimates of HIV prevalence are from UNAIDS (personal communication).

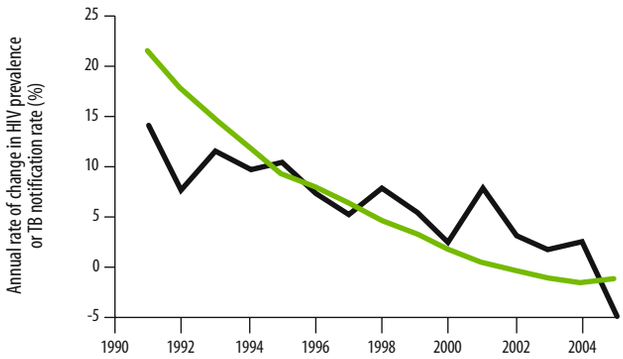
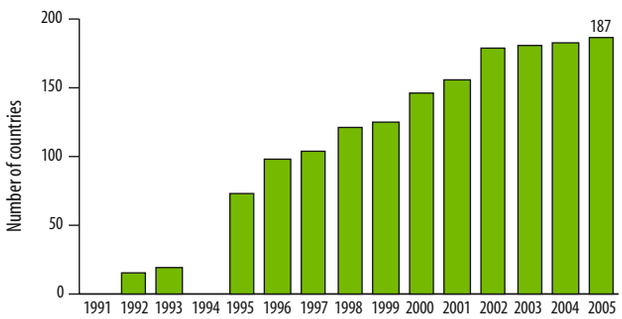


FIGURE 9

Number of countries implementing DOTS (out of a total of 212 countries), 1991–2005



African countries show the expected lag between peak HIV prevalence and peak TB incidence rate. In Zimbabwe, for example, estimated HIV prevalence reached a maximum in 1997, while the TB case notification rate was highest in 2002.

In subregion Africa – low HIV, the TB incidence rate was evidently still increasing in 2005. In eastern Europe, the annual increase in the incidence rate reached nearly 20% in 1995 but had stabilized by year 2000.

The global incidence rate of TB peaked around 2002 and appears now to have stabilized or begun to decline (Figure 7). The incidence rate is now stable or falling in all six WHO regions. However, the slow decline in incidence rates per capita is offset by population growth. Consequently, the number of new cases arising each year is still increasing globally and in the WHO regions of Africa, the Eastern Mediterranean and South-East Asia.

DOTS coverage

The total number of countries implementing DOTS increased steadily from 1995 but had stabilized at about 180 by 2002, rising a little closer to the maximum in 2005 (187 out of 212; Figure 9). All 22 HBCs have had DOTS programmes since 2000; many of which have been established for much longer. DOTS coverage within countries has steadily increased since 1995 (Figure 10; Table 10). By the end of 2005, 89% of the world's population lived in counties, districts, oblasts and provinces of countries that had adopted DOTS. Geographical coverage was reported to be more than 80% in all regions except Europe (Figure 11).

All but four HBCs had at least 90% of the population living in areas where DOTS has been implemented. Population coverage in the remaining four – Afghanistan, Brazil, Nigeria, and the Russian Federation – was 81%, 68%, 65%, and 83% respectively.

Case notification and case detection

A total of 4.8 million new cases of TB were notified from all sources in 2005. This represents 55% of the 8.8 million estimated new cases; the 2.4 million new smear-positive cases notified account for 62% of the 3.9 million estimated (Tables 8, 9; Annex 2).

The detection rate of new smear-positive cases from all

FIGURE 10

DOTS coverage, 1995–2005

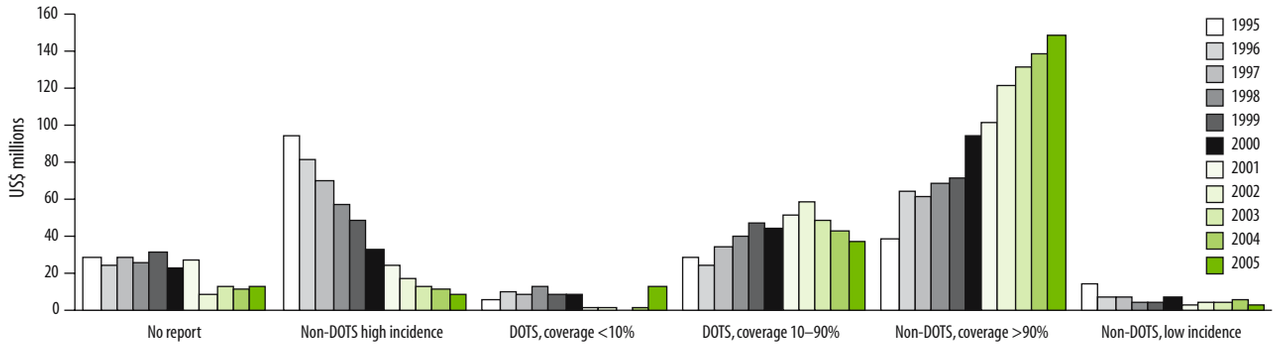


TABLE 10

Progress in DOTS implementation, 1995–2005

	PERCENT OF POPULATION COVERED BY DOTS										
	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
1 India	1.5	2	2.3	9	13.5	30	45	51.6	67.2	84.0	91.0
2 China	49	60.4	64.2	63.9	64	68	68	77.6	91	96	100
3 Indonesia	6	13.7	28.3	80	90	98	98	98	98	98	98
4 Nigeria	47	30	40	45	45	47	55	55	60	65	65
5 Bangladesh	40.5	65	80	90	90	92	95	95	99	99	99
6 Pakistan	2.0	8	–	8	8	9	24	45	63	79	100
7 South Africa	–	0	13	22	66	77	77	98	99.5	93	94
8 Ethiopia	39	39	48	64.4	63	85	70	95	95	70	90
9 Philippines	4.3	2	15	16.9	43	89.6	95	98	100	100	100
10 Kenya	15	100	100	100	100	100	100	100	100	100	100
11 DR Congo	47	51.4	60	60	62	70	70	70	75	75	100
12 Russian Federation	–	2.3	2.3	5	5	12	16	25	25	45	83
13 Viet Nam	50	95	93	96	98.5	99.8	99.8	99.9	100	100	99.9
14 UR Tanzania	98	100	100	100	100	100	100	100	100	100	100
15 Brazil	–	0	0	3	7	7	32	25	33.6	52	68
16 Uganda	–	0	100	100	100	100	100	100	100	100	100
17 Thailand	–	1.1	4	32	59	70	82	100	100	100	100
18 Mozambique	97	100	84	95	–	100	100	100	100	100	100
19 Myanmar	–	59	60	60.3	64	77	84	88.3	95	95	95
20 Zimbabwe	–	0	0	100	11.6	100	100	100	100	100	100
21 Cambodia	60	80	88	100	100	99	100	100	100	100	100
22 Afghanistan	–	–	12	11	13.5	15	12	38	53	68	81
High-burden countries	**24**	**32**	**36**	**43**	**46**	**55**	**61**	**68**	**79**	**87**	**94**
AFR	43	46	56	61	56	71	69	81	85	84	89
AMR	12	48	50	55	65	68	73	73	78	83	88
EMR	16	12	18	33	51	65	71	78	86	90	97
EUR	5.4	8.2	17	22	23	26	32	40	42	47	60
SEAR	6.6	12	16	29	36	49	60	66	77	89	93
WPR	43	55	57	58	57	67	68	77	90	94	98
Global	**22**	**32**	**37**	**43**	**47**	**57**	**62**	**69**	**77**	**83**	**89**

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

FIGURE 11

DOTS coverage by WHO region, 2005. The shaded portion of each bar shows the DOTS coverage as a percent of the population. The numbers in each bar show the population (in millions) within (green portion) or outside (grey portion) DOTS areas.

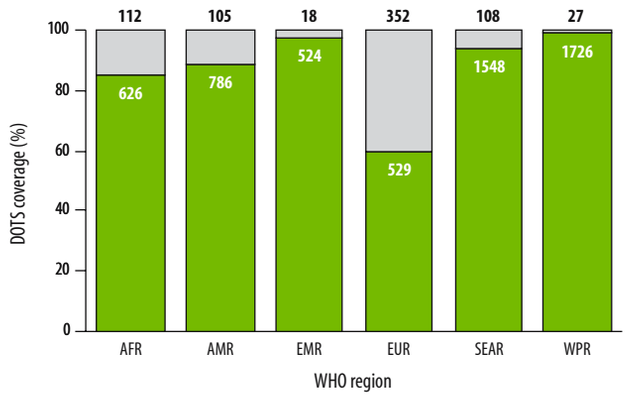
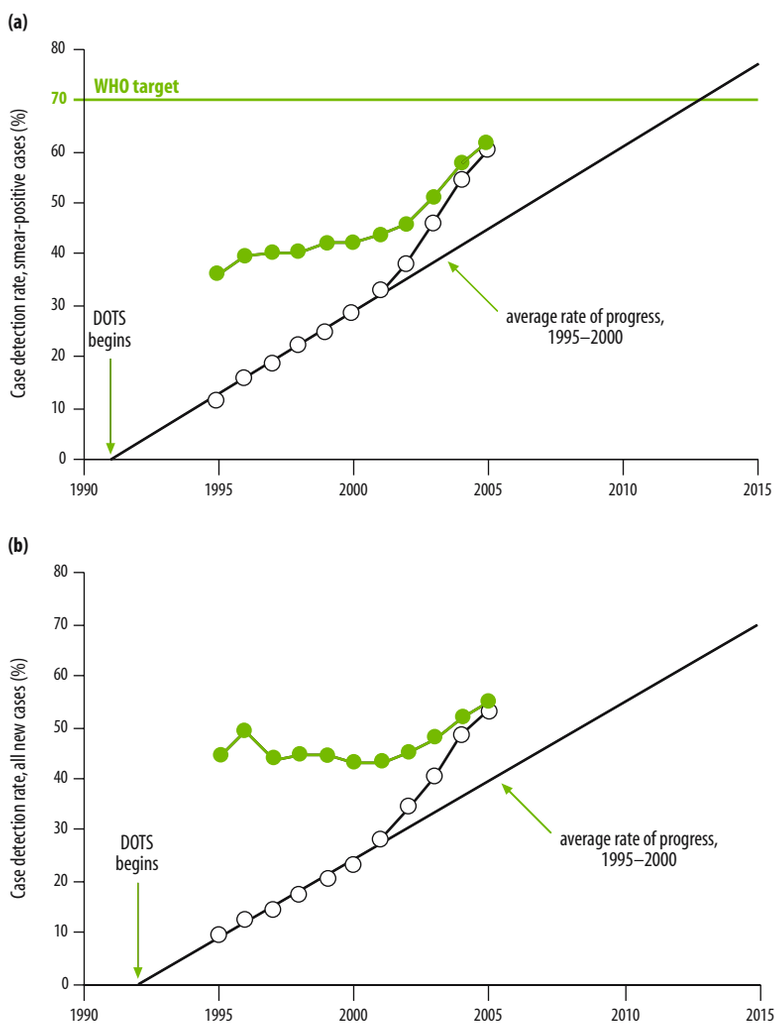


FIGURE 12

Progress towards the 70% case detection target. (a) Open circles mark the number of new smear-positive cases notified under DOTS 1995–2004, expressed as a percentage of estimated new cases in each year. The solid line through these points indicates the average annual increment from 1995 to 2000 of about 134 000 new cases, compared to the increment from 2004 to 2005 of about 242 000 cases. 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 new cases (excluding relapses).



sources increased slowly and linearly from 1995 to 2001 and then more quickly from 2002 to 2005 (Figure 12a). The increase from 2002 to 2005 is attributable mostly to increases in the numbers of new smear-positive cases reported in the South-East Asia and Western Pacific regions. The detection rate of all new TB cases, from DOTS and non-DOTS programmes, remained approximately stable from 1995 to 2001 but increased between 2002 and 2005 (Figure 12b).

DOTS programmes detected an estimated 53% of all new cases and 60% of new smear-positive cases in 2005. The detection rate achieved by DOTS programmes, of both smear-positive and all new TB cases, has accelerated sharply since 2000, rising more quickly than the overall (DOTS and non-DOTS) case detection rate (Figure 12). However, the increase in the smear-positive case detection rate under DOTS is slowing: the increment between 2004 (54%) and 2005 (60%) was 6%, which is less than in the two preceding yearly intervals (Table 11, Figure 12).

The point estimate of 60% smear-positive case detection rate by DOTS programmes in 2005 is below the 70% target. There is, however, much uncertainty surrounding this estimate: 95% confidence limits range from 52% to 69%, with a small chance (0.7%) of the true estimate lying at ≥70%.

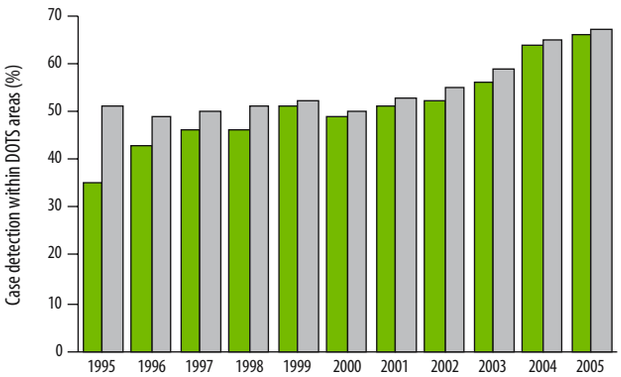
Since case detection under DOTS has increased faster than the overall rate of case detection, the proportion of all notified new smear-positive cases that were notified by DOTS programmes has increased, reaching 97% in 2005. Almost all TB cases (96%) reported to WHO in 2005 were reported by DOTS programmes (Table 8).

The case detection rate within DOTS areas (measured by the ratio of case detection to population coverage) changed little between 1995 and 2001, averaging 51% worldwide, but had increased to 67% by 2005 (Figure 13). Data from the 22 HBCs show the same pattern of change, where recent increases since 2000 have been driven mainly, but not exclusively, by improvements in Asia: Bangladesh, China, India, Indonesia, Myanmar and the Philippines (Tables 10, 11; Figure 13; Annex 1).

Comparing the WHO regions, new smear-positive case detection rates by DOTS programmes in 2005 were lowest in the European (35%) and Eastern Mediterranean regions (44%) and highest in the Region of the Americas (65%), the South-East Asia Region (64%) and the Western Pacific Region (76%; Table 11, Figure 14). Only the Western Pacific Region met the 2005 target.

FIGURE 13

Smear-positive case detection rate within DOTS areas[a] for high-burden countries (green) and the world (grey), 1995–2005



[a] Calculated as DOTS case detection rate of new smear-positive cases divided by DOTS coverage

FIGURE 14

Smear-positive case detection rate by DOTS programmes, by WHO region, 1995–2005. Heavy line shows global DOTS case detection rate.

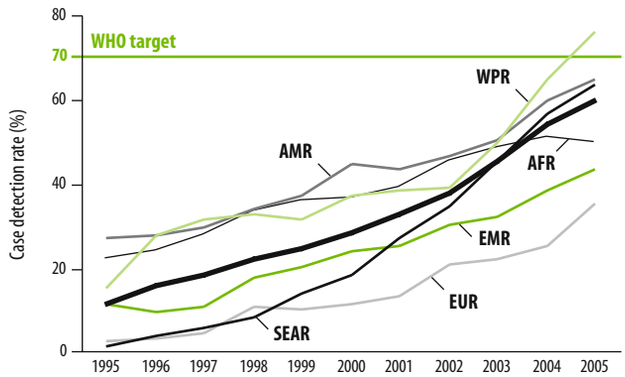


TABLE 11

Case detection rate of new smear-positive cases (%), 1995–2005

		DOTS PROGRAMMES											WHOLE COUNTRY										
		1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
1	India	0.3	0.9	1.1	1.7	7.0	12	24	31	45	57	61	38	41	38	38	46	46	49	50	54	60	62
2	China	15	28	32	32	29	31	31	30	43	63	80	22	34	39	33	33	34	34	32	45	65	80
3	Indonesia	1.3	4.4	7.4	12	19	20	22	31	38	53	66	12	4.4	7.4	12	19	21	*	31	*	53	66
4	Nigeria	11	11	11	12	13	13	14	13	18	21	22	*	11	*	*	13	13	17	15	*	21	22
5	Bangladesh	7.0	15	19	24	25	26	28	32	38	44	59	16	22	25	28	28	28	29	33	38	44	*
6	Pakistan	1.0	1.8	–	3.7	2.0	2.8	5.3	13	17	27	37	2.5	*	–	13	5.5	*	9.2	13	*	*	*
7	South Africa	–	–	5.0	18	57	62	67	88	101	104	103	33	55	65	74	76	75	79	89	101	109	108
8	Ethiopia	15	20	22	24	25	33	33	34	35	36	33	*	*	*	*	*	*	*	34	35	36	33
9	Philippines	0.4	0.5	3.2	10	20	48	56	61	68	72	75	96	87	80	68	71	64	56	61	68	72	75
10	Kenya	55	57	53	56	55	46	49	48	48	47	43	55	57	53	*	*	50	*	*	*	*	*
11	DR Congo	41	47	44	55	54	52	56	55	63	71	72	46	*	44	55	*	*	56	*	*	*	*
12	Russian Federation	–	0.4	0.9	0.9	1.6	4.4	5.0	6.6	8.3	13	30	68	66	60	56	27	33	32	35	38	41	43
13	Viet Nam	30	59	78	83	83	82	83	87	85	89	84	59	77	*	85	83	*	*	87	*	*	84
14	UR Tanzania	56	55	52	53	51	47	46	43	45	46	45	*	55	*	53	*	*	46	43	*	*	*
15	Brazil	–	–	–	4.1	3.9	7.5	7.8	9.4	18	45	53	80	79	79	80	77	78	74	81	79	86	86
16	Uganda	–	–	58	58	57	49	45	45	45	46	45	49	54	*	*	57	*	*	*	*	*	45
17	Thailand	–	0.3	5.0	21	39	46	72	65	71	70	73	55	46	35	*	*	*	*	*	*	70	73
18	Mozambique	52	47	46	47	46	44	44	45	46	47	49	*	*	46	47	46	*	44	*	46	47	*
19	Myanmar	–	26	26	29	32	48	56	65	73	83	95	26	28	28	*	*	*	58	*	73	83	95
20	Zimbabwe	–	–	–	50	47	44	44	45	41	43	41	48	52	55	50	*	44	44	*	41	*	*
21	Cambodia	40	34	44	47	53	49	47	56	61	60	66	*	42	*	47	*	49	*	56	61	*	*
22	Afghanistan	–	–	2.7	8.2	7.5	13	21	29	28	36	44	–	–	*	*	7.5	*	*	*	28	*	*
High-burden countries		**8.4**	**14**	**17**	**20**	**23**	**27**	**31**	**36**	**44**	**55**	**62**	**32**	**36**	**37**	**37**	**39**	**39**	**41**	**43**	**49**	**58**	**63**
	AFR	22	24	28	33	36	37	39	45	49	51	50	36	41	39	43	43	41	43	46	49	52	51
	AMR	27	28	30	34	37	45	44	47	51	60	65	71	72	77	77	76	76	76	77	77	79	80
	EMR	11	9.6	11	18	20	24	26	30	32	39	44	21	26	25	32	29	25	28	31	33	39	45
	EUR	2.5	3.3	4.4	11	10	11	14	21	22	25	35	61	61	56	56	43	45	41	41	50	46	48
	SEAR	1.5	4.1	5.6	8.2	14	19	27	34	45	57	64	29	30	30	30	38	40	43	47	51	59	64
	WPR	15	28	31	33	31	37	38	39	50	65	76	36	45	48	44	44	43	43	43	52	67	78
Global		**11**	**16**	**18**	**22**	**25**	**28**	**33**	**38**	**45**	**54**	**60**	**36**	**40**	**40**	**40**	**42**	**42**	**44**	**46**	**51**	**58**	**62**

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

FIGURE 15

Proportion of estimated new smear-positive (a) and of all new cases (b) notified under DOTS (grey portion of bars) and non-DOTS (green portion of bars), 2005. Figures indicate the number of cases (in thousands) represented by each portion of each bar.

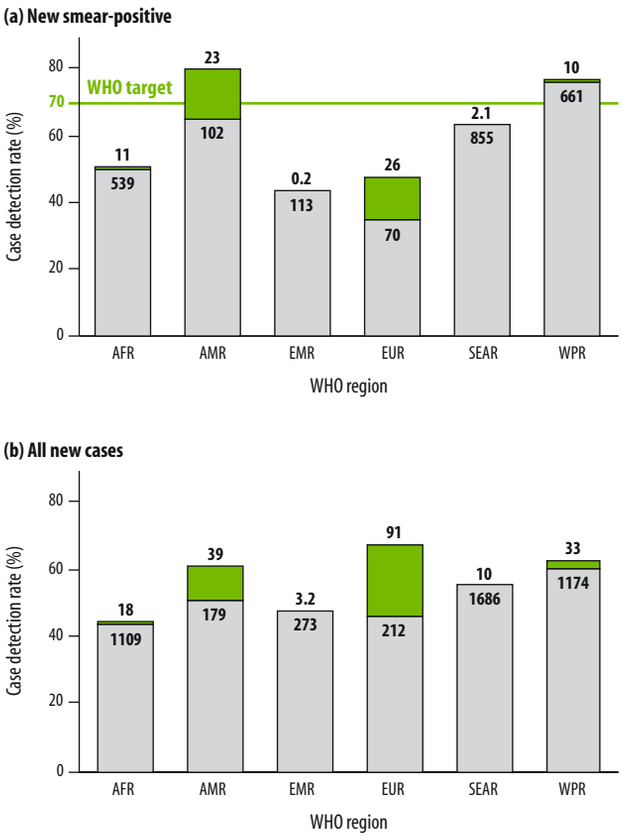
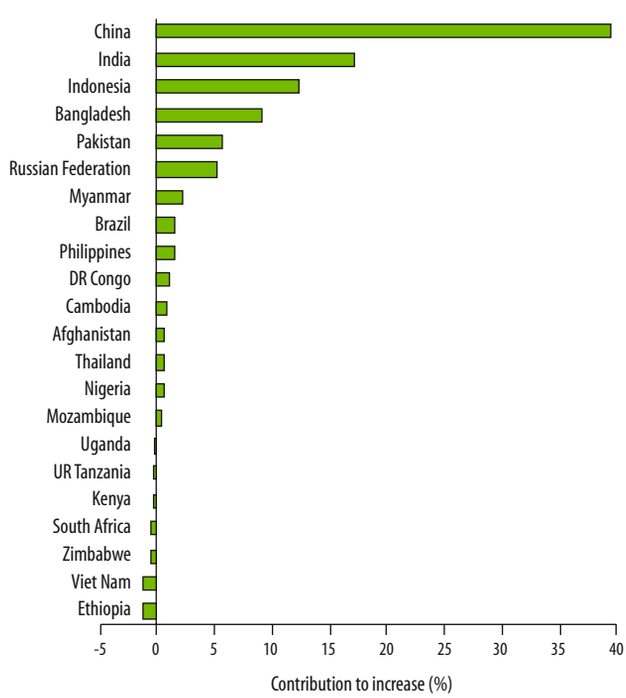


FIGURE 16

Contributions to the global increase in the number of new smear-positive cases notified under DOTS made by high-burden countries, 2004–2005



In the three regions with the highest rates of case detection – South-East Asia, the Americas and the Western Pacific – the increment between 2004 and 2005 was smaller than in the preceding year. Among the HBCs, the deceleration in case detection was most conspicuous in India.

The Region of the Americas and the European Region reported the largest numbers of cases from outside DOTS programmes. Counting all smear-positive cases, the case detection rate in the Region of the Americas exceeded 70% (Table 11, Figure 15a). Counting all new cases, the overall case detection rate in Europe was 68% (Figure 15b).

Estimates of the case detection rates for individual countries suggest that 67 countries met the 70% target by the end of 2005. Of the additional new smear-positive cases reported by DOTS programmes in 2005 (compared with 2004), 39% were in China and 17% were in India (Figure 16). China and India have made big improvements in case detection in recent years, but these two countries still accounted for an estimated 28% of all undetected new smear-positive cases in 2005. However, in 2005, Nigeria had succeeded China as the second largest reservoir of undetected cases. These three countries are among eight that together accounted for 59% of all cases not detected by DOTS programmes in 2005 (Figure 17).

Outcomes of treatment

More than two million new smear-positive cases were registered for treatment in DOTS programmes in 2004, approximately the same number that were notified that year (Table 12). Discrepancies between the numbers of cases notified and registered for treatment were small globally, by region and for most HBCs. The largest proportional difference between notified and registered cases was reported by the Russian Federation.

The cure rate among cases registered under DOTS worldwide was 77%, and a further 7% completed treatment (no laboratory confirmation of cure), giving a reported, overall treatment success rate of 84%, i.e. 1% below the 85% target set for the 2004 cohort (evaluated by

FIGURE 17

Smear-positive TB cases undetected by DOTS programmes in eight high-burden countries, 2005. Numbers above the bars indicate the proportion of all missed cases which were missed by each country.

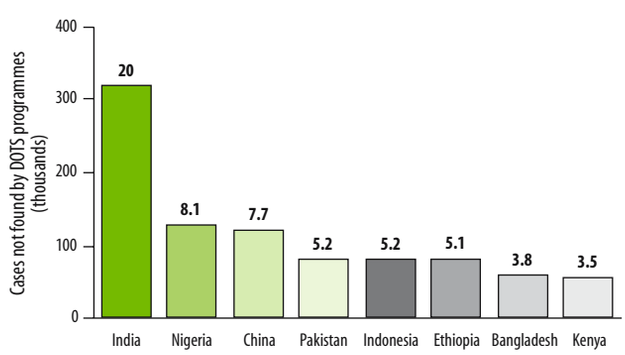


TABLE 12

Treatment outcomes for new smear-positive cases, DOTS strategy, 2004 cohort

		NOTIFIED	REGISTERED[a]	REGST'D (%)	TREATMENT OUTCOMES (%)[a] CURED	COMPLETED TREATMENT[a]	DIED	FAILED	DEFAULTED	TRANS-FERRED	NOT EVAL'D	TREATMENT SUCCESS (%)	% EST[a] CASES SUCCESSFULLY TREATED UNDER DOTS
1	India	465 518	465 518	100	84	2.3	4.4	2.4	6.6	0.4	0.0	86†	49
2	China	377 546	377 546	100	91	2.5	1.7	1.0	1.0	0.9	1.6	94†	59
3	Indonesia	128 981	128 981	100	81	8.2	2.5	1.1	5.0	1.7	0.0	90†	48
4	Nigeria	33 755	33 755	100	62	12	6.3	2.4	12	1.9	4.3	73	16
5	Bangladesh	62 694	62 694	100	88	1.2	3.8	0.7	2.8	2.4	0.6	90†	39
6	Pakistan	33 746	33 152	98	70	12	2.8	0.8	11	3.8	0.2	82	22
7	South Africa	120 977	120 977	100	54	15	7.4	1.5	11	6.2	4.5	70	73
8	Ethiopia	41 430	41 430	100	64	15	6.2	0.7	4.7	5.0	4.0	79	29
9	Philippines	78 163	78 163	100	79	7.7	2.3	1.0	4.7	2.5	2.8	87†	63
10	Kenya	41 167	41 167	100	69	11	5.0	0.2	7.0	5.1	2.3	80	38
11	DR Congo	62 192	62 192	100	79	5.5	5.9	1.1	4.8	2.9	0.5	85	60
12	Russian Federation	9 926	7 108	72	55	3.7	14	14	9.8	4.4	0.0	59	5.5
13	Viet Nam	58 394	58 370	100	91	2.1	3.3	0.9	1.4	1.7	0.0	93†	82
14	UR Tanzania	25 823	25 823	100	78	3.1	10	0.3	3.6	4.7	0.1	81	37
15	Brazil	22 532	22 532	100	46	35	5.4	0.6	7.9	4.6	0.5	81	37
16	Uganda	20 986	20 986	100	31	39	6.6	0.5	17	5.5	0.3	70	33
17	Thailand	28 421	28 421	100	70	3.9	8.6	1.7	6.1	3.8	5.4	74	52
18	Mozambique	17 058	17 058	100	75	1.3	13	1.1	7.2	2.3	0.1	77	36
19	Myanmar	31 408	31 413	100	75	8.3	5.5	2.2	6.2	2.5	0.0	84	69
20	Zimbabwe	14 581	14 581	100	50	4.6	12	1.7	7.6	9.4	15	54	24
21	Cambodia	18 978	18 978	100	89	2.6	4.0	0.2	2.3	2.0	0.0	91†	55
22	Afghanistan	8 273	9 976	121	79	10	3.0	1.8	2.7	3.4	0.0	89†	39
High-burden countries		**1 702 549**	**1 700 821**	**100**	**80**	**6.1**	**4.2**	**1.5**	**5.3**	**2.1**	**1.3**	**86†**	**47**
	AFR	537 591	538 641	100	62	12	7.0	1.3	9.4	4.9	3.1	74	38
	AMR	99 991	96 613	97	60	19	5.0	1.1	6.1	3.2	5.0	80	48
	EMR	96 769	98 426	102	72	11	2.9	1.2	7.7	2.7	2.8	83	32
	EUR	52 286	48 471	93	59	14	6.8	6.7	6.5	2.9	3.4	74	18
	SEAR	755 479	755 489	100	83	3.6	4.2	2.0	5.9	1.1	0.3	87†	49
	WPR	564 871	566 238	100	87	3.9	2.3	1.0	1.7	1.4	2.5	91†	59
Global		**2 106 987**	**2 103 878**	**100**	**77**	**7.3**	**4.4**	**1.6**	**5.8**	**2.4**	**2.0**	**84**	**46**

Values over 10 shown as whole numbers.

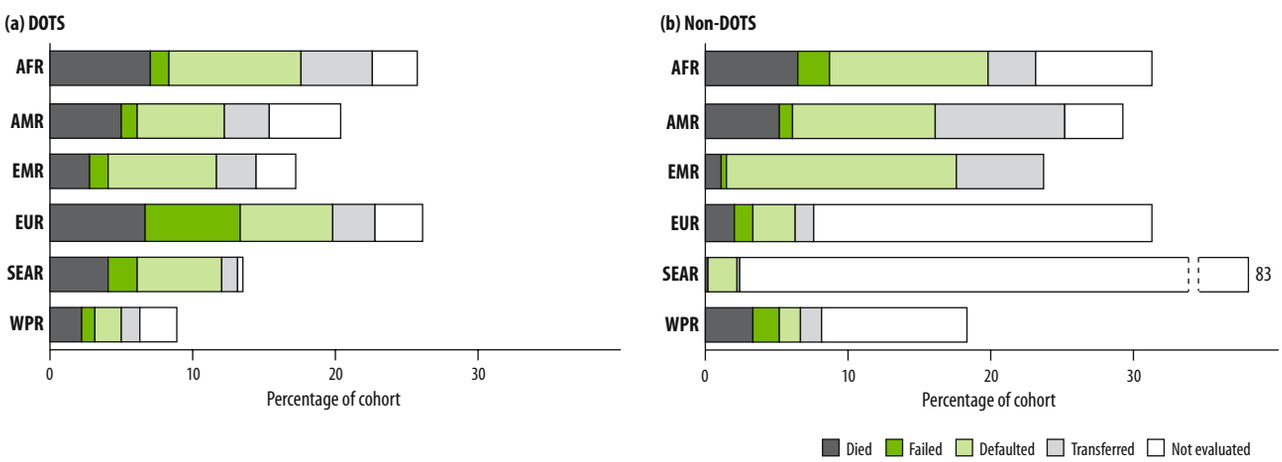
a Cohort: cases diagnosed during 2004 and treated/followed-up through 2005. See Table 5 and accompanying text for definitions of treatment outcomes. If the number registered was provided, this (or the sum of the outcomes, if greater) was used as the denominator for calculating treatment outcomes. If 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 2004 (as opposed to notified or registered).

† Treatment success ≥ 85% (treatment success for DR Congo 84.8%).

Laboratory-confirmed notifications from Israel and USA included here under smear-positive notifications.

FIGURE 18

Outcomes for those patients not successfully treated in (a) DOTS and (b) non-DOTS areas, by WHO region, 2004 cohort



the end of 2005; Table 12). An estimated 46% of all smear-positive cases arising in 2004 were treated successfully by DOTS programmes. Of all patients treated under DOTS, 10% had no reported outcome (defaulted, transferred, not evaluated). Treatment results for 11 consecutive cohorts (1994–2004) of new smear-positive patients show that the success rates have been 80% or more in DOTS areas since 1998, even though the number of patients has increased from 240 000 in 1994 to over 2 million in 2004 (Tables 12, 13).

The differences in treatment outcomes among WHO regions were similar to those reported in previous years. Documented treatment success rates by DOTS programmes varied from 74% in Europe and Africa, to 87% in South-East Asia and 91% in the Western Pacific, the latter two regions having exceeded the 85% target (Table 12, Figure 18). Death during treatment was most common in the African Region (7%), where a higher fraction of cases are HIV-positive, and in the European Region (7%), where a higher fraction of cases are drug resistant (eastern Europe) or occur among the elderly (western and central Europe). Treatment interruption (default) was most frequent in the African Region (9%) and the Eastern Mediterranean Region (8%). Transfer without follow-up was also especially high in the African Region (5%). Treatment failure was conspicuously high in the European Region (7%), mainly because failure rates were high in eastern Europe.

DOTS treatment success reached or exceeded 85% in eight HBCs (Table 12), and in 57 countries in total. It was under 60% in Zimbabwe and the Russian Federation, and 90% or more in Cambodia, China, and Viet Nam. Treatment results for individual African countries once again point to the effects of HIV and inadequate patient support: cohort death rates were more than 7% in Mozambique, South Africa, UR Tanzania and Zimbabwe. HIV may also have contributed to the high death rate in Thailand (7%) although, among Asian countries, Thailand has a relatively high proportion of elderly patients (Annex 1).

Treatment outcomes are also poor in some African

TABLE 13

Treatment success for new smear-positive cases (%), 1994–2004 cohorts[a]

	DOTS PROGRAMMES										
	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
1 India	83	79	79	82	84	82	84	85	87	86	86
2 China	94	96	96	96	97	96	95	96	93	94	94
3 Indonesia	94	91	81	54	58	50	87	86	86	87	90
4 Nigeria	65	49	32	73	73	75	79	79	79	78	73
5 Bangladesh	73	71	72	78	80	81	83	84	84	85	90
6 Pakistan	74	70	–	67	66	70	74	77	77	75	82
7 South Africa	–	–	69	73	74	60	66	65	68	67	70
8 Ethiopia	74	61	73	72	74	76	80	76	76	70	79
9 Philippines	80	–	82	83	84	87	88	88	88	88	87
10 Kenya	73	75	77	65	77	78	80	80	79	80	80
11 DR Congo	71	80	48	64	70	69	78	77	78	83	85
12 Russian Federation	–	65	62	67	68	65	68	67	67	61	59
13 Viet Nam	91	91	90	85	93	92	92	93	92	92	93
14 UR Tanzania	80	73	76	77	76	78	78	81	80	81	81
15 Brazil	–	–	–	–	91	89	73	67	75	83	81
16 Uganda	–	–	33	40	62	61	63	56	60	68	70
17 Thailand	–	–	78	62	68	77	69	75	74	73	74
18 Mozambique	67	39	54	67	–	71	75	78	78	76	77
19 Myanmar	–	66	79	82	82	81	82	81	81	81	84
20 Zimbabwe	–	–	–	–	70	73	69	71	67	66	54
21 Cambodia	84	91	94	91	95	93	91	92	92	93	91
22 Afghanistan	–	–	–	45	33	87	86	84	87	86	89
High-burden countries	**87**	**83**	**78**	**81**	**83**	**81**	**84**	**84**	**83**	**84**	**86**
AFR	59	62	57	63	70	69	72	71	73	73	74
AMR	77	77	83	82	81	83	81	82	83	83	80
EMR	82	87	86	79	77	83	83	83	83	82	83
EUR	68	69	72	72	76	77	77	75	76	75	74
SEAR	80	74	77	72	72	73	83	84	85	85	87
WPR	90	91	93	93	95	94	92	93	90	91	91
Global	**77**	**79**	**77**	**79**	**81**	**80**	**82**	**82**	**82**	**83**	**84**

– Indicates not available.

[a] See notes for Table 12.

TABLE 14

Re-treatment outcomes for smear-positive cases, DOTS strategy, 2004 cohort[a]

	REGISTERED	TREATMENT OUTCOMES (%)							TREATMENT SUCCESS (%)
		CURED	COMPLETED TREATMENT	DIED	FAILED	DEFAULTED	TRANS-FERRED	NOT EVAL'D	
1 India	196 726	50	23	6.9	4.5	15	0.7	0.1	73
2 China	106 741	84	5.5	2.6	2.7	1.6	1.1	2.9	89†
3 Indonesia	4 429	62	20	4.4	3.2	6.6	4.1	0.0	82
4 Nigeria	3 421	62	11	8.8	4.7	12	1.6	0.1	73
5 Bangladesh	4 305	76	5.1	4.0	2.8	5.9	4.2	1.9	81
6 Pakistan	5 079	63	14	3.8	2.2	12	4.6	0.0	78
7 South Africa	53 511	27	29	12	2.4	17	6.8	6.2	56
8 Ethiopia	3 197	38	16	8.8	2.2	4.6	3.3	27	54
9 Philippines	3 498	41	12	3.8	5.3	5.7	4.2	28	53
10 Kenya	3 646	66	10	11	0.7	6.6	5.4	0.0	76
11 DR Congo	5 463	67	4.4	8.9	4.6	5.3	4.6	5.6	71
12 Russian Federation	3 011	35	3.6	15	26	15	5.4	0.0	39
13 Viet Nam	7 438	80	4.3	5.7	4.8	3.0	2.4	0.0	84
14 UR Tanzania	4 953	36	40	14	0.5	4.0	4.7	1.0	76
15 Brazil	5 029	25	27	7.2	1.2	16	9.2	15	51
16 Uganda	1 592	30	38	7.7	0.8	12	4.8	6.7	68
17 Thailand	2 240	51	5.3	10	6.0	6.6	4.4	17	56
18 Mozambique	–	–	–	–	–	–	–	–	–
19 Myanmar	6 012	60	14	9.0	5.2	7.9	4.1	0.0	74
20 Zimbabwe	6 931	28	25	11	3.5	5.6	4.6	22	53
21 Cambodia	912	71	15	5.8	1.2	3.7	3.6	0.0	86†
22 Afghanistan	–	–	–	–	–	–	–	–	–
High-burden countries	**428 134**	**56**	**18**	**6.6**	**3.7**	**11**	**2.2**	**2.7**	**74**
AFR	96 827	36	24	11	2.6	13	5.8	8.0	60
AMR	11 640	41	18	6.4	2.9	14	6.2	12	59
EMR	10 654	58	16	4.5	3.3	10	3.8	4.1	74
EUR	25 159	33	20	10	11	12	3.9	10	52
SEAR	226 364	52	22	6.7	4.8	14	1.1	0.3	73
WPR	126 075	80	6.1	3.0	2.9	2.0	1.7	4.5	86†
Global	**496 719**	**55**	**18**	**6.8**	**4.1**	**10**	**2.5**	**3.7**	**73**

– Indicates not available.
† Treatment success ≥ 85%
[a] See notes for Table 12.

countries because many patients are lost to follow-up: more than 10% of patients had no recorded outcome in Ethiopia, Kenya, Nigeria, South Africa, Uganda and Zimbabwe (Table 12). The same was true of Brazil, Pakistan, the Philippines and the Russian Federation. Large numbers of patients completed treatment without confirming cure (a final, negative sputum smear) in Brazil (35%) and Uganda (39%).

A total of 496 719 patients were reported to have been re-treated under DOTS in 2004 (Table 14). While some patients remained on treatment (included with those not evaluated), the re-treatment success rate by the end of 2005 was 73%.

When the three registration categories (re-treatment after relapse (post cure), failure and default) are distinguished and compared with new TB patients, three patterns appear. First, the treatment success was lower on average for re-treatment (73%) than for new cases (84%) (Tables 12, 14). In the 2004 cohort of re-treated patients, re-treatment success was higher post-relapse than post-default in eight out of eight HBCs that provided data, and higher post-default than post-failure in four out of seven HBCs (Annex 2). Second, patients who defaulted from their first course of treatment tended to default when treated again. In all eight HBCs that submitted data, patients who were re-treated after default did not complete the subsequent course of treatment more often than patients who were re-treated after relapse or failure. Third, the regional distribution of adverse re-treatment outcomes resembled the pattern observed for new cases. For example, countries in the African Region reported high death rates (11%; Table 14). Countries in the European Region reported high rates of death (10%) and treatment failure (11%). Re-treatment success was much lower than 85% in all regions except the Western Pacific.

For non-DOTS areas, only five of the 12 HBCs that do not have full DOTS coverage provided treatment results for new smear-positive patients in the 2004 cohort. In

India, 93% of 23 677 patients were not evaluated. In China, 91% of 7340 patients were treated successfully. Brazil, the Russian Federation and South Africa reported treatment success rates of 70% (of 20 349 patients), 61% (of 18 570) and 55% (of 5921), respectively.

Meeting targets for case detection and cure – results by country, region and worldwide

The data and estimates in this report suggest that the world as a whole narrowly failed to meet the targets for case detection (60%/70%) and treatment success (84%/85%). Both targets were reached in the Western Pacific Region, and the South-East Asia Region achieved more than 85% treatment success. All other WHO regions missed both targets. The European Region performed worst on both indicators.

Data on both treatment success and case detection were provided by 187 DOTS countries. Case detection exceeded 50%, and treatment success exceeded 70%, in 85 countries (Figure 19). Of these countries, 26 appear to have reached both WHO targets. They include the HBCs China, the Philippines and Viet Nam (Figure 19, 20). Of 164 countries that provided data for both the 2003 and the 2004 cohorts, 87 (53%) showed higher treatment success rates for the 2004 cohort, and 59 of 177 (33%) improved case detection by more than 5% between 2004 and 2005.

The country profiles in Annex 1 give more details of progress in each of the 22 HBCs. Annex 2 tabulates case detection and treatment success rates by country over the 11 years for which data are available.

FIGURE 19

DOTS status in 2005, countries close to targets. 85 countries reported treatment success rates 70% or over and DOTS detection rates 50% or over. 26 countries (including 1 country out of range of graph) have reached both targets; 1 in the African Region, 4 in the Region of the Americas, 5 in the Eastern Mediterranean Region, 5 in the European Region, 3 in the South-East Asia Region and 8 in the Western Pacific Region.

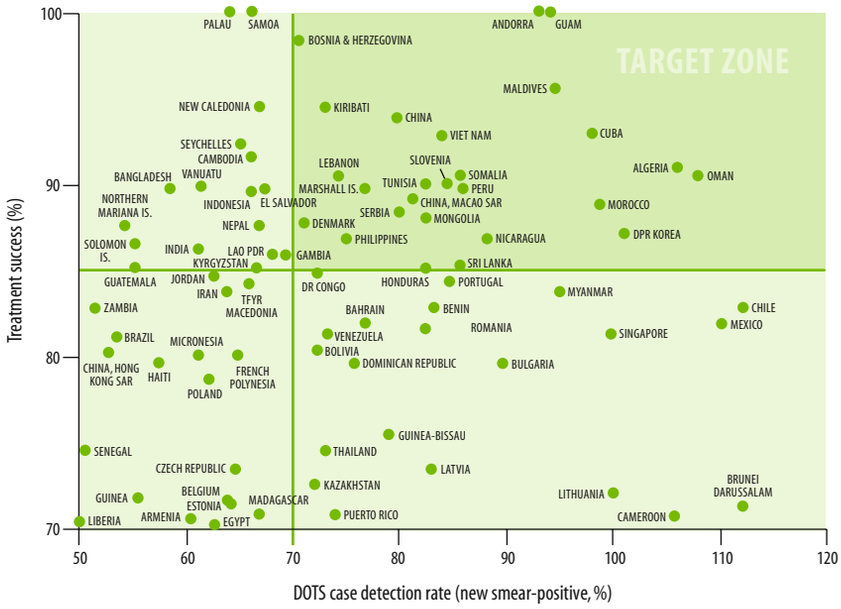
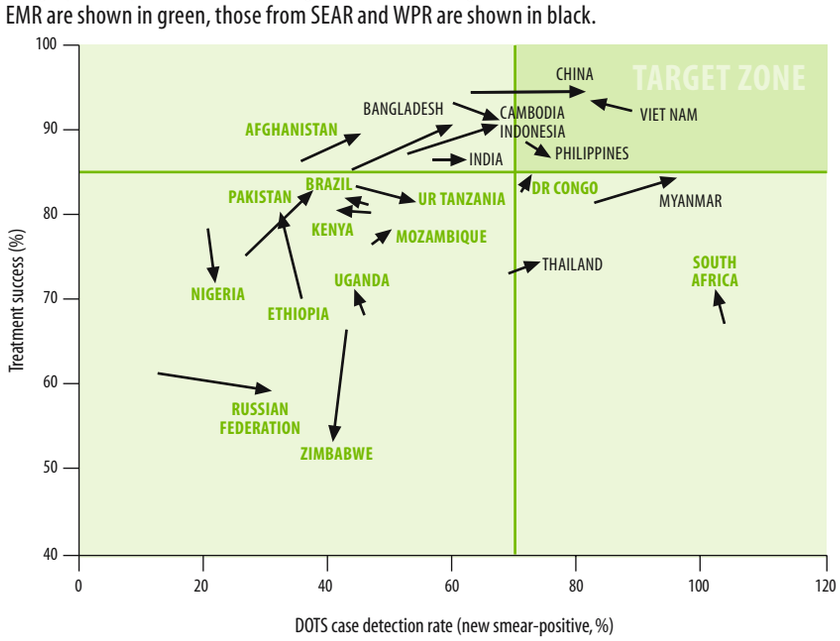


FIGURE 20

DOTS progress in high-burden countries, 2004–2005. Treatment success refers to cohorts of patients registered in 2003 or 2004, and evaluated, respectively, by the end of 2004 or 2005. Arrows mark progress in treatment success and DOTS case detection rate. Countries should enter the graph at top left, and proceed rightwards to the target zone. Countries from AFR, AMR and EMR are shown in green, those from SEAR and WPR are shown in black.



Progress towards the Millennium Development Goals

Trends in incidence, prevalence and mortality

With the 8.8 million new incident TB cases in 2005, there were 14.1 million prevalent cases (217/100 000) on average (Table 9). An estimated 1.6 million people (24/100 000) died from TB in 2005, including those coinfected with HIV (195 000). The sequence of annual estimates suggests that all three major indicators – incidence, prevalence and mortality rates – are now falling globally. Prevalence was already in decline by 1990, mortality peaked before the year 2000, and incidence has begun to fall since 2003 (Figure 21). TB prevalence continued to fall globally between 1990 and 2005 because, in Africa, HIV caused a smaller increase in prevalence than in incidence or mortality. In addition,

FIGURE 21

Estimated global prevalence, mortality and incidence rates, 1990–2005. Note the different scales on y-axes.

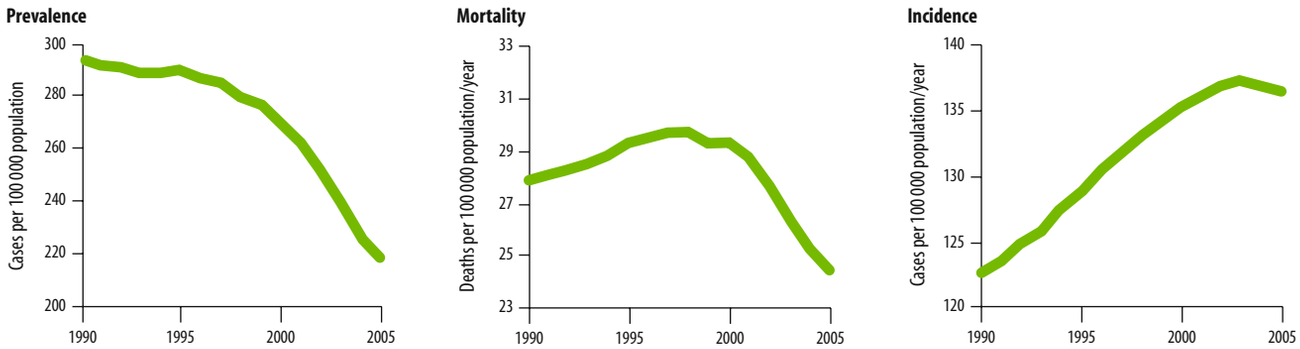
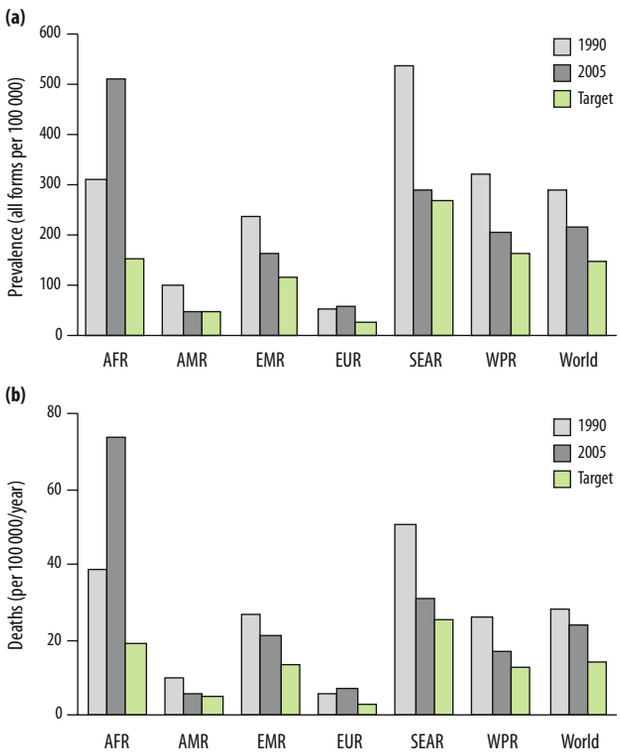


FIGURE 22

Estimated TB prevalence (a) and death rates (b), by WHO region, for the MDG baseline year 1990, for 2005, and compared with the MDG target for 2015



in Asia, our calculations suggest that DOTS has reduced prevalence more than incidence or mortality.

The fall in the global incidence rate, if confirmed by further monitoring, satisfies MDG 6, target 8. The targets set by the Stop TB Partnership – to halve prevalence and death rates by 2015 (compared with levels in 1990) – are more demanding but have, perhaps, almost been reached in the Region of the Americas (Figure 22).[1] Prevalence and death rates have fallen in South-East Asia and the Western Pacific Region at rates that will, if maintained, reach the targets by 2015. In the Eastern Mediterranean Region, both indicators are falling, but too slowly to meet the 2015 targets.

In line with the trends in incidence (Figure 7), prevalence and death rates increased in the African and European regions between 1990 and 2005, but most dramatically in the former. Estimates for these two regions in 2005 are very much larger than the 2015 target values. The combined data from all regions suggest that the world as a whole will not meet the 2015 targets at the current rate of progress.

Epidemic trends and the age distribution of TB cases

The specific effects on TB epidemiology of HIV infection, drug resistance, the impact of DOTS and other phenomena cannot easily be disentangled in routinely collected data. One of several reasons is that the time series of case notifications do not always reflect underlying trends in incidence. The true incidence and its trend may be obscured by the variable effort given to case-finding, by changing diagnostic procedures and by fluctuations in the consistency of reporting. However, the age distribution of notified cases is less susceptible to the vagaries of reporting, and trends in the age of TB cases are more likely to reflect underlying epidemiological processes.

Case reports from Viet Nam show no decline in the overall notification rate, even though the NTP has met the WHO targets for case detection and cure for more

[1] See also: *Health situation in the Americas – basic indicators.* Washington D.C., Pan American Health Organization, 2006 (PAHO/HDM/HA/06.01).

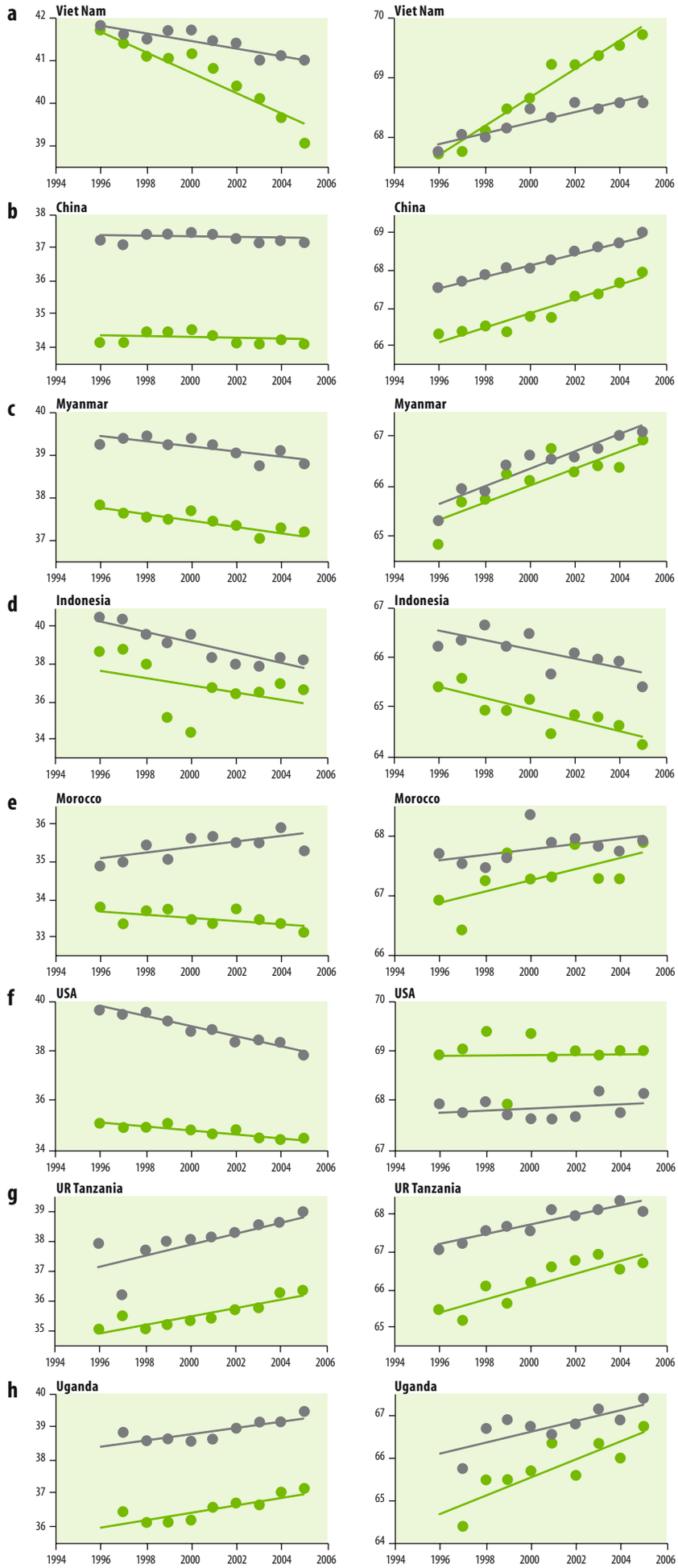


FIGURE 23

Average age of men (grey circles) and women (green circles) aged 15–54 years (left) and ≥55 years (right) with sputum smear-positive TB, notified under DOTS, 1996–2005. The effects of demographic change have been removed by calculating averages from the case notification rates per capita within each age class.

than a decade (Annex 2). Figure 23a reveals that, while the average age of older men and women with TB (≥55 years) has been rising, as expected when transmission is in decline, the average age of TB patients aged 15–54 years has been falling (left). The same is true in Myanmar (Figure 23b), and in Bangladesh, Sri Lanka and Thailand (not shown). Data from China show that new TB patients aged 55 years and over are getting older on average each year, but this is not true for younger patients (Figure 23c). In Viet Nam, the changes have been faster for women than men, opening up an age gap between male and female patients that already existed during the 1990s in Myanmar, and which has persisted until 2005.

The spread of HIV infection is one possible reason for the shift towards younger adults in these Asian countries. Another is that transmission is continuing among younger adults but not among the elderly. In Viet Nam, the shift is due to an increase in case notification rates among 15–24 years-olds (especially men), coupled with a fall in notifications among people aged 25–54 years (especially women). In Indonesia, the average age of men and women with TB has been falling in both younger and older age classes (Figure 22d). This suggests an explanation other than HIV, at least for people aged 55 years and over. In Morocco, the average age of men with TB aged 15–54 years is increasing, while for women it is decreasing (Figure 23e).

The average age of TB patients is also falling among people aged 15–54 years in the United States of America (Figure 23f). The most likely explanation is the growing proportion of cases among immigrants, although it may be reinforced by the age shift in some high-burden countries. During the period 2001–2005, Viet Nam (Figure 23a) was ranked third (behind Mexico and the Philippines) as a source of TB patients born outside the USA.[1]

In UR Tanzania and Uganda (Figure 23g, h), by contrast, the average TB patient is getting older in both age classes. This finding for younger men and women is consistent with, but not proof of, the view that the HIV epidemics are in decline in these countries[2] and that, as a consequence, TB incidence was stable or falling by 2005.

Stop TB Strategy: implementation and planning (2005–2007)

For the first time in 2006, countries were asked specific questions related to the six components of the WHO Stop TB Strategy, which was formally launched early in the year (Table 2). All HBCs have embraced the strategy to some degree and have been implementing diverse activities to achieve full DOTS expansion, to consolidate the gains made in previous years and to begin addressing the remaining challenges. The progress made by countries, and especially by the 22 HBCs, in implementing the Stop TB Strategy was evident from their responses to the questionnaire. These are presented in detail in Annex 2, and summarized below under the various components and subcomponents of the Strategy. Component 1e, concerned with monitoring and evaluation, is covered under **Monitoring progress in TB control**.

1. Pursue high-quality DOTS expansion and enhancement

a. Political commitment

The development of NTP strategic plans in line with *The Global Plan to Stop TB, 2006–2015* is one indicator of sustained political commitment. A total of 18 HBCs reported having such plans, mostly covering the period 2006–2010, with the exception of Brazil (2004–2007), India (2006–2011), Pakistan (2005–2010), the Russian Federation (2007–2011) and Thailand (2006–2015). While Ethiopia's plan was still under development, South Africa, UR Tanzania and Zimbabwe did not have country plans in line with the Global Plan at the time of reporting. A more rigorous assessment of the extent to which country plans are in line with the Global Plan is provided under **Financing TB control** and in Annex 1.

Human resource development

HRD for comprehensive TB control was included in regional strategic plans for TB control 2006–2010 in the African, Americas, South-East Asia and Western Pacific regions, although the level of detail varies considerably. At the end of 2006, the plan for the European Region was under preparation. In the Eastern Mediterranean Region, HRD was included in the TB/HIV strategic plan for 2006–2010, with details for other components not yet finalized.

A total of 15 HBCs reported having a comprehensive HRD plan for TB control (Annex 2). Of the 7 HBCs with no plan, both China and Mozambique had plans under development. In the Russian Federation, HRD has been described briefly in both the World Bank loan and the GFATM grant, but has not been fully developed. Kenya had not developed an HRD plan by the end of 2006. In Uganda, HRD was not directly under the control of the NTP. In UR Tanzania and Zimbabwe, TB control has been integrated with the delivery of other health services and there was no separate HRD plan for TB. Twelve countries reported that their HRD plans were linked and coordinated with national human resources for health plans.

In the 15 HBCs with HRD plans, all have included training and staffing needs for DOTS enhancement and sustainability, together with collaborative TB/HIV activities. Ten have incorporated training and staffing needs for MDR-TB, and 13 included training and staffing needs for PPM.

A total of 17 countries had a staff member at the central level specifically for HRD work, and in 9 countries this

[1] *Reported tuberculosis in the United States, 2005*. Atlanta GA, Centers for Disease Control and Prevention, 2005.

[2] *AIDS epidemic update: December 2006*. Geneva, UNAIDS/WHO, 2006.

person worked on HRD full-time (Bangladesh, Brazil, Ethiopia, India, Indonesia, Nigeria, Pakistan, South Africa, Viet Nam). Some 19 HBCs had job descriptions for HRD positions, which were distributed and known to all staff.

Seven HBCs reported that all peripheral-level health care units had at least one health-care professional trained on TB; 10 countries reported that some units did not have a trained professional. Training on TB control, following NTP guidelines, was included in the basic training of doctors in 19 of the 22 HBCs (all but Ethiopia, Pakistan and Uganda) and was a part of the nursing curricula in 17 HBCs.

b. Case detection through quality-assured bacteriology

Table 15 summarizes information on laboratory services in HBCs. Although there has been improvement in the geographical coverage of laboratory services, these services need to be strengthened in several countries. For example, six HBCs reported not having a fully functional national reference laboratory (Table 15).

In terms of coverage, there has also been an improvement in EQA for smear microscopy in recent years. However, these efforts still need to be intensified, especially in the Region of the Americas, and in the Eastern Mediterranean and European regions. The data reported to WHO were incomplete but, in each of these regions, less than half of the smear microscopy centres appear to have been included in the EQA programme. Only nine HBCs reported EQA coverage exceeding 50% of designated laboratories. Similarly, while all 22 HBCs had plans for laboratory supervision, only half of them implemented these plans during 2006. Laboratory supervision was uneven in the remaining half.

Regarding culture facilities, there were also large gaps in the information reported to WHO. Brazil, Cambodia, China, South Africa, Thailand and Viet Nam were exceptional in reporting good coverage of culture facilities, i.e. exceeding the minimum of one culture facility per five million population. However, over half of the populations in the African, South-East Asia and Western Pacific regions had limited coverage of culture services. India had only five laboratories linked to the NTP that provided a culture service, and only these five were able to do DST. Most countries had neither national policies to expand culture and DST services nor the technical capacity to implement and support such services.

Lack of staff, problems of transportation and inadequate funding, including that for technical assistance, were reported to be the major barriers for HBCs to operate or strengthen quality-assured laboratory services.

TABLE 15

Coverage of laboratory services, high-burden countries, 2005

				ACCESS TO DIAGNOSTIC SERVICES						LABORATORIES INCLUDED IN EXTERNAL QUALITY ASSURANCE (EQA) FOR SPUTUM SMEAR MICROSCOPY	
				SPUTUM SMEAR		CULTURE		DST			
COUNTRY		POPULATION THOUSANDS	NATIONAL REFERENCE LABORATORY (NRL)	NUMBER OF LABS	PER 100 000 POP	NUMBER OF LABS	PER 5 MILLION POP[a]	NUMBER OF LABS	PER 10 MILLION POP[a]	NUMBER	%
1	India	1 103 371	Y	11 813	1.1	5	0.02	5	0.05	11 813	100
2	China	1 315 844	Y	3 240	0.2	327	1.2	187	2.5	2 904	90
3	Indonesia	222 781	N (one acting)	3 320	1.5	41	0.9	22	1.8	3 294	99
4	Nigeria	131 530	Y	598	0.5	3	0.1	3	0.2	209	35
5	Bangladesh	141 822	Y	635	0.4	2	0.1	0	0.1	26	4.1
6	Pakistan	157 935	Y (weak)	982	0.6	3	0.1	0	0.2	312	32
7	South Africa	47 432	N	143	0.3	18	1.9	18	3.8	0	0
8	Ethiopia	77 431	Y	607	0.8	1	0.1	1	0.1	1 778	limited
9	Philippines	83 054	Y	1 858	2.2	3	0.2	3	0.4	491	26
10	Kenya	34 256	Y (weak)	619	1.8	3	0.4	3	0.9	90	15
11	DR Congo	57 549	Y	1 041	1.8	1	0.1	1	0.2	1 041	100
12	Russian Federation	143 202	Y	4 953	3.5	–	–	–	–	–	limited
13	Viet Nam	84 238	Y	875	1.0	30	1.8	2	3.6	756	86
14	UR Tanzania	38 329	Y	690	1.8	3	0.4	1	0.8	690	100
15	Brazil	186 405	Y	4 000	2.1	187	5.0	33	10	1 800	45
16	Uganda	28 816	Y (weak)	465	1.6	2	0.3	2	0.7	203	44
17	Thailand	64 233	Y	846	1.3	40	3.1	8	6.2	846	100
18	Mozambique	19 792	Y	252	1.3	1	0.3	1	0.5	252	100
19	Myanmar	50 519	Y	310	0.6	2	0.2	1	0.4	14	4.5
20	Zimbabwe	13 010	Y	167	1.3	1	0.4	1	0.8	10	6.0
21	Cambodia	14 071	Y	186	1.3	3	1.1	1	2.1	186	100
22	Afghanistan	29 863	N	435	1.5	0	0	0	0	0	0

– indicates not available; labs, laboratories; pop, population.

[a] To provide culture for diagnosis of paediatric, extrapulmonary and ss-/HIV+ TB, as well as DST for re-treatment and failure cases, most countries will need one culture facility per 5 million population and one DST facility per 10 million population. However, for countries with large populations (numbers shown it italics), one laboratory for culture and DST in each major administrative area (e.g. province) may be sufficient. See also footnote g in country profiles (Annex 1).

c. Standardized treatment, with supervision and patient support

All 22 HBCs, and 171 of 176 responding countries, used standardized, short-course chemotherapy in DOTS units; 149 of 178 responding countries routinely used directly observed therapy (DOT) during the initial phase of treatment. In the Russian Federation, South Africa, Thailand, Uganda and Zimbabwe, some DOTS units were not using DOT during the initial phase of treatment.

A total of 159 countries, and all HBCs provided anti-TB drugs free of charge to all patients treated with Category I regimens under DOTS; 129 countries responding to the questionnaire, and all HBCs except Brazil and Zimbabwe, reported that they used the WHO-recommended Category I regimen. Only 20 out of 37 responding NTPs in the European region said that they used the recommended Category I regimen.

Treatment with Category I regimen for six months was reportedly used in 91 countries worldwide; 31 reported that they used an eight-month regimen; 21 of the countries that used an eight-month Category I regimen, notably those in the African Region, said that they had plans to change to the six-month regimen.

d. An effective drug supply and management system

Uninterrupted provision of quality-assured anti-TB drugs is central to effective TB control. All WHO regions reportedly had at least one country (16 countries in Africa) facing a stock-out of first line drugs at the central or peripheral levels (basic TB management units). Africa reported that 22% of countries suffered a peripheral-level anti-TB drug stock-out during 2005. Fourteen countries in Africa had a stock-out of first-line drugs at the central level (Annex 2). HBCs reporting a stock-out of any first-line drug at the peripheral level were China, DR Congo, India, Mozambique, Thailand, Uganda and Zimbabwe (Annex 2).

The Stop TB Strategy recommends the use of drugs in fixed-dose combinations (FDCs) in the treatment of TB. During 2006, only 44 countries were using four-drug FDCs in the initial phase and two-drug FDCs in the continuation phase of treatment. The South-East Asia Region had the highest proportion of countries (5/11) using FDCs (Annex 1). Nine HBCs (41%) were using patient kits for drugs, including seven with FDCs: Afghanistan, Brazil, Indonesia, Kenya, Nigeria, the Philippines and Viet Nam. A total of 17 HBCs had in place mechanisms for the quality control of anti-TB drugs.

2. Address TB/HIV, MDR-TB and other challenges

Implement collaborative TB/HIV activities

The association between HIV and TB has been known almost since the start of the HIV-epidemic, but programmes to implement collaborative TB/HIV activities have been developed only in the past five years. Now, with the increasing availability of antiretroviral drugs, and the support of international donors and technical agencies, the number of countries that have policies to implement collaborative TB/HIV activities is increasing rapidly, especially in the African Region (Figure 24).

Of the 63 TB/HIV focus countries, 60 provided data to WHO in 2005. Figure 24 shows that, of those that provided data, between 58% and 71% had appointed a TB/HIV focal point in the NTP, had developed a national plan for implementing collaborative TB/HIV activities, had a national policy of HIV counselling and testing for all TB

FIGURE 24

Development of policies for TB/HIV collaboration; for diagnosing and treating HIV in TB patients; and for diagnosing, treating and preventing TB in people infected with HIV, 2002–2005. Data for those countries that were sent detailed questionnaires about collaborative TB/HIV activities (35 countries in 2002, 36 in 2003, 41 in 2004, and 63 in 2006). Dark portion of each bar shows the number of countries with each type of policy among those 32 countries that provided data for all 4 years. Shown are the numbers of countries with a nominated person in the NTP responsible for collaborative TB/HIV activities (focal person), a national body responsible for coordinating TB/HIV activities (coordination), a national plan for such activities (plan), a national surveillance system to measure the prevalence of HIV in TB patients (surveillance), a policy to offer HIV counselling and testing to TB patients, a policy to offer CPT to HIV-infected TB patients (CPT), a policy to offer ART to HIV-infected TB patients (ART), a policy of intensified case-finding by screening people with HIV for TB annually (ICF), a policy to offer IPT to people with HIV, and a policy for controlling the spread of TB in congregate settings (infection control).

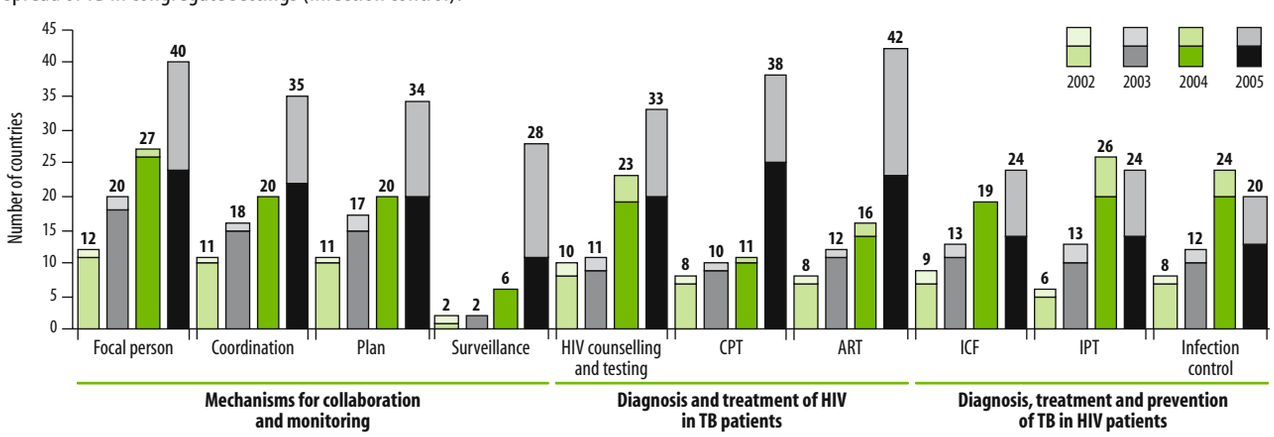
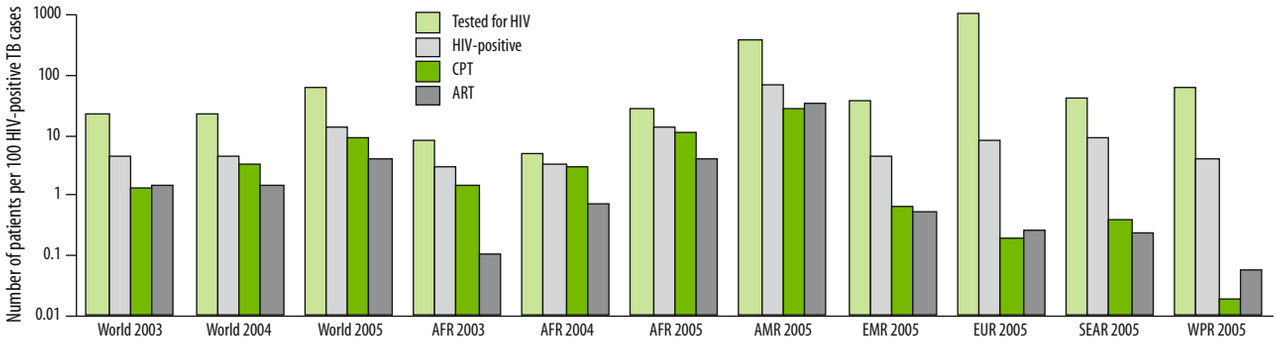


FIGURE 25

Diagnosis and treatment of HIV in TB patients, globally and in the African Region, 2003–2005, and in other WHO regions, 2005.
TB patients tested for HIV, that were found to be HIV-positive, that were given CPT, and that started ART, for every 100 estimated HIV-positive TB cases.



patients, and had a national policy to provide CPT and ART to HIV-positive TB patients. However, fewer countries had policies and procedures for diagnosing (through screening, ICF), treating and preventing TB (IPT) in people infected with HIV. Only 34–41% had policies on intensified TB case-finding among HIV-positive people, to provide IPT to people who are HIV-positive but who do not have active TB, and on infection control to minimize the spread of TB among HIV-positive people. Figure 24 also shows that only 47% had a system for HIV surveillance among TB patients.

Table 16, and Figure 26, show the number of TB patients tested for HIV, and the numbers testing HIV-positive, started on CPT, ART and IPT, how the numbers varied among regions, and how they changed between 2003 and 2005. For every 100 adult (15–49 years) HIV-positive TB cases in the world, estimated as described in the **Methods**, 59 TB patients were tested for HIV in 2005 (Figure 25; this index is expected to be greater than 100). The highest testing rates were in the European Region, which has the lowest incidence rate of HIV-positive TB cases; the lowest testing rates were in the African Region, where the incidence rate is highest. The Eastern Mediterranean, South-East Asia and Western Pacific regions had the lowest rates of HIV testing among notified TB patients in 2005 (*T/N* in Table 16). The European and Western Pacific regions had the lowest prevalence of HIV among those tested (*P/T*). In the African Region, where all TB patients should be tested for HIV, about 10% of notified TB cases were tested.

A better measure of the coverage of HIV testing is the number of TB cases that were found to be HIV-positive, expressed as a percentage of the expected number of incident HIV-positive TB cases (Figure 25; *P/E* in Table 16). In the Region of the Americas in 2005, 66% were detected. In the African Region 13% were detected, while only 4% were found in the Western Pacific Region. Globally, only 14% of all estimated HIV-positive TB cases were identified by testing in 2005 (Figure 25, Table 16). Among all TB patients tested, the proportion positive (*P/T*) remained fairly constant between 2003 and 2005 at about 51% in African Region, and about 23% worldwide (Table 16).

Table 16 also shows that the African Region led the

TABLE 16

Detection and treatment of HIV-positive TB patients, by WHO region, 2005. T is the number of TB patients that were tested for HIV, N the number of notified TB patients, P the number of TB patients that were found to be HIV-positive, E the estimated number of HIV-positive TB cases, C the number of HIV-positive TB patients that were treated with CPT, and A the number of HIV-positive TB patients that were started on ART. Ranges express uncertainty within each region by including in the denominator all countries that were asked for data on A, C and P (lower limit, assuming C = A = 0 for countries that reported on P but not C or A), or only those countries that reported all these data (upper limit). *C/P and A/P could not be meaningfully calculated for the European Region: 1064 HIV-positive TB patients were reported from 16 countries; information about CPT was provided only by Armenia, Georgia, Iceland and Serbia (26 patients in total), and information about ART was provided by these countries and by Slovakia and TFYR Macedonia (36 patients in total). The final column gives the percentage of total estimated HIV-positive TB cases in each region.

	TESTED FOR HIV/ NOTIFIED	HIV-POSITIVE/ TESTED FOR HIV	HIV-POSITIVE/ ESTIMATED HIV-POSITIVE TB CASES	STARTED CPT/ TESTED HIV-POSITIVE	STARTED ART/ TESTED HIV-POSITIVE	REGIONAL DISTRIBUTION OF ESTIMATED HIV-POSITIVE TB CASES
	T/N (%)	P/T (%)	P/E (%)	C/P (%)	A/P (%)	
AFR	10	51	13	82–92	29–33	80
AMR	26	17	66	41–85	52–89	2.7
EMR	1.0	11.6	4.4	14.8–15.4	12–14	1.2
EUR	32	0.6	7.8	*	*	2.2
SEAR	1.6	22	8.9	4–50	3–31	13
WPR	0.5	1.8	4.0	0.5–18	1–55	1.8
Global	**6.7**	**23**	**14**	**68–91**	**30–38**	**100**

FIGURE 26

Collaborative TB/HIV activities, 2002–2005. Bars show the numbers (in thousands) of TB patients that were tested for HIV, found to be HIV-positive, given CPT, started on ART; and for HIV-positive people, the number (in thousands) that were screened for TB, diagnosed with active TB, or given IPT after screening. The numbers of countries reporting data in each year are given above the bars.

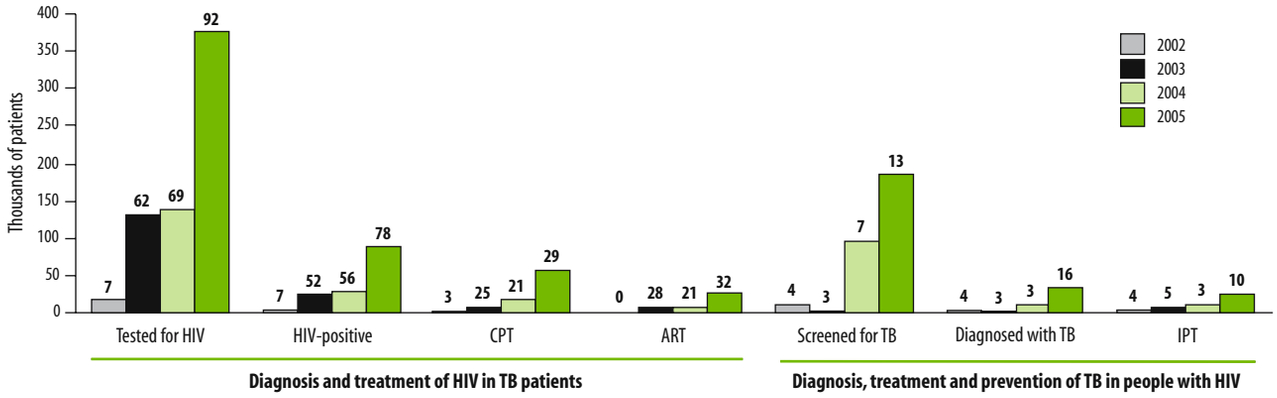


TABLE 17

Country reports for 2005 compared with expectations for 2006 given in *The Global Plan to Stop TB, 2006–2015*

	COUNTRY REPORTS, 2005[a]	GLOBAL PLAN, 2006
	(MILLIONS OR PERCENTAGES)	
DOTS EXPANSION		
Number of new smear-positive cases notified under DOTS	2.3	2.1
Estimated number of new smear-positive cases	3.8	3.3
New smear-positive case detection rate under DOTS	60%	65%
Number of new smear-positive cases successfully treated under DOTS	1.7	1.8
Number of new smear-positive cases registered for treatment under DOTS	2.1	2.1
New smear-positive treatment success rate, 2004	84%	83%
Number of new smear-negative and extrapulmonary cases notified under DOTS	2.2	3.0
Estimated number of new smear-negative and extrapulmonary cases	4.8	4.5
New smear-negative and extra-pulmonary case detection rate under DOTS	46%	66%
MDR-TB		
Number of laboratory-confirmed MDR-TB cases treated by GLC-approved programmes or equivalent	0.005	0.02
Number of laboratory-confirmed MDR-TB cases treated by all programmes	0.02	0.12
Proportion of laboratory-confirmed MDR-TB cases treated by GLC-approved programmes or equivalent	27%	17%
TB/HIV		
Number of HIV-positive people attending HIV services screened for TB	0.18	11
Number of HIV-positive people attending HIV services	4.0	18
Proportion of HIV-positive people attending HIV services that were screened for TB	8.8%[b]	61%
Number of eligible HIV-positive people offered IPT	0.026[c]	1.2
Estimated number of HIV-positive people	29	30
Proportion of HIV-positive people and eligible for IPT that received IPT	0.27%[d]	4%
Number of TB patients tested for HIV	0.22[e,f]	1.6[f]
Total number of notified TB cases including new, re-treatment and other cases	3.3[e,f]	3.4[f]
Proportion of all notified TB cases that were tested for HIV	6.6%[g]	47%
Number of HIV-positive TB cases enrolled on ART	0.025[e]	0.22
Number of TB cases found to be HIV-positive	0.083[e]	0.50
Proportion of all HIV-positive TB patients that enrolled on ART	38%[h]	44%

GLC indicates Green Light Committee.

[a] Includes only those countries in the Global Plan, i.e countries in sub-regions Central Europe and Established Market Economies (see legend of Figure 7) are excluded here.

[b] Only the 9 countries which provided both numerator and denominator are included in this percentage.

[c] While the Global Plan includes only people newly diagnosed with HIV in this indicator, country reports include all HIV-positive people eligible for IPT, regardless of year of diagnosis.

[d] Only the 4 countries which provided both numerator and denominator are included in this percentage.

[e] Includes patients reported from DOTS and non-DOTS areas.

[f] The numbers of notified TB cases, and the numbers tested for HIV, are weighted according to the population coverage of collaborative TB/HIV activities anticipated by the Global Plan.

[g] Only the 91 countries which provided both numerator and denominator are included in this percentage.

[h] Only the 31 countries which provided both numerator and denominator are included in this percentage.

world in the provision of CPT, at least in relation to TB patients who tested HIV-positive (*C/P*), while the Eastern Mediterranean Region lagged behind in the provision of ART (*A/P*). The uncertainties in the estimated proportion of HIV-positive TB patients that are given CPT or that start ART (ranges in Table 16) reflect fundamental problems in patient management as well as in reporting.

The Global Plan laid out objectives for TB/HIV control in 2006 (Table 17). It proposed that 1.6 million TB patients would be tested for HIV in 2006. It also suggested that 220 000 patients should be started on ART, as compared with a total of 80 000 in country plans for 2006. In 2005, 14% and 11% of the expected numbers for 2006 were reported to have been tested for HIV and started on ART, respectively. In the African Region in 2005, where the burden of HIV-related TB is highest, 17% of 737 000, suggested in the Global Plan for 2006, were tested for HIV and 10% of the 197 000, suggested in the Global Plan for 2006, were started on ART. Furthermore, the number of HIV-positive people screened for TB in 2005 was only 1.7% of the 11 million targeted for 2006; the number started on IPT in 2005 was 2.2% of the 1.2 million targeted for 2006.

The proportion of all (estimated) adult (15–49) HIV-positive TB patients put on ART was only 4% in 2005 (Annex 2). Although screening is an efficient way of finding TB patients, just 0.2% of the estimated 24 million HIV-positive people in the African Region were screened in 2005, and approximately 0.1% of the estimated 21 million HIV-positive people without active TB were started on IPT.[1]

In sum, many more HIV-positive TB patients need to be diagnosed and treated in order to satisfy expectations of the Global Plan from 2006 onwards.

The time trends in these indicators are more encouraging because they do show rapid expansion of diagnosis and treatment, albeit from low levels (Figures 25 and 26). The numbers of TB patients tested for HIV, and found to be HIV-positive, increased more then 15-fold between 2002 and 2005 (Figure 26). The provision of CPT and ART to TB patients has also expanded globally (Figure 26), in the African Region (especially ART, Figure 25), and in some countries (Box) Screening for TB among HIV-positive cases, followed by the provision of IPT, also increased quickly between 2002 and 2005 (Figure 26).

Recording and reporting of HIV testing in TB patients is improving but still weak. Of the 63 TB/HIV focus countries, 6 that account for 2.7% of all HIV-positive TB patients had modified their TB registers to capture HIV data routinely (Belize, Brazil, Estonia, Jamaica, the Russian Federation and Trinidad and Tobago), 19 that account for 57% of HIV-positive TB patients were planning to do so, and 32 that account for 37% of HIV-positive TB patients did not have plans to do so. Only 21 out of 37 focus countries in the African Region reported the number of TB cases tested for HIV.

[1] 2006 Report on the Global AIDS Epidemic (UNAIDS/WHO) May 2006.

Prevent and control MDR-TB

MDR-TB surveillance and control in high-burden countries

Among the 22 HBCs, 11 had carried out nationwide drug resistance surveys by 2006, including Ethiopia and the Philippines, with UR Tanzania finalizing its first nationwide survey. A further 6 HBCs are expanding regional coverage of DRS, among which China, India and the Russian Federation have all made substantial progress. Additionally, China is planning to undertake a nationwide survey in 2007. Indonesia has its first DRS under way. Afghanistan, Bangladesh, Nigeria and Pakistan have never reported drug resistance data, but all except Afghanistan have plans to carry out surveys.

A total of 13 NTPs have staff responsible at central level for drug-resistant TB, 9 of which have national guidelines on the programmatic management of MDR-TB. In seven HBCs (Brazil, DR Congo, Mozambique, Philippines, the Russian Federation, South Africa and Thailand), MDR-TB is managed by the NTP.

Prior to 2006, the NTPs of Kenya, the Philippines and the Russian Federation were approved by the GLC for management of MDR-TB. In addition, India was approved by the GLC in 2005 for a project in New Delhi. In Kenya, the MDR-TB management project has not yet been launched because of lack of human and financial resources. In 2006, three additional HBCs were approved by the GLC: Bangladesh and DR Congo as part of the NTP, and Cambodia for an operational research project. A major geographical expansion of GLC-approved MDR-TB management occurred in 2006 in the Russian Federation, with eight additional regions approved and two regions under review. Before 2006, only four regions were approved. In 2006, China and India submitted applications from the NTPs, which are currently under review. In addition, Uganda has a GLC application under review submitted by a national university working with an international NGO. The NTPs in Myanmar and Viet Nam have started preparing applications to the GLC, which should be submitted at the beginning of 2007 (Table 18).

TABLE 18

GLC collaboration, high-burden countries, end 2006

GLC-APPROVED		UNDER GLC REVIEW		PREPARATION OF GLC APPLICATION
NTP	NON-NTP[a]	NTP	NON-NTP[a]	NTP
Bangladesh DR Congo Kenya Philippines Russian Federation	Cambodia India	China India	Uganda	Ethiopia Myanmar Viet Nam

[a] e.g. projects proposed and implemented by private health-care providers, NGOs, universities

BOX

Scaling up HIV testing among TB patients: three case studies

In many countries, HIV testing is the major bottleneck in the provision of CPT and ART for HIV-positive patients. In several African countries, HIV testing for TB patients has increased dramatically over the past two years. Where there has been good collaboration between the HIV/AIDS and TB control programmes, provider-initiated testing has led to substantial increases in the number of TB/HIV patients starting CPT and ART. This is illustrated with data from Kenya, Rwanda and Zambia. Similar results have been reported from Malawi.[1]

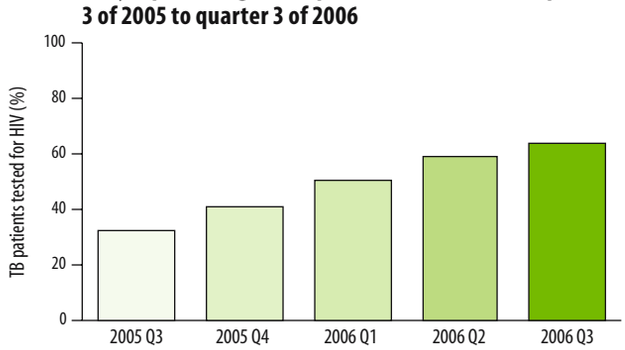
Kenya

Population: 34.3 million
Tuberculosis cases notified in 2005: 108 401
Estimated proportion of TB patients infected with HIV in 2005: 52%

Before 2005, few TB patients in Kenya knew their HIV status, even though about half of them were infected with HIV. Collaborative TB/HIV activities, guided by a national steering committee, led to the development of a provider-initiated programme of rapid HIV testing for TB patients. Starting in March 2005, district and health-centre staff treating TB patients throughout Kenya were trained to do HIV-testing. TB patients are offered HIV testing at TB clinics, and those who are infected with HIV are given CPT at the same clinic. Patients are referred to ART centres, usually in the district hospital. TB recording and reporting forms, adapted to capture TB/HIV data, have been introduced throughout the country. Routine testing began in 2005. In the third quarter of 2005, 32% of TB patients in Kenya were tested for HIV, and this had increased to 64% by the third quarter of 2006 (Figure B1). Of those found to be HIV-positive from the third quarter of 2005 to the third quarter of 2006, 80% were given CPT and 30% started ART.

FIGURE B1

Kenya: percentage of TB patients tested for HIV, quarter 3 of 2005 to quarter 3 of 2006



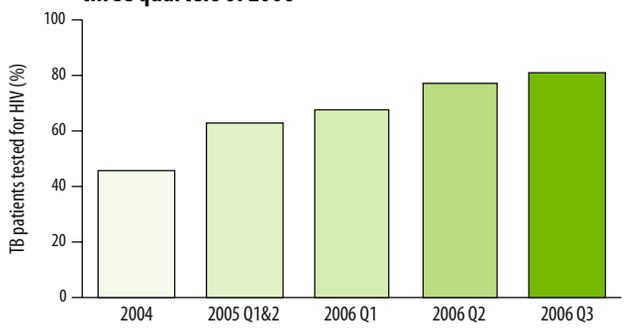
Rwanda

Population: 9.0 million
Tuberculosis cases notified in 2005: 7220
Estimated proportion of TB patients infected with HIV in 2005: 38%

In 2004, a programme of TB/HIV collaborative activities was established and a national programme was developed to train health workers who diagnose TB to test patients for HIV. During 2005, health workers throughout the country were trained in HIV counselling and testing. TB monitoring and recording forms, revised to include TB/HIV data, were introduced in late 2005 and were made available in all health centres by the beginning of 2006. In 2004, 46% of TB patients were tested for HIV; by the third quarter of 2006, this had increased to 81% (Figure B3). HIV-positive TB patients are given CPT by health workers who treat TB patients and then referred to the district ART services. In the first two quarters of 2006, 43% of TB patients were given CPT and 31% started ART.

FIGURE B3

Rwanda: percentage of TB patients tested for HIV in 2004, in quarters 1 and 2 of 2005, and in each of the first three quarters of 2006



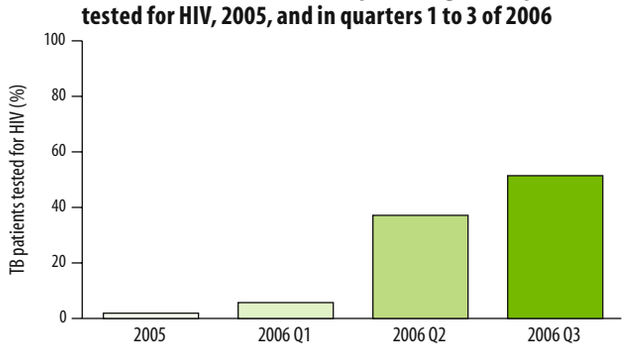
Zambia

Population: 11.7 million
Tuberculosis cases notified in 2005: 49 567
Estimated proportion of TB patients infected with HIV in 2005: 56%

The national TB/HIV coordinating committee met quarterly during 2005 and 2006. Counselling and testing guidelines have been developed; during 2006, all district and clinic staff were trained to use them. Revised monitoring and recording forms to capture TB/HIV data were introduced at the beginning of 2006. CPT is given at ART clinics from where patients are referred to ART centres, which are usually in the district hospital. Data are available from Southern Province, where the percentage of TB patients tested for HIV increased from 2% in 2005 to 52% in the third quarter of 2006 (Figure B2). Of those found to be HIV-positive from the first quarter of 2006 to the third quarter of 2006, 29% were given CPT and 33% started ART.

FIGURE B2

Zambia (Southern Province): percentage of TB patients tested for HIV, 2005, and in quarters 1 to 3 of 2006



[1] *Global tuberculosis control: surveillance, planning, financing. WHO report 2006.* Geneva, World Health Organization, 2006 (WHO/HTM/TB/2006.362).

The GFATM has approved funding (up to round 5) for both DRS and MDR-TB control in seven HBCs (Bangladesh, China, DR Congo, India, Indonesia, Mozambique and the Russian Federation). In addition, Cambodia, Nigeria and Zimbabwe have been approved for DRS and Kenya and the Philippines for MDR-TB management.

MDR-TB surveillance and control globally

Out of 182 countries that filled in the standard data collection form, 125 (69%) reported that management of MDR-TB patients was an activity of the NTP (Figure 27); a further 31 stated that they planned to treat MDR-TB in the next two years. Globally in 2005, 98 728 drug susceptibility tests were done at the start of treatment, of which 39% were reported from the European Region (38 818); 104 countries reported 18 422 laboratory-confirmed MDR-TB cases (16 countries in the African Region, 20 in the Region of the Americas, 14 in the Eastern Mediterranean Region, 38 in the European Region, 3 in the South-East Asia Region and 13 in the Western Pacific Region). Out of all MDR-TB cases, 10 828 (59%) were reported from the European Region (Figure 28). The total number of laboratory-confirmed MDR-TB patients reported in 2005, and the number known to be treated by WHO-recommended procedures, are far lower than the numbers anticipated by the Global Plan for 2006 (Table 17).

Up to December 2006, the Global DRS Project had collected data from areas representing more than 40% of global smear-positive TB cases. The GLC had approved 53 projects for more than 25 000 MDR-TB patients in 42 countries.[1] This is almost a doubling of MDR-TB patients since December 2005, by which time about 13 000 MDR-TB patients had been approved for treatment. The countries approved in 2006 were: Armenia, Bangladesh, Belize, Burkina Faso, Cambodia, DR Congo, Ecuador, Guinea, Kazakhstan, Paraguay and Rwanda. Most GLC-approved countries are in the European Region and the Region of the Americas (12 countries each), followed by the African Region (6 countries), the Eastern Mediterranean Region (5 countries), the South-East Asia Region (4 countries) and the Western Pacific Region (3 countries).

From the data provided in the standard data collection form, GLC-approved projects globally were reporting slightly better outcomes at the end of treatment than non-GLC approved projects, with cure rates of 57% (variation among WHO regions 50–80%) and 50% (range 48–79%), respectively (Figure 28). Countries reported that they were expecting to treat 16 990 MDR-TB cases in 2006 (6345

[1] Armenia, Azerbaijan, Bangladesh, Belize, Bolivia, Burkina Faso, Cambodia, Costa Rica, DR Congo, Dominican Republic, Ecuador, El Salvador, Egypt, Estonia, Georgia, Guinea, Haiti, Honduras, India, Jordan, Kazakhstan, Kenya, Kyrgyzstan, Latvia, Lebanon, Lithuania, Malawi, Mexico, Mongolia, Nepal, Nicaragua, Paraguay, Peru, Philippines, Republic of Moldova, Romania, Russian Federation, Rwanda, Syrian Arab Republic, Timor-Leste, Tunisia and Uzbekistan.

FIGURE 27

Percentage of NTPs that manage MDR-TB patients as part of their routine activities, by WHO region, 2005

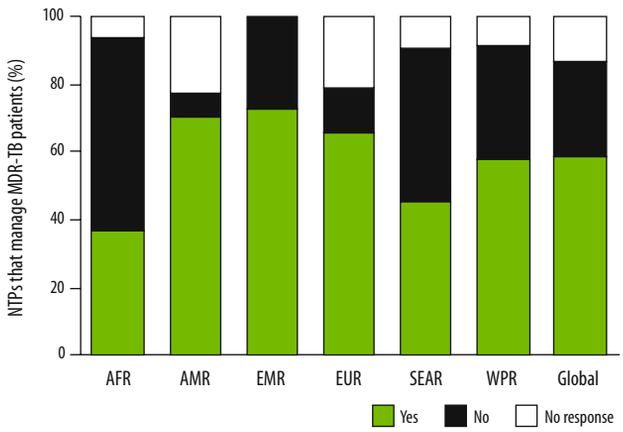


FIGURE 28

Numbers of patients for whom DST was carried out at the start of treatment, and the number of patients with confirmed MDR-TB, by WHO region, 2005. Note that some countries reported the number of confirmed cases of MDR-TB without providing the number tested. Furthermore, confirmed MDR-TB cases may have been tested at any time during treatment.

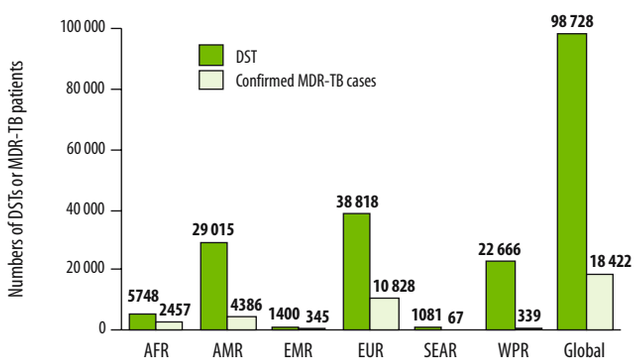
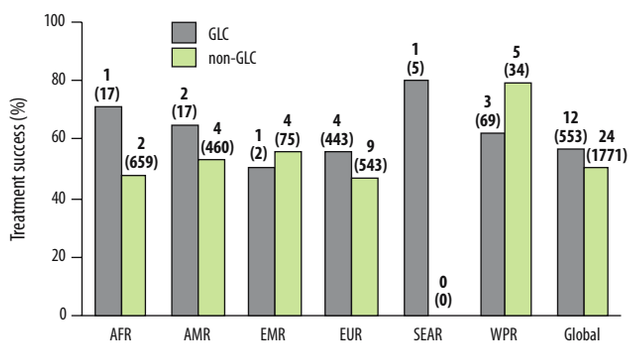


FIGURE 29

Treatment success among MDR-TB cases, by WHO region, 2002 cohort. The number of countries providing outcomes is shown above each bar; the total number of patients is shown in parentheses.



under the GLC and 10 645 outside of GLC programmes; cf 20 000 in the Global Plan, Table 17), and 16 714 MDR-TB cases in 2007 (7096 under the GLC and 9618 outside GLC programmes).

Address prisoners, refugees, other high-risk groups and special situations

Prison inmates are among the high-risk groups that have received most attention in HBCs. Some 20 HBCs had a plan of action for TB control in prisons. Other high-risk groups for which HBCs had specific action plans included refugees (11 countries), ethnic minorities (9 countries) and other marginalized groups (6 countries).

While Afghanistan, DR Congo and Nigeria have been addressing TB control among refugees following political unrest, India, Indonesia and Pakistan were attempting to manage TB among people forced to move by natural disasters. Efforts to improve TB control in Afghanistan, DR Congo and Uganda have been hampered by outbreaks of war.

FIGURE 30

Level of the health-care system with staff fully dedicated to TB, high-burden countries, 2005

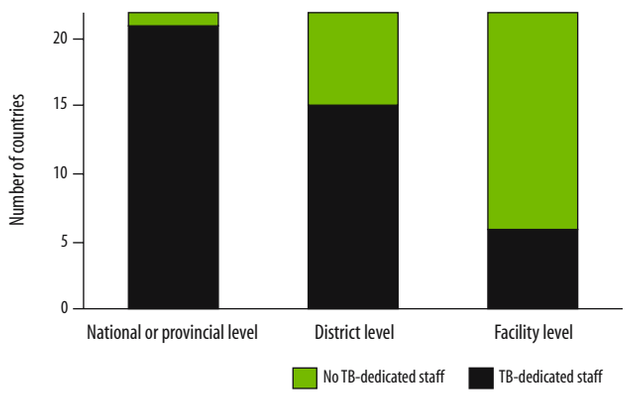
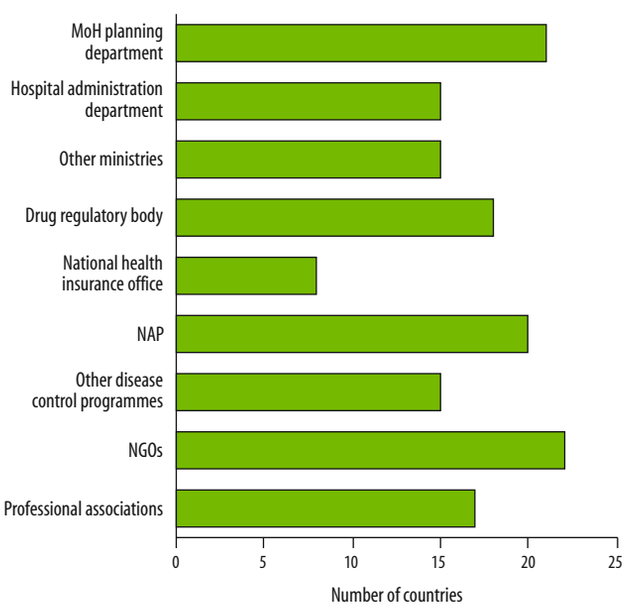


FIGURE 31

Partners involved in the development of national TB control plans, high-burden countries, 2005



3. Contribute to health system strengthening

The diagnosis and treatment of TB are fully integrated into the public health systems of most countries. Although HBCs normally have staff fully dedicated to TB control in central and provincial planning and supervision units, as well as dedicated TB control supervisors at the district level, a few also have dedicated staff at facility level (Figure 30). Some TB control functions were typically managed by NTPs, such as quality control of sputum smear microscopy and monitoring and evaluation. By contrast, anti-TB drug management was fully integrated into general drug management systems in nine HBCs. It was partly integrated in a further nine HBCs, while four managed the supply of anti-TB drugs separately.

Because TB services are normally delivered in general health facilities by multi-purpose staff, NTPs rely on a well-functioning health-care infrastructure, including committed and well-trained general health staff. Any challenge to the general health system is thus a challenge for TB control. Optimal planning of TB control therefore requires collaboration with relevant stakeholders involved in general health-care planning. It also requires coordination among the various health development frameworks at central, provincial and district levels, such as poverty reduction strategy papers (PRSP), sector-wide approaches (SWAPs) and medium-term expenditure frameworks (MTEF).

The extent to which this was being done in 2005 varied among HBCs. Most of the HBCs had developed their TB control plans with the involvement of a broad range of stakeholders (Figure 31). Eighteen had aligned their plans for TB control with a national health development plan. With respect to HRD, only 13 had coordinated the plan for TB with a national plan.[1] Of the 19 HBCs with a PRSP, 14 had aligned their TB control plans accordingly. The TB control plans of nine HBCs were aligned with SWAPs.

Practical Approach to Lung Health

Worldwide, 70 countries reported that the Practical Approach to Lung Health (PAL) was a part of the national plan for TB control (including 10 HBCs). In 2005, PAL was operational in some form in 20 countries. Among them, Chile, El Salvador, Kyrgyzstan, Morocco and South Africa have been scaling up PAL activities, while Algeria, Bolivia, Guinea, Jordan, the Syrian Arab Republic and Tunisia have developed and tested their PAL guidelines and have begun the process of implementation. The remaining nine countries were at a preliminary phase

[1] It is not known how many of the HBCs have formal sector-wide human resource development plans in the health sector, so further integration may be hindered by the lack of such a plan.

of PAL development. Among the 22 HBCs, Uganda had adapted and was field-testing PAL guidelines. South Africa had progressed further in PAL development and implementation, with guidelines and training materials developed for primary health-care workers, emphasizing HIV-infected TB patients. Five additional Latin American countries, including Brazil, were planning to begin implemention of PAL early in 2007.

4. Engage all care providers

Public–Public and Public–Private mix approaches

By September 2006, 11 HBCs (Bangladesh, China, DR Congo, India, Indonesia, Kenya, Mozambique, Myanmar, Philippines, UR Tanzania and Viet Nam) had started scaling up public–private mix for TB care and control (PPM), 5 were preparing to scale up and had developed PPM guidelines (Cambodia, Nigeria, Pakistan, Thailand and Zimbabwe), while the remaining had either initiated or prepared for PPM pilot projects. Specific training for non-NTP providers was organized in 18 HBCs, and 16 HBCs were providing anti-TB drugs free of charge to such providers. A focal person for PPM in the central NTP office was appointed in 14 HBCs, of which 4 were working full-time and 10 part-time.

Several HBCs had involved all health institutions belonging to public sector health-care networks, such as public hospitals, medical college hospitals, army health facilities and prison health facilities (Figures 32 and 33). However, many such providers continued to operate without formal links to the NTP and did not follow NTP or ISTC guidelines. Facilities governed by health insurance agencies were partly or fully engaged with the NTP in 8 of the 16 countries where such agencies were of relevance for TB control.

All but one HBC (Russian Federation) had begun to involve at least some private practitioners, private hospitals and NGO health facilities in referral to the NTP (Figure 32), in diagnosis following programme guidelines and/or in treatment with recommended drugs (Figure 33). However, in most HBCs, only a small fraction of all eligible private providers have so far been involved.

International Standards for Tuberculosis Care

The International Standards for Tuberculosis Care were familiar to 17 HBCs, of which 11 had developed plans for their wide dissemination and use as an advocacy and training tool so as to engage all health-care providers. Among HBCs, Indonesia, India, Kenya and UR Tanzania are pilot sites for implementing ISTC, and have adopted diverse approaches to make best use of the published standards. The ISTC have been particularly useful in engaging the national professional societies and academic institutions in TB control.

FIGURE 32

Engagement of different types of providers in referral of TB suspects, high-burden countries, 2005

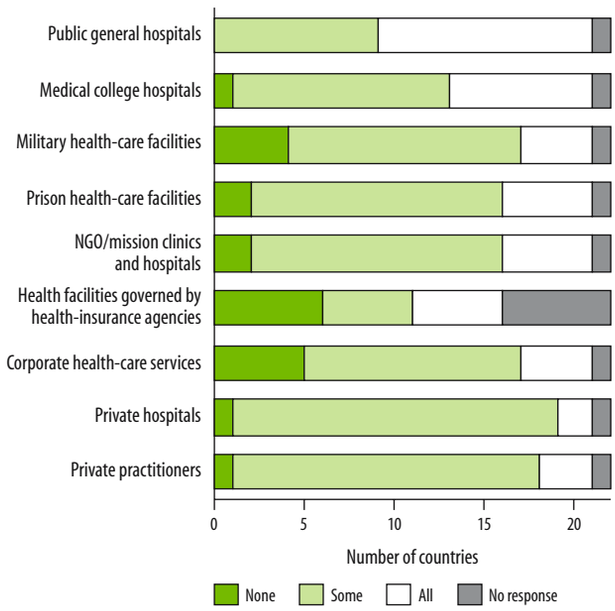
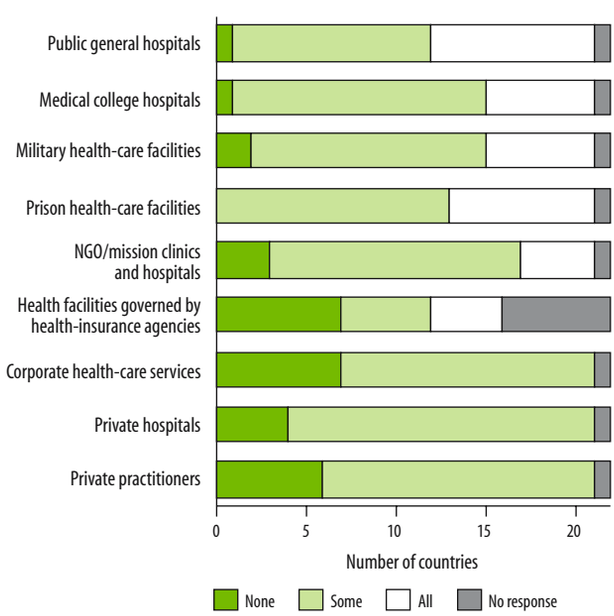


FIGURE 33

Engagement of different types of providers in free-of-charge TB treatment with recommended drugs, high-burden countries, 2005



5. Empower people with TB, and communities

Advocacy, communication and social mobilization

The implementation of advocacy, communication and social mobilization (ACSM) at country level has been uneven. Some countries already have extensive experience carrying out communication programmes aimed at increasing case detection rates while, for other countries, ACSM is an entirely new field. The quality of ACSM depended largely on resources available. Some large programmes made liberal use of partners including NGOs, media and advertising agencies, multi-disease ACSM resources in governments, community groups, and others, who helped to develop materials and to disseminate key messages from national level down to community level.

The two major barriers reportedly faced by HBCs to implement successful ACSM plans were limited resources and staff capacity. With the GFATM (round 5) approving substantial grants for ACSM for 18 countries (US$ 36 million over 5 years), a lack of skilled staff at the central and peripheral levels, rather than the availability of money, is likely to be the main problem.

Monitoring and evaluation of ACSM is a major challenge for all HBCs: only seven HBCs currently claim to have data sources in place to measure and assess ACSM results. The Stop TB Partnership is in the process of developing guidelines on ACSM indicators to help countries develop a robust monitoring and evaluation system, and to develop strategies through identification of the most important gaps in knowledge and attitudes among their key target groups.

Community participation in TB care

Community-based approaches to TB control were implemented in all regions. All (except for one) countries in the South-East Asia Region reported interventions for community involvement in TB control to a varying extent. About half of the countries in Africa, the Americas and in the Eastern Mediterranean and Western Pacific regions (65 countries), and only a quarter of countries in Europe (10 countries), reportedly engaged communities in TB care and prevention (Annex 1).

Most HBCs have been engaging communities in activities other than treatment support, with the exception of Afghanistan, India and Thailand. Other areas of involvement included case detection, defaulter tracing and raising awareness about TB. Future plans to involve communities included expansion of ongoing activities and new ACSM activities related mostly to raising awareness.

More than half of the HBCs have GFATM funding for community involvement (14 and 20 countries had grants approved in rounds 5 and 6, respectively). Among GFATM TB grants approved in round 6, 20 countries (including two HBCs, India and UR Tanzania) included community involvement as a part of their application, worth a total of US$ 25.7 million for up to 5 years (6.4% of overall budgets).

Patients' Charter for Tuberculosis Care

The Patients' Charter for Tuberculosis Care was being promoted in all regions, although few countries reported any specific promotional activities. In the Indian state of Kerala, the state health minister launched the charter, presenting it to a TB patient and distributing copies translated into the local language. The minister also launched the ISTC, directed at health-care providers in the state.

6. Enable and promote research

Globally, no specific mechanism yet exists to promote or oversee TB research activities. Few, if any, NTPs monitor the TB research under way in their countries. NTPs were therefore expected to report mainly on research with which they were associated in 2005.

All HBCs did report having operational research (OR) in their respective NTP strategic plans, but only India and Pakistan provided details. TB/HIV and prevalence surveys were the most common OR activities undertaken across the HBCs. Mozambique and Zimbabwe reported only drug resistance surveys under OR. Kenya, Mozambique and Thailand reported no OR activities for 2005.

Financing TB control

Data received

Financial data were received from 156 out of 212 (74%) countries (Table 19), continuing the year-on-year increase in reporting since the start of data collection in 2002 (the total in *Global tuberculosis control 2006* was 140 countries).[1] Complete budget data for 2006 were provided by 98 countries (up from 87 in last year's report), 87 countries provided complete budget data for 2007, and 83 provided complete expenditure data for 2005 (compared with 73 that provided complete expenditure data for 2004). The countries that provided financial reports accounted for 96–100% of the regional burden of TB in four WHO regions, with lower figures of 85% and 81% for the Region of the Americas and the European Region, respectively. Overall, countries that reported financial data accounted for 98% of the global burden of TB.

Data were received from all 22 HBCs, including South Africa for the first time (Table 20). Complete budget data for 2006 were provided by 21 countries (the exception was Thailand), and complete budget data for 2007 were provided by 19 countries (the exceptions were Thailand, UR Tanzania[2] and Zimbabwe). Complete expenditure data for 2005 were provided for 19 countries, with data missing for Thailand, Uganda and Zimbabwe. A total of 21 countries provided data on the utilization of health

[1] *Global tuberculosis control: surveillance, planning and financing.* Geneva, World Health Organization, 2006 (WHO/HTM/TB/2006.362).

[2] As in previous years, the planning cycle in UR Tanzania means that we did not expect budget data for 2007 to be reported.

TABLE 19

Budget, expenditure and utilization data received, all countries, 2007

	NUMBER OF COUNTRIES	FINANCIAL REPORTS RECEIVED	BUDGET 2006			BUDGET 2007			EXPENDITURE 2005			UTILIZATION OF HEALTH SERVICES	PROP. OF ESTIMATED REGIONAL TB INCIDENCE ACCOUNTED FOR BY COUNTRIES THAT REPORTED FINANCIAL DATA (%)
			COMPLETE	PARTIAL	NONE	COMPLETE	PARTIAL	NONE	COMPLETE	PARTIAL	NONE		
AFR	46	43	31	7	5	25	5	13	23	1	19	22	99
AMR	44	26	16	6	4	15	7	4	15	3	8	21	85
EMR	22	18	13	1	4	13	1	4	11	1	6	14	96
EUR	53	29	16	8	5	17	6	6	16	3	10	22	81
SEAR	11	9	6	3	0	5	3	1	5	1	3	8	99
WPR	36	31	16	8	7	12	7	12	13	4	14	26	100
Global	**212**	**156**	**98**	**33**	**25**	**87**	**29**	**40**	**83**	**13**	**60**	**113**	**98**

TABLE 20

Budget, expenditure and utilization data received, high-burden countries, 2007

	NUMBER OF COUNTRIES	FINANCIAL REPORTS RECEIVED	BUDGET 2006			BUDGET 2007			EXPENDITURE 2005		UTILIZATION OF HEALTH SERVICES
			COMPLETE	PARTIAL	NONE	COMPLETE	PARTIAL	NONE	COMPLETE	NONE	
AFR	9	9	9	0	0	7	0	2[a]	7	2[b]	9
AMR	1	1	1	0	0	1	0	0	1	0	1
EMR	2	2	2	0	0	2	0	0	2	0	2
EUR	1	1	1	0	0	1	0	0	1	0	1
SEAR	5	5	4	1[c]	0	4	1[c]	0	4	1[c]	4[c]
WPR	4	4	4	0	0	4	0	0	4	0	4
Global	**22**	**22**	**21**	**1**	**0**	**19**	**1**	**2**	**19**	**3**	**21**

[a] UR Tanzania and Zimbabwe.
[b] Uganda and Zimbabwe.
[c] Thailand did not report data.

services and made projections of the number of cases they would treat in 2006 and 2007. While considerable clarification and verification of data by WHO are still required, the quality of the data when first submitted is improving: Bangladesh, Brazil, China, India, Indonesia, South Africa and UR Tanzania provided timely and exemplary data that required almost no follow-up.

NTP budgets and funding

High-burden countries, 2002–2007

NTP budgets in 21 of the 22 HBCs have increased during the period 2002–2007, sometimes by substantial amounts (Figures 34–35; Table 21). There are insufficient data to make an assessment for Thailand. The total combined budget for the 22 HBCs in 2007 is US$ 1.25 billion, 2.5 times the US$ 509 million budgeted in 2002. The Russian Federation has by far the largest budget (US$ 513 million), followed by China (US$ 200 million), South Africa (US$ 95 million), India (US$ 75 million) and Indonesia (US$ 59 million), making a combined total that is 75% of the NTP budgets reported by HBCs. There are three countries with budgets in the range US$ 30–50 million and four with budgets in the range US$ 20–30 million; the rest (10 countries, half of which are in Africa) have budgets of under US$ 20 million.

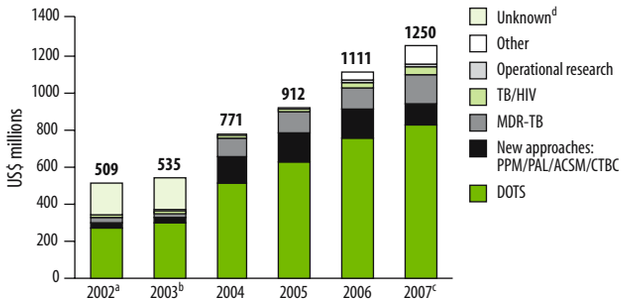
In absolute terms, the budgetary increase in the Russian Federation dwarfs that in any other HBC, at US$ 351 million since 2002; the second largest increase (in China) was US$ 103 million. In relative terms, the increases in nine countries (Afghanistan, Brazil, DR Congo, Kenya, Myanmar, Nigeria, Pakistan, the Russian Federation and Zimbabwe) stand out, with three- to eight-fold increases over six years (Table 21). Countries with relatively small increases are Ethiopia, the Philippines, UR Tanzania and Viet Nam. Across all 22 HBCs, DOTS has consistently accounted for the largest share of NTP budgets,[1] but since 2004 an increasing share of these budgets has been accounted for by MDR-TB treatment and new approaches such as PPM, community TB care, ACSM and PAL (Figure 34). NTP budgets for collaborative TB/HIV activities remain small, although Kenya is an exception (see Annex 1).

These large budget increases have been accompanied by big improvements in available funding (Figures 35–36; Table 21). For all HBCs, funding for NTP budgets has increased by US$ 592 million since 2002, reaching US$ 1 billion of the US$ 1.25 billion needed in 2007. Kenya and Viet Nam are the only countries where projected funding for 2007 is less than in 2002, although in the case of Kenya this is because the NTP is unsure about whether funding theoretically available in GFATM grants will be approved for disbursement and because multi-

[1] See **Methods** for definition of the budgetary line items included in the category DOTS.

FIGURE 34

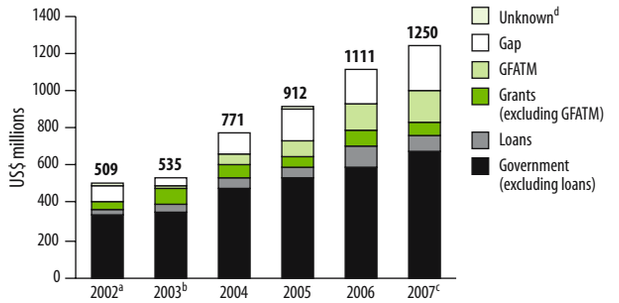
Total NTP budgets by line item, high-burden countries, 2002–2007



[a] Estimates assume budget 2002 equal to expenditure 2002 (Ethiopia), budget 2003 (Afghanistan, Bangladesh, Mozambique and Uganda) or expenditure 2003 (Russian Federation and Zimbabwe).
[b] Estimates assume budget 2003 equal to expenditure 2003 (Russian Federation and Zimbabwe) or budget 2004 (Thailand).
[c] Estimates assume budget 2007 equal to budget 2006 (UR Tanzania and Zimbabwe).
[d] "Unknown" applies to Afghanistan 2002–2004, Russian Federation 2002–2003 and Mozambique 2002–2003, as breakdown by line item not available.

FIGURE 35

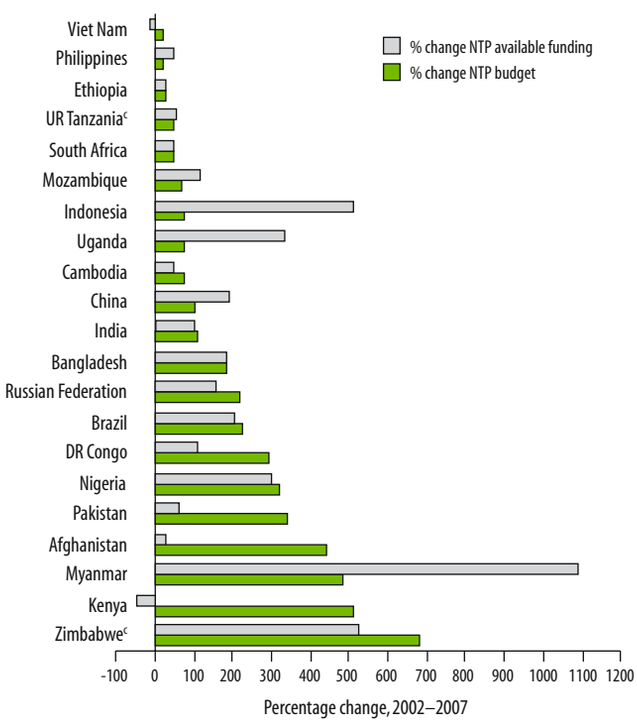
Total NTP budgets by source of funding, high-burden countries, 2002–2007



[a] Estimates assume budget 2002 equal to expenditure 2002 (Ethiopia), budget 2003 (Afghanistan, Bangladesh, Mozambique and Uganda) or expenditure 2003 (Russian Federation and Zimbabwe).
[b] Estimates assume budget 2003 equal to expenditure 2003 (Russian Federation and Zimbabwe) or budget 2004 (Thailand).
[c] Estimates assume budget 2007 equal to budget 2006 for UR Tanzania and Zimbabwe.
[d] "Unknown" applies to Afghanistan 2004, DR Congo 2002 and Nigeria 2002 as breakdown by funding source not available.

FIGURE 36

Changes in NTP budget and available funding, 21 high-burden countries,[a,b] 2002–2007



[a] Complete data not available for Thailand.
[b] Countries ranked by percentage change in NTP budget.
[c] Comparison is 2002–2006 for UR Tanzania and Zimbabwe.

year grants with bilateral donors need to be renegotiated during 2007.[1] While most of the extra US$ 592 million has come from HBC governments (US$ 404 million including loans), this overall statistic conceals the fact that most of the additional domestic funding comes from three countries only: China, the Russian Federation and South Africa (an extra US$ 340 million including loans since 2002). Although most other HBC governments have also increased their domestic funding (the six exceptions are Afghanistan, Cambodia, Ethiopia, Kenya, the Philippines and Viet Nam), the remaining increase in funding is largely due to the GFATM. Funding from the GFATM in 2007 amounts to US$ 168 million compared with zero in 2002, and all HBCs have now secured GFATM grants (although Myanmar's grant has been terminated and funding ended in 2006). The largest grants are held by Bangladesh, China, India, Indonesia, Nigeria and the Russian Federation (worth US$ 10–30 million in 2007); in other HBCs, grants are worth in the range US$ 1–8 million in 2007. In relative terms, the most impressive improvements in funding overall (from all sources) have occurred in Indonesia, Myanmar and Zimbabwe (Figure 36), mainly due to GFATM funding in Indonesia and Zimbabwe and GDF funding in Myanmar.

Among all HBCs, national governments will provide US$ 758 million (61%) of the funding required by NTPs in 2007 and US$ 241 million (19%) will be funded by donor agencies (Table 21). This leaves a reported funding gap of US$ 251 million (20%). In absolute terms, the largest funding gaps (as in 2006) are those reported by China, Kenya, Pakistan and the Russian Federation (US$ 186 million, or 74% of the total gap). Proportionally,

[1] If multi-year grants are successfully renegotiated and GFATM grants are disbursed on schedule, then the funding available in 2007 will be higher than in 2002.

TABLE 21

NTP budgets and available funding, high-burden countries, 2007

		TOTAL NTP BUDGET (US$ MILLIONS)	CHANGE SINCE 2002[a] (US$ MILLIONS)	CHANGE SINCE 2002 (%)	AVAILABLE FUNDING (US$ MILLIONS)				FUNDING GAP (US$ MILLIONS)	CHANGE IN AVAILABLE FUNDING SINCE 2002[b] (US$ MILLIONS)				CHANGE IN FUNDING GAP SINCE 2002 (US$ MILLIONS)
					GOVERNMENT (EXCL. LOANS)	LOANS	GRANTS (EXCL. GFATM)	GFATM		GOVERNMENT (EXCL. LOANS)	LOANS	GRANTS (EXCL. GFATM)	GFATM	
1	India	75	39	109	9.2	37	10	14	3.4	2.9	13	5.0	14	3.4
2	China	200	103	105	120	11	2.7	26	41	68	11	0.2	26	-2.5
3	Indonesia	59	25	73	25	0	11	23	0	18	0	8.0	23	-25
4	Nigeria	36	28	323	17	0	4.2	13	2.3	15	0	0	13	-4.3
5	Bangladesh	20	13	184	2.9	0.9	2.5	14	0	-0.5	0.8	-0.9	14	0
6	Pakistan	23	18	341	3.4	0	2.0	0.6	17	0.4	0	1.3	0.6	16
7	South Africa	95	32	50	88	0	2.5	4.0	0	30	0	0.9	4.0	0
8	Ethiopia	6.3	1.5	30	0.2	0	1.5	4.5	0	-0.9	0	-2.2	4.5	0
9	Philippines	20	3.8	23	10	0	1.5	6.4	2.1	-1.8	0	1.5	6.4	-2.3
10	Kenya	32	26	508	1.0	0	0.2	1.0	29	-0.5	0	-2.4	1.0	28
11	DR Congo	26	19	292	1.4	0.8	5.0	6.7	12	0.4	0.8	-0.7	6.7	8.1
12	Russian Federation	513	351	216	360	25	2.2	27	99	206	25	-5.4	27	99
13	Viet Nam	14	2.2	19	6.6	0	1.9	1.9	3.4	-2.1	-1.8	0.9	1.9	3.4
14	UR Tanzania[c]	8.1	2.6	47	2.1	0	5.7	0	0.4	1.9	0	0.9	0	-0.2
15	Brazil	44	30	225	29	0.5	2.8	8.1	3.0	16	0.5	2.8	8.1	3.0
16	Uganda	9.2	3.9	75	1.7	0	0.5	6.2	0.8	1.6	-1.2	-0.1	6.2	-2.5
17	Thailand[c]	2.0	–	–	–	–	–	2.0	–	–	–	–	2.0	–
18	Mozambique	14	5.7	72	0.8	0	3.9	1.2	7.8	0.5	0	1.5	1.2	2.5
19	Myanmar	16	14	484	0.5	0	6.6	0	9.2	0.1	0	6.4	0	7.0
20	Zimbabwe[c]	13	12	679	2.3	0	3.2	5.1	2.6	2.2	0	1.6	5.1	2.6
21	Cambodia	7.6	3.3	77	0.6	0	1.8	2.1	3.1	-0.7	-0.7	0.7	2.1	1.9
22	Afghanistan	17	14	445	0.1	0	0.7	1.3	15	-0.2	0	-0.6	1.3	13
High-burden countries		**1 250**	**746**	**109[d]**	**683**	**76**	**73**	**168**	**251**	**356**	**48**	**19**	**168**	**152**

– Indicates not available.

[a] Figures assume budget 2002 equal to expenditure 2002 (Ethiopia), budget 2003 (Afghanistan, Bangladesh, Mozambique and Uganda) or expenditure 2003 (Russian Federation and Zimbabwe).

[b] Total of changes in available funding and funding gap does not equal the total in column 3 because comparisons by source of funding are with 2003 for DR Congo and Nigeria.

[c] Data for UR Tanzania and Zimbabwe are for 2006. Data for Thailand are partial.

[d] Median value.

the largest gaps are in Afghanistan, Cambodia, DR Congo, Kenya, Mozambique, Myanmar and Pakistan (with gaps representing 40–93% of the required budget).

Further details, including charts showing trends in NTP budgets by funding source and line item for each HBC during the period 2002–2007, are provided in Annex 1.

All countries by region, 2007

The Global Financial Monitoring Project started to collect data from all countries (rather than focusing only on the 22 HBCs) in 2003 and to report on these data in 2004. Since there is variation in the set of countries that report complete data each year, presentation of needs for all countries over time is difficult. For this reason, Figure 37 presents NTP budgets by source of funding for 2007 only. In 2007, 90 countries (22 HBCs and 68 other countries) that collectively account for 90% of the global burden of TB submitted complete data.[1] These countries accounted for almost all of the regional burden of TB in the Eastern Mediterranean, South-East Asia and Western Pacific regions, for 87% of the regional burden in the African Region, 57% of the burden in the Region of the Americas, and 65% of the regional burden in the European Region. These figures mean that the reporting of complete financial data to WHO has been maintained (compared with 2006) in the South-East Asia and Western Pacific regions, and improved in all regions except the Region of the Americas.[2]

NTP budgets in 2007 in these 90 countries total US$ 1.6 billion, with a funding gap of US$ 307 million (both figures higher than for 2006). Budgetary funding gaps as a proportion of the total budget are higher in HBCs compared with other countries, except in the African Region and the Region of the Americas. Overall, NTP budgets per TB case (estimated annual incidence) were lower for HBCs compared with non-HBCs in four regions; in the African Region, budgets were very similar (US$ 138 per case and US$ 135 per case for HBCs and non-HBCs respectively), and in the European Region the budget for the Russian Federation was higher than the average for the other 16 countries that reported data.

[1] Data in 2007 assumed to be as for 2006 in Thailand, UR Tanzania and Zimbabwe.

[2] This is because Peru reported data in the 2005 round of data collection, but not the 2006 round of data collection used for this report.

FIGURE 37

Regional distribution of NTP budgets by source of funding, 22 high-burden countries and 68 non high-burden countries, 2007.
Numbers in parentheses above bars show the percentage of all estimated TB cases in the region accounted for by the countries included in the bar. Numbers in parentheses in the x-axis show the number of countries contributing to each bar.

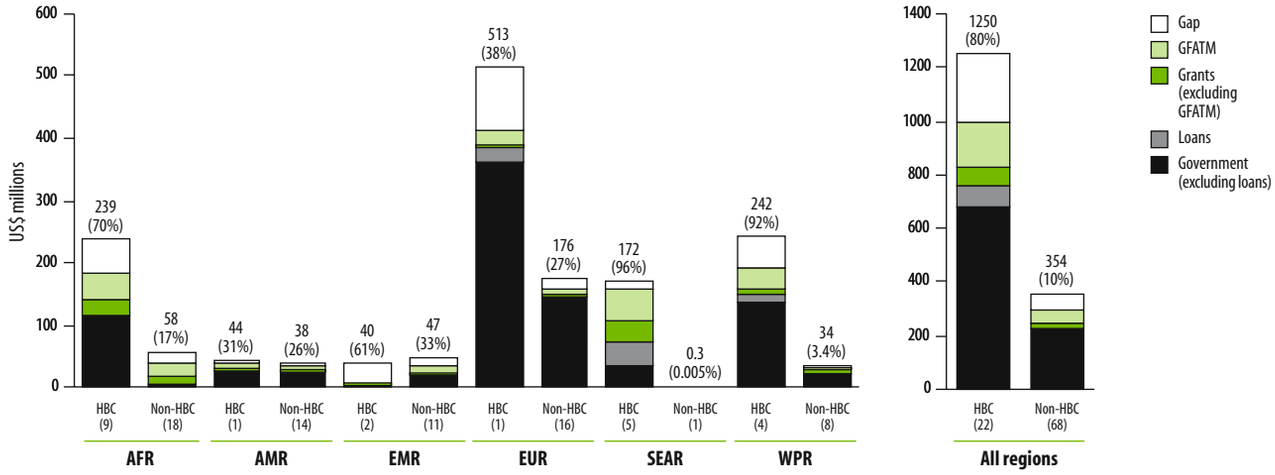
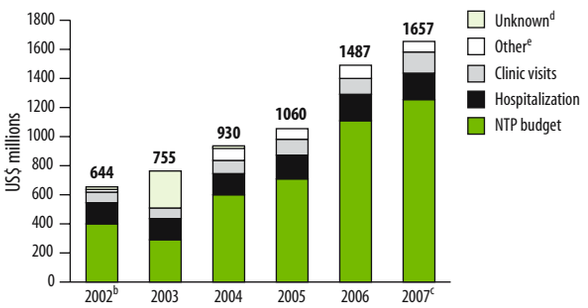


FIGURE 38

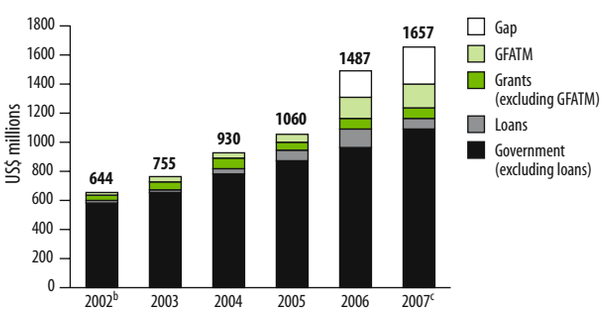
Total TB control costs by line item, high-burden countries,[a] 2002–2007



[a] Total TB control costs for 2002–2005 are based on expenditure data, whereas those for 2006–2007 are based on budget data.
[b] Estimates assume costs 2002 equal to costs 2003 for Afghanistan, Bangladesh, Mozambique, Nigeria, Uganda and Zimbabwe.
[c] Estimates assume costs 2007 equal to costs 2006 for UR Tanzania and Zimbabwe.
[d] "Unknown" applies to Russian Federation 2003 and Thailand 2002–2004.
[e] "Other" includes costs for hospitalization and fluorography in the Russian Federation not reflected in NTP budget or NTP expenditure data.

FIGURE 39

Total TB control costs by source of funding, high-burden countries,[a] 2002–2007



[a] Total TB control costs for 2002–2005 are based on expenditure data, whereas those for 2006–2007 are based on budget data.
[b] Estimates assume costs 2002 equal to costs 2003 for Afghanistan, Bangladesh, Mozambique, Nigeria, Uganda and Zimbabwe.
[c] Estimates assume costs 2007 equal to costs 2006 for UR Tanzania and Zimbabwe.

Total costs of TB control

High-burden countries, 2002–2007

NTP budgets include only part of the resources needed for TB control. In particular, they do not include the costs associated with general health-service staff and infrastructure, which are used when TB patients are hospitalized or make outpatient clinic visits for DOT and monitoring. For the 22 HBCs combined, the total cost of TB control is projected to be almost US$ 1.7 billion in 2007, compared with US$ 644 million in 2002 (Figures 38–40; Table 22). The figures for total costs 2002–2006 are lower than those reported in *Global tuberculosis control 2006*, due to downward revisions of the costs estimated for South Africa following the reporting of financial data and related estimates of health services utilization (hospitalization and clinic visits) to WHO for the first time in 2006. Notably, the financial report for South Africa included lower estimates of the frequency and duration of hospitalization compared with the costing studies conducted in the mid-late 1990s that were used to produce cost estimates for previous reports in this series.

Increases in projected costs during the period 2002–2007 arise because of the large increases in NTP budgets (described above) and because of the higher costs of clinic visits and hospitalization that are associated with treating more patients. As in previous years, the largest costs in 2007 are for the Russian Federation and South Africa, which together account for US$ 829 million, or almost exactly half of the total cost of US$ 1.7 billion (Figure 40; Table 22). South Africa is a middle-income country, and the high costs are mainly explained by the higher prices for items such as hospitalization and outpatient visits, compared with those typical in low-income countries, as well as a relatively large budget for treatment of MDR-TB (US$ 43 million for about 6000 patients). The high costs in the Russian Federation reflect continued staffing and maintenance of an extensive network of TB hospitals and

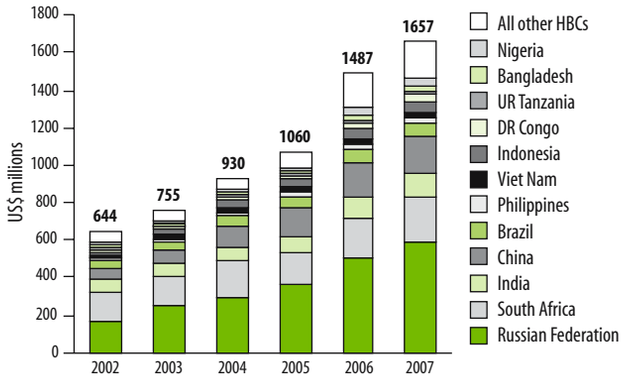
sanatoria, a large budget for second-line anti-TB drugs to treat many MDR-TB patients (US$ 91 million, with an estimated total of about 34 000 cases) and continued use of fluorography for mass population screening. China (US$ 200 million), India (US$ 119 million), Brazil (US$ 74 million) and Indonesia (US$ 64 million) rank third to sixth. These six countries account for 78% of the total cost of TB control in the 22 HBCs. An additional nine countries have total costs in the range US$ 23–52 million in 2007, and the remaining seven have costs of US$ 19 million or less.

The countries with by far the largest projected absolute increases in annual costs between 2002 and 2007 are the Russian Federation and China (US$ 423 million and US$ 139 million respectively). They are followed by increases in the range US$ 36–81 million in Brazil, India, Indonesia, Nigeria and South Africa. The smallest absolute changes are projected for Cambodia, Ethiopia, Uganda, UR Tanzania, and Viet Nam. The biggest proportional increases are for Afghanistan, Kenya, Myanmar, Nigeria and Pakistan.

Funding for the general health-service staff and infrastructure used by TB patients during clinic visits and hospitalization is assumed to be provided by governments.

FIGURE 40

Total TB control costs by country, high-burden countries,[a] 2002–2007



[a] Total TB control costs for 2002–2005 are based on expenditure data, whereas those for 2006–2007 are based on budget data.

TABLE 22

Total TB control costs and available funding, high-burden countries, 2007

		TOTAL COSTS (US$ MILLIONS)	CHANGE SINCE 2002[a] (US$ MILLIONS)	CHANGE SINCE 2002 (%)	AVAILABLE FUNDING (US$ MILLIONS)				FUNDING GAP (US$ MILLIONS)	CHANGE IN AVAILABLE FUNDING SINCE 2002 (US$ MILLIONS)				CHANGE IN FUNDING GAP SINCE 2002 (US$ MILLIONS)
					GOVERNMENT (EXCL. LOANS)	LOANS	GRANTS (EXCL. GFATM)	GFATM		GOVERNMENT (EXCL. LOANS)	LOANS	GRANTS (EXCL. GFATM)	GFATM	
1	India	119	56	90	53	37	10	14	3.4	13	20	5.6	14	3.4
2	China	200	139	229	120	11	2.7	26	41	63	9.8	-0.6	26	41
3	Indonesia	64	43	209	29	0	11	23	0	10	0	9.4	23	0
4	Nigeria	52	43	435	33	0	4.2	13	2.3	27	0	0.4	13	2.3
5	Bangladesh	27	17	160	10	0.9	2.5	14	0	3.2	0.8	-0.9	14	0
6	Pakistan	27	22	444	7.0	0	2.0	0.6	17	3.2	0	0.8	0.6	17
7	South Africa	235	81	53	228	0	2.5	4.0	0	80	0	0.9	4.0	0
8	Ethiopia	14	7.0	99	8.0	0	1.5	4.5	0	4.7	0	-2.2	4.5	0
9	Philippines	31	8.9	40	21	0	1.5	6.4	2.1	1.5	-2.2	1.0	6.4	2.1
10	Kenya	34	28	533	3.1	0	0.2	1.0	29	0.3	0	-2.4	1.0	29
11	DR Congo	35	23	196	11	0.8	5.0	6.7	12	4.9	0.8	-1.1	6.7	12
12	Russian Federation	594	423	247	442	25	2.2	27	99	271	25	2.2	27	99
13	Viet Nam	23	2.2	10	16	0	1.9	1.9	3.4	-2.7	-1.8	1.4	1.9	3.4
14	UR Tanzania[b]	15	3.7	33	8.7	0	5.7	0	0.4	2.4	0	0.9	0	0.4
15	Brazil	74	36	93	60	0.5	2.8	8.1	3.0	21	0.5	2.8	8.1	3.0
16	Uganda	10	6.9	245	2.2	0	0.5	6.2	0.8	1.2	-1.2	-0.1	6.2	0.8
17	Thailand[b]	4.0	–	–	2.0	–	–	2.0	–	–	–	–	2.0	–
18	Mozambique	24	20	518	11	0	3.9	1.2	7.8	8.5	-0.8	3.6	1.2	7.8
19	Myanmar	19	16	531	3.4	0	6.6	0	9.2	1.2	0	5.7	0	9.2
20	Zimbabwe[b]	18	12	201	7.0	0	3.2	5.1	2.6	2.6	0	1.6	5.1	2.6
21	Cambodia	10	5.1	104	3.0	0	1.8	2.1	3.1	0.2	-0.7	0.4	2.1	3.1
22	Afghanistan	27	23	542	10	0	0.7	1.3	15	10	0	-3.3	1.3	15
High-burden countries		**1 657**	**1 017**	**201[c]**	**1 089**	**76**	**73**	**168**	**251**	**527**	**50**	**26**	**168**	**251**

– Indicates not available.

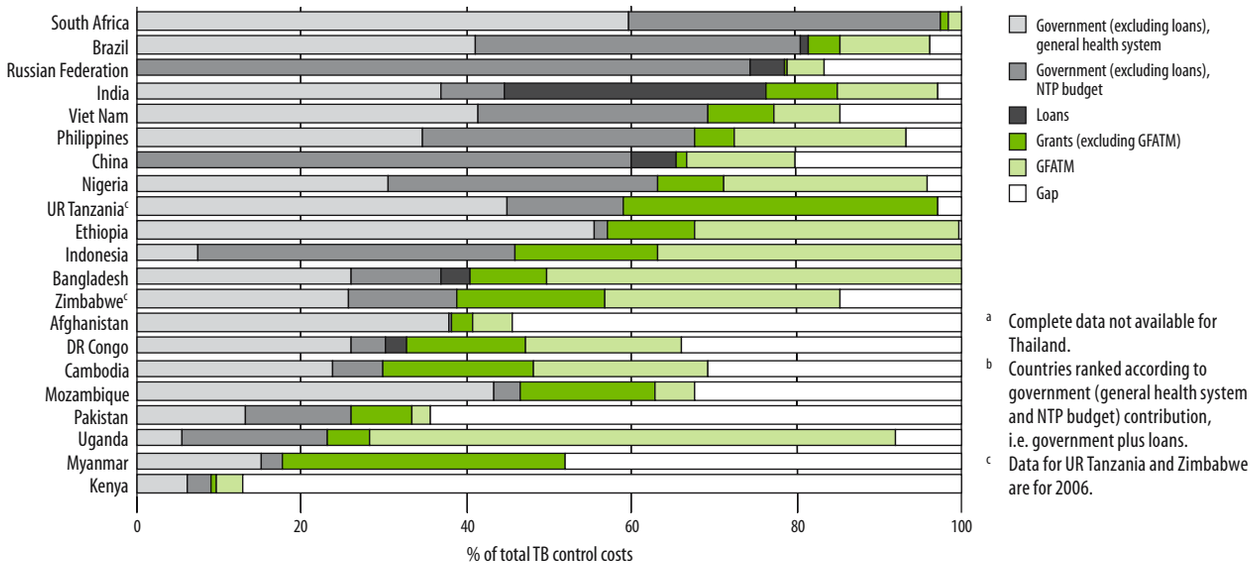
[a] TB control costs for 2006–2007 were estimated using budget data, whereas those for 2002–2005 were estimated using expenditure rather than budget data wherever possible. Estimates assume expenditure 2002 equal to available funding 2002 (Kenya and UR Tanzania), to expenditure 2003 (Afghanistan, Bangladesh, Mozambique, Nigeria and Zimbabwe) or to available funding 2003 (Uganda).

[b] Data for UR Tanzania and Zimbabwe are for 2006. Data for Thailand are partial.

[c] Median value.

FIGURE 41

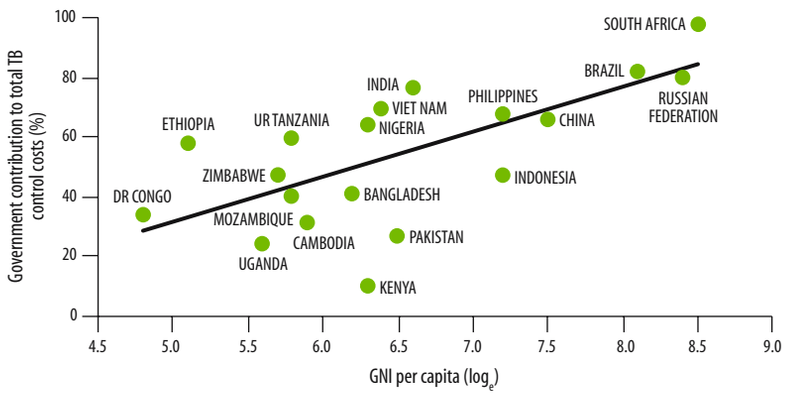
Sources of funding for total TB control costs, 21 high-burden countries,[a,b] 2007



[a] Complete data not available for Thailand.
[b] Countries ranked according to government (general health system and NTP budget) contribution, i.e. government plus loans.
[c] Data for UR Tanzania and Zimbabwe are for 2006.

FIGURE 42

Government contribution (including loans) to total TB control costs by gross national income (GNI) per capita, 19 high-burden countries,[a] 2007



[a] Data on GNI per capita not available for Myanmar and Afghanistan. Complete data for Thailand not available.

This assumption, together with the implicit assumption that health systems have sufficient capacity to support the treatment of growing numbers of patients in 2007,[1] means that the resources available for TB control are estimated to have increased from almost US$ 644 million in 2002 to US$ 1.4 billion in 2007 (Figure 39; Table 22). The contribution by HBC governments to the total cost of TB control in 2007 is 70% on average, which is larger than their contribution to NTP budgets. However, this high average figure conceals important variations among countries. There are 10 HBCs that are dependent on grants to cover more than one-third of the total costs of TB control (Bangladesh, Cambodia, DR Congo, Ethiopia, Indonesia, Myanmar, Nigeria, Uganda, UR Tanzania and Zimbabwe), and a further four (Afghanistan, Kenya, Mozambique and Pakistan) that are likely to rely on grant funding to a similar or greater extent to fill reported funding gaps (Figure 41). The share of the total costs provided by HBC governments is closely related to average income levels (Figure 42), although the government contribution relative to income levels is comparatively high in Ethiopia, India, South Africa, UR Tanzania and Viet Nam, and comparatively low in Indonesia, Kenya, and Pakistan. For all HBCs, the estimated gap between the funding already available and the total cost of TB control is US$ 251 million in 2007, i.e. the NTP budget gap reported above.

Further details, including charts for each country that show trends in total TB control costs by line item for each year 2002–2007, are shown in Annex 1.

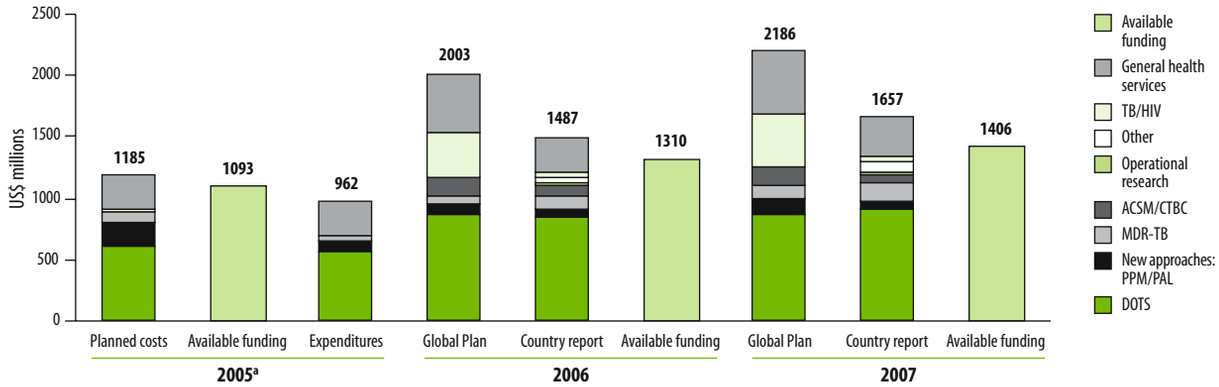
High-burden countries: country reports compared with the Global Plan

The Global Plan has set out what needs to be done between 2006 and 2015 to achieve the MDG and related Stop TB Partnership targets for TB control. For the Global Plan to be successfully implemented, country-level planning and budgeting for TB control needs to be in line with the seven regional plans and budgets that are described in the Global Plan; plans need to be fully funded; and planned interventions and activities need to be fully implemented. For the 22 HBCs as a whole, planned costs and available funding for 2006 and 2007 according to country reports

[1] Nonetheless, the capacity of health systems to manage an increasing number of TB patients warrants further analysis, particularly in countries where the number of patients will need to increase substantially to achieve the MDG and related Stop TB Partnership targets for TB control.

FIGURE 43

Global Plan compared to planned costs, available funding and expenditures, 22 high-burden countries, 2005–2007



[a] Planned costs are higher than actual costs shown in Figures 38–40 (actual costs are based on expenditures).

are compared with those derived from the Global Plan,[1] as well as with planned costs, available funding and actual expenditures in 2005, in Figure 43. This shows that while planned costs and available funding reported by countries are higher in 2006 and 2007 compared with 2005, they are much less than the funding requirements included in the Global Plan. For example, in 2007 the Global Plan indicates that US$ 2.2 billion is required in the 22 HBCs, while country reports indicate planned costs of US$ 1.7 billion, and available funding of US$ 1.4 billion. The discrepancy is mostly due to lower planned costs for collaborative TB/HIV activities (especially in the African region – see Annex 1) and ACSM. Exceptions where planned costs in country reports are either in line with or more ambitious than the Global Plan include Brazil, China, Kenya, the Philippines and Viet Nam (see Annex 1).

All countries: country reports compared to the Global Plan

The financial data submitted to WHO allow total TB control costs for 2007 to be estimated for 84 of the 172 countries that were included in the Global Plan (22 HBCs and 62 other countries).[2] These 84 countries account for 90% of all new cases arising each year, while the 172 countries included in the Global Plan account for 98% of such cases. A regional comparison of costs and available funding based on (a) country reports and (b) the Global Plan is shown for these 84 countries in Figure 44. Overall, country reports indicate planned costs of US$ 2.3 billion, compared with US$ 3.1 billion in the Global Plan. As for the 22 HBCs, the main discrepancy is the higher costs for collaborative TB/HIV activities and ACSM that are included in the Global Plan. However, Figure 44 also illustrates that this overall discrepancy is mostly accounted for by the African and (to a lesser extent) South-East Asia regions. In the Western Pacific Region, costs based on country reports are similar to those set out in the Global Plan. In the Region of the Americas and the Eastern Mediterranean Region, higher costs in the Global Plan reflect higher projections of the number of patients that need to be treated in DOTS programmes (both regions) and, in the Eastern Mediterranean region, an NTP budget that is not increasing in line with country projections of patients to be treated (notably in Pakistan). In the European Region, planned costs based on country reports are higher than those in the Global Plan. These differences mean that while the funding gap reported by countries amounts to US$ 307 million in 2007, the funding gap would be US$ 1.1 billion if the available funding of US$ 2.0 billion is compared with the funding requirements of US$ 3.1 billion set out in the Global Plan.

Budgets and costs per patient

Budgets and costs per patient in HBCs are shown in Table 23. The budget for first-line anti-TB drugs is lowest in Bangladesh (US$ 13) and highest in South Africa (US$ 61). In most countries, the budget is in the range US$ 16–35. The relatively high figure of US$ 51 for Kenya is due to the purchase of a one-year buffer stock; it is possible that the comparatively high figures for Mozambique and UR Tanzania have a similar explanation.

The budget per patient, including all line items, also varies. Three countries have budgets below US$ 100 per patient (Ethiopia, India and Pakistan). A total of eight countries have budgets in the range US$ 100–200 per patient, five are in the range US$ 200–300 and four are in the range US$ 300–550.[3] The Russian Federation is the only country with a budget above US$ 1000 per patient. The total cost per patient treated in 2007 is below US$ 100 in Ethiopia and India, in the range US$ 100–300 in 12 countries, and US$ 300–500 in three countries. There are four countries with much higher costs: Afghanistan, Brazil, the Russian Federation, and South Africa. Afghanistan's

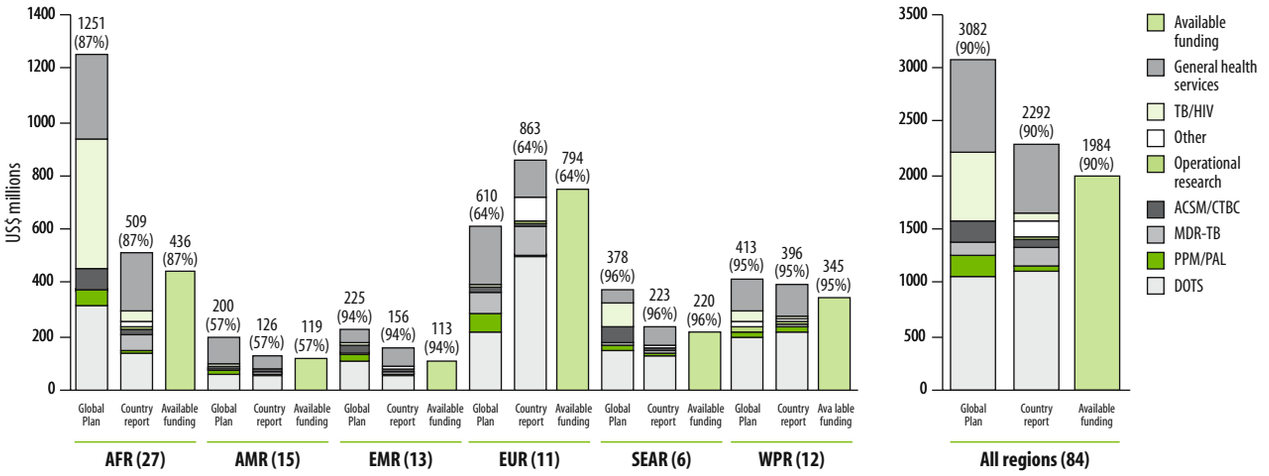
[1] See **Methods** for explanation of how costs for individual countries were derived from the Global Plan.

[2] Six of the 90 countries that reported complete data were not considered in the Global Plan cost estimates.

[3] Figures were not calculated for Thailand because the budget and health services utilization data reported to WHO were incomplete.

FIGURE 44

Total TB control costs in 2007 in 22 high-burden countries and 62[a] other countries by region: country reports compared with *The Global Plan to Stop TB, 2006–2015*. Numbers in parentheses above bars show the percentage of all estimated TB cases in the region accounted for by the countries included in the bar. Numbers in parentheses in the x-axis show the number of countries contributing to each bar.



[a] Iceland, the Netherlands, Serbia, Slovakia, Switzerland and TFYR Macedonia are excluded since they were not included in the Global Plan.

TABLE 23

Total TB control costs and NTP budgets per patient, high-burden countries, 2007

	2007 (US$)			CHANGES SINCE 2002, (FACTOR[a])		
	FIRST-LINE DRUGS BUDGET	NTP BUDGET	TOTAL COSTS	FIRST-LINE DRUGS BUDGET	NTP BUDGET	TOTAL COSTS
1 India	16	57	91	1.6	1.7	1.5
2 China	23	250	250	1.4	1.9	1.9
3 Indonesia	31	171	185	1.0	1.5	1.4
4 Nigeria	14	346	497	0.3	2.4	2.0
5 Bangladesh	13	101	136	0.6	1.2	1.1
6 Pakistan	19	97	112	0.3	2.1	1.2
7 South Africa	61	324	803	1.0	1.1	1.1
8 Ethiopia	26	39	88	1.0	0.9	1.4
9 Philippines	30	145	222	0.6	1.2	1.2
10 Kenya	51	263	280	1.4	5.1	4.2
11 DR Congo	19	228	309	0.5	2.5	1.8
12 Russian Federation	17	1 465	1 698	0.3	3.5	3.9
13 Viet Nam	35	166	283	1.0	1.9	1.3
14 UR Tanzania[b]	49	137	248	1.2	1.7	1.3
15 Brazil	67	516	864	1.5	3.1	1.7
16 Uganda	24	146	154	0.5	3.1	2.2
17 Thailand	–	–	–	–	–	–
18 Mozambique	51	297	522	2.2	3.8	3.4
19 Myanmar	21	117	138	1.2	5.6	2.6
20 Zimbabwe[b]	33	221	298	1.2	7.7	3.0
21 Cambodia	26	197	259	0.6	1.5	1.3
22 Afghanistan	20	545	598	0.7	2.4	5.2
High-burden countries (median value)	**26**	**197**	**259**	**1.0**	**1.9**	**1.8**

– Indicates not available.
[a] Calculated as 2007 value divided by 2002 value.
[b] Latest available data are for 2006.

relatively high costs reflect the need to rebuild the basic infrastructure required for TB control,[1] as well as a plan for 2006–2010 that incorporates all elements of the new Stop TB Strategy and follows the planning and costing framework used for the Global Plan. The other three countries are middle-income countries with generally higher prices for the inputs needed for TB control and in the Russian Federation, as noted above, a further explanation is the continued reliance on lengthy hospitalization of patients as well as mass population screening using fluorography. Among the low-income countries, there is no clear-cut relationship between the cost per patient treated and GNI per capita: for example, in India and Pakistan the cost per patient treated is low relative to income levels, while in DR Congo and Mozambique the cost per patient treated is relatively high compared with GNI per capita (data not shown). Overall, budgets and costs per patient are generally increasing, with a median increase of 90% per patient for budgets and of 80% for total costs (though the median for first-line drugs shows no change since 2002).

Further details, including charts that show five per patient indicators (costs, budgets, available funding, expenditures and budget for first-line anti-TB drugs) for each year 2002–2007 for each HBC, are provided in Annex 1. Data have also been compiled and analysed for all other countries that reported data, and are available upon request.

Expenditures compared with available funding and case detection

For countries that have received large increases in funding, there are two important challenges: to spend the extra money, and to translate extra spending into improved case detection and treatment success rates. To date, we have been able to conduct analyses for the HBCs only.

The ability to translate additional funding into spending can be assessed by comparing expenditures with available funding (Table 24; Figure 45). Complete sets of data on budgets, funds and expenditures for 2005 were available for 18 HBCs (the exceptions being South Africa, Thailand, Uganda and Zimbabwe). When budget and funding data were prospectively reported for 2005, five of these 18 HBCs had fully-funded budgets (Afghanistan, Brazil, India, Indonesia and Viet Nam). Among these five countries, Brazil, India, and Viet Nam spent all the available funds; in Brazil and India, expenditures included the spending of funds that were mobilized in excess of the original budget.[2]

China was also successful in mobilizing additional funding during 2005, and spent funds that were in excess of the original budget. Apart from these six countries,

[1] While we have reported these costs as part of the NTP budget, they will help to strengthen the health system as a whole.

[2] This explains why the value of expenditures in 2005 as a percentage of the available funding prospectively reported in 2005 (final column of Table 24) is above 100.

TABLE 24

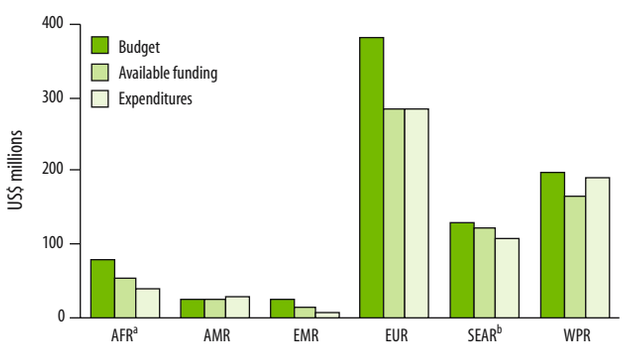
Budgets, available funding and expenditures (US$ millions), high-burden countries, 2005

		BUDGET	AVAILABLE FUNDING[a]	EXPENDITURE[b]	AVAILABLE FUNDING AS % OF NTP BUDGET	EXPENDITURE AS % OF AVAILABLE FUNDING[c]
1	India	47	47	51	100	108
2	China	155	127	157	82	123
3	Indonesia	53	53	40	100	76
4	Nigeria	14	8.6	8.5	63	100
5	Bangladesh	17	14	12	85	85
6	Pakistan	19	8.7	3.1	45	36
7	South Africa	–	41	41	–	99
8	Ethiopia	6.8	6.2	5.9	91	95
9	Philippines	20	17	13	86	78
10	Kenya	10	7.8	7.7	77	98
11	DR Congo	11	8.7	7.9	81	91
12	Russian Federation	382	284	284	74	100
13	Viet Nam	17	17	17	100	100
14	UR Tanzania[d]	7.6	6.5	5.1	86	78
15	Brazil	24	24	28	100	117
16	Uganda	6.0	3.6	–	60	–
17	Thailand[d]	4.7	4.7	–	100	–
18	Mozambique	7.7	7.3	4.8	95	66
19	Myanmar	5.8	2.1	2.6	36	122
20	Zimbabwe[d]	16	5	–	30	–
21	Cambodia	6.9	4.6	4.4	67	94
22	Afghanistan	4.0	4.0	1.8	100	44
High-burden countries		**833**	**702**	**694**	**79[e]**	**90[e]**

– Indicates not available.
[a] Based on budget data, reported prospectively in 2005.
[b] Based on actual expenditures reported in 2006.
[c] Figures can be above 100% when additional funds were mobilized after reporting data in 2005.
[d] Data for UR Tanzania and Zimbabwe are for 2006. Data for Thailand are partial.
[e] Average values.

FIGURE 45

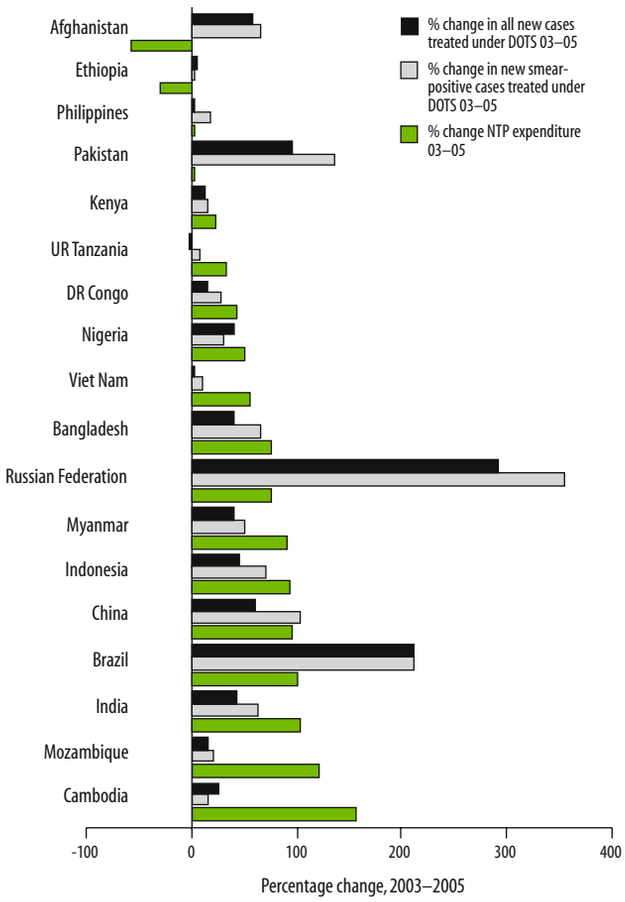
Budget, available funding and expenditures by WHO region (US$ millions), high-burden countries, 2005



[a] Expenditure data not available for Uganda and Zimbabwe. Budget data not available for South Africa.
[b] Expenditure data not available for Thailand.

FIGURE 46

Change in NTP expenditure and change in new smear-positive and all types of patients treated under DOTS, 18 high-burden countries,[a,b] 2003–2005



[a] Expenditure data for both years not available for South Africa, Thailand, Uganda and Zimbabwe. Comparison for Kenya is with expenditure 2004.
[b] Countries ranked by percentage change in NTP expenditure.

budgets were not fully funded and, except for Myanmar, Nigeria and the Russian Federation, expenditures were almost always less than available funding. Expenditures were particularly low in relation to available funding in Afghanistan and Pakistan. For three African countries highlighted as spending less than 50% of the funding available to them in 2004, there was an improvement in 2005. In 2005, Kenya, Mozambique and UR Tanzania spent 98%, 66% and 78% of available funding, respectively.

The ability to translate spending into improved case detection can be assessed by comparing changes in expenditures 2003–2005 with changes in the number of patients treated 2003–2005 (Figure 46; 2005 is the most recent year for which both case notification and expenditure data are available). Of the 18 countries for which data were available, all but one that increased spending between 2003 and 2005 also increased the number of cases (both new smear-positive and new cases as a whole) that were detected and treated in DOTS programmes (the exception was UR Tanzania). However, the relationship was variable. In Brazil and the Russian Federation, the increase in the number of patients treated under DOTS was far in excess of the increase in expenditures, probably because increasing the number of cases treated under DOTS requires a substitution of DOTS for non-DOTS treatment rather than an increase in total notifications. There was a close to one-to-one relationship between increased expenditures and increased notifications of new smear-positive cases under DOTS in China, while the percentage increase in notifications of new smear-positive cases under DOTS was 56–87% of the percentage increase in expenditures in Bangladesh, DR Congo, India, Indonesia, Kenya, Myanmar and Nigeria (with a range of 46–81% when all forms of new case are considered). There were four countries where the percentage increase in the number of cases treated in DOTS programmes was small compared with the increase in expenditures (Cambodia, Mozambique, UR Tanzania and Viet Nam). In three countries, reported expenditures fell while the number of cases treated increased (Afghanistan, Ethiopia and Pakistan). This fall in expenditures combined with an increase in the number of cases treated is plausible in Ethiopia, since large capital expenditures occurred in 2003, but the data for Afghanistan and Pakistan suggest that expenditures are being underreported. Finally, in the Philippines there were relatively small absolute changes in both expenditures and cases (all forms) treated (2% and 3% respectively).

GFATM contribution to TB control

High-burden countries

In HBCs, the GFATM is the single most important source of external financing, with nine countries (Bangladesh, Cambodia, DR Congo, Ethiopia, Indonesia, Nigeria, the Philippines, Uganda and Zimbabwe) relying on the GFATM to fund more than 25% of their NTP budgets. After six rounds of proposals, the total value of approved proposals in the HBCs is US$ 1.3 billion (Table 25). The amounts in the Phase 1 grant agreements (i.e. the grants that cover the first two years of the proposal) total US$ 519 million.

By the end of 2006, US$ 324 million had been disbursed. For each country, we can compare the actual and expected rates of disbursal, where the expected rate assumes that disbursements should be spread evenly over the two or five year period of the grant agreement following the programme start date (Table 25).[1] Across all grants and countries, the actual disbursement rate is similar to the expected rate. However, for half (19 out of 38) of the grants the actual disbursement rate is below the expected rate, and for half it is above the expected rate. Disbursements are particularly low in relation to the expected disbursement

[1] For other countries, a summary table with the same indicators as those shown for the HBCs is available upon request.

TABLE 25

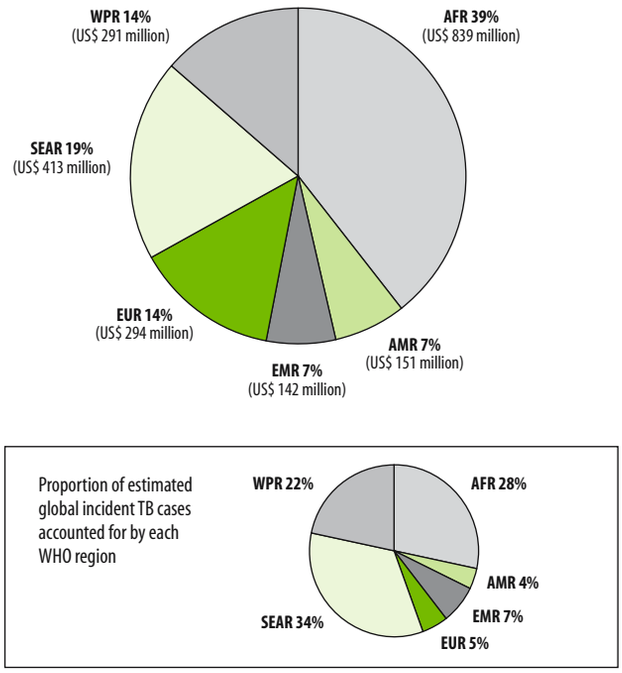
The Global Fund to Fight Aids, Tuberculosis and Malaria financing for high-burden countries, as of end 2006

	ROUND	TOTAL BUDGET (YEARS 1–5)[a] US$ MILLIONS	GRANT AMOUNT PHASE 1 (YEARS 1–2)[b] US$ MILLIONS	GRANT AMOUNT PHASE 2 (YEARS 3–5) US$ MILLIONS	TOTAL DISBURSEMENT BY END 2006 (AS OF 23 DEC 2006) US$ MILLIONS	TOTAL DISBURSEMENT BY END 2006 AS % OF GRANT AGREEMENT ACTUAL (%)	EXPECTED (%)[c]	DATE GRANT AGREEMENT SIGNATURE	PROGRAMME START DATE	DATE OF FIRST DISBURSEMENT	TIME BETWEEN BOARD APPROVAL AND SIGNATURE OF GRANT AGREEMENT[d] (MONTHS)	TIME BETWEEN SIGNATURE OF GRANT AGREEMENT AND FIRST DISBURSEMENT (MONTHS)
1 India	1[e]	8.7	5.7	3.0	7.2	84	75	Jan-03	Apr-03	Jul-03	9	6
	2	29	7.1	22	6.8	23	55	Feb-04	Apr-04	Mar-04	13	2
	3[f]	15	2.7	–	2.2	82	100	Oct-04	Nov-04	Jan-05	12	3
	4	27	6.8	–	4.0	59	86	Feb-05	Apr-05	Mar-05	7	1
	6	24	9.1	–	–	–	–	–	–	–	>2	–
2 China	1	48	25	23	36	74	75	Jan-03	Apr-03	Apr-03	9	3
	4	56	28	–	22	79	74	Jun-05	Jul-05	Jul-05	11	1
	5	53	18	–	3.9	22	7.2	Sep-06	Nov-06	Oct-06	12	0.5
3 Indonesia	1	69	22	47	38	56	68	Jan-03	Aug-03	Mar-03	9	2
	5	69	18	–	–	–	–	Sep-06	–	–	12	–
4 Nigeria	5	68	26	–	8.4	33	0	Sep-06	Jan-07	Dec-06	12	2
5 Bangladesh	3	42	11	16	15	57	48	Jul-04	Aug-04	Jul-04	9	1
			5.5	10	4.5	29	46	Aug-04	Sep-04	Oct-04	10	1
	5	46	3.9	–	1.5	39	32	May-06	May-06	Jun-06	7	1
			5.8	–	1.5	25	32	May-06	May-06	Aug-06	7	3
6 Pakistan	2	4.0	2.2	1.8	1.7	43	60	Aug-03	Jan-04	Jan-04	7	5
	3	9.9	5.6	–	3.7	67	99	Oct-04	Jan-05	Nov-04	12	2
7 South Africa	1[f]	20	2.4	–	2.4	100	100	Aug-03	Dec-03	Dec-03	16	5
			18	–	18	100	100	Aug-03	Aug-03	Dec-03	16	5
	1[f]	62	27	–	22	84	100	Aug-03	Jan-04	Dec-03	16	5
	2[f]	25	8.4	–	1.8	21	49	Nov-05	Jan-06	Dec-05	34	1
8 Ethiopia	1	27	11	16	15	57	68	Mar-03	Aug-03	Aug-03	11	5
	6	44	12	–	–	–	–	–	–	–	>2	–
9 Philippines	2	11	3.4	8.0	9.3	81	68	Jun-03	Aug-03	Jul-03	5	1
	5	50	15	–	4.6	30	11	Aug-06	Oct-06	Sep-06	>2	–
10 Kenya	2	8.8	4.9	3.8	2.5	28	63	Jun-03	Nov-03	Oct-03	5	4
	5	20	7.9	–	3.5	44	16	Jul-06	Sep-06	Aug-06	9	2
	6	9.2	4.2	–	–	–	–	–	–	–	>2	–
11 DR Congo	2[e]	7.6	6.4	1.2	7.6	100	68	Jun-03	Aug-03	Jul-03	5	1
	5	36	15	–	4.7	32	3.1	Oct-06	Dec-06	Nov-06	13	1
	6	12	8.5	–	–	–	–	–	–	–	>2	–
12 Russian Federation	4	88	49	–	18	36	53	Oct-05	Dec-05	Dec-05	15	3
Tomsk	3	11	6.3	4.5	6.5	61	41	Oct-04	Dec-04	Dec-04	12	2
13 Viet Nam	1	10	2.5	7.5	2.5	25	51	Oct-03	Jun-04	Apr-04	9	7
	6	11	1.6	–	–	–	–	–	–	–	>2	–
14 UR Tanzania	3[f]	83	24	–	20	85	100	Sep-04	Nov-04	Nov-04	11	2
	6	37	18	–	–	–	–	–	–	–	>2	–
Zanzibar	3	1.7	1.0	–	1.0	100	100	Sep-04	Dec-04	Nov-04	20	3
15 Brazil	5	27	2.8	–	–	–	–	Dec-06	–	–	15	–
			8.8	–	–	–	–	Dec-06	–	–	15	–
16 Uganda	2	5.7	4.7	–	4.6	98	100	Mar-04	Mar-04	Mar-04	14	0.4
	6	26	11	–	–	–	–	–	–	–	>2	–
17 Thailand	1	11	7.0	4.5	6.9	60	65	May-03	Oct-03	Jul-03	13	2
	6	20	7.7	–	–	–	–	–	–	–	>2	–
18 Mozambique	2	15	9.2	–	7.2	78	99	Apr-04	Jan-05	Dec-04	15	9
19 Myanmar[g]	2	17	2.7	–	2.7	100	99	Aug-04	Jan-05	Sep-04	19	1
20 Zimbabwe	5	12	9.2	–	–	–	–	Dec-06	–	–	15	–
21 Cambodia	2	6.2	2.5	3.7	4.0	64	60	Oct-03	Jan-04	Dec-03	9	2
	5	9.7	3.3	–	0.8	24	7.2	Sep-06	Nov-06	Nov-06	12	1
22 Afghanistan	4[e]	3.4	2.3	–	1.3	56	66	Jun-05	Sep-05	Aug-05	12	2
High-burden countries		**1 298**	**519**	**171**	**324**	**62[h]**	**65[h]**				**11[h]**	**2[h]**

– Indicates not available.
[a] Budgets are for 5 years, unless otherwise stated.
[b] Phase 1 amounts for round 6 grants are provisional because the grants have not yet been signed.
[c] Shows the percentage of the grant period that has elapsed since the programme start date.
[d] Board approval dates: 22 April 2002 for round 1, 13 January 2003 for round 2, 15 October 2003 for round 3, 28 June 2004 for round 4, 30 September 2005 for round 5 and 3 Novemeber 2006 for round 6.
[e] Budget is for three years.
[f] TB/HIV grant.
[g] Grant has been terminated.
[h] Median values.

FIGURE 47

GFATM funding for TB control by WHO region, as of end 2006[a]



[a] Refers to the total budgets approved in rounds 1–6.

FIGURE 48

GFATM financing and proposal approval rate by round.
Numbers in the horizontal axis show the number of TB proposals approved in each round.

of funds in India (round 2 but not rounds 1, 3 and 4), Kenya (round 2 but not round 5), South Africa (rounds 1 and 2) and Viet Nam (round 1). The main delay in the initial flow of funds to countries is the time taken to sign the grant agreement after proposal approval; the median time is 11 months (range 2–34 months), which is in line with GFATM expectations that it takes about one year to prepare and finalize the Phase 1 grant agreement and related documentation. Once grant agreements are signed, disbursements are usually made within 2 months.

All countries

In six funding rounds between 2002 and 2006, the GFATM approved proposals worth a total of US$ 2.1 billion for control of TB and TB/HIV in 92 countries, including all 22 HBCs. The total for TB proposals was US$ 1.9 billion. The African Region has the single largest share, at 39% (Figure 47), which is higher than its share of the global burden of TB (28%). The South-East Asia and Western Pacific regions have the second and third highest funding in absolute terms, but less than might be expected given their share of the global burden of TB. The funding approved for the Eastern Mediterranean Region is in line with its share of the global burden of TB (7%), while the share of funding for the European Region and the Region of the Americas is higher than these regions' share of the global burden of TB.

The value of approved proposals for TB control was relatively high in rounds 5 and 6 compared with rounds 1–4, as was the proposal approval rate (Figure 48).[1] The approval rate for TB proposals submitted to the GFATM was 50% in round 5 and 62% in round 6, up from 37–40% in rounds 1–4.

[1] Calculated as the number of proposals approved divided by the number of proposals reviewed by the GFATM's Technical Review Panel.

Conclusions

Monitoring progress in TB control

This report draws four main conclusions about progress in TB control, based on routine monitoring and surveillance data. The first is that NTPs worldwide narrowly missed the 2005 targets for case detection (60%/70%) and treatment success (84%/85%). However, both targets were met in the Western Pacific Region, and in 26 countries including China, the Philippines and Viet Nam. Second, while the total number of patients diagnosed and treated under DOTS approached target levels in 2005, the numbers known to be HIV-positive or carrying drug-resistant bacteria (MDR-TB) were far fewer than anticipated by the Global Plan in 2006. Therefore a major effort is needed to step up collaborative TB/HIV activities and the management of MDR-TB. Third, the global TB epidemic appears to be on the threshold of decline. The incidence rate (per capita) worldwide has evidently stabilized or begun to fall, following the earlier downturns in prevalence and mortality.[1] The incidence rate is now stable or falling in all WHO regions, including Africa and Europe. These findings, if robust, mean that MDG target 8 was met before 2005, and more than 10 years before the target date of 2015. However, the total number of new TB cases was still rising slowly in 2005, and in the African, Eastern Mediterranean and South-East Asia regions. In some Asian countries that report high rates of case detection and treatment success, incidence has not apparently been reduced as quickly as expected, for reasons that are not fully understood. This is linked to the fourth conclusion: that the global TB burden is not yet falling fast enough to satisfy the more demanding targets set by the Stop TB Partnership within the MDG framework. That is, at the current rate of progress, the 1990 prevalence and mortality rates will not be halved worldwide by 2015. The following sections discuss these conclusions in more detail.

Case detection

The point estimate of the global case detection rate in 2005 is 60%, i.e. 10% below target. The data suggest that the target was reached in the Western Pacific Region and in seven HBCs. Calculations that attempt to allow for many of the uncertainties surrounding the point estimate indicate that case detection could have been as high as 69% or as low as 52%. It therefore seems unlikely that case detection exceeded 70%, both on the basis of these calculations and in view of much independent data showing why detection and/or reporting of patients is low in some places. For example, improving links among public health providers, and between public and private sectors, can substantially increase the number of patients reported to NTPs.[2,3]

While the case detection rate accelerated markedly between 2000 and 2004, the annual increase slowed between 2004 and 2005. Saturation in case-finding is expected where detection rates are high, but the deceleration began in South-East Asia, the Americas and the Western Pacific Region at rates of detection that were below the 70% target. Among HBCs, the slowdown was conspicuous in India, where the final stages of national DOTS expansion are taking place in states with the weakest health systems, such as Bihar and Jharkhand.

Case detection inevitably becomes more difficult at the limits of public health systems, but there are still some comparatively easy gains to be made. Several WHO reports in this series have emphasized that, in the Americas and Europe, many TB cases are reported through the public health system but from outside DOTS programmes. This implies that target rates of case detection could be achieved in these two regions by implementing the procedures required under DOTS, including the more frequent use of smear microscopy in the European Region. In other parts of the world, especially the African and the Eastern Mediterranean regions, case detection must be improved by finding more patients in total, for example by increasing the number and diversity of clinics and hospitals that report TB cases.

The acceleration in case detection since 2000 has been achieved both by improving detection within established DOTS areas and by expanding geographical coverage. However, "coverage" is now less useful as an indicator than in the early years of DOTS expansion, for two reasons. First, geographical coverage was high in most DOTS countries by 2005. Second, other determinants of case detection (e.g. diagnosis and treatment in the private sector, the efficiency of public health services) have, in many countries, become more important than recruiting new districts and provinces to DOTS programmes.

Outcomes of treatment

DOTS programmes treated more than two million smear-positive patients in the 2004 cohort, and achieved a global success rate just below the 85% target. The target was met in the South-East Asia and Western Pacific regions, and in eight HBCs. However, the overall treatment success, coupled with the 54% case detection rate in 2004, means that less than half (46%) of all new smear-positive patients were known to have been successfully treated in that cohort.

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1 *Global tuberculosis control: surveillance, planning and financing. WHO report 2006*. Geneva, World Health Organization, 2006 (WHO/HTM/TB/2006.362).

2 Lönnroth K et al. Public–private mix for DOTS implementation: what makes it work? *Bulletin of the World Health Organization*, 2004, 82:580–586.

3 Lönnroth K et al. Hard gains through soft contracts: productive engagement of private providers in tuberculosis control. *Bulletin of the World Health Organization*, 2006, 84:876–883.

In the countries where treatment outcomes have been poor in recent years, little change was visible in the results for 2004. In the African and European regions, where high proportions of patients fail treatment or die, or are lost from DOTS cohorts, HIV/AIDS and MDR-TB are, respectively, major obstacles to TB control. But incomplete cohort data from these regions show that programme management also continues to be weak.

Clearly, NTPs must continue to improve case-finding and treatment success within the framework of the Global Plan, working towards the MDGs. To reach the targets of 70% case detection and 85% treatment success is a precondition for achieving a major impact with DOTS and the Stop TB Strategy.

Epidemiological trends and the impact of TB control

Our conclusion that incidence, prevalence and mortality were falling globally by 2005 is based on the best available evidence, but needs to be verified with more and better information. Current point estimates of the key epidemiological indicators are, for many countries, derived by mathematical and statistical modelling, and from weak or indirect evidence. For example, it is uncertain whether the TB incidence rate is still increasing in subregion Africa – low HIV, given that HIV prevalence is thought to be in decline in this group of African countries (Figure 7).[1] In the Region of the Americas, TB prevalence and death rates had already fallen by 2005 to about half the 1990 values, 10 years ahead of the 2015 target year. But this conclusion is not based on direct measurements of prevalence, and is guided by limited information about TB deaths (Annex 3). Moreover, the fall in case notifications has, for unknown reasons, slowed or reversed in recent years in some Latin American countries, including Brazil, Mexico and Peru.

The ultimate goal is to measure incidence through reliable case notifications, prevalence via well-designed prevalence surveys, and deaths by comprehensive vital registration (Table 4). Most countries cannot yet measure all key indicators, and there is much scope for improving and validating methods such as verbal autopsy for counting TB deaths in the population at large (i.e. outside DOTS cohorts).

Notwithstanding this cautious note on evaluation, the trend in TB incidence in some countries is clear and, in a few instances, the fall in TB can be attributed to the implementation of good control programmes. In 10 countries in the Eastern Mediterranean Region, for example, case notification rates were falling at 2–10% annually between 1994 and 2005. For the majority of these countries, the trends in case reports probably reflect the underlying trend in incidence. The higher rates of reduction (e.g. Jordan, Lebanon) are likely to reflect some impact of DOTS programmes, although the size of this impact is not easily quantified. New Caledonia is a more persuasive example, albeit on a small scale, of impact due to a good programme of drug treatment: the overall case notification rate fell at an average of 9% each year between 1990 and 2005.

In contrast, some countries are not showing the reductions in incidence expected after several years of DOTS implementation. Viet Nam has apparently had high and stable case detection and treatment success rates for a decade, and yet there are no indications that the total number of TB cases is falling. An examination of the notification trends by age and sex shows that case rates are falling among adults aged 35–64 years (especially women), but they are increasing among 15–24 year-olds (especially men) (data in Annex 2 and previous reports). In Figure 23 we have presented this phenomenon in another way: the average age of TB patients is falling among younger adults but increasing among the elderly. Such differences among and between younger and older adults can be seen in data from Bangladesh, China, Myanmar, Sri Lanka and Thailand. In Indonesia, exceptionally, the average age of older as well as younger TB patients is falling. In the United States of America, the average age is falling among younger men and women, but is not obviously increasing among older people. Among people 15–54 years old in Morocco, the average age of women with TB is falling, but for men it is increasing.

This analysis, based only on surveillance data, is not powerful enough to determine the direction of the TB epidemics in these countries, or to fully explain the patterns of change with age. The observations do, however, help to refine the epidemiological questions. In particular, they underline the importance of understanding how the epidemiology of TB among young men and women could be slowing the decline of the epidemic in the established market economies, and in those Asian countries that have most of the world's TB cases.

While the slow decline in TB incidence is a concern in Asia, any sign of a reduction in TB is welcome news in Africa. After more than a decade of rising case numbers, the increase in the case notification rate in eastern and southern African countries (sub-region Africa – high HIV) appears to have halted and may now be in decline. The upward shift in the average age of TB patients in Uganda and UR Tanzania is consistent with the flat or declining trend in case notifications, and follows the trend in HIV prevalence in these two countries. The stabilization or decline of TB in parts of sub-Saharan Africa is the main reason why the incidence rate has begun to fall globally.

Although incidence, prevalence and death rates now appear to be in decline, prevalence and death rates are not yet falling fast enough to achieve the 2015 targets. The decline will be accelerated by finding and curing more patients. The total number of patients diagnosed and treated in 2005 is in line with expectations for 2006, but the marked variations in case detection among WHO

[1] *AIDS epidemic update: December 2006*. Geneva, UNAIDS/WHO, 2006.

regions in 2005 will persist without remedial action. And there were major deficiencies in 2005 in the diagnosis and treatment of HIV-positive and MDR-TB patients, which are reflected in budgets for 2005–2007 (see **Financing TB control**). The present analysis leads to the conclusion that investment and implementation need to be stepped up especially, but not exclusively, in the African, Eastern Mediterranean and European regions.

Stop TB Strategy: implementation and planning

Eight main themes emerge from this review of the transition from DOTS to the Stop TB Strategy during 2006.

Strategic planning

The majority of HBCs have developed strategic plans that recognize most of the elements of the Stop TB Strategy but which are not yet in line with the Global Plan. The identification of extensively drug-resistant tuberculosis (XDR-TB) during 2006 has prompted many countries to review the quality of their TB control strategy, and to take the necessary steps to strengthen basic TB control. However, some country plans are modest in terms of the investments needed, especially to improve the quality of DOTS, to treat patients with MDR-TB, and to implement collaborative TB/HIV activities on a large scale (see **Financing TB control**).

Human resource development

The strength and sustainability of NTPs depend on timely, adequate and ongoing training and deployment of personnel. The performance of staff depends on various factors such as motivation, training, supervision, salaries and working conditions, all of which must be included in carefully-formulated and implemented HRD policies.

With the transition from DOTS to the Stop TB Strategy, HRD is becoming more complex. Compared with previous years, NTPs are now producing more comprehensive HRD plans, and there is a growing recognition that HRD consists of more than training. Also needed are routine data to monitor staff turnover, improved working conditions, and motivation and retention strategies. The systematic development of human capacity is becoming central to TB control in many countries.

Monitoring missions have shown that many NTPs now have a system and structure for HRD. However, the quality of the system is often insufficient and the HR management capacity is often inadequate at provincial and district levels. One of the key challenges is to retain enough competent staff to cover TB control when general health service staff are overstretched. Few countries routinely report data related to HRD, or systematically review staffing and training during routine supervision. Such information would lead to improvements in training and recruitment.

HRD needs better advocacy and promotion, and NTP staff need to understand its essential role in TB control. The lessons learnt by NTPs in countries such as India and Indonesia on how HRD should be organized and managed should be widely disseminated. Furthermore, there must be greater collaboration on HRD among government departments and ministries that service the whole health system.

Quality-assured laboratory and treatment services

The prompt diagnosis and effective treatment of all types of TB underpin the Stop TB Strategy. Both functions require a strong laboratory network, but the quality of laboratory services has been given too little attention. DOTS, as a part of the Stop TB Strategy, requires high-quality sputum smear microscopy. Implementation of the strategy also requires the phased expansion of culture and DST facilities, but this is being done slowly in all regions except the Americas and Europe. Although all HBCs require more funds to develop their laboratory networks, India in particular needs substantial additional investment.

While there have been major improvements in the procurement, supply and use of quality-assured anti-TB drugs, NTPs must be prepared to confront new challenges, such as XDR-TB. Standardized, free-of-charge, short-course chemotherapy is now routinely used worldwide. Patient kits and FDCs are also being increasingly used. However, some weaknesses need to be rectified, such as the use of the WHO-recommended Category I regimen in only half of the countries in Europe. Of greater concern is the observation that all WHO regions had at least one country that experienced first-line drug stock-outs at some level during 2005, and seven HBCs reported first-line drug stock-outs at the peripheral level.

Collaborative TB/HIV activities

The TB and HIV/AIDS control programmes in most countries have begun to respond to the challenge presented by the interaction between these two epidemics. But the majority of countries do not yet offer widely the essential diagnostic and treatment services: HIV testing, screening for TB among HIV-positive people, and the provision of CPT, ART and IPT. Low rates of HIV testing are, in most countries, currently the principal obstacle to providing ART to TB patients. The coverage of these services in 2005 was far less than anticipated by the Global Plan in 2006, the first year of its implementation. It is therefore clear that collaborative TB/HIV activities need to be stepped-up rapidly, to respond to the TB emergency declaration in Africa,[1] and to satisfy the needs of "universal access" as described in the Global Plan.

This report shows that there were in fact significant improvements between 2003 and 2005, at least in some

[1] See: www.who.int/tb/features_archive/tb_emergency_declaration/en/

aspects of diagnosis and treatment in some countries. For example, Kenya, Malawi and Rwanda are now testing a growing number of notified TB cases for HIV, providing CPT to around 80% of their HIV-positive TB patients, and ART to around 30%. The total number of reported patients beginning ART in the African Region increased about 40-fold between 2003 and 2005.

In 2005, CPT was more widely available to HIV-positive TB patients than ART. In part this is because CPT is cheaper and easier to distribute and administer than ART, which must be taken for life. But CPT is also provided at the periphery of health services, while ART is often available only in hospitals to which fewer patients have access. As the costs of diagnosis and treatment fall, and as experience in the care of HIV-positive TB patients grows, it will be easier to simplify and decentralize the provision of ART.

There has been less progress in screening HIV-positive people for TB, even though screening appears to be an efficient way of finding TB cases, and despite the demonstrated efficacy of preventive therapy (IPT) for those who have not (yet) progressed to active TB. Botswana, uniquely, has shown that IPT can be provided to HIV-positive people on a large scale.

The expansion of HIV testing among TB patients, and the recording and reporting of test results, will provide important information for monitoring and evaluation. With this information, TB epidemic trends can be monitored separately among HIV-positive and HIV-negative populations, so as to obtain a better understanding of the underlying epidemiology and impact of TB control. It will also be possible to monitor treatment outcomes according to HIV status, in particular mortality. Smear-positive patients treated under DOTS in Africa had higher death rates than in any other WHO region in 2004. This is presumably because of the high prevalence of HIV in the region, but the contribution of HIV to TB deaths in Africa has not yet been demonstrated directly on a large scale.

In this context, several countries including Brazil, Jamaica, Belize, Estonia and the Russian Federation, have developed their own recording and reporting systems to ensure that information on TB and HIV is systematically collected, compiled and analysed. The quality of information about TB and HIV will increase greatly as more countries follow the revised (2006) WHO guidelines on recording and reporting.[1]

MDR-TB surveillance and control

The long-term vision for control of MDR-TB includes DRS and treatment of MDR-TB as standard components of all TB control programmes. True integration of surveillance and treatment of MDR-TB requires the scale-up of culture and DST services, which were the primary limiting factors for expansion in 2006.

Currently, few countries, with the exception of the established market economies and the subregions of Central and Eastern Europe, are providing diagnostic services including culture and DST for all TB cases. In most countries, culture and DST are provided to a group of patients selected on a clinical basis, often treatment failures or contacts of known MDR-TB patients. Therefore, routine surveillance data and survey data obtained through the Global DRS Project are poorly correlated, with the exception of the European Region which provides wide access to culture and DST services.[2]

A total of 182 countries filled in the WHO standard data collection form for MDR-TB data for 2005, but only 104 countries reported at least one MDR-TB case, and the majority of countries reported less than 50 cases. It is expected that expansion of culture and DST, as well as treatment for MDR-TB as outlined in the Global Plan, will improve the routine surveillance of drug resistance, particularly among re-treatment cases. In the meantime, the Global DRS Project continues to play an important role in supplementing routine surveillance, and in monitoring trends in drug resistance. The Global Plan anticipates that 20 000 and 36 000 MDR-TB cases will be treated according to international standards in 2006 and 2007, respectively. In 2005, the total number of MDR-TB patients reported, and the number reported as being diagnosed in GLC programmes (probably overestimated), were far below the Global Plan proposal for 2006. However, the number of known MDR-TB patients is growing, and the proportion treated under the GLC is expected to increase from about a third (35%) in 2006 to a half (47%) in 2007.

The 2004 cohort of MDR-TB patients was the first for which data on treatment outcomes were collected. The treatment success rate for patients in GLC projects was 57% on average somewhat better than for patients treated outside GLC projects (50% treatment success).[3] In future, we expect treatment outcomes in GLC projects to improve as cohorts are likely to include fewer chronic cases and a higher proportion of new MDR-TB patients carrying bacteria that are typically resistant to fewer drugs. In addition, the GLC has in recent years approved more countries that do not have a history of second-line drug use. In such settings, MDR-TB control is likely to yield better treatment outcomes; susceptibility to the most

[1] *The revised TB recording and reporting forms – version 2006*. Geneva, World Health Organization, 2006. Available at www.who.int/tb/dots

[2] Data not presented in this report. This is a repeat of the analysis presented in *Global tuberculosis control: surveillance, planning and financing. WHO report 2006*. Geneva, World Health Organization, 2006 (WHO/HTM/TB/2006.362). The reanalysis gives essentially the same results.

[3] This is lower than reported in another publication from the same GLC-approved countries (Nathanson E et al. Multidrug-resistant tuberculosis management in resource-limited settings. *Emerging Infectious Diseases*, 2006, 12:1389–1397). The paper reported that an average of 70% of MDR-TB patients were successfully treated (higher among new, 77%, than among previously treated MDR-TB patients, 69%). In that source, the number of patients was higher because the data covered three years instead of one year in this report. The MDR-TB patients discussed in the article also included a high proportion of severe chronic cases, with 65% of patients resistant to both first- and second-line anti-TB drugs.

effective second-line drugs should be preserved, perhaps permitting shorter regimens with fewer, less toxic drugs.

The number of GLC-approved, MDR-TB control programmes is increasing rapidly, both as a result of more funding for TB control from the GFATM, and through the integration of MDR-TB management into general TB control efforts, as outlined in the Stop TB Strategy and described in the new guidelines for the management of drug-resistant TB.[1] The GLC is receiving a growing number of applications from low-income countries (as defined by the World Bank). By the end of 2006, 15 low-income countries had been approved by the GLC, among which 10 were approved during the past two years. In addition, applications from two low-income countries were under GLC review.

Although the number of GLC-approved MDR-TB treatments is increasing, with an estimated global incidence of over 400 000 MDR-TB cases, most patients remain undiagnosed and untreated. And many of those patients who have been identified are still treated inadequately, with inappropriate diagnostic and treatment procedures.

WHO and its partners will focus on assisting countries in planning, piloting and scaling-up procedures for the management of MDR-TB, following the new guidelines and in line with the Global Plan. Several HBCs and high MDR-TB prevalence countries have plans and resources to improve MDR-TB management. By the end of 2006, the newly-established UNITAID[2] also agreed to scale-up access to second-line anti-TB drugs by contributing significant financial resources for GLC-approved countries.

Extensively drug-resistant TB

Although resistance to second-line TB drugs is not a recent development, it gained considerable attention during 2006, following a review of findings by supranational TB reference laboratories, and a highly-publicized occurrence of resistance to second-line drugs among HIV-infected TB patients in South Africa,[3] coupled with high mortality. The term extensively drug-resistant TB (XDR-TB) is defined as TB due to strains that are resistant to the two most important first-line drugs, isoniazid and rifampicin (MDR-TB), and further resistance to a fluoroquinolone and at least one second-line injectable agent (amikacin, kanamycin and/or capreomycin).[4] DST is not routinely carried out in most national reference laboratories. Therefore, to assess the magnitude of the XDR-TB problem, second-line testing must be conducted on isolates from MDR-TB patients identified in routine drug-resistance surveys. This is under way in at least 10 countries, and data will be available in 2007.

Strengthening health systems, improving access to care

The Stop TB Strategy reinforces the natural linkages between TB control and general health systems. It highlights the need for NTPs to actively participate in efforts to improve health policy, human resources, financing, management, logistics, service delivery and information systems.

Most HBCs have developed plans for TB control jointly with a range of stakeholders involved in health-care planning financing and health systems development. Several NTPs have actively engaged in SWAPs, MTEFs and PRSPs. However, this may not be sufficient in the context of the current, wide-ranging debate on health system strengthening. Most NTPs need to participate more actively in that debate, particularly in countries with ongoing health sector reforms.

Some of the innovative but well-tested approaches, which are integral components of the Stop TB Strategy, provide opportunities for NTPs to strengthen health systems while also enhancing TB control. These include community-based TB care (linking community and health services), PAL (TB care in the context of all respiratory problems) and PPM (exposing and sensitizing non-state health-care providers to public health through collaboration with NTPs).

So far, a few countries have initiated PAL, and some have begun scaling up. Countries, including those with a high prevalence of HIV infection, should actively consider starting PAL implementation and mobilize the required resources through, for example, applications to the GFATM. PPM has been shown in some settings not only to improve access to care for the poor but also to reduce costs to patients.[5] There has been a significant increase in the number and the scale of initiatives to actively engage all health-care providers through PPM approaches to TB care and control. This is being facilitated by two important tools launched during 2006: the *International Standards for Tuberculosis Care and Engaging all health care providers in TB control: guidance on implementing public–private mix approaches*. All regions have now included PPM in the regional TB control plans, and more

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1 *Guidelines for the programmatic management of drug-resistant tuberculosis*. Geneva, World Health Organization, 2006 (WHO/HTM/TB/2006.361).

2 UNITAID is a financing mechanism established in 2006 to facilitate access to high-quality drugs and diagnostics for HIV, TB and malaria, led by Brazil, Chile, France, Norway and the United Kingdom, and based primarily on a tax contribution to the price of airline tickets.

3 Gandhi N et al. Extensively drug-resistant tuberculosis as a cause of death in patients co-infected with tuberculosis and HIV in a rural area of South Africa. *Lancet*, 2006, 368:1575–1580.

4 Fluoroquinolones and injectable agents are the most effective second-line anti-TB drugs, and the only ones that have bactericidal effect. They are therefore recommended in the initial phase of any MDR-TB treatment regimen. Fluoroquinolones and aminoglycosides are the most common second-line anti-TB drugs, largely available also in most low-income countries. XDR-TB is therefore a term intended to describe a resistance pattern for which patients are much less likely to be successfully treated with existing second-line regimens. See: *Guidelines for the programmatic management of drug-resistant tuberculosis*. Geneva, World Health Organization, 2006 (WHO/HTM/TB/2006.361).

5 Floyd K et al. Cost and cost-effectiveness of PPM-DOTS for tuberculosis control: evidence from India. *Bulletin of the World Health Organization*, 2006, 84:437–445.

countries are bringing PPM into the national planning and implementation process. All HBCs have some form of PPM activity in progress. Increased attention to PPM in countries also means a significant increase in the need for technical assistance in this area. Major challenges for PPM scale-up are skilled staff in countries and adequate external and internal technical assistance for country-level implementation.

Working with people and communities

Community-based TB care has been shown to improve both access to services and adherence to treatment, and is in place in many countries.[1] However, it needs to be promoted actively and implemented more widely.

The wider involvement of communities in TB care and prevention – going beyond patient care – should be based on the assessment of possible synergies with existing community initiatives, and with a view to improving physical, social and economic access to services for TB care and control. The vision underlying principles for community empowerment is one of partnership between health systems and communities, aimed at establishing a patient-centred approach, with earlier and higher case detection, better treatment adherence throughout the period of treatment, and mitigation of the economic impact of the disease on patients and their families. So far, the approach to ACSM under the Stop TB Strategy has been uneven. WHO and partners, including a wide range of civil society organizations, will address these challenges by publishing guidelines for community empowerment early in 2007. These guidelines will serve as a basis for developing country-specific strategies, and should benefit all countries, especially those which have mobilized funding for ACSM activities from the GFATM.

Research to improve TB control

Implementation of the various components of the Stop TB Strategy requires a greater and more systematic effort on the part of countries to plan, design and undertake research. This will be required as much for the rapid deployment of new and improved technology as for the implementation of innovative, programme-based approaches to TB control. The limited research activities reported by NTPs in 2006 included surveys of the prevalence of HIV infection among TB patients, surveys of drug resistance, studies on health-seeking behaviour and the effectiveness of FDCs, and the evaluation of PPM initiatives. The development and promotion of a set of research priorities, the harnessing and strengthening of research capacity at the regional, national and local levels, and the establishment of institutional mechanisms to support research are all needed to reinforce component 6 of the Stop TB Strategy.

[1] *Community contribution to TB care: practice and policy.* Geneva, World Health Organization, 2003 (WHO/CDS/TB/2003.312).

Financing TB control

The financial analyses included in this report are based on data from 90 countries that together account for 90% of the global TB incidence, including all 22 HBCs and 84 of the countries considered in the Global Plan. These data show that NTP budgets in the 22 HBCs have increased substantially over the past six years, from just over US$ 500 million in 2002 to US$ 1.25 billion in 2007, while total costs (NTP budgets plus the cost of general health system staff and infrastructure used for the treatment of TB patients) have risen from US$ 644 million in 2002 to US$ 1.65 billion in 2007. When all 90 countries are considered, NTP budgets for 2007 amount to US$ 1.65 billion, with total costs of US$ 2.3 billion. In response to these growing budgets, funding for TB control has also increased, from US$ 644 million in 2002 to US$ 1.4 billion in 2007 in HBCs. Nonetheless, funding gaps reported by countries in 2007 amount to US$ 307 million, of which US$ 251 million is accounted for by the 22 HBCs. Moreover, despite increases in planned costs and available funding for TB control since 2002, these funding gaps would be larger still if country plans and assessments of funding requirements were in line with the Global Plan. For the 84 countries for which an assessment could be made, the Global Plan indicates that US$ 3.1 billion is required in 2007, compared with planned costs based on country reports of US$ 2.3 billion and available funding of US$ 2.0 billion. Figures for the 22 HBCs specifically are US$ 2.2 billion, US$ 1.7 billion and US$ 1.4 billion, respectively. The discrepancy is mostly explained by the higher costs for collaborative TB/HIV activities and ACSM that are included in the Global Plan (US$ 832 million in the Global Plan compared with US$ 128 million in country reports), especially in the African and South-East Asia regions.

National budgets compared with the Global Plan

The Global Plan has set out what needs to be done to achieve the MDG and related Stop TB Partnership targets for TB control set for 2015. For this reason, it is important to understand why there are differences between country reports and the Global Plan.

For collaborative TB/HIV activities, the big difference between the Global Plan and NTP country reports has two possible explanations. The first is that the budgets reported by NTPs exclude national AIDS programme budgets for collaborative TB/HIV activities, as well as funding channelled through other mechanisms (e.g. via NGOs). For items such as ART for HIV-positive TB patients, these amounts could be large. The second is that the scale at which implementation of collaborative TB/HIV activities is planned is much less than described in the Global Plan.

The process of clarification and verification of the financial data reported by NTPs clearly demonstrated that NTP budgets do not include all of the budgets and

funding available for collaborative TB/HIV activities in some countries. Kenya and India are two examples. Planning for collaborative TB/HIV activities in Kenya is in line with and sometimes ahead of the Global Plan (for example, 57% of TB patients were tested for HIV in the first half of 2006 with a target of reaching 85% by the end of 2006, compared with the figure of 47% included in the Global Plan for 2006 as a whole). However, the NTP budget is lower than the funding requirements set out in the Global Plan because US$ 7 million is being channelled through NGOs rather than the NTP, and the budget for antiretroviral drugs is part of the national AIDS programme budget (see Annex 1). In India, the only collaborative TB/HIV activity included in the NTP budget is HIV testing of TB patients, which is among the least expensive of the 12 recommended activities. The extent to which other activities are budgeted for and funded by the national AIDS programme is not known.

While NTP budgets are therefore undoubtedly an underestimate of total budgets and funding for collaborative TB/HIV activities, the figures presented in the TB/HIV sections of this report also show that, compared with the Global Plan, there is a large deficit in actual implementation in 2005 as well as in the planned level of implementation in 2006–2007. For example, country reports indicate plans to enrol about 80 000 HIV-positive TB patients on ART in 2006, which is 36% of the 220 000 proposed in the Global Plan. This means that the financing data, in which budgets reported by NTPs are about 10% of those included in the Global Plan, illustrate, but also overstate, a real deficit in both funding and implementation. If ART is considered a good marker for collaborative TB/HIV activities as a whole, then planned budgets for collaborative TB/HIV activities are about one-third rather than one-tenth of the total set out in the Global Plan.

In the case of ACSM, Global Plan estimates of funding requirements were based on a limited number of countries that had developed detailed ACSM plans in the context of applications for GFATM funding in round 5, with guidance from the Stop TB Partnership's ACSM secretariat. Funding requirements in other countries were extrapolated from this set of countries. Given that ACSM is a relatively new area for most NTPs, and that country-specific data were not available in most cases, it is not surprising that budgets reported by countries tend to be comparatively small.

In contrast to TB/HIV and ACSM, the funding available for MDR-TB treatment is higher than the requirement set out in the Global Plan. This is mostly due to the large budgets reported by the Russian Federation and South Africa; the combined total (US$ 134 million) for these two countries is higher than the US$ 129 million included in the Global Plan for the 84 countries that we were able to analyse for this report. The aggregated data for all countries conceal the fact that budgets, as well as the planned number of patients to be enrolled on treatment, are lower than Global Plan expectations in many countries, including the two with the largest estimated number of cases (China and India).

These differences highlight a need for better alignment between country plans and budgets and the Global Plan. The existing evidence already demonstrates that this has been achieved in some countries – notable examples being Brazil, Kenya, the Philippines, Viet Nam and, with the exception of MDR-TB treatment, China. However, these countries remain a small minority.

If the 2015 targets are to be achieved, robust country-owned plans that include implementation of all components of the Stop TB Strategy at a scale consistent with the Global Plan are needed. In this context, WHO has developed a tool for planning and budgeting in line with the Global Plan and the Stop TB strategy at country level.[1] The tool was field-tested in a range of countries in 2006, and an early version was used to help develop strategic plans in Afghanistan and Brazil. The first major use of the final version will be as part of a planning and budgeting workshop for 15 priority African countries including all nine HBCs in the region, scheduled for the first half of 2007. The tool will be used to help develop strategic plans and budgets in priority countries in the European Region during the same period.

Financing the Global Plan

Country plans that are in line with the Global Plan will have larger funding requirements and larger funding gaps, as illustrated by our comparisons with the Global Plan for 84 countries and by specific examples such as Kenya. Filling these funding gaps will require intensive resource mobilization. External grant funding to the 84 countries that could be compared with the Global Plan reaches about US$ 300 million in 2007, with GFATM grants now in place in almost all of these countries and other grant funding stable during the period 2002–2007. Filling the likely funding gap of over US$ 1 billion in 2007 is equivalent to an almost four-fold increase in grant financing. Existing domestic funding, including loans, is about US$ 1.7 billion in 2007; filling the likely gap of around US$ 1.1 billion would therefore need an increase of approximately 65% in existing domestic funding. These figures show that it is unlikely that the funding gap will be filled by donor agencies, and that domestic financing from national governments will be crucial.

Increasing domestic financing for TB control means a major shift from trends during the period 2002–2007, when almost all of the increase in domestic funding among the 22 HBCs was accounted for by three countries (China, the Russian Federation and South Africa). Data from HBCs show that while there is a clear relationship between a country's national income (measured as GNI

[1] This tool is available on a Sharepoint site, accessible by contacting tbbudget@who.int

per capita) and the share of funding for TB control that is provided by HBC governments, two countries with similar levels of income and burden of TB can have very different levels of domestic funding for TB control. This implies that there is real scope for increasing domestic funding in several countries including Indonesia (compared with the Philippines), Pakistan (compared with India), and Kenya (compared with several low-income countries). There should also be potential for increasing loan funding. In 2007, World Bank loans for TB control in the 22 HBCs are restricted to China, India and the Russian Federation.

Broader trends in funding for the health sector also offer an opportunity to increase domestic funding for TB control in India, to support the management of TB/HIV and MDR-TB, and to expand ACSM. The Government of India has pledged to increase public investment in health care by an amount equivalent to 1–2% of GDP over five years. Other than India, funding needs according to the Global Plan amount to about US$ 650 million for low-income countries in 2007. This suggests that if 50% of needs in low-income countries were funded domestically, if middle-income countries financed their TB control entirely from domestic sources,[1] and if donor resources were channelled primarily to low-income countries, then much of the increased funding required for implementation of the Global Plan could be mobilized from domestic sources.

While some countries need to mobilize additional funding, others face the task of maintaining their funding for TB control. Viet Nam, which has achieved the implementation targets of a 70% case detection rate and 85% treatment success for several years, is the only one of the 22 HBCs where funding projected for 2007 is less than in 2002. This decrease in funding includes a reduction in government funding. Failure to maintain financial support for the NTP risks undermining TB control and could prevent implementation of the newer components of TB control included in the Stop TB Strategy.

Resource mobilization is more likely to be successful if it is based on a credible plan and related budget, if there is evidence that increased funding can be spent, and if there is proof that increased spending can be translated into improved TB control. For several of the countries with the largest numbers of TB cases, larger sums of money have been spent, and increased spending has been associated with an increase in the number of patients treated in DOTS programmes. Notable examples are Bangladesh, Brazil, China, India, Indonesia and the Russian Federation where, for a 100% increase in funding, there has been an increase in new smear-positive cases treated under DOTS of at least 61%. Similar figures also apply to five other HBCs with smaller absolute increases in treated cases: DR Congo, Kenya, Myanmar, Nigeria and the Philippines. In other HBCs, the relationship between increased spending and increased cases treated in DOTS programmes was much weaker or could not be demonstrated due to a lack or apparent underreporting of expenditure data. Afghanistan and Pakistan both reported large increases in the numbers of cases treated in DOTS programmes between 2003 and 2005 and large funding gaps for 2007, but expenditure data appear to have been underreported. With better expenditure data, it would be easier to make a case for increased funding in these countries. Overall, the data also illustrate that, when assessing the impact of increased funding on the burden of TB, as will be done by the GFATM during 2007 and 2008, it is advisable to look first at the relationship between expenditures and outcome indicators (such as the number of patients treated or the number of patients successfully treated), prior to linking funding with impact indicators such as prevalence or mortality rates. In countries where there is no clear relationship, an in-depth analysis of how the increased funding was used and how the lack of a relationship with outcome indicators can be explained is warranted.

Strengthening the financial monitoring system

The financial monitoring system itself has grown in strength between 2002 and 2007, yielding more data of higher quality year-on-year. Nonetheless, there is scope for improvement. Beyond the 90 countries included in our analyses, there were a further 66 countries that submitted incomplete financial data. In at least some of these, it is probably possible to provide a complete report. Better data are needed for Thailand, which reported only partial data because, in their decentralized system, financial data are not reported or aggregated at national level. The South African NTP illustrates how it might be possible to address this difficulty – in 2006, the NTP manager sent the WHO data collection form to each of the country's nine provinces for the first time, allowing an aggregated report to be prepared. Budgets and funding for collaborative TB/HIV activities that are included in national AIDS programmes need to be better understood, for example via better linkages with resource tracking work undertaken by UNAIDS.

In summary, there has been major progress in the financing of TB control during the six-year period 2002–2007, with big increases in budgets, available funding and expenditures. However, large funding gaps remain, and the gaps reported by countries for 2006 and 2007 would be larger still if country plans and assessments of funding requirements were fully aligned with the Global Plan. The Global Plan needs to be translated into country-owned plans and budgets, which should then underpin intensified efforts to mobilize the necessary resources.

[1] As indicated for health care as a whole in the report of the WHO Commission on Macroeconomics and Health. See: *Macroeconomics and health: investing in health for economic development. Report of the Commission on Macroeconomics and Health*. Geneva, World Health Organization, 2001, pp. 166–167.

ANNEX 1

Profiles of high-burden countries

Afghanistan

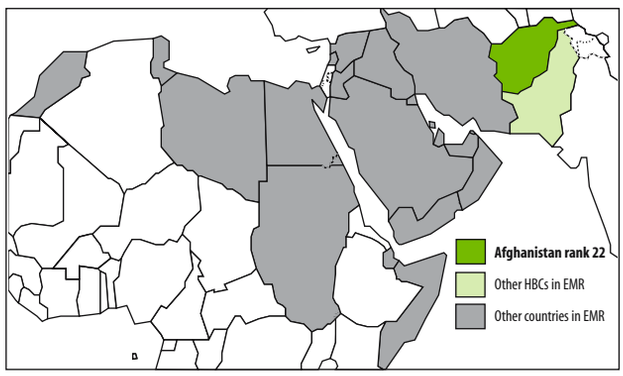
Although Afghanistan has limited resources and remains politically unstable, the NTP has laid the foundations for high-quality TB control, evidenced by consistently high treatment success rates. Key components of the Stop TB Strategy, such as diagnosis, DOT, drug management, and recording and reporting, are in place. Even following downward revision of the incidence estimate, the case detection rate is low, suggesting that only half of all new smear-positive cases are notified by the NTP in DOTS areas. Initiatives to involve the private health sector and community health workers are critical in improving access to DOTS for the entire population.

SURVEILLANCE AND EPIDEMIOLOGY

Population (thousands)[a]	29 863	
TB burden, 2005 estimates (with 2.5 and 97.5 centiles)[b]		
Incidence (all cases/100 000 pop/yr)	168	105–229
Trend in incidence rate (%/yr, 2004–2005)[c]	**-5.4**	
Incidence (ss+/100 000 pop/yr)	76	47–104
Prevalence (all cases/100 000 pop)[c]	**288**	177–405
Mortality (deaths/100 000 pop/yr)[c]	**35**	21–49
Of new adult TB cases (15–49yrs), % HIV+[d]	0.0	0.0–0.0
New TB cases multidrug-resistant, 2004 (%)[e]	*1.7*	*0.3–9.4*
Previously treated TB cases multidrug-resistant, 2004 (%)[e]	*28*	*4.9–75*
Surveillance and DOTS implementation, 2005		
Notification rate (new and relapse/100 000 pop/yr)	73	
Notification rate (new ss+/100 000 pop/yr)	33	
DOTS case detection rate (new ss+, %)	**44**	32–71
DOTS treatment success (new ss+ cases, 2004 cohort, %)	**89**	
Of new pulmonary cases notified under DOTS, % smear-positive	62	
Of new cases notified under DOTS, % extrapulmonary	24	
Of new smear-positive cases notified under DOTS, % in women	69	
Of sub-national reports expected, % received at next reporting level[f]	–	
Laboratory services, 2005[g]		
Number of laboratories performing smear microscopy	435	
Number of laboratories performing culture	0	
Number of laboratories performing DST	0	
Of laboratories performing smear microscopy, % covered by EQA	0	
Management of MDR-TB, 2005		
Of new cases notified, % receiving DST at start of treatment	–	
Of new cases receiving DST at start of treatment, % MDR-TB	–	
Of re-treatment cases notified, % receiving DST	–	
Of re-treatment cases receiving DST, % MDR-TB	–	
Collaborative TB/HIV activities, 2005		
National policy of counselling and testing TB patients for HIV?	No	
National surveillance system for HIV-infection in TB patients?	–	
Of TB patients (new and re-treatment) notified, % tested for HIV	–	
Of TB patients tested for HIV, % HIV+	–	
Of HIV+ TB patients detected, % receiving CPT	–	
Of HIV+ TB patients detected, % receiving ART	–	
Budget and finance, 2007		
Government contribution to NTP budget (including loans, %)	0.3	
Government contribution to total cost of TB control (including loans, %)	9.2	
Government health spending used for TB control (%)	11	
NTP budget funded (%)	12	

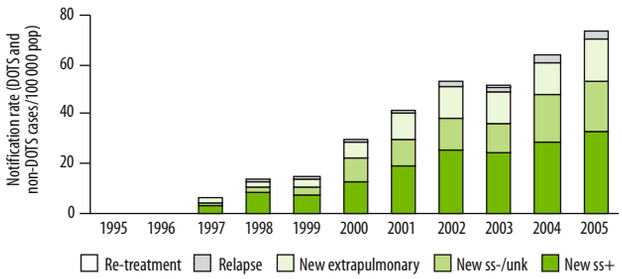
WHO Eastern Mediterranean Region (EMR)

Rank based on estimated number of incident cases (all forms) in 2005



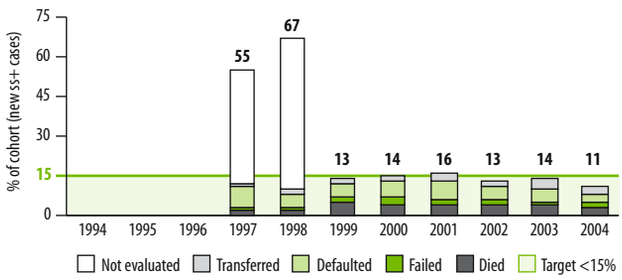
Case notifications

Notifications continue to rise as DOTS coverage increases



Unfavourable treatment outcomes, DOTS

Treatment success rates consistently close to or above target; default rate for 2004 cohort lower than in previous cohorts



DOTS expansion and enhancement	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
DOTS coverage (%)	0.0	0.0	12	11	14	15	12	38	53	68	81
DOTS notification rate (new & relapse/100 000 pop)	–	–	5.9	14	14	30	41	53	51	64	73
DOTS notification rate (new ss+/100 000 pop)	–	–	2.8	8.2	7.3	12	19	25	24	29	33
DOTS case detection rate (all new cases, %)	–	–	2.5	5.9	6.4	14	20	26	26	34	42
DOTS case detection rate (new ss+, %)	–	–	2.7	8.2	7.5	13	21	29	28	36	44
Case detection rate within DOTS areas (new ss+, %)[h]	–	–	23	75	56	86	171	75	54	53	54
DOTS treatment success (new ss+, %)	–	–	–	78	84	78	–	–	–	–	–

IMPLEMENTING THE STOP TB STRATEGY[1]

Pursue high-quality DOTS expansion and enhancement

Budget (2006): US$ 12 million
Budget (2007): US$ 12 million

Gap (2006): US$ 9.7 million
Gap (2007): US$ 10 million

Achievements

- Expanded DOTS services to cover more than two thirds of the population (funded by Italian Government, USAID and CIDA) and included DOTS services in the Basic Package of Health Services (BPHS) in 803 health-care facilities (81% of total)
- Improved number and skills of NTP central and provincial staff and developed 5-year NTP plan (2006–2010) in line with the Stop TB Strategy
- Expanded partnerships with BPHS partners for TB care (including technical assistance, training, drug supply) under the coordination of the NTP and MoH
- Successfully treated more than 85% of registered new smear-positive TB cases in the past 3 cohorts (2002–2004), despite the complex emergency situation
- Expanded the laboratory network to over 400 microscopy laboratories
- Signed GFATM round 4 grant agreement for TB component and received first disbursement of US$ 1.3 million
- Produced a detailed first annual report of NTP activities

Planned activities

- Continue DOTS expansion within BPHS through the training of health workers, expansion of TB laboratory network, and by ensuring a regular supply of anti-TB drugs
- Improve quality of TB services through continuous monitoring and evaluation of TB control activities, supervision, training/re-training, and community involvement
- Strengthen and monitor TB contact investigation activities within TB control services
- Ensure appropriate and efficient coordination with and among the various partners through the Interagency Coordination Committee
- Pilot EQA for smear microscopy in Balkh and Herat in collaboration with JICA and WHO

Challenges

- Filling large funding gaps in the 2006 and 2007 NTP budgets
- Rapidly implementing the GFATM round 4 project
- Increasing government funding; TB is considered as one of the top health priorities, nonetheless government funding makes up only 0.3% of the NTP budget for 2007, leaving TB control heavily dependent on international funding
- Scaling up the collaboration with BPHS partners by developing collaborative mechanisms, and providing TB-specific technical assistance, anti-TB drugs and laboratory reagents
- Strengthening the NTP central unit, and defining a clear policy for staffing and training

Address TB/HIV, MDR-TB and other challenges

Budget (2006): US$ 0.2 million
Budget (2007): US$ 0.5 million

Gap (2006): US$ 0.2 million
Gap (2007): US$ 0.5 million

Achievements

- Carried out preparatory work for a TB/HIV action plan and task force
- Provided food aid to all TB patients and health staff through the World Food Programme, in collaboration with WHO

Planned activities

- Develop a national policy for implementation of collaborative TB/HIV activities in partnership with the NAP
- Adapt the current recording and reporting system to monitor MDR-TB and chronic TB patients

Challenges

- Lack of funding for planned collaborative TB/HIV and MDR-TB activities
- Establishing a national strategy for management of patients with MDR-TB and chronic TB

Contribute to health system strengthening

Budget (2006): US$ 0
Budget (2007): US$ 0

Gap (2006): US$ 0
Gap (2007): US$ 0

Achievements

- Involved a range of stakeholders, such as numerous departments of the Ministry of Public Health (Policy and Planning, Human Resources, HIV Control, Malaria Control, IEC) and other ministries and NGOs implementing the BPHS in the development of national strategic and operational planning exercises
- Trained pharmacists and logistics officers in drug management

Planned activities

- Establish a national working group on PAL and develop PAL guidelines, to be pilot-tested in 2007

Challenges

- Ensuring that staff are distributed appropriately
- Improving the currently poor infrastructure for health-care

[1] Unless otherwise specified, achievements are for financial year 2005; planned activities are for financial year 2006. Budgets and gaps are for financial years.

IMPLEMENTING THE STOP TB STRATEGY

Engage all care providers

Budget (2006): US$ 0.2 million
Budget (2007): US$ 0.2 million
Gap (2006): US$ 0.2 million
Gap (2007): US$ 0.15 million

Achievements

- Collaborated successfully with NGOs and military laboratories for diagnosis of TB
- Designated a part-time NTP staff member in central office responsible for activities which involve non-NTP providers

Planned activities

- Perform a national situational assessment of PPM activities, and develop training and materials for PPM
- Introduce the International Standards of Tuberculosis Care to all health-care providers involved in TB control

Challenges

- Controlling the use of anti-TB drugs in the unregulated private sector

Empower people with TB, and communities

Budget (2006): US$ 0.25 million
Budget (2007): US$ 0.5 million
Gap (2006): US$ 0.2 million
Gap (2007): US$ 0.4 million

Achievements

- Established (under BPHS), a network of Community Health Workers (CHWs)
- Began involving communities in the referral of TB suspects for diagnosis

Planned activities

- Develop 5-year ACSM strategy
- Enhance community involvement through mobilization and sensitization activities
- Train CHWs in DOTS

Challenges

- Standardizing the incentives provided to CHWs by different organizations

Enable and promote research

Budget (2006): US$ 2.0 million
Budget (2007): US$ 2.0 million
Gap (2006): US$ 1.7 million
Gap (2007): US$ 1.9 million

Achievements

- Included operational research studies on diagnosis and treatment practices in the NTP strategic plan
- TB/HIV prevalence survey conducted by the International Red Cross through Johns Hopkins University

Planned activities

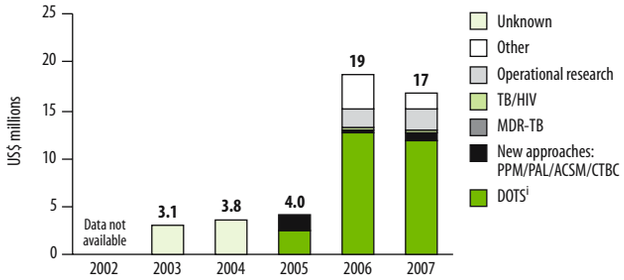
- Establish full-time TB research agenda in collaboration with Johns Hopkins University
- Carry out prevalence of disease and infection surveys in 2010

Challenges

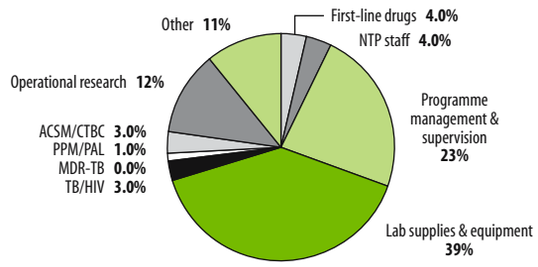
- Assessing the burden of TB and the impact of control, given the ambiguous results of recent sub-national infection surveys

FINANCING THE STOP TB STRATEGY

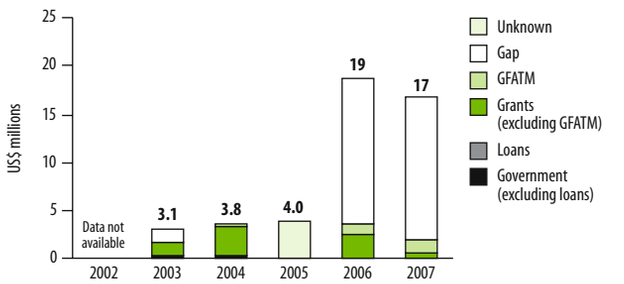
NTP budget by line item
Large part of DOTS budget is for investment in laboratory infrastructure and for supervision



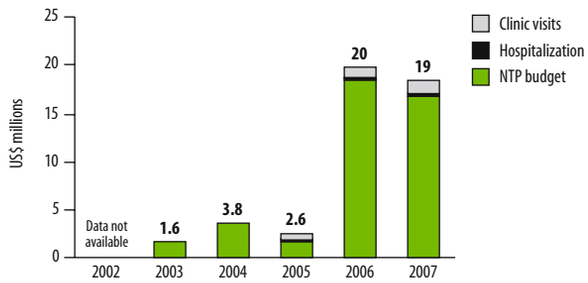
NTP budget by line item, 2007
Share of budget for laboratory supplies and equipment largest among HBCs



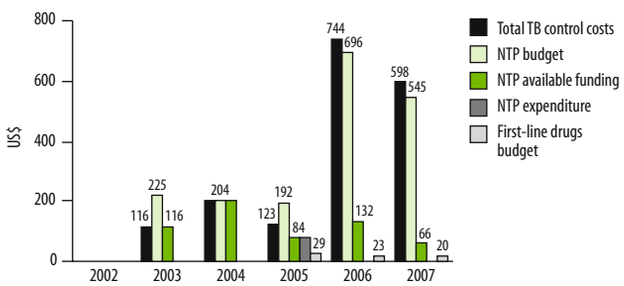
NTP budget by source of funding
Important increase in budgets for 2006 and 2007, reflecting need for substantial strengthening of TB control including investment in new laboratory infrastructure; filling the substantial funding gap is a major challenge



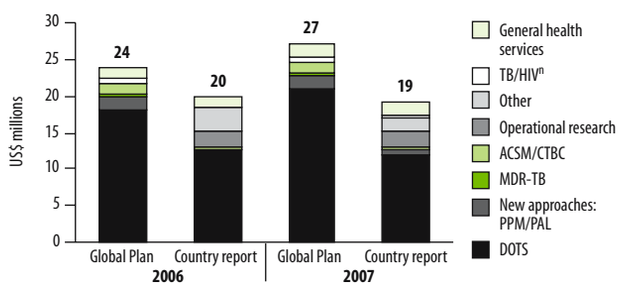
Total TB control costs by line item[j]
First attempt to estimate the utilization of general health services by TB patients; NTP budget accounts for the largest share of total TB control costs



Per patient costs, budgets and expenditures[k,l]
Increased budget per patient for 2006 and 2007 but big gap between the budget and available funding



Comparison of country report and Global Plan:[m] total TB control costs, 2006–2007
Total cost for 2006 similar in Global Plan and country report if costs listed under "Other" are considered part of "DOTS"



SOURCES, METHODS AND ABBREVIATIONS

[a] *World population prospects – the 2004 revision*. New York, United Nations Population Division, 2005.
[b] Incidence, prevalence and mortality estimates include patients infected with HIV. TB burden in 2005 re-assessed based on study of treatment seeking behaviour in Kabul which suggested 44% of cases are detectd by the NTP. Regional trend in incidence rate used to calculate estimates for earlier years.
[c] MDG and STB Partnership indicators shown in bold. Targets are 70% case detection of smear-positive cases under DOTS, 85% treatment success, to ensure that the incidence rate is falling by 2015, and to reduce incidence rates and halve 1990 prevalence and mortality rates by 2015. Estimates for 1990 are prevalence 607/100 000 pop and mortality 69/100 000 pop/yr.
[d] Estimate of HIV prevalence in incident TB cases (15–49 yo) derived from UNAIDS estimate of HIV prevalence in the general population, using assumed incidence rate ratio of 6.
[e] MDR-TB figures shown in regular type are survey data from the database of the WHO/IUATLD Global Project on Anti-Tuberculosis Drug Resistance Surveillance. Figures in italics are estimates from the following source: Zignol M et al. Global incidence of multidrug-resistant tuberculosis. *Journal of Infectious Diseases*, 2006, 194:479–485.
[f] Completeness of reporting assessed at lowest level in reporting hierarchy for which information is available.
[g] For routine diagnosis, there should be at least one laboratory providing smear microscopy per 100 000 population. To provide culture for diagnosis of paediatric, extrapulmonary and ss-/HIV+ TB, as well as DST for re-treatment and failure cases, most countries will need one culture facility per 5 million population and one DST facility per 10 million population.
[h] Case detection within DOTS areas calculated by dividing national case detection rate (new ss+) by DOTS coverage.
[i] DOTS includes the following components shown in the pie chart at right: first-line drugs, NTP staff, programme management and supervision, and laboratory supplies and equipment.
[j] Total TB control costs for 2003–2004 are based on available funding, whereas those for 2005 are based on received funding, and those for 2006–2007 are based on budgets. Estimates of the costs of clinic visits and hospitalization are WHO estimates based on data provided by the NTP and from other sources. See Methods for further details.
[k] Estimates of expenditure in 2005 are based on received funding.
[l] NTP available funding for 2005 is based on the amount of funding actually received, using retrospective data; available funding for 2003–2004 and 2006–2007 is based on prospectively reported budget data, and estimated as the total budget minus any reported funding gap.
[m] Estimates in the Global Plan were presented for regions rather than countries. See Methods for explanation of calculation of individual country estimates from regional estimates.
[n] Global Plan estimates cover the full costs of collaborative TB/HIV activities, but these costs may be budgeted for by either the NTP or the National AIDS Programme. In this graph, country reports include only the NTP budget. This may explain the apparent discrepancy between the Global Plan and country reports.

– indicates not available; pop, population; ss+, sputum smear-positive; ss-, sputum smear-negative pulmonary; unk, pulmonary – sputum smear not done or result unknown; yr, year.

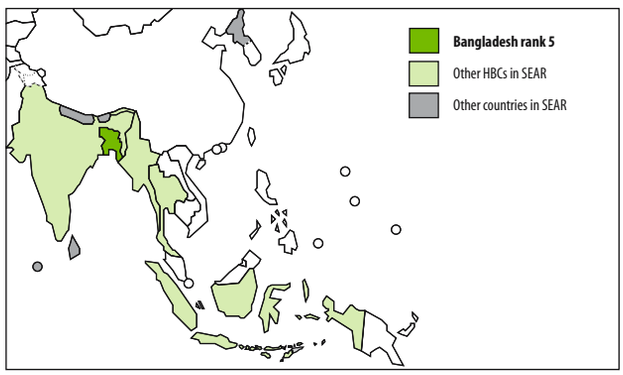
Bangladesh

The quality of TB control in Bangladesh continues to improve, as evidenced by meeting the treatment success global target for the second year in a row. Case detection rates remain below the global target, but the large increase from 2004 (44%) to 2005 (59%) is impressive. The NTP has given priority to PPM and ACSM initiatives in their 2006–2010 strategic plan. In addition to continuing to strengthen and expand existing activities, the NTP will initiate management of MDR-TB patients in 2007.

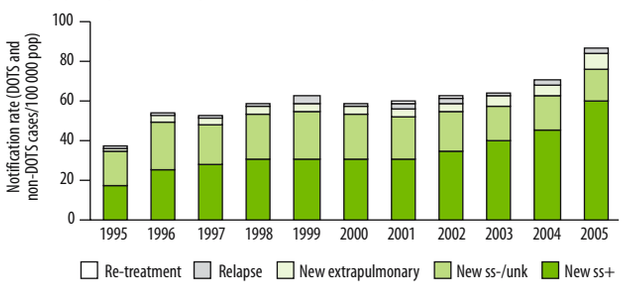
SURVEILLANCE AND EPIDEMIOLOGY

Population (thousands)[a]	141 822	
TB burden, 2005 estimates (with 2.5 and 97.5 centiles)[b]		
Incidence (all cases/100 000 pop/yr)	227	165–294
Trend in incidence rate (%/yr, 2004–2005)[c]	**-1.0**	
Incidence (ss+/100 000 pop/yr)	102	73–135
Prevalence (all cases/100 000 pop)[c]	**406**	286–542
Mortality (deaths/100 000 pop/yr)[c]	**47**	33–64
Of new adult TB cases (15–49yrs), % HIV+[d]	0.1	0.0–0.1
New TB cases multidrug-resistant, 2004 (%)[e]	*1.8*	*0.3–9.7*
Previously treated TB cases multidrug-resistant, 2004 (%)[e]	*14*	*2.2–56*
Surveillance and DOTS implementation, 2005		
Notification rate (new and relapse/100 000 pop/yr)	87	
Notification rate (new ss+/100 000 pop/yr)	60	
DOTS case detection rate (new ss+, %)	**59**	44–82
DOTS treatment success (new ss+ cases, 2004 cohort, %)	**90**	
Of new pulmonary cases notified under DOTS, % smear-positive	79	
Of new cases notified under DOTS, % extrapulmonary	9.5	
Of new smear-positive cases notified under DOTS, % in women	32	
Of sub-national reports expected, % received at next reporting level[f]	98	
Laboratory services, 2005[g]		
Number of laboratories performing smear microscopy	635	
Number of laboratories performing culture	2	
Number of laboratories performing DST	0	
Of laboratories performing smear microscopy, % covered by EQA	3.5	
Management of MDR-TB, 2005		
Of new cases notified, % receiving DST at start of treatment	0.0	
Of new cases receiving DST at start of treatment, % MDR-TB	–	
Of re-treatment cases notified, % receiving DST	0.0	
Of re-treatment cases receiving DST, % MDR-TB	–	
Collaborative TB/HIV activities, 2005		
National policy of counselling and testing TB patients for HIV?	No	
National surveillance system for HIV-infection in TB patients?	No	
Of TB patients (new and re-treatment) notified, % tested for HIV	0.0	
Of TB patients tested for HIV, % HIV+	–	
Of HIV+ TB patients detected, % receiving CPT	–	
Of HIV+ TB patients detected, % receiving ART	–	
Budget and finance, 2007		
Government contribution to NTP budget (including loans, %)	19	
Government contribution to total cost of TB control (including loans, %)	40	
Government health spending used for TB control (%)	4.5	
NTP budget funded (%)	100	

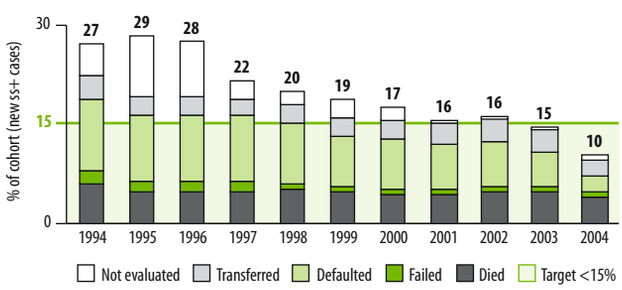
WHO South-East Asia Region (SEAR)
Rank based on estimated number of incident cases (all forms) in 2005



Case notifications
Sharp increase in notification rate in past 2 years as number of diagnositic and treatment centres increased and PPM initiatives were scaled up; apparent under-diagnosis and/or under-reporting of smear-negative and extrapulmonary cases



Unfavourable treatment outcomes, DOTS
Treatment success above target for 2nd year; default rates lower for 2004 cohort than for previous cohorts



DOTS expansion and enhancement	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
DOTS coverage (%)	41	65	80	90	90	92	95	95	99	99	99
DOTS notification rate (new & relapse/100 000 pop)	12	26	33	43	56	46	49	54	65	71	87
DOTS notification rate (new ss+/100 000 pop)	7.9	16	21	27	27	28	29	34	39	45	60
DOTS case detection rate (all new cases, %)	4.6	10	13	17	23	19	20	22	27	30	37
DOTS case detection rate (new ss+, %)	7.0	15	19	24	25	26	28	32	38	44	59
Case detection rate within DOTS areas (new ss+, %)[h]	17	23	24	27	28	28	29	34	38	44	59
DOTS treatment success (new ss+, %)	71	72	78	80	81	83	84	84	85	90	–
DOTS re-treatment success (ss+, %)	75	57	58	74	72	76	–	69	73	81	–

IMPLEMENTING THE STOP TB STRATEGY[1]

Pursue high-quality DOTS expansion and enhancement

Budget (2006): US$ 19 million Gap (2006): US$ 0
Budget (2007): US$ 16 million Gap (2007): US$ 0

Achievements

- Established 28 EQA centres distributed across the country
- Strengthened supervision and monitoring at all levels through intensified supervision, with standardized checklists, provision of feedback and quarterly monitoring meetings at district level
- Expanded diagnostic and treatment centres in Dhaka and other metropolitan cities
- Started using FDC anti-TB drugs in smear-positive, smear-negative and extrapulmonary patients in the intensive phase of treatment
- Included course on the management of TB for doctors and a mid-level course on TB for paramedics in the curricula for basic training
- Held several courses on the management of TB for Upazila Health and Family Planning Officers and Medical Officers in 2005 and 2006
- Mobilized full funding for all planned activities
- Produced 5th annual report of NTP activities
- Improved data management through introduction of customized database to allow more detailed analysis of sub-national data, and of the performance of different DOTS providers

Planned activities

- Develop further a new NRL at the National Institute of Diseases of the Chest and Hospital in Dhaka, and link with the Thailand supranational reference laboratory
- Perform culture and sensitivity testing in the new NRL for patients who fail TB treatment, and establish 2 intermediate level culture facilities within the next 5 years

Challenges

- Maintaining the high levels of political commitment
- Further strengthening laboratory services, including supervision, quality of smear microscopy and expansion of culture and DST
- Strengthening systems for diagnosis of smear-negative and extrapulmonary TB patients

Address TB/HIV, MDR-TB and other challenges

Budget (2006): US$ 0.05 million Gap (2006): US$ 0
Budget (2007): US$ 0.3 million Gap (2007): US$ 0

Achievements

- Received approval from the GLC for a proposal from the NTP to manage 700 MDR-TB patients over 4 years; enrolment to begin in summer 2007

Planned activities

- Develop a national policy to link the NTP and the NAP for collaborative TB/HIV activities
- Increase awareness of TB among staff working with HIV and carry out an HIV seroprevalence survey among TB patients
- Finalize the national MDR-TB guidelines and conduct the first national training course on MDR-TB management
- Develop 1-year operational plan for management of MDR-TB patients

Challenges

- No representative drug resistance data exist for Bangladesh

Contribute to health system strengthening

Budget (2006): US$ 0 Gap (2006): US$ 0
Budget (2007): US$ 0 Gap (2007): US$ 0

Achievements

- Contributed to larger general laboratory system strengthening through expansion of TB diagnostic centres

Planned activities

- Develop and execute research projects to strengthen health system and integration of TB control into the general health system

Challenges

- Strengthening the health information system
- Increasing the number of trained staff in urban areas
- Integrating anti-TB drug procurement, distribution and stock management systems with the general drug management systems

Engage all care providers

Budget (2006): US$ 0.7 million Gap (2006): US$ 0
Budget (2007): US$ 0.8 million Gap (2007): US$ 0

Achievements

- Established an urban DOTS project involving several NGOs, medical colleges, private practitioners and corporate sector health services
- Initiated collaboration with non-NTP laboratories (private, NGO, university, military, prison) to supply reagents and microscopes and conduct quarterly reporting, training and EQA for smear microscopy
- Prepared guidelines on PPM that were approved by the Ministry of Health and Family Welfare
- Developed a 1-year operational plan for PPM projects
- Opened new "DOTS corners" in medical colleges
- Held advocacy workshops on DOTS in medical colleges for general practitioners, doctors and nurses

[1] Unless otherwise specified, achievements are for financial year 2005; planned activities are for financial year 2006. Budgets and gaps are for financial years.

IMPLEMENTING THE STOP TB STRATEGY

Planned activities

- Operationalize DOTS in military and other Ministry of Defence hospitals

Challenges

- Intensifying partnerships with NGOs, the private sector, academic institutes and workplaces for TB control

Empower people with TB, and communities

Budget (2006): US$ 0.9 million Gap (2006): US$ 0
Budget (2007): US$ 1.9 million Gap (2007): US$ 0

Achievements

- Involved communities in identification and referral of TB suspects, DOT, defaulter tracing and counselling in 95% of upazillas (equivalent of district)
- Formed ACSM core groups with participation of key stakeholders and professionals in relevant fields

Planned activities

- Develop guidelines for ACSM
- Train volunteers to advocate for rights of TB patients
- Develop an ACSM logo with slogan for TB services
- Prepare a common framework based on the national ACSM strategy for building awareness of TB, and ensure proper implementation among relevant health service providers
- Implement activities to promote public awareness of TB services in clinics
- Conduct assessment of the impact of knowledge and awareness of TB on the population and service recipients
- Include Patients' Charter for Tuberculosis Care in training of NTP staff and ACSM materials

Challenges

- Securing technical assistance to develop the national ACSM strategy focusing on an interactive social communication approach
- Monitoring the mechanism for assessing awareness of and involvement in TB of both formal and informal leaders
- Ensuring all care providers have access to information on TB, and linking with poverty reduction groups to disseminate TB information

Enable and promote research

Budget (2006): US$ 0.1 million Gap (2006): US$ 0
Budget (2007): US$ 0.2 million Gap (2007): US$ 0

Achievements

- Included operational research as part of the NTP strategic plan
- Carried out 3 separate research studies on: the involvement of private practitioners in TB, improving the yield of smear microscopy, and health-seeking behaviour in Dhaka
- Conducted drug resistance surveys in collaboration with the International Centre for Diarrhoeal Diseases and Research (ICDDR) and the Damien Foundation
- Initiated PPM operational research project between NTP and Nuffield Institute for Health, University of Leeds, United Kingdom to develop an innovative partnership model for effective involvement of private practitioners in TB service delivery

Planned activities

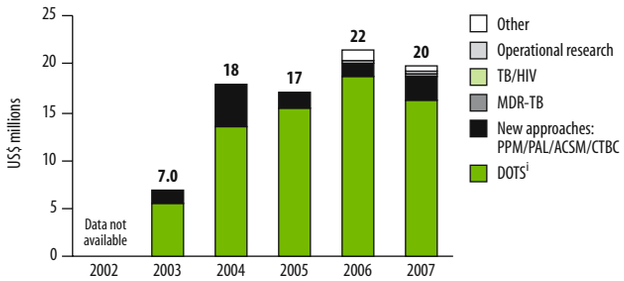
- Conduct a national population-based prevalence of disease survey in 2006–2008, outsourced to ICDDR, with a follow-up survey planned for 2012
- Conduct a national HIV seroprevalence study among TB patients in collaboration with the South Asian Association for Regional Cooperation (SAARC)

Challenges

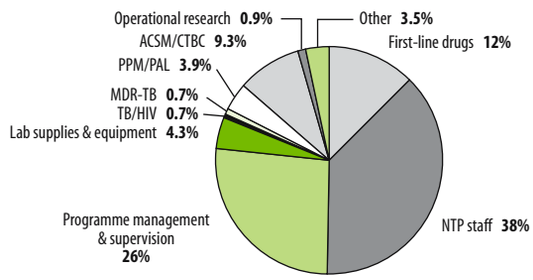
- Strengthening capacity for operational research

FINANCING THE STOP TB STRATEGY

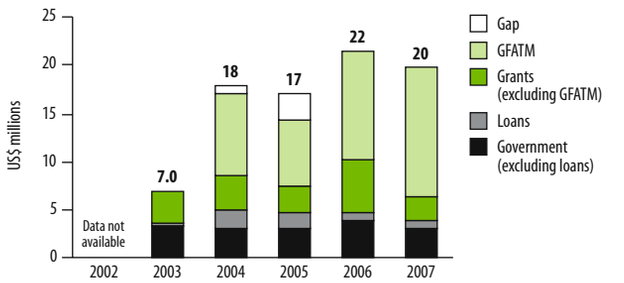
NTP budget by line item
Budget in 2006 and 2007 is not increasing in line with projected 66% increase in numbers of patients to be treated 2005–2007



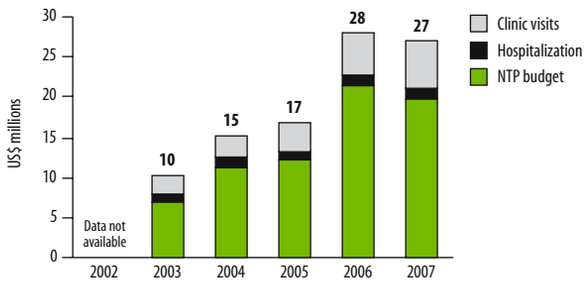
NTP budget by line item, 2007
80% of NTP budget is for DOTS



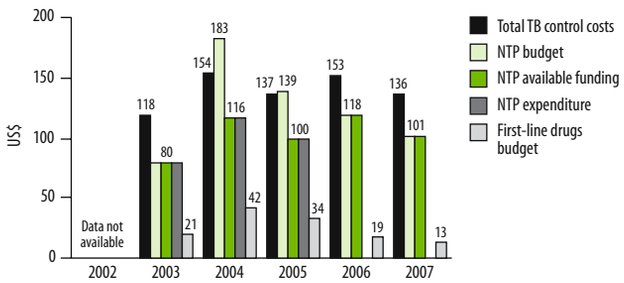
NTP budget by source of funding
Substantial increase in budget and funding since 2003, mainly from the GFATM, with no funding gap in 2006 and 2007



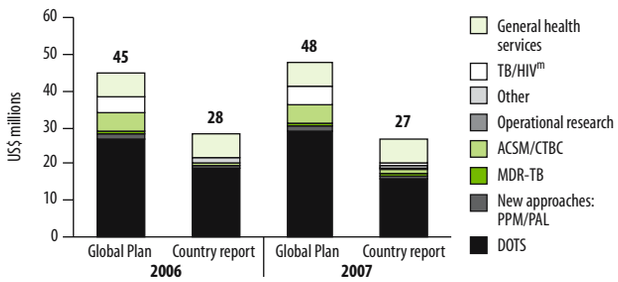
Total TB control costs by line item[j]
Hospitalization costs are for 696 dedicated TB beds, costs for clinic visits cover an estimated 27 outpatient visits per patient during treatment



Per patient costs, budgets and expenditures[k]
NTP budget per patient decreasing in 2006 and 2007 due to large increase in projected number of patients to be treated but only limited increase in the budget; budget per patient for first-line drugs decreasing as drug prices fall



Comparison of country report and Global Plan:[l] total TB control costs, 2006–2007
Global Plan estimates for DOTS allow NTP budget to increase in line with number of patients to be treated, whereas country budget for 2006 and 2007 does not. As for other HBCs, budget for ACSM and TB/HIV higher in Global Plan



SOURCES, METHODS AND ABBREVIATIONS

[a] *World population prospects – the 2004 revision*. New York, United Nations Population Division, 2005.
[b] Incidence, prevalence and mortality estimates include patients infected with HIV. Incidence estimated on basis of 40-year old tuberculin survey and local prevalence surveys, and assumed to be declining at 1% per yr.
[c] MDG and STB Partnership indicators shown in bold. Targets are 70% case detection of smear-positive cases under DOTS, 85% treatment success, to ensure that the incidence rate is falling by 2015, and to reduce incidence rates and halve 1990 prevalence and mortality rates by 2015. Estimates for 1990 are prevalence 630/100 000 pop and mortality 76/100 000 pop/yr.
[d] Estimate of HIV prevalence in incident TB cases (15–49 yo) derived from UNAIDS estimate of HIV prevalence in the general population, using assumed incidence rate ratio of 6.
[e] MDR-TB figures shown in regular type are survey data from the database of the WHO/IUATLD Global Project on Anti-Tuberculosis Drug Resistance Surveillance. Figures in italics are estimates from the following source: Zignol M et al. Global incidence of multidrug-resistant tuberculosis. *Journal of Infectious Diseases*, 2006, 194:479–485.
[f] Completeness of reporting assessed at lowest level in reporting hierarchy for which information is available.
[g] For routine diagnosis, there should be at least one laboratory providing smear microscopy per 100 000 population. To provide culture for diagnosis of paediatric, extrapulmonary and ss-/HIV+ TB, as well as DST for re-treatment and failure cases, there should be at least one culture facility and one DST facility in each of the 6 divisions.
[h] Case detection within DOTS areas calculated by dividing national case detection rate (new ss+) by DOTS coverage.
[i] DOTS includes the following components shown in the pie chart at right: first-line drugs, NTP staff, programme management and supervision, and laboratory supplies and equipment.
[j] Total TB control costs for 2003–2005 are based on expenditure, whereas those for 2006–2007 are based on budgets. Estimates of the costs of clinic visits and hospitalization are WHO estimates based on data provided by the NTP and from other sources. See Methods for further details.
[k] NTP available funding for 2004–2005 is based on the amount of funding actually received, using retrospective data; available funding for 2003 and 2006–2007 is based on prospectively reported budget data, and estimated as the total budget minus any reported funding gap.
[l] Estimates in the Global Plan were presented for regions rather than countries. See Methods for explanation of calculation of individual country estimates from regional estimates.
[m] Global Plan estimates cover the full costs of collaborative TB/HIV activities, but these costs may be budgeted for by either the NTP or the National AIDS Programme. In this graph, country reports include only the NTP budget. This may explain the apparent discrepancy between the Global Plan and country reports.

– indicates not available; pop, population; ss+, sputum smear-positive; ss-, sputum smear-negative pulmonary; unk, pulmonary – sputum smear not done or result unknown; yr, year.

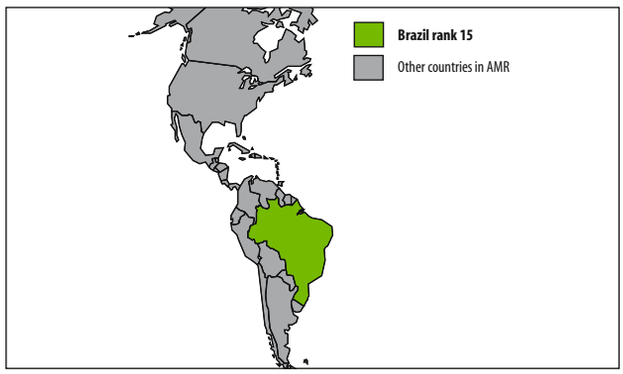
Brazil

Brazil is close to reaching the global target for treatment success, and continues to make progress to reach full DOTS coverage and the global target for case detection. TB services have been further decentralized and the laboratory network, with EQA, has been expanded. The Brazil Stop TB Partnership continues to involve different stakeholders in TB control, and the launch of a national advocacy plan to disseminate information will advance community involvement. The management of MDR-TB patients is fully integrated into the NTP and the number of TB patients tested for HIV is high. However, with new MoH leadership, advocacy for the NTP is urgently needed to ensure continuity of a fully funded programme.

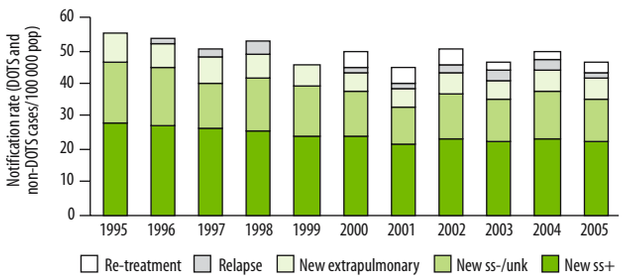
SURVEILLANCE AND EPIDEMIOLOGY

Population (thousands)[a]	186 405	
TB burden, 2005 estimates (with 2.5 and 97.5 centiles)[b]		
Incidence (all cases/100 000 pop/yr)	60	54–73
Trend in incidence rate (%/yr, 2004–2005)[c]	**-2.9**	
Incidence (ss+/100 000 pop/yr)	26	22–32
Prevalence (all cases/100 000 pop)[c]	**76**	60–97
Mortality (deaths/100 000 pop/yr)c	**8.1**	6.1–11
Of new adult TB cases (15–49yrs), % HIV+[d]	14	8.2–2.21
New TB cases multidrug-resistant, 1996 (%)[e]	0.9	0.5–1.4
Previously treated TB cases multidrug-resistant, 1996 (%)[e]	5.4	4.0–7.2
Surveillance and DOTS implementation, 2005		
Notification rate (new and relapse/100 000 pop/yr)	43	
Notification rate (new ss+/100 000 pop/yr)	23	
DOTS case detection rate (new ss+, %)	**54**	44–64
DOTS treatment success (new ss+ cases, 2004 cohort, %)	**81**	
Of new pulmonary cases notified under DOTS, % smear-positive	64	
Of new cases notified under DOTS, % extrapulmonary	14	
Of new smear-positive cases notified under DOTS, % in women	34	
Of sub-national reports expected, % received at next reporting level[f]	96	
Laboratory services, 2005[g]		
Number of laboratories performing smear microscopy	4 000	
Number of laboratories performing culture	187	
Number of laboratories performing DST	33	
Of laboratories performing smear microscopy, % covered by EQA	45	
Management of MDR-TB, 2005		
Of new cases notified, % receiving DST at start of treatment	–	
Of new cases receiving DST at start of treatment, % MDR-TB	–	
Of re-treatment cases notified, % receiving DST	61	
Of re-treatment cases receiving DST, % MDR-TB	6.3	
Collaborative TB/HIV activities, 2005		
National policy of counselling and testing TB patients for HIV?	Yes	
National surveillance system for HIV-infection in TB patients?	Yes	
Of TB patients (new and re-treatment) notified, % tested for HIV	43	
Of TB patients tested for HIV, % HIV+	14	
Of HIV+ TB patients detected, % receiving CPT	85	
Of HIV+ TB patients detected, % receiving ART	85	
Budget and finance, 2007		
Government contribution to NTP budget (including loans, %)	68	
Government contribution to total cost of TB control (including loans, %)	81	
Government health spending used for TB control (%)	0.4	
NTP budget funded (%)	93	

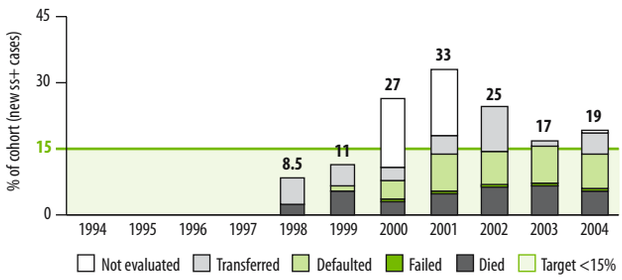
WHO Region of the Americas (AMR)
Rank based on estimated number of incident cases (all forms) in 2005



Case notifications
After falling in the late 1990s, notification rates have been fairly constant since 2000



Unfavourable treatment outcomes, DOTS
For 3 consecutive years, treatment outcomes have been reported for almost all registered patients, but high default rates keep the treatment success below target



DOTS expansion and enhancement	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
DOTS coverage (%)	0.0	0.0	0.0	3.0	7.0	7.0	32	25	34	52	68
DOTS notification rate (new & relapse/100 000 pop)	–	–	–	2.5	2.4	3.1	4.3	4.9	9.1	24	28
DOTS notification rate (new ss+/100 000 pop)	–	–	–	1.3	1.2	2.3	2.3	2.7	5.0	12	14
DOTS case detection rate (all new cases, %)	–	–	–	3.3	3.3	4.3	5.6	7.2	13	37	45
DOTS case detection rate (new ss+, %)	–	–	–	4.1	3.9	7.5	7.8	9.4	18	45	54
Case detection rate within DOTS areas (new ss+, %)[h]	–	–	–	136	56	107	25	38	53	87	79
DOTS treatment success (new ss+, %)	–	–	–	91	89	73	67	75	83	81	–
DOTS re-treatment success (ss+, %)	–	–	–	–	–	43	47	60	64	51	–

IMPLEMENTING THE STOP TB STRATEGY[1]

Pursue high-quality DOTS expansion and enhancement

Budget (2006): US$ 25 million
Budget (2007): US$ 27 million
Gap (2006): US$ 2.1 million
Gap (2007): US$ 1.9 million

Achievements

- Increased political awareness of TB as a public health problem among public health authorities, and endorsed the Stop TB Strategy
- Implemented the laboratory information system (SILTB) in all public health laboratories (LACENs) and health services of the 315 prioritized municipalities
- Conducted EQA (by the NRL) in 1800 of 4000 microscopy centres
- Produced 3rd annual report of NTP activities

Planned activities

- Decentralize TB control services from district to primary health-care units in the 315 priority municipalities
- Strengthen the "Resources Development Plan" included in the NTP strategic plan for training of health professionals in the 315 priority municipalities
- Establish facilitator groups at state and municipal levels responsible for human resource management (ensuring sufficient trained staff, appropriately distributed), and for supervision, monitoring and evaluation
- Expand EQA for smear microscopy to all laboratories of the prioritized municipalities
- Strengthen culture facilities in 15 laboratories, bringing the total number of laboratories performing culture to 137
- Improve case follow-up through the national information system (SINAN)

Challenges

- Reducing turnover of trained TB staff
- Increasing human and financial resources for LACENs
- Improving supervision, monitoring and evaluation capacity of the NTP
- Garnering technical assistance to implement GFATM activities
- Improving routine reporting practices: only 80% of expected fortnightly case-finding and treatment outcome reports received from municipalities in 2005

Address TB/HIV, MDR-TB and other challenges

Budget (2006): US$ 7.7 million
Budget (2007): US$ 6.2 million
Gap (2006): US$ 1.5 million
Gap (2007): US$ 0.1 million

Achievements

- Developed a national TB/HIV action plan covering 315 prioritized municipalities
- Introduced intensified TB case-finding among people with HIV in basic health units
- Increased available financial resources from MoH and GFATM for expansion of the collaborative TB/HIV action plan
- Integrated activities for the management of MDR-TB patients fully into the NTP
- Included both the national prison system and the indigenous programme, with collaborative TB/HIV activities, in the 2004–2007 NTP strategic plan

Planned activities

- Improve coordination and collaboration with the NAP to implement activities according to a joint TB/HIV national action plan
- Strengthen referral mechanism between basic health units and the network of health-care services to ensure systematic referral of TB and HIV patients to the appropriate services
- Expand TB prevention, diagnosis and treatment services for people with HIV to all the basic health units
- Continue monitoring and evaluation of joint national action plan for collaborative TB/HIV activities

Challenges

- Further improving TB case-finding among HIV-infected patients in the basic health units
- Strengthening TB prevention among HIV-infected cases
- Providing HIV testing for 100% of TB patients
- Continuing the integration of the prison system, indigenous programme and other risk groups in DOTS expansion activities

Contribute to health system strengthening

Budget (2006): US$ 1.0 million
Budget (2007): US$ 1.0 million
Gap (2006): US$ 1.0 million
Gap (2007): US$ 0.5 million

Achievements

- Integrated the NTP into the health system network through a unified programme jointly carried out by federal, state and municipal governments to guarantee access to the programme's activities for the population
- Integrated anti-TB drug procurement, distribution and stock management systems fully with the general drug management systems; Department for Pharmaceutical Assistance and Strategic Inputs is in charge of quality control, procurement and distribution to states

[1] Unless otherwise specified, achievements are for financial year 2005; planned activities are for financial year 2006. Budgets and gaps are for financial years.

IMPLEMENTING THE STOP TB STRATEGY

Planned activities

- Initiate PAL activities in 2007

Challenges

- Continuing to decentralize activities to the primary health-care level
- Improving the regular use of SINAN for routine health surveillance

Engage all care providers

Budget (2006): US$ 1.0 million
Budget (2007): US$ 1.0 million
Gap (2006): US$ 1.0 million
Gap (2007): US$ 0.5 million

Achievements

- Collaborated with private laboratories, university laboratories, military and penitentiary laboratories in reporting, EQA and provision of reagents

Planned activities

- Involve the big metropolitan hospitals in DOTS expansion in the priority states and municipalities
- Develop and implement an action plan for the distribution of the International Standards for Tuberculosis Care in the 315 priority municipalities with eventual expansion to all states and municipalities

Challenges

- Improving DOTS training for specialists

Empower people with TB, and communities

Budget (2006): US$ 3.0 million
Budget (2007): US$ 5.1 million
Gap (2006): US$ 0.2 million
Gap (2007): US$ 0.001 million

Achievements

- Held national media campaign to increase community education and awareness of TB control and prevention
- Expanded the use of media for ACSM activities and campaigns
- Mobilized substantial new funding for ACSM activities

Planned activities

- Develop a national action plan for ACSM based on lessons learnt from the HIV/AIDS programme
- Engage different technical and financial organizations to enhance community empowerment
- Develop plan (including financial support) to implement the Patients' Charter for Tuberculosis Care in the 10 big metropolitan areas

Challenges

- Promoting the Patients' Charter for Tuberculosis Care through collaboration with NGOs, based on lessons learnt from the HIV/AIDS programme
- Incorporating TB patients in the action plan for DOTS activities including treatment support, case detection, community mobilization for national policy change and resource mobilization

Enable and promote research

Budget (2006): US$ 2.6 million
Budget (2007): US$ 2.6 million
Gap (2006): US$ 0.1 million
Gap (2007): US$ 0

Achievements

- Started second national drug resistance survey in 2005; survey will be continued state by state
- Developed an operational research plan which covers: surveys of the prevalence of HIV, drug resistance and MDR among TB patients; evaluation of the quality of the HIS; and challenges to DOTS expansion in selected municipalities

Planned activities

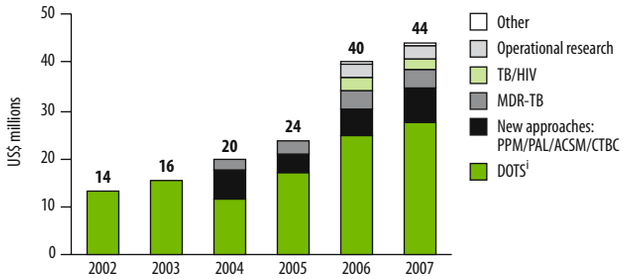
- Start analysis of the second national drug resistance survey
- Use routine surveillance data (individual patient data), combined with vital registration (mortality) data to assess burden of TB and impact of control

Challenges

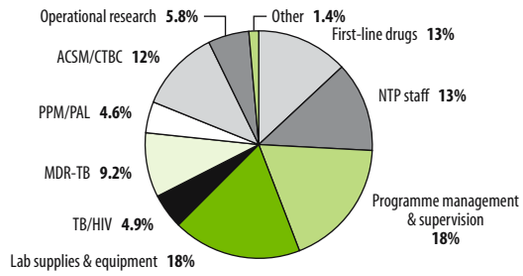
- Completing the second national drug resistance survey in the first half of 2007

FINANCING THE STOP TB STRATEGY

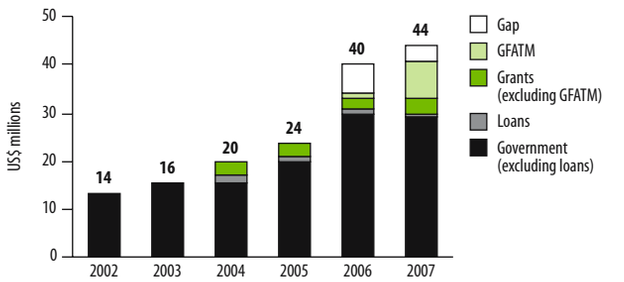
NTP budget by line item
Increasing budget for DOTS, mainly for NTP staff and laboratory supplies and equipment, as well as for collaborative TB/HIV activities, MDR-TB treatment and operational research



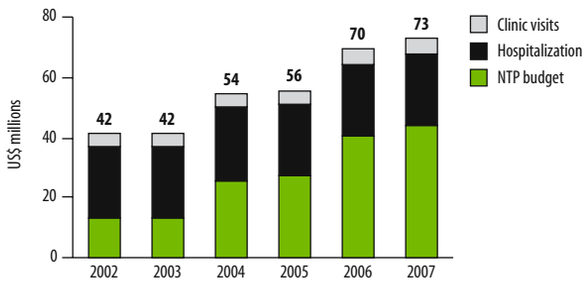
NTP budget by line item, 2007
Largest budget allocation for components 2–6 of the Stop TB Strategy among HBCs



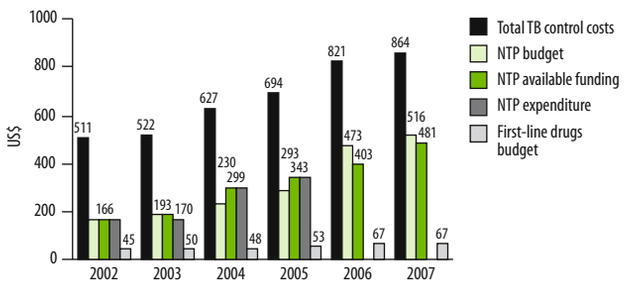
NTP budget by source of funding
Large increase in budget for 2006 and 2007, supported by increased government funding



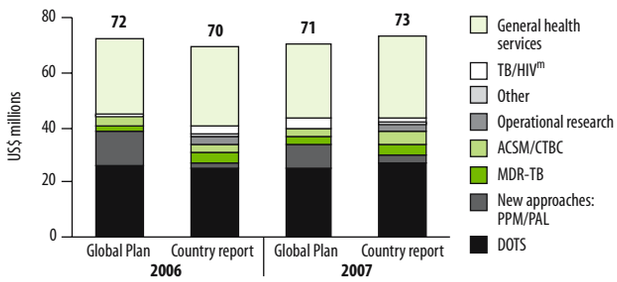
Total TB control costs by line item[j]
Use of general health services accounts for large share of costs; 2500 TB beds are available in the country



Per patient costs, budgets and expenditures[k]
Budget per patient steadily increasing, with expenditures matching or close to budgets



Comparison of country report and Global Plan:[l] total TB control costs, 2006–2007
Global Plan and country report are consistent except for new approaches and MDR-TB



SOURCES, METHODS AND ABBREVIATIONS

[a] *World population prospects – the 2004 revision*. New York, United Nations Population Division, 2005.
[b] Incidence, prevalence and mortality estimates include patients infected with HIV. Incidence based on assumption of 80% ss+ case detection rate in 1997 (DOTS and non-DOTS). Incidence (new and relapse) assumed to be declining at same rate as average notifications from those countries in region judged to be detecting an unchanging proportion of cases.
[c] MDG and STB Partnership indicators shown in bold. Targets are 70% case detection of smear-positive cases under DOTS, 85% treatment success, to ensure that the incidence rate is falling by 2015, and to reduce incidence rates and halve 1990 prevalence and mortality rates by 2015. Estimates for 1990 are prevalence 143/100 000 pop and mortality 13/100 000 pop/yr.
[d] Estimate of HIV prevalence in incident TB cases (15–49 yo) derived from UNAIDS estimate of HIV prevalence in the general population, using assumed incidence rate ratio of 6.
[e] MDR-TB figures shown in regular type are survey data from the database of the WHO/IUATLD Global Project on Anti-Tuberculosis Drug Resistance Surveillance. Figures in italics are estimates from the following source: Zignol M et al. Global incidence of multidrug-resistant tuberculosis. *Journal of Infectious Diseases*, 2006, 194:479–485.
[f] Completeness of reporting assessed at lowest level in reporting hierarchy for which information is available.
[g] For routine diagnosis, there should be at least one laboratory providing smear microscopy per 100 000 population. To provide culture for diagnosis of paediatric, extrapulmonary and ss-/HIV+ TB, as well as DST for re-treatment and failure cases, there should be at least one culture facility and one DST facility in each of the 27 states.
[h] Case detection within DOTS areas calculated by dividing national case detection rate (new ss+) by DOTS coverage.
[i] DOTS includes the following components shown in the pie chart at right: first-line drugs, NTP staff, programme management and supervision, and laboratory supplies and equipment.
[j] Total TB control costs for 2002–2005 are based on expenditure, whereas those for 2006–2007 are based on budgets. Estimates of the costs of clinic visits and hospitalization are WHO estimates based on data provided by the NTP and from other sources. See Methods for further details.
[k] NTP available funding for 2004–2005 is based on the amount of funding actually received, using retrospective data; available funding for 2002–2003 and 2006–2007 is based on prospectively reported budget data, and estimated as the total budget minus any reported funding gap.
[l] Estimates in the Global Plan were presented for regions rather than countries. See Methods for explanation of calculation of individual country estimates from regional estimates.
[m] Global Plan estimates cover the full costs of collaborative TB/HIV activities, but these costs may be budgeted for by either the NTP or the National AIDS Programme. In this graph, country reports include only the NTP budget. This may explain the apparent discrepancy between the Global Plan and country reports.

– indicates not available; pop, population; ss+, sputum smear-positive; ss-, sputum smear-negative pulmonary; unk, pulmonary – sputum smear not done or result unknown; yr, year.

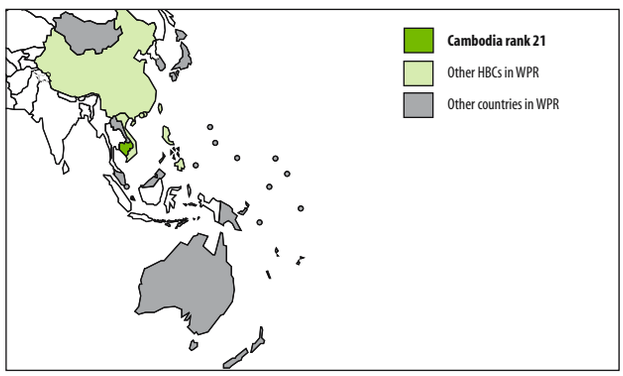
Cambodia

Cambodia continues to approach the global target of 70% case detection, having for many years surpassed the 85% target for treatment success. Although the budget for the TB control programme continues to increase, the success of the programme is threatened by a growing funding gap. Although collaborative TB/HIV activities are starting to expand in parts of the country, initiatives such as PPM and ACSM have yet to see substantial progress.

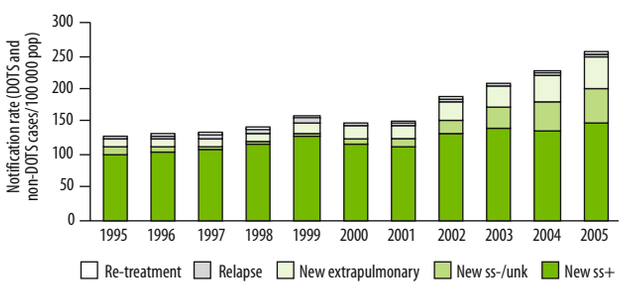
SURVEILLANCE AND EPIDEMIOLOGY

Population (thousands)[a]	14 071	
TB burden, 2005 estimates (with 2.5 and 97.5 centiles)[b]		
Incidence (all cases/100 000 pop/yr)	506	335–686
Trend in incidence rate (%/yr, 2004–2005)[c]	**-0.9**	
Incidence (ss+/100 000 pop/yr)	226	148–310
Prevalence (all cases/100 000 pop)[c]	**703**	447–1006
Mortality (deaths/100 000 pop/yr)[c]	**87**	55–127
Of new adult TB cases (15–49yrs), % HIV+[d]	6.0	3.5–9.0
New TB cases multidrug-resistant, 2001 (%)[e]	0.0	0.0–0.5
Previously treated TB cases multidrug-resistant, 2001 (%)[e]	3.1	0.6–8.9
Surveillance and DOTS implementation, 2005		
Notification rate (new and relapse/100 000 pop/yr)	253	
Notification rate (new ss+/100 000 pop/yr)	149	
DOTS case detection rate (new ss+, %)	**66**	48–100
DOTS treatment success (new ss+ cases, 2004 cohort, %)	**91**	
Of new pulmonary cases notified under DOTS, % smear-positive	75	
Of new cases notified under DOTS, % extrapulmonary	19	
Of new smear-positive cases notified under DOTS, % in women	49	
Of sub-national reports expected, % received at next reporting level[f]	100	
Laboratory services, 2005g		
Number of laboratories performing smear microscopy	180	
Number of laboratories performing culture	3	
Number of laboratories performing DST	1	
Of laboratories performing smear microscopy, % covered by EQA	100	
Management of MDR-TB, 2005		
Of new cases notified, % receiving DST at start of treatment	–	
Of new cases receiving DST at start of treatment, % MDR-TB	–	
Of re-treatment cases notified, % receiving DST	–	
Of re-treatment cases receiving DST, % MDR-TB	–	
Collaborative TB/HIV activities, 2005		
National policy of counselling and testing TB patients for HIV?	Yes	
National surveillance system for HIV-infection in TB patients?	Yes	
Of TB patients (new and re-treatment) notified, % tested for HIV	2.9	
Of TB patients tested for HIV, % HIV+	8.2	
Of HIV+ TB patients detected, % receiving CPT	–	
Of HIV+ TB patients detected, % receiving ART	–	
Budget and finance, 2007		
Government contribution to NTP budget (including loans, %)	8.0	
Government contribution to total cost of TB control (including loans, %)	30	
Government health spending used for TB control (%)	11	
NTP budget funded (%)	60	

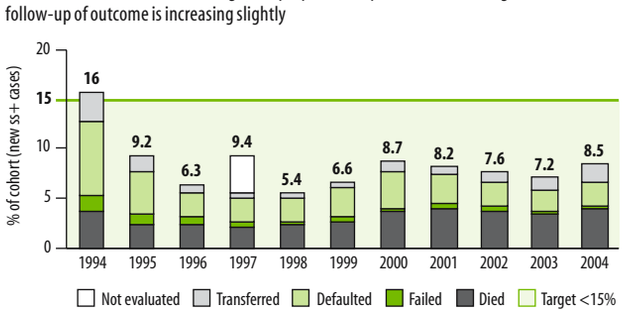
WHO Western Pacific Region (WPR)
Rank based on estimated number of incident cases (all forms) in 2005



Case notifications
Case detection continuing to increase as further efforts are made to improve access to TB care for all patients, including among prisoners and previously underserved populations



Unfavourable treatment outcomes, DOTS
Treatment success rate remains high, but proportion of patients transferring with no follow-up of outcome is increasing slightly



DOTS expansion and enhancement	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
DOTS coverage (%)	60	80	88	100	100	99	100	100	100	100	100
DOTS notification rate (new & relapse/100 000 pop)	128	102	131	139	154	148	147	185	209	223	253
DOTS notification rate (new ss+/100 000 pop)	98	83	106	114	126	116	110	130	140	138	149
DOTS case detection rate (all new cases, %)	22	18	23	25	28	27	27	35	39	43	49
DOTS case detection rate (new ss+, %)	40	34	44	47	53	49	47	56	60	60	66
Case detection rate within DOTS areas (new ss+, %)[h]	66	42	50	47	53	50	47	56	60	60	66
DOTS treatment success (new ss+, %)	91	94	91	95	93	91	92	92	93	91	–
DOTS re-treatment success (ss+, %)	85	89	90	91	90	90	92	89	87	86	–

IMPLEMENTING THE STOP TB STRATEGY[1]

Pursue high-quality dots expansion and enhancement

Budget (2006): US$ 3.7 million
Budget (2007): US$ 3.7 million
Gap (2006): US$ 0.9 million
Gap (2007): US$ 1.4 million

Achievements

- Accelerated case-finding activities through provision of DOTS to 100% of health-care centres, which, combined with complete recording and reporting, has resulted in case detection close to the 70% target
- Transitioned from 8 to 6 months' treatment regimen involving retraining of health-care staff at all DOTS facilities, and development of new health education materials for TB patients and health volunteers
- EQA conducted by NRL at 163 of 186 microscopy centres
- Equipped 3 laboratories to perform culture
- Produced 12th annual report of NTP activities

Planned activities

- Intensify training in TB management to all TB supervisors to ensure high-quality DOTS services (funded and implemented through TB CAP)
- Strengthen the referral/feedback mechanism between health-care centres and microscopy units to enhance DOTS services and to reduce the average time from a patient's initial contact with the health-care centres to the start of treatment
- Develop a working group to draft a national strategic plan for the TB laboratory by the end of 2006

Challenges

- Improving performance in laboratories: 2005 EQA results show that approximately 15% of slides were falsely determined to be negative for AFB
- Addressing funding gaps which, in 2006, meant that supervision plans, including those for laboratories, could not be fully implemented
- Broadening the donor funding base (the arrival of GFATM funds has led to "donor replacement" rather than additional funding for existing gaps)
- Obtaining increased funding from MoH to match overall increase in MoH budget: steady MoH funding for NTP despite increase in MoH budget over period 2001–2005 means that the proportion of MoH funds used for NTP has fallen from 5.3% to 1.3%

Address TB/HIV, MDR-TB and other challenges

Budget[2] (2006): US$ 0.9 million
Budget[2] (2007): US$ 1.0 million
Gap (2006): US$ 0.2 million
Gap (2007): US$ 0.3 million

Achievements

- Developed standard operating procedures for collaborative TB/HIV activities
- Jointly trained health-care workers on the management of TB/HIV patients in 10 operational districts
- Revised TB register in 2005 to record TB/HIV indicators
- Conducted HIV seroprevalence survey among TB patients in 2005
- Received GLC approval of small-scale project to detect and treat MDR-TB in the setting of a clinical trial
- Initiated DOTS in prisons in Phnom Penh, and trained health-care staff from selected prisons in DOTS
- Increased the number of ethnic minority TB patients on DOTS after special training of health-care workers and volunteers, and development of health education materials for minorities who do not speak Khmer language

Planned activities

- Establish TB/HIV working groups at operational district level and appoint operational district TB/HIV coordinators
- Develop training curriculum and conduct training on clinical and operational management of HIV-infected TB patients
- Establish mechanisms for referral of TB patients for VCT, and access to ART for HIV-infected TB patients
- Address TB and smoking in the 2006–2010 National Policy on TB Control by introducing a smoking cessation programme along with DOTS
- Develop a "Pro-poor DOTS Package" in selected areas where NGOs are involved, building on the successful World Food Programme project and NGO-funded social support for poor TB suspects and patients

Challenges

- Printing revised TB registers to capture TB/HIV information: sufficient funds are not available
- Activating the national coordination committee on TB/HIV in order to progress work on planning, policy updating and monitoring
- Providing adequate access to services, including HIV testing, and CPT and TB screening for HIV-infected individuals

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1 Unless otherwise specified, achievements are for financial year 2005; planned activities are for financial year 2006. Budgets and gaps are for financial years.
2 Figures exclude clinical trial budget for treatment of MDR-TB.

IMPLEMENTING THE STOP TB STRATEGY

Contribute to health system strengthening

Budget (2006): US$ 0 Gap (2006): US$ 0
Budget (2007): US$ 0 Gap (2007): US$ 0

Achievements

- Successfully integrated NTP into the general health-care system through the following activities: institutional capacity building, investment in physical infrastructure and logistic support, human resource development, drug management and laboratory services training, health information system strengthening
- Incorporated anti-TB drug procurement, distribution and stock management systems fully into the general drug management system

Planned activities

- Commence PAL activities in 2008

Challenges

- Increasing knowledge and skills of general health-sector staff
- Improving salaries and incentives for staff

Engage all care providers

Budget (2006): US$ 0.1 million Gap (2006): US$ 0.02 million
Budget (2007): US$ 0.6 million Gap (2007): US$ 0.2 million

Achievements

- Collaborated with non-NTP laboratories of NGOs, military/police and Pasteur Institute du Cambodge in quarterly reporting, training, supply of reagents and consumables, and EQA for smear microscopy
- Drafted guidelines on referral of TB suspects from private providers to public health-care facilities with DOTS
- Started pilot PPM DOTS initiatives in collaboration with JICA and NGO partners

Planned activities

- Assess PPM DOTS in pilot sites
- Conduct orientation workshops for private providers and government health-care workers
- Map location of private pharmacies and record the training of non-NTP staff
- Introduce and disseminate the ISTC through TB CAP funding, including adaptation, translation and printing of the ISTC in Khmer language

Challenges

- Ensuring that private laboratories working in TB control are accredited
- Obtaining information on the impact of private sector involvement at the national level
- Improving registration arrival rate of referred suspects in pilot projects

Empower people with TB, and communities

Budget (2006): US$ 1.9 million Gap (2006): US$ 1.0 million
Budget (2007): US$ 1.9 million Gap (2007): US$ 1.0 million

Achievements

- Involved communities in case detection and treatment support in 70% of the country
- Trained village health volunteers as treatment supporters to expand TB services and increase community participation
- Included ACSM strategy in the national policy on TB

Planned activities

- Draft a national ACSM strategy with partner support
- Expand community involvement to underserved populations at 150 health-care centres in collaboration with NGOs, bringing the total number to 372 health-care centres (40% of total)

Challenges

- Involving cured TB patients in TB control activities
- Promoting and translating the Patients' Charter for Tuberculosis Care
- Defining and implementing an ACSM monitoring and evaluation system
- Closing the large funding gap for ACSM activities

Enable and promote research

Budget (2006): US$ 0.15 million Gap (2006): US$ 0.05 million
Budget (2007): US$ 0.2 million Gap (2007): US$ 0.1 million

Achievements

- Continued functioning of operational research team within NTP (CENAT) with links to RIT/JATA and other key partners for technical assistance
- Conducted KAP survey in 2005

Planned activities

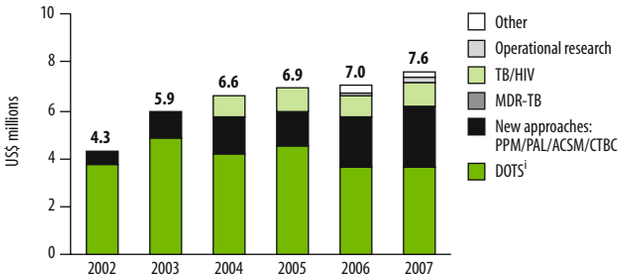
- Carry out prevalence of disease survey in 2010, which will allow assessment of impact of control, when compared with results of 2002 survey
- Conduct second drug resistance survey in 2006–2007 supported by RIT/JATA

Challenges

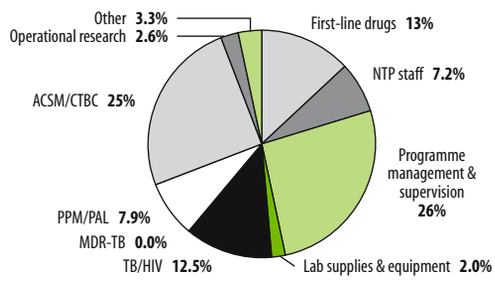
- Obtaining sufficient funding for operational research activities

FINANCING THE STOP TB STRATEGY

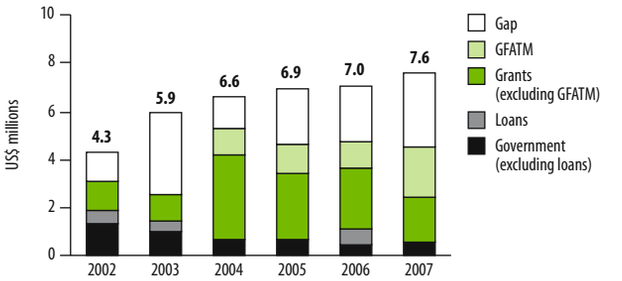
NTP budget by line item
No major changes in budget total or distribution since 2004 with exception of increased budget for ACSM



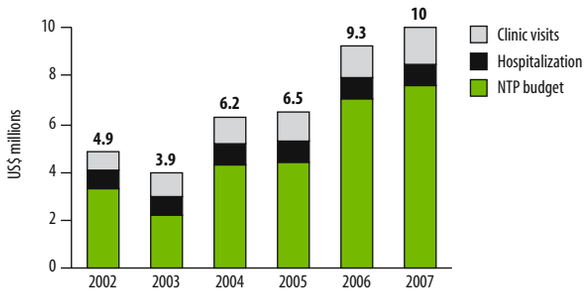
NTP budget by line item, 2007
Share of budget for ACSM largest among HBCs



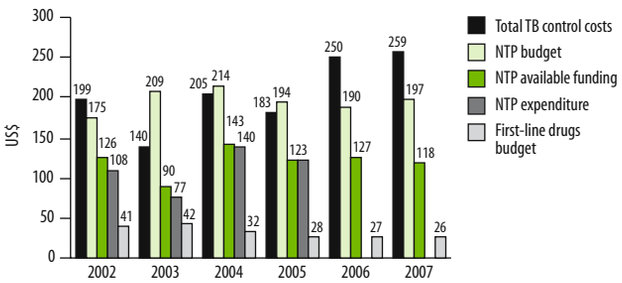
NTP budget by source of funding
Stable budget since 2004, but increasing funding gap, which in 2006 and 2007 is mostly for ACSM activities; increased funding from GFATM mainly for first-line drugs but declining funding from other sources of grant funding



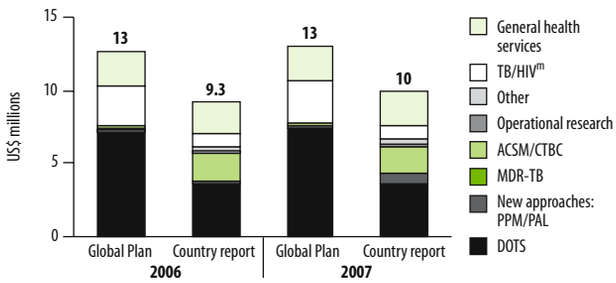
Total TB control costs by line item[j]
NTP budget accounts for biggest share of total TB control costs



Per patient costs, budgets and expenditures[k]
Relatively unchanging budget per patient treated, but fall in available funding linked to unexpected reduction in financial support from some donors



Comparison of country report and Global Plan:[l] total TB control costs, 2006–2007
Global Plan estimates higher number of new ss-/EP TB patients to be treated and higher number of HIV+ TB patients to be enrolled on ART; unlike other HBCs, ACSM component is larger in country report



SOURCES, METHODS AND ABBREVIATIONS

[a] *World population prospects – the 2004 revision*. New York, United Nations Population Division, 2005.
[b] Incidence, prevalence and mortality estimates include patients infected with HIV. Estimate of TB burden reassessed following national prevalence survey in 2002. Incidence assumed to be declining at 1% per yr as in other countries in WPR.
[c] MDG and STB Partnership indicators shown in bold. Targets are 70% case detection of smear-positive cases under DOTS, 85% treatment success, to ensure that the incidence rate is falling by 2015, and to reduce incidence rates and halve 1990 prevalence and mortality rates by 2015. Estimates for 1990 are prevalence 951/100 000 pop and mortality 112/100 000 pop/yr.
[d] Estimate of HIV prevalence in incident TB cases (15–49 yo) derived from UNAIDS estimate of HIV prevalence in the general population, using assumed incidence rate ratio of 6.
[e] MDR-TB figures shown in regular type are survey data from the database of the WHO/IUATLD Global Project on Anti-Tuberculosis Drug Resistance Surveillance. Figures in italics are estimates from the following source: Zignol M et al. Global incidence of multidrug-resistant tuberculosis. *Journal of Infectious Diseases*, 2006, 194:479–485.
[f] Completeness of reporting assessed at lowest level in reporting hierarchy for which information is available.
[g] For routine diagnosis, there should be at least one laboratory providing smear microscopy per 100 000 population. To provide culture for diagnosis of paediatric, extrapulmonary and ss-/HIV+ TB, as well as DST for re-treatment and failure cases, most countries will need one culture facility per 5 million population and one DST facility per 10 million population.
[h] Case detection within DOTS areas calculated by dividing national case detection rate (new ss+) by DOTS coverage.
[i] DOTS includes the following components shown in the pie chart at right: first-line drugs, NTP staff, programme management and supervision, and laboratory supplies and equipment.
[j] Total TB control costs for 2002–2005 are based on expenditure, whereas those for 2006–2007 are based on budgets. Estimates of the costs of clinic visits and hospitalization are WHO estimates based on data provided by the NTP and from other sources. See Methods for further details.
[k] NTP available funding for 2004–2005 is based on the amount of funding actually received, using retrospective data; available funding for 2002–2003 and 2006–2007 is based on prospectively reported budget data, and estimated as the total budget minus any reported funding gap.
[l] Estimates in the Global Plan were presented for regions rather than countries. See Methods for explanation of calculation of individual country estimates from regional estimates.
[m] Global Plan estimates cover the full costs of collaborative TB/HIV activities, but these costs may be budgeted for by either the NTP or the National AIDS Programme. In this graph, country reports include only the NTP budget. This may explain the apparent discrepancy between the Global Plan and country reports.

– indicates not available; pop, population; ss+, sputum smear-positive; ss-, sputum smear-negative pulmonary; unk, pulmonary – sputum smear not done or result unknown; yr, year.

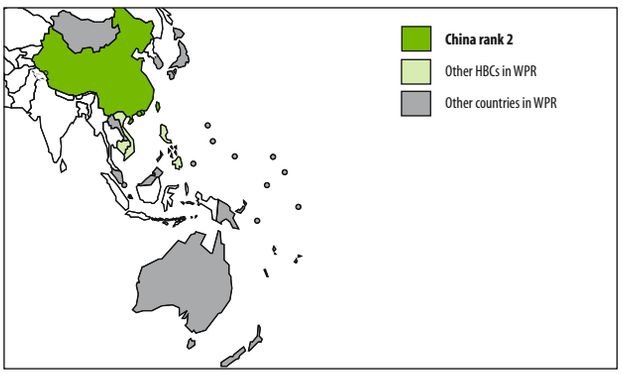
China

China reached the global TB targets of 70% case detection and 85% treatment success by the end of 2005 but must now determine how to sustain these achievements and ensure the quality of DOTS services throughout the country. An increase in the budget for TB/HIV shows that China is beginning to confront this major issue. However, treatment for MDR-TB is not yet widely available and China must also confront the challenge of TB among internal migrants, ensuring that all patients are diagnosed, treated and reported. Now that the targets for DOTS implementation have apparently been met, compiling further evidence that transmission and incidence are in decline should be a priority.

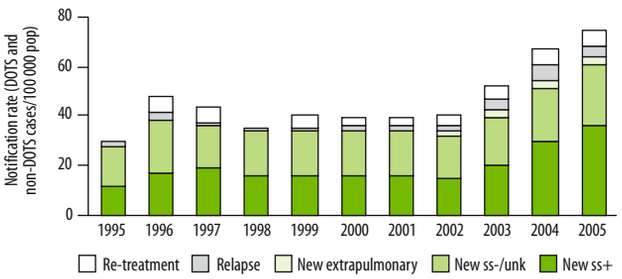
SURVEILLANCE AND EPIDEMIOLOGY

Population (thousands)[a]	1 315 844	
TB burden, 2005 estimates (with 2.5 and 97.5 centiles)[b]		
Incidence (all cases/100 000 pop/yr)	100	70–130
Trend in incidence rate (%/yr, 2004–2005)[c]	**-1.0**	
Incidence (ss+/100 000 pop/yr)	45	29–58
Prevalence (all cases/100 000 pop)[c]	**208**	139–283
Mortality (deaths/100 000 pop/yr)c	**16**	10–22
Of new adult TB cases (15–49yrs), % HIV+[d]	0.5	0.3–0.8
New TB cases multidrug-resistant, 2004 (%)[e]	*5.3*	*3.9–7.1*
Previously treated TB cases multidrug-resistant, 2004 (%)[e]	*27*	*21–35*
Surveillance and DOTS implementation, 2005		
Notification rate (new and relapse/100 000 pop/yr)	68	
Notification rate (new ss+/100 000 pop/yr)	36	
DOTS case detection rate (new ss+, %)	**80**	62–124
DOTS treatment success (new ss+ cases, 2004 cohort, %)	**94**	
Of new pulmonary cases notified under DOTS, % smear-positive	59	
Of new cases notified under DOTS, % extrapulmonary	5.1	
Of new smear-positive cases notified under DOTS, % in women	31	
Of sub-national reports expected, % received at next reporting level[f]	100	
Laboratory services, 2005[g]		
Number of laboratories performing smear microscopy	3 060	
Number of laboratories performing culture	125	
Number of laboratories performing DST	47	
Of laboratories performing smear microscopy, % covered by EQA	90	
Management of MDR-TB, 2005		
Of new cases notified, % receiving DST at start of treatment	–	
Of new cases receiving DST at start of treatment, % MDR-TB	–	
Of re-treatment cases notified, % receiving DST	–	
Of re-treatment cases receiving DST, % MDR-TB	–	
Colloaborative TB/HIV activities, 2005		
National policy of counselling and testing TB patients for HIV?	No	
National surveillance system for HIV-infection in TB patients?	No	
Of TB patients (new and re-treatment) notified, % tested for HIV	–	
Of TB patients tested for HIV, % HIV+	–	
Of HIV+ TB patients detected, % receiving CPT	–	
Of HIV+ TB patients detected, % receiving ART	–	
Budget and finance, 2007		
Government contribution to NTP budget (including loans, %)	65	
Government contribution to total cost of TB control (including loans, %)	65	
Government health spending used for TB control (%)	0.7	
NTP budget funded (%)	80	

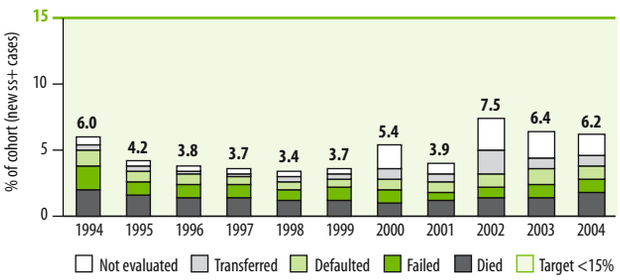
WHO Western Pacific Region (WPR)
Rank based on estimated number of incident cases (all forms) in 2005



Case notifications
DOTS expansion to 100% of population in 2005 matched with increased case-finding



Unfavourable treatment outcomes, DOTS
Reported treatment success remains very high



DOTS expansion and enhancement	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
DOTS coverage (%)	49	60	64	64	64	68	68	78	91	96	100
DOTS notification rate (new & relapse/100 000 pop)	13	21	24	27	27	27	28	30	43	58	68
DOTS notification rate (new ss+/100 000 pop)	7.4	14	16	15	14	15	14	14	20	29	36
DOTS case detection rate (all new cases, %)	11	18	21	24	24	24	25	27	37	52	64
DOTS case detection rate (new ss+, %)	15	28	32	32	29	31	31	30	43	63	80
Case detection rate within DOTS areas (new ss+, %)[h]	30	47	50	50	46	45	45	39	47	66	80
DOTS treatment success (new ss+, %)	96	96	96	97	96	95	96	93	94	94	–
DOTS re-treatment success (ss+, %)	92	94	–	95	95	89	93	88	89	89	–

IMPLEMENTING THE STOP TB STRATEGY[1]

Pursue high-quality dots expansion and enhancement

Budget (2006): US$ 151 million — Gap (2006): US$ 35 million
Budget (2007): US$ 151 million — Gap (2007): US$ 35 million

Achievements

- Reached 70% case detection and 85% treatment success global TB control targets at the end of 2005
- Developed the mid-term evaluation protocol of the 2001–2010 national NTP control plan, and the 2006–2010 implementation plan for the NTP
- Formulated monitoring and evaluation framework, a set of indicators of NTP performance, and supervision checklist for TB control staff at different levels
- Field-tested standardized microscopy training course, and trained laboratory staff at provincial and prefectural levels by the national reference laboratory
- Drafted the laboratory supervision checklist, essential requirements for each level of TB laboratory, and revised EQA guidelines
- Implemented joint Chinese Centres for Disease Control and Prevention/ WHO training programme for key staff at provincial level
- Field tested standard operational procedures for anti-TB drug management
- Prepared 2005 budgeted workplans at different levels
- Published 24th annual report of NTP activities
- Used Internet-based notification system to improve completeness of data and to ensure that patients referred from hospitals are registered for treatment in TB dispensaries

Planned activities

- Hold a state council video teleconference meeting on status of implementation of TB control activities
- Implement the mid-term evaluation of the 2001–2010 national NTP control plan, and develop a final report
- Revise NTP guidelines
- Prepare 2006 budgeted workplans at different levels
- Develop and field test data quality assessment tool
- Complete HR assessment in 6 provinces and draft HRD plan for TB control by the end of 2006
- Systematically evaluate and improve the Internet–based notification system

Challenges

- Mobilizing local governmental funds for meeting funding gap, all of which is for routine programme management and supervision as well as other essential activities
- Maintaining or building political commitment to achieve 2010 regional targets (reduce TB prevalence and mortality by 50%) after reaching 2005 global TB targets
- Improving laboratory capacity
- Increasing the NTP workforce, reducing high staff turnover, and strengthening the quality of training
- Establishing sufficient posts for different levels of staff based on the HRD plan
- Strengthening the drug management system to ensure continuous drug supply and transportation in all counties
- Improving quality of TB surveillance system and usage of TB data

Address TB/HIV, MDR-TB and other challenges

Budget (2006): US$ 2.6 million — Gap (2006): US$ 0
Budget (2007): US$ 6.7 million — Gap (2007): US$ 0

Achievements

- Developed the national framework for collaborative TB/HIV activities and management of MDR-TB patients, including national guidelines
- Established national steering committee and working group for collaborative TB/HIV activities
- Launched the screening of HIV-infected patients for TB in 4 provinces
- Drafted manual for nationwide drug resistance surveillance
- Developed a joint plan between the MoH and the Ministry of Justice for TB control in prisons
- Published Chinese version of "Guidelines for the programmatic management of drug-resistant tuberculosis"

Planned activities

- Pilot collaborative TB/HIV activities in 6 counties using the national framework
- Implement the TB/HIV project funded by round 5 GFATM grant
- Develop the framework and pilot projects for TB control in migrant population groups
- Launch round 5 GFATM pilot projects for standardized treatment and management of MDR-TB patients in 2 provinces in 2006 and expand to 31 MDR-TB sites in 6 out of 31 provinces by 2009
- Develop framework and plan to expand programmatic management of MDR-TB over the period 2006–2010

Challenges

- Strengthening the coordination between NTP and NAP
- Implementing a successful MDR-TB treatment programme in parts of China where rates of MDR-TB are among the highest in the world
- Providing high-quality DOTS services in provinces experiencing an increase in TB cases among the migrant population

[1] Unless otherwise specified, achievements are for financial year 2005; planned activities are for financial year 2006. Budgets and gaps are for financial years.

IMPLEMENTING THE STOP TB STRATEGY

Contribute to health system strengthening

Budget (2006): US$ 0 Gap (2006): US$ 0
Budget (2007): US$ 0 Gap (2007): US$ 0

Achievements

- Included contribution to health system strengthening in the 5-year (2006–2010) implementation plan of national NTP plan
- Implemented and tested TB-specific Internet-based reporting system within health system

Planned activities

- Establish a separate TB division under the newly formed Disease Control Bureau by the MoH

Challenges

- General health services, including staff salaries, are not fully funded by government

Engage all care providers

Budget (2006): US$ 18 million Gap (2006): US$ 2.5 million
Budget (2007): US$ 20 million Gap (2007): US$ 0.4 million

Achievements

- Facilitated access for most medical care providers to Internet-based system of reporting TB cases
- Established national PPM working group
- Developed guidelines and implementation plan for current PPM policy
- Developed training material for reporting, referring and tracing of TB cases according to the current PPM policy
- Provided training and quality control to general hospital laboratories for TB diagnosis

Planned activities

- Hold national PPM working group meeting to formulate overall workplan and mechanism
- Launch 3 pilot PPM projects to explore new models of PPM within different contexts
- Strengthen training for non-NTP providers at each administrative level of TB control
- Circulate the International Standards for Tuberculosis Care among members of the national PPM working group, and adapt these standards to the Chinese context

Challenges

- Improving current system of TB reporting from hospitals and tracing of reported cases by the NTP
- Strengthening collaboration between the NTP and specialized hospitals that treat a large number of TB patients (e.g. TB hospitals, and infectious and respiratory hospitals)

Empower people with TB, and communities

Budget (2006): US$ 14 million Gap (2006): US$ 3.4 million
Budget (2007): US$ 14 million Gap (2007): US$ 3.4 million

Achievements

- Developed health promotion toolkit that will be updated annually
- Implemented ACSM coordination project and annual ACSM training course with round 4 GFATM funding

Planned activities

- Provide health education on TB in all universities, junior colleges, and middle and primary schools, in collaboration with education departments
- Conduct a survey on the effect of health promotion on TB control in 2006, and a follow-up survey on knowledge, attitude and practices in 2009

Challenges

- Formally involving communities in TB control as part of the NTP plan

Enable and promote research

Budget (2006): US$ 0.8 million Gap (2006): US$ 0
Budget (2007): US$ 1.0 million Gap (2007): US$ 0

Achievements

- Included operational research as part of the NTP strategic plan at provincial and central levels, in collaboration with universities and the GFATM
- Conducted operational research projects on the diagnosis and treatment of smear-negative patients, the effectiveness of FDC anti-TB drugs, and the increasing case detection rate in remote and poor areas

Planned activities

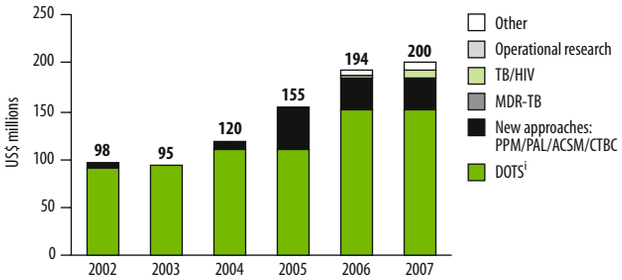
- Conduct a nationwide drug resistance survey (2007–2008), and complete drug resistance surveys in all provinces by 2011
- Carry out a prevalence of disease survey in 2010, with comparison of surveys conducted in 1979, 1985, 1990 and 2000 to allow further assessment of impact of TB control

Challenges

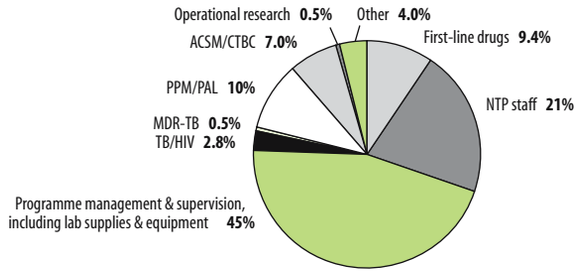
- Developing a mechanism to ensure high-quality operational research for addressing critical constraints in NTP

FINANCING THE STOP TB STRATEGY

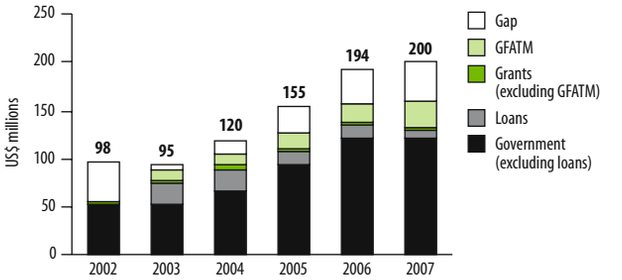
NTP budget by line item
Increasing budget for DOTS; new budget for collaborative TB/HIV activities in 2006 and 2007; despite large number of estimated cases, budget for MDR-TB treatment currently small



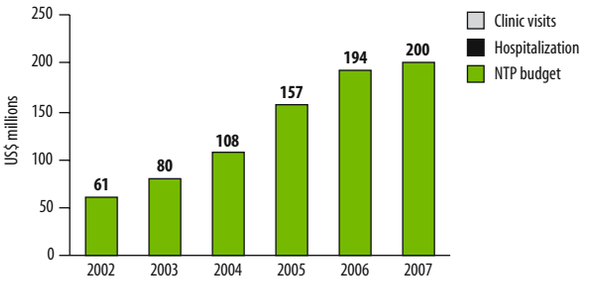
NTP budget by line item, 2007
82% of budget is for Component 1 of Stop TB Strategy (Pursuing high-quality DOTS expansion and enhancement)



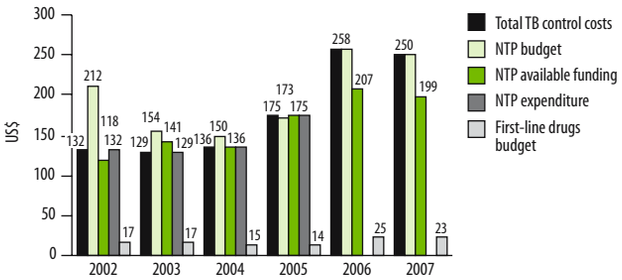
NTP budget by source of funding
Big increase in budget and funding since 2002; funding gap in 2006 and 2007, mostly for supervision and training activities, needs to be filled by local government



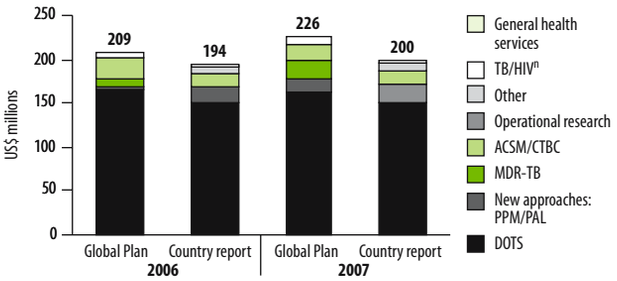
Total TB control costs by line item[j]
All costs for TB control are included in the NTP budget



Per patient costs, budgets and expenditures[k,l]
Increased budget per patient for first-line drugs in 2006 and 2007 because price of drugs has increased and, since 2006, all detected smear-negative patients receive anti-TB drugs free-of-charge



Comparison of country report and Global Plan:[m] total TB control costs, 2006–2007
Country plan consistent with Global Plan, except for MDR-TB treatment and ACSM



SOURCES, METHODS AND ABBREVIATIONS

[a] *World population prospects – the 2004 revision*. New York, United Nations Population Division, 2005.
[b] Incidence, prevalence and mortality estimates include patients infected with HIV. Smear-positive incidence estimated on basis of annual risk of TB infection (ARTI) measured in 2000, and assumed to be declining at same rate as ARTI (1% per yr).
[c] MDG and STB Partnership indicators shown in bold. Targets are 70% case detection of smear-positive cases under DOTS, 85% treatment success, to ensure that the incidence rate is falling by 2015, and to reduce incidence rates and halve 1990 prevalence and mortality rates by 2015. Estimates for 1990 are prevalence 325/100 000 pop and mortality 24/100 000 pop/yr.
[d] Estimate of HIV prevalence in incident TB cases (15–49 yo) derived from UNAIDS estimate of HIV prevalence in the general population, using assumed incidence rate ratio of 6.
[e] MDR-TB figures shown in regular type are survey data from the database of the WHO/IUATLD Global Project on Anti-Tuberculosis Drug Resistance Surveillance. Figures in italics are estimates from the following source: Zignol M et al. Global incidence of multidrug-resistant tuberculosis. *Journal of Infectious Diseases*, 2006, 194:479–485.
[f] Completeness of reporting assessed at lowest level in reporting heirachy for which information is available.
[g] For routine diagnosis, there should be at least one laboratory providing smear microscopy per 100 000 population. To provide culture for diagnosis of paediatric, extra-pulmonary and ss-/HIV+ TB, as well as DST for re-treatment and failure cases, there should be at least one culture facility and one DST facility in each of the 31 provinces.
[h] Case detection within DOTS areas calculated by dividing national case detection rate (new ss+) by DOTS coverage.
[i] DOTS includes the following components shown in the pie chart at right: first-line drugs, NTP staff, programme management and supervision, and laboratory supplies and equipment.
[j] Total TB control costs for 2002–2005 are based on expenditure, whereas those for 2006–2007 are based on budgets.
[k] Estimates of expenditure are based on received funding.
[l] NTP available funding for 2004–2005 is based on the amount of funding actually received, using retrospective data; available funding for 2002–2003 and 2006–2007 is based on prospectively reported budget data, and estimated as the total budget minus any reported funding gap.
[m] Estimates in the Global Plan were presented for regions rather than countries. See Methods for explanation of calculation of individual country estimates from regional estimates.
[n] Global Plan estimates cover the full costs of collaborative TB/HIV activities, but these costs may be budgeted for by either the NTP or the National AIDS Programme. In this graph, country reports include only the NTP budget. This may explain the apparent discrepancy between the Global Plan and country reports.

– indicates not available; pop, population; ss+, sputum smear-positive; ss-, sputum smear-negative pulmonary; unk, pulmonary – sputum smear not done or result unknown; yr, year.

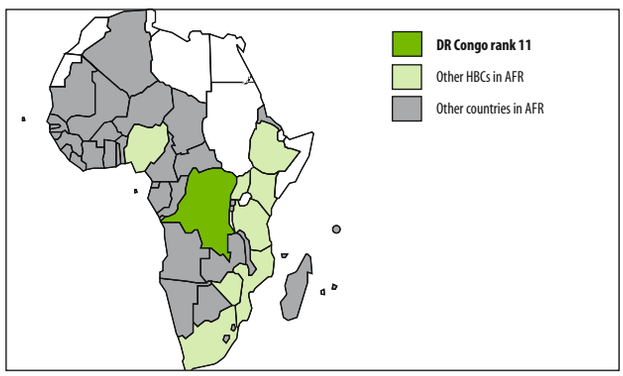
Democratic Republic of the Congo

On the best evidence available, DR Congo had met the target for case detection and narrowly missed the target for treatment success by the end of 2005. However, it is doubtful that the case detection rate is so high: DOTS coverage has not expanded beyond 75% since 2003, the impact of HIV is uncertain, and assessment of the detection rate is based on few data. The NTP continues to focus on improving the capacity of staff and on strengthening laboratories, and has started to engage the private sector in TB control. A more thorough evaluation is needed of the burden and distribution of TB within DR Congo. Better coordination between the NTP and the NAP is needed to advance TB/HIV control activities.

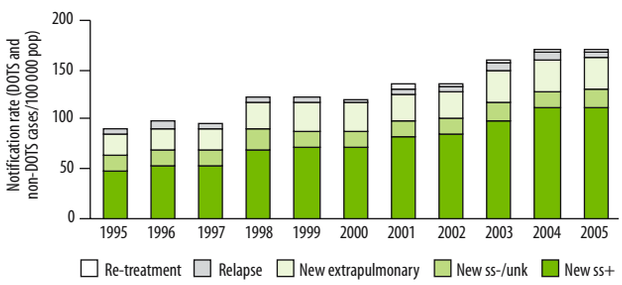
SURVEILLANCE AND EPIDEMIOLOGY

Population (thousands)[a]	57 549	
TB burden, 2005 estimates (with 2.5 and 97.5 centiles)[b]		
Incidence (all cases/100 000 pop/yr)	356	262–462
Trend in incidence rate (%/yr, 2004–2005)[c]	**-0.1**	
Incidence (ss+/100 000 pop/yr)	156	113–206
Prevalence (all cases/100 000 pop)[c]	**541**	370–744
Mortality (deaths/100 000 pop/yr)[c]	**73**	53–99
Of new adult TB cases (15–49yrs), % HIV+[d]	17	10–24
New TB cases multidrug-resistant, 2004 (%)[e]	*2.0*	*0.3–11*
Previously treated TB cases multidrug-resistant, 2004 (%)[e]	*8.1*	*1.2–40*
Surveillance and DOTS implementation, 2005		
Notification rate (new and relapse/100 000 pop/yr)	169	
Notification rate (new ss+/100 000 pop/yr)	113	
DOTS case detection rate (new ss+, %)	**72**	55–100
DOTS treatment success (new ss+ cases, 2004 cohort, %)	**85**	
Of new pulmonary cases notified under DOTS, % smear-positive	87	
Of new cases notified under DOTS, % extrapulmonary	20	
Of new smear-positive cases notified under DOTS, % in women	47	
Of sub-national reports expected, % received at next reporting level[f]	94	
Laboratory services, 2005[g]		
Number of laboratories performing smear microscopy	1 086	
Number of laboratories performing culture	1	
Number of laboratories performing DST	1	
Of laboratories performing smear microscopy, % covered by EQA	98	
Management of MDR-TB, 2005		
Of new cases notified, % receiving DST at start of treatment	–	
Of new cases receiving DST at start of treatment, % MDR-TB	–	
Of re-treatment cases notified, % receiving DST	–	
Of re-treatment cases receiving DST, % MDR-TB	–	
Collaborative TB/HIV activities, 2005		
National policy of counselling and testing TB patients for HIV?	Yes	
National surveillance system for HIV-infection in TB patients?	No	
Of TB patients (new and re-treatment) notified, % tested for HIV	1.9	
Of TB patients tested for HIV, % HIV+	20	
Of HIV+ TB patients detected, % receiving CPT	74	
Of HIV+ TB patients detected, % receiving ART	1	
Budget and finance, 2007		
Government contribution to NTP budget (including loans, %)	8.8	
Government contribution to total cost of TB control (including loans, %)	33	
Government health spending used for TB control (%)	13	
NTP budget funded (%)	54	

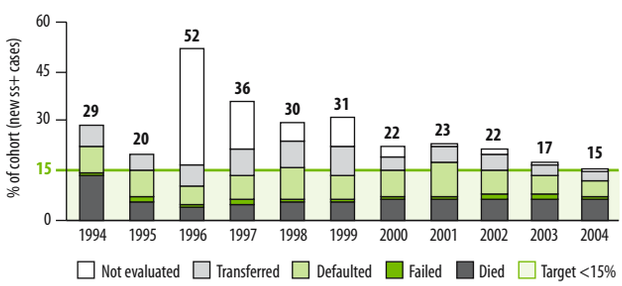
WHO African Region (AFR)
Rank based on estimated number of incident cases (all forms) in 2005



Case notifications
Notification rates continuing to increase; very high proportion of pulmonary cases smear-positive, suggesting poor case-finding of smear-negative cases



Unfavourable treatment outcomes, DOTS
Steady improvement in treatment success rates over past 9 years; target almost met for 2004 cohort (treatment success 84.8%)



DOTS expansion and enhancement	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
DOTS coverage (%)	47	51	60	60	62	70	70	70	75	75	100
DOTS notification rate (new & relapse/100 000 pop)	85	100	95	123	122	121	130	134	156	167	169
DOTS notification rate (new ss+/100 000 pop)	42	52	52	70	71	72	82	84	99	111	113
DOTS case detection rate (all new cases, %)	34	37	33	41	39	36	37	37	42	45	46
DOTS case detection rate (new ss+, %)	41	47	44	55	54	52	56	55	63	71	72
Case detection rate within DOTS areas (new ss+, %)[h]	88	92	74	92	87	74	80	79	84	95	72
DOTS treatment success (new ss+, %)	80	48	64	70	69	78	77	78	83	85	–
DOTS re-treatment success (ss+, %)	72	33	46	31	67	–	–	67	72	71	–

IMPLEMENTING THE STOP TB STRATEGY[1]

Pursue high-quality DOTS expansion and enhancement

Budget (2006): US$ 11 million
Budget (2007): US$ 11 million
Gap (2006): US$ 4.8 million
Gap (2007): US$ 4.3 million

Achievements

- Developed a comprehensive strategic HRD plan including all components of the Stop TB Strategy
- Included NTP-recommended TB control strategies in the curriculum for basic training of doctors
- Increased the number of TB diagnostic and treatment centres from 991 to 1041
- Distributed equipment and supplies to all 1041 TB diagnostic and treatment centres
- Started EQA in 900 microscopy centres, with more than half having adequate performance
- Procured two thirds of the first-line anti-TB drugs required in the country through a GDF grant, with remaining drug requirements provided with support from the Damien Foundation
- Mobilized funding sufficient to cover all planned activities
- Signed GFATM round 5 grant agreement in October 2006; the first disbursement (in November) will be used to procure first and second-line anti-TB drugs
- Received approval for GFATM round 6 proposal for TB control activities

Planned activities

- Train 71 providers in TB control activities in Nord Kivu and Bas Congo Ouest
- Include NTP-recommended TB guidelines in the training course for nurses
- Revise and implement quality control procedures for laboratories whose performance is not adequate
- Provide training-of-trainers in quality control for laboratory technicians at provincial level
- Strengthen culture facilities in Kisangani and Lubumbashi
- Improve motivation and provide incentives for personnel and improve conditions of employment

Challenges

- Ensuring continuous supply of laboratory reagents and equipment
- Ensuring regular supervision of laboratory activities at all levels

Address TB/HIV, MDR-TB and other challenges

Budget (2006): US$ 4.5 million
Budget (2007): US$ 5.3 million
Gap (2006): US$ 3.9 million
Gap (2007): US$ 4.8 million

Achievements

- Implemented a pilot project to test VCT approaches and to measure the prevalence of HIV among TB patients in collaboration with the NTP, NAP and University of North Carolina (UNC)
- Established a steering committee for collaborative TB/HIV activities and management of HIV-infected TB patients
- Developed a training module on TB/HIV for TB diagnostic and treatment centres
- Provided second-line anti-TB drugs and free medical examinations to 180 MDR-TB patients, with Damien Foundation support
- Received GLC approval in August 2006 for management of 1100 MDR-TB patients over 5 years

Planned activities

- Hold training in the management of collaborative TB/HIV activities (60 people)
- Strengthen resource mobilization for collaborative TB/HIV activities
- Collaborate with UNC and the IHC (Integrated HIV Care) programme of the Union to treat HIV-infected TB patients
- Finalize guidelines and training material for the management of MDR-TB patients
- Start GLC-approved projects in 2 sites in Kinshasa at the end of 2006

Challenges

- Improving the functioning of the TB/HIV steering committee
- Improving coordination and collaboration between the NTP and the NAP
- Addressing the shortage of HIV test kits and of co-trimoxazole
- Developing an action plan for TB control activities in high-risk groups

Contribute to health system strengthening

Budget (2006): US$ 0
Budget (2007): US$ 0
Gap (2006): US$ 0
Gap (2007): US$ 0

Achievements

- None described

Planned activities

- Train and develop health professionals in TB control at all levels

Challenges

- Integrating procurement and distribution of anti-TB drugs by the NTP with procurement and distribution of drugs by the MoH

[1] Unless otherwise specified, achievements are for financial year 2005; planned activities are for financial year 2006. Budgets and gaps are for financial years.

IMPLEMENTING THE STOP TB STRATEGY

Engage all care providers

Budget (2006): US$ 0 Gap (2006): US$ 0
Budget (2007): US$ 0 Gap (2007): US$ 0

Achievements

- Collaborated with some private practitioners, hospitals, penitentiary/military centres, NGO/mission clinics and hospitals, and corporate health services in referral, diagnosis and treatment of TB patients
- Provided TB training for health professionals in the private sector in Kinshasa
- Supplied private sector providers with anti-TB drugs and laboratory supplies
- Collaborated with a network of non-NTP laboratories (private, faith-based organization, university, military, penitentiary, Institut Médical de Recherche Médicale) at the MoH level

Planned activities

- Scale up PPM activities by developing guidelines and training material
- Implement a TB recording and reporting system in private health centres
- Provide anti-TB drugs and laboratory supplies and equipment to non-NTP health centres in big cities

Challenges

- Engaging health providers in activities to promote the International Standards for Tuberculosis Care

Empower people with TB, and communities

Budget (2006): US$ 2.3 million Gap (2006): US$ 2.1 million
Budget (2007): US$ 1.9 million Gap (2007): US$ 1.6 million

Achievements

- Implemented national media campaign to increase awareness of TB by using radio, television, banners and posters
- Increased patient treatment compliance and reduced TB stigma by involving the community in treatment support
- Promoted Patients' Charter for Tuberculosis Care in collaboration with NGOs, and used the lessons learnt by the HIV/AIDS programme
- Involved TB patients in the development of the action plan for DOTS activities

Planned activities

- Expand media TB campaigns at provincial level, and train personal in communication methods to enhance community empowerment

Challenges

- None described

Enable and promote research

Budget (2006): US$ 0.8 million Gap (2006): US$ 0.5 million
Budget (2007): US$ 0.4 million Gap (2007): US$ 0.3 million

Achievements

- Developed an operational research plan including projects listed under "Planned activities"
- Implemented studies on risk factors for relapse and predictors of smear conversion in Kinshasa
- KAP studies in Kinshasa and in Bukavu conducted by the Ecole de Santé Publique of Kinshasa
- Evaluated TB/HIV knowledge among health-workers
- Studied factors contributing to treatment default

Planned activities

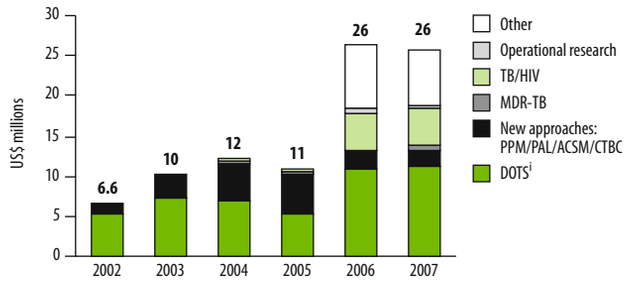
- Establish a research division and train the members of this new division
- Conduct a drug resistance survey of Kinshasa and Bas Congo in collaboration with WHO and the Prince Léopold Institute of Tropical Medicine (IMT, Antwerp, Belgium)
- Collaborate with the Ecole de Santé Publique of Kinshasa on an IEC survey
- Evaluate TB/HIV knowledge and pratices among nurses
- Investigate factors influencing the likelihood of relapse
- Assess the impact of TB control through annual analysis of routine surveillance data, in consultation with the Union

Challenges

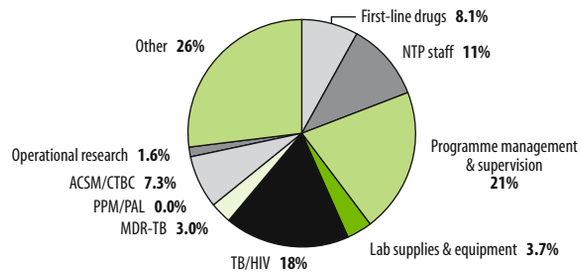
- None described

FINANCING THE STOP TB STRATEGY

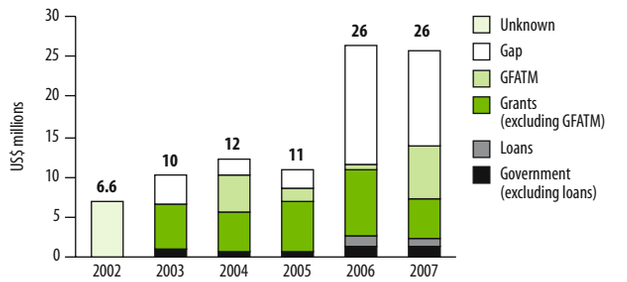
NTP budget by line item
Large budget for "other", which includes technical assistance as well as training



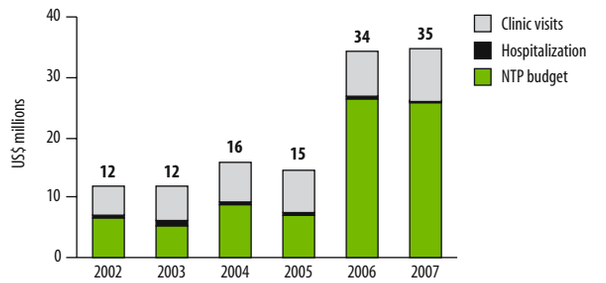
NTP budget by line item, 2007
Programme management and supervision, TB/HIV and "other" are the largest items in the budget



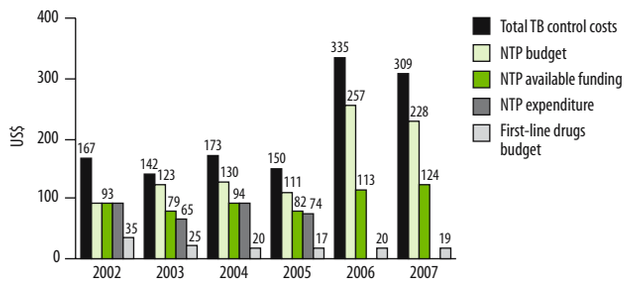
NTP budget by source of funding
Increased total NTP budget supported by increase in grant funding; large funding gaps remain



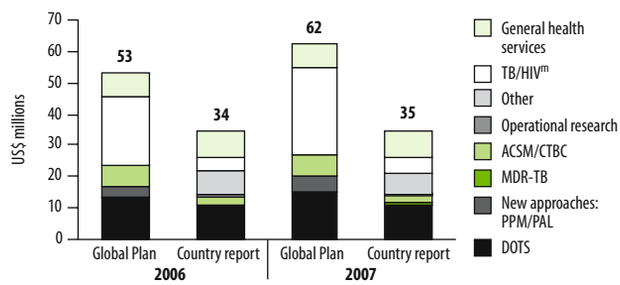
Total TB control costs by line item[j]
Cost of clinic visits based on 90 visits for new ss+ patients and 32 visits for new ss-/EP patients



Per patient costs, budgets and expenditures[k]
Increasing total costs and budget per patient; most of the available funding is spent



Comparison of country report and Global Plan:[l] total TB control costs, 2006–2007
Like other African HBCs, main difference between Global Plan and country report is TB/HIV and ACSM/CTBC



SOURCES, METHODS AND ABBREVIATIONS

[a] *World population prospects – the 2004 revision*. New York, United Nations Population Division, 2005.
[b] Incidence, prevalence and mortality estimates include patients infected with HIV. Incidence estimate originally based on assumption of 45% ss+ case detection rate in 1997 (DOTS and non-DOTS). Trend in incidence estimated from 3-year moving average of notifications from those countries in region judged to be detecting an unchanging proportion of cases.
[c] MDG and STB Partnership indicators shown in bold. Targets are 70% case detection of smear-positive cases under DOTS, 85% treatment success, to ensure that the incidence rate is falling by 2015, and to reduce incidence rates and halve 1990 prevalence and mortality rates by 2015. Estimates for 1990 are prevalence 225/100 000 pop and mortality 32/100 000 pop/yr.
[d] Estimate of HIV prevalence in incident TB cases (15–49 yo) derived from UNAIDS estimate of HIV prevalence in the general population, using assumed incidence rate ratio of 6.
[e] MDR-TB figures shown in regular type are survey data from the database of the WHO/IUATLD Global Project on Anti-Tuberculosis Drug Resistance Surveillance. Figures in italics are estimates from the following source: Zignol M et al. Global incidence of multidrug-resistant tuberculosis. *Journal of Infectious Diseases*, 2006, 194:479–485.
[f] Completeness of reporting assessed at lowest level in reporting hierarchy for which information is available.
[g] For routine diagnosis, there should be at least one laboratory providing smear microscopy per 100 000 population. To provide culture for diagnosis of paediatric, extrapulmonary and ss-/HIV+ TB, as well as DST for re-treatment and failure cases, most countries will need one culture facility per 5 million population and one DST facility per 10 million population.
[h] Case detection within DOTS areas calculated by dividing national case detection rate (new ss+) by DOTS coverage.
[i] DOTS includes the following components shown in the pie chart at right: first-line drugs, NTP staff, programme management and supervision, and laboratory supplies and equipment.
[j] Total TB control costs for 2002–2005 are based on expenditure, whereas those for 2006–2007 are based on budgets. Estimates of the costs of clinic visits and hospitalization are WHO estimates based on data provided by the NTP and from other sources. See Methods for further details.
[k] NTP available funding for 2004–2005 is based on the amount of funding actually received, using retrospective data; available funding for 2002–2003 and 2006–2007 is based on prospectively reported budget data, and estimated as the total budget minus any reported funding gap.
[l] Estimates in the Global Plan were presented for regions rather than countries. See Methods for explanation of calculation of individual country estimates from regional estimates.
[m] Global Plan estimates cover the full costs of collaborative TB/HIV activities, but these costs may be budgeted for by either the NTP or the National AIDS Programme. In this graph, country reports include only the NTP budget. This may explain the apparent discrepancy between the Global Plan and country reports.

– indicates not available; pop, population; ss+, sputum smear-positive; ss-, sputum smear-negative pulmonary; unk, pulmonary – sputum smear not done or result unknown; yr, year.

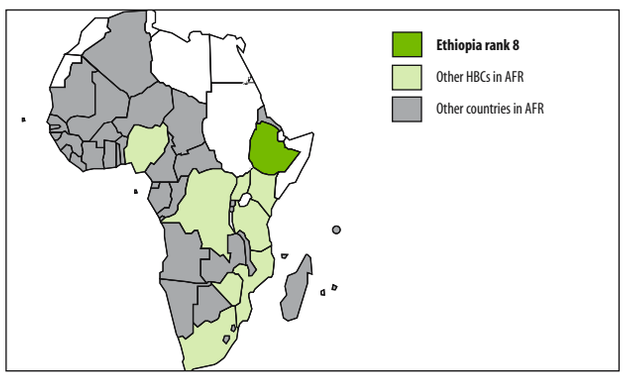
Ethiopia

The main objectives of the NTP in Ethiopia are to provide high-quality patient-centred treatment and to improve access to diagnosis. Fulfilling these objectives continues to be challenging given the serious shortage of competent and motivated staff, and the increasing private sector not yet engaged with the NTP. The planned construction of new general health-care facilities by the government should improve access to general health and DOTS services. The GFATM remains the largest source of funding for the NTP, especially for expansion of collaborative TB/HIV activities. It is important for the NTP to align its strategic plan with the Global Plan in order to make progress towards the global targets for case detection and treatment success.

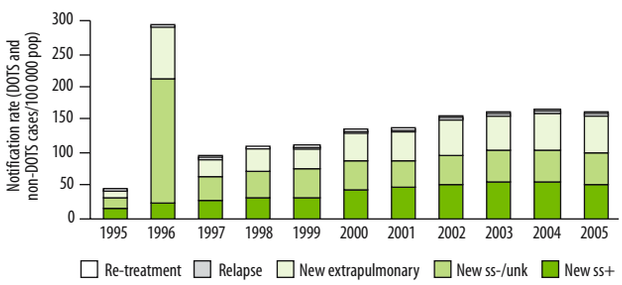
SURVEILLANCE AND EPIDEMIOLOGY

Population (thousands)[a]	77 431	
TB burden, 2005 estimates (with 2.5 and 97.5 centiles)[b]		
Incidence (all cases/100 000 pop/yr)	341	277–422
Trend in incidence rate (%/yr, 2004–2005)[c]	**-0.1**	
Incidence (ss+/100 000 pop/yr)	152	119–189
Prevalence (all cases/100 000 pop)c	**546**	389–726
Mortality (deaths/100 000 pop/yr)c	**73**	55–94
Of new adult TB cases (15–49yrs), % HIV+d	11	7.3–14
New TB cases multidrug-resistant, 2004 (%)[e]	*1.7*	*0.3–9.2*
Previously treated TB cases multidrug-resistant, 2004 (%)[e]	*8.0*	*1.1–39*
Surveillance and DOTS implementation, 2005		
Notification rate (new and relapse/100 000 pop/yr)	160	
Notification rate (new ss+/100 000 pop/yr)	50	
DOTS case detection rate (new ss+, %)	**33**	26–42
DOTS treatment success (new ss+ cases, 2004 cohort, %)	**79**	
Of new pulmonary cases notified under DOTS, % smear-positive	49	
Of new cases notified under DOTS, % extrapulmonary	36	
Of new smear-positive cases notified under DOTS, % in women	46	
Of sub-national reports expected, % received at next reporting level[f]	100	
Laboratory services, 2005[g]		
Number of laboratories performing smear microscopy	694	
Number of laboratories performing culture	3	
Number of laboratories performing DST	1	
Of laboratories performing smear microscopy, % covered by EQA	–	
Management of MDR-TB, 2005		
Of new cases notified, % receiving DST at start of treatment	–	
Of new cases receiving DST at start of treatment, % MDR-TB	–	
Of re-treatment cases notified, % receiving DST	–	
Of re-treatment cases receiving DST, % MDR-TB	–	
Collaborative TB/HIV activities, 2005		
National policy of counselling and testing TB patients for HIV?	Yes	
National surveillance system for HIV-infection in TB patients?	No	
Of TB patients (new and re-treatment) notified, % tested for HIV	2.6	
Of TB patients tested for HIV, % HIV+	41	
Of HIV+ TB patients detected, % receiving CPT	88	
Of HIV+ TB patients detected, % receiving ART	29	
Budget and finance, 2007		
Government contribution to NTP budget (including loans, %)	3.3	
Government contribution to total cost of TB control (including loans, %)	57	
Government health spending used for TB control (%)	6.2	
NTP budget funded (%)	100	

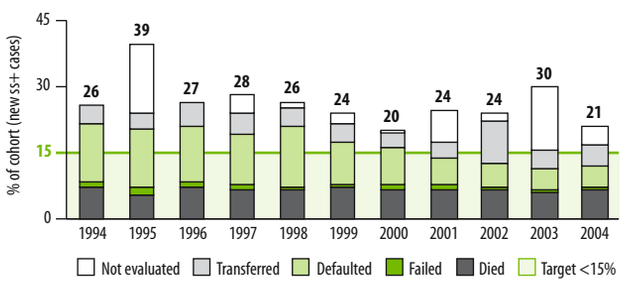
WHO African Region (AFR)
Rank based on estimated number of incident cases (all forms) in 2005



Case notifications
Notification rate of new pulmonary cases levelling off



Unfavourable treatment outcomes, DOTS
Proportion of cases evaluated higher for 2004 cohort than for 2003 cohort, but treatment success still below target



DOTS expansion and enhancement	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
DOTS coverage (%)	39	39	48	64	63	85	70	95	95	70	90
DOTS notification rate (new & relapse/100 000 pop)	43	68	93	107	108	133	135	153	159	163	160
DOTS notification rate (new ss+/100 000 pop)	15	21	25	29	32	45	47	51	54	55	50
DOTS case detection rate (all new cases, %)	19	27	35	38	37	43	41	45	46	47	46
DOTS case detection rate (new ss+, %)	15	20	22	24	25	33	33	34	35	36	33
Case detection rate within DOTS areas (new ss+, %)[h]	39	51	46	37	40	39	47	36	37	51	36
DOTS treatment success (new ss+, %)	61	73	72	74	76	80	76	76	70	79	–
DOTS re-treatment success (ss+, %)	79	71	69	60	74	71	64	60	60	54	–

IMPLEMENTING THE STOP TB STRATEGY[1]

Pursue high-quality DOTS expansion and enhancement

Budget (2006): US$ 4.7 million Gap (2006): US$ 0
Budget (2007): US$ 4.7 million Gap (2007): US$ 0

Achievements

- Developed a comprehensive strategic HRD plan for TB control that includes training and staffing needs for DOTS enhancement and sustainability
- Revised the laboratory smear microscopy guidelines
- Held semi-annual meetings to discuss summary indicators and comparisons between districts, and assessed impact of TB control through analysis of quarterly case-finding and treatment outcome reports
- Secured funding for first-line anti-TB drugs and laboratory supplies until 2008 from the GFATM round 1 grant
- Received approval for GFATM round 6 proposal for TB control activities

Planned activities

- Train trainers in all 70 zones of Ethiopia, who will then cascade the training to staff in both new and existing health institutions
- Establish microscopy services in 360 new heath facilities over the upcoming 5 years with GFATM round 6 funds
- Hire an international consultant to provide guidance to the NTP on monitoring and evaluation, assisted by 11 regional monitoring and evaluation officers recruited locally, while extending the agreement between the MoH and GLRA to continue support for monitoring and evaluation for the next 5 years
- Develop new 5-year strategic plan for 2007–2011 that is in line with the Global Plan terms of reference have been developed; the plan will be written in early 2007

Challenges

- Devising a mechanism to retain existing TB staff at both managerial and service delivery levels
- Resolving high staff turnover at all levels, especially in the laboratory, leading to inability to implement laboratory training for existing staff according to the HRD plan
- Including TB control in the curricula for basic training of doctors or nurses
- Improving reliability of reporting of treatment outcomes; outcomes were reported for 96% of new smear-positive cases registered in 2004, but for only 85% of those registered in 2003

Address TB/HIV, MDR-TB and other challenges

Budget (2006): US$ 0.3 million Gap (2006): US$ 0
Budget (2007): US$ 0.3 million Gap (2007): US$ 0

Achievements

- Strengthened TB/HIV coordinating body
- Developed and distributed TB/HIV implementation guidelines
- Expanded collaborative TB/HIV activities, which started in 9 health facilities as pilot projects, to more than 50 health facilities in 2005, and to 338 by end 2006
- Developed specific plan for TB control in prisons and among refugees

Planned activities

- Further expand collaborative TB/HIV activities by printing and distributing screening checklists and educational materials to the remaining 340 health facilities
- Expand provider-initiated HIV counselling and testing by continued training of health facility staff
- Begin MDR-TB case management in St Peter's Specialized TB Hospital, Addis Ababa, with funding from GFATM round 6 (GLC approval will be sought)

Challenges

- Retaining staff trained on collaborative TB/HIV activities
- Ensuring adequate supplies of HIV test kits, condoms and co-trimoxazole
- Developing guidelines and training the necessary staff in order to include MDR-TB treatment in programme activities

Contribute to health system strengthening

Budget (2006): US$ 0 Gap (2006): US$ 0
Budget (2007): US$ 0 Gap (2007): US$ 0

Achievements

- Integrated anti-TB drug procurement, distribution and stock management systems fully within the general drug management system
- Incorporated anti-TB treatment into general health services, and decentralized service delivery to peripheral health units in woredas in line with the health sector reform (carried out within the framework of the Health Sector Development Plan)
- Involved Health Extension Workers in TB control

Planned activities

- Include DOTS services in 232 new health centres planned to be constructed and in more than half of the 1662 health stations planned to be upgraded in the next 5 years by the Ethiopian government
- Further strengthen the involvement of Health Extension Workers

Challenges

- Improving staff salaries
- Strengthening health information systems

[1] Unless otherwise specified, achievements are for financial year 2005; planned activities are for financial year 2006.

IMPLEMENTING THE STOP TB STRATEGY

Engage all care providers

Budget (2006): US$ 0 Gap (2006): US$ 0
Budget (2007): US$ 0 Gap (2007): US$ 0

Achievements

- Collaborated with non-NTP laboratories (NGO, faith-based organization, university, military, prison) in training and provision of laboratory supplies and equipment
- Developed national concept paper on PPM
- Held a consensus building workshop on PPM with relevant stakeholders
- Established a PPM working group composed of the Medical Association of Physicians in Private Practice in Ethiopia (MAPPE), academic institutions, bilateral/multilateral development partners and various departments under the MoH
- Started PPM pilot projects in 3rd quarter of 2006
- Developed and printed PPM guidelines in 2006

Planned activities

- Hold workshop to launch the PPM guidelines in first quarter of 2007, and begin distribution
- Expand DOTS to the private sector by funding MAPPE to train staff in private health facilities to manage TB according to NTP guidelines
- Support the post of a national PPM coordinator, contracted through an NGO
- Include International Standards for Tuberculosis Care in the revised national NTP guidelines

Challenges

- No budget or funding for planned activities to engage all care providers

Empower people with TB, and communities

Budget (2006): US$ 0 Gap (2006): US$ 0
Budget (2007): US$ 0.05 million Gap (2007): US$ 0.03 million

Achievements

- Utilized the Ethiopian Health Education Centre to produce IEC/Communication for Behaviour Change messages
- Trained 9900 female health extension workers to serve the community in preventive health-care services, who will be used to involve community TB care during 2005, with a further 7500 trained and deployed in 2006
- Established an ACSM task force in second half of 2006 (with the involvement all relevant stakeholders) and developed TOR

Planned activities

- Establish ISAC initiative to train community TB supporters to identify and refer TB suspects in 150 districts over the upcoming 5-year period, with funding from the GFATM round 6 grant
- Train a further 7000 Health Extension Workers in 2007
- Develop ACSM strategic plan with the goal of stimulating early reporting of TB suspects and improving adherence to treatment
- Include the Patients' Charter for Tuberculosis Care in the revised NTP guidelines

Challenges

- Developing activities that will raise low public awareness of TB while minimizing stigma associated with TB

Enable and promote research

Budget (2006): US$ 0 Gap (2006): US$ 0
Budget (2007): US$ 0 Gap (2007): US$ 0

Achievements

- Finalized the national drug resistance survey
- Developed an annual plan to train staff on operational research in collaboration with Addis Ababa University and Armouer Hansen Research Institute

Planned activities

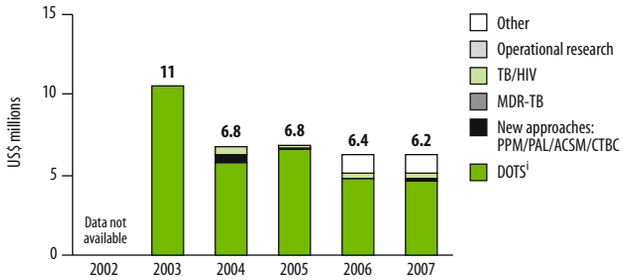
- Conduct operational research projects in the area of TB/HIV and adherence to IPT
- Hold a national research capacity-building training workshop where research proposals developed by participants will be reviewed by a technical review panel

Challenges

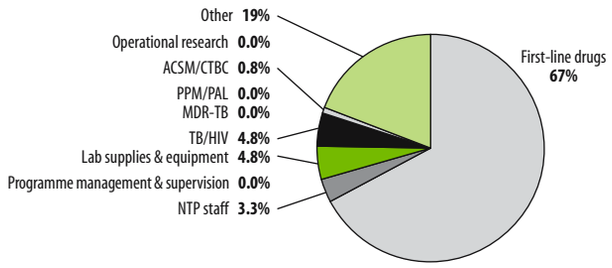
- Assessing the burden of TB and its impact of TB control using routinely collected data, which will require careful investigation and detailed analyses
- Developing budget for and obtaining funding for planned operational research activities

FINANCING THE STOP TB STRATEGY

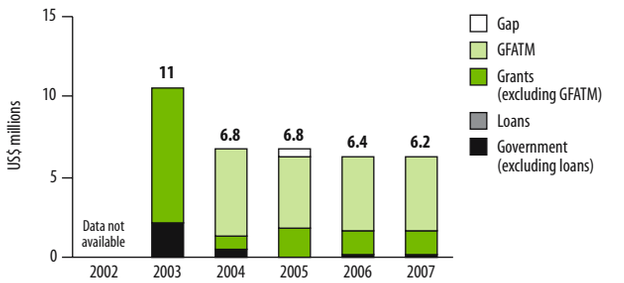
NTP budget by line item
Budget required mostly for pursuing high-quality DOTS expansion; stable budget despite 30% increase in projected number of patients to be treated in 2005–2007



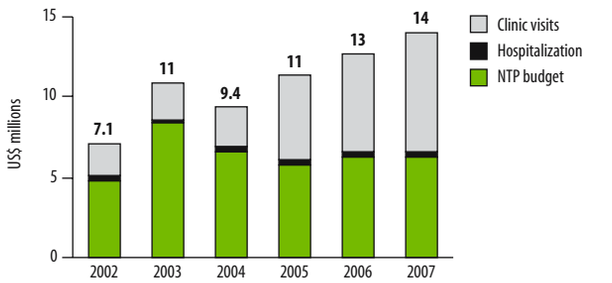
NTP budget by line item, 2007
Unlike all other HBCs, most of the budget is for first-line drugs



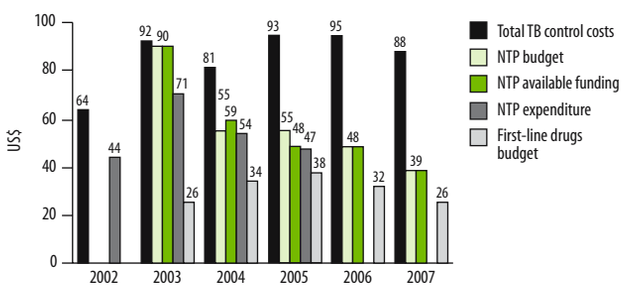
NTP budget by source of funding
Budget mostly funded by GFATM; no financial gap identified for 2006 and 2007



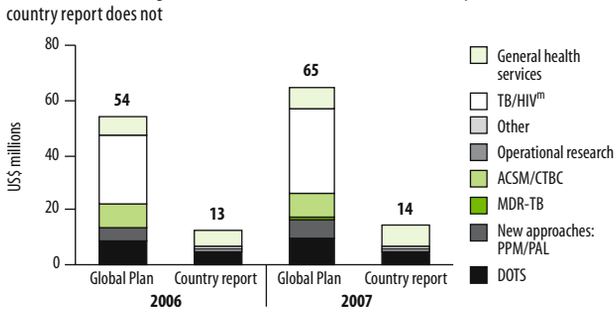
Total TB control costs by line itemj
Clinic visits for DOT estimated based on 65 visits per TB patient in 2005–2007 and 37 visits in 2002–2004



Per patient costs, budgets and expenditures[k]
Budget per patient falling because increase in expected number of patients not accompanied by increase in total budget



Comparison of country report and Global Plan:[l] total TB control costs, 2006–2007
Much higher budget for TB/HIV and ACSM/CTBC in Global Plan; in addition, Global Plan allows budget for DOTS to increase in line with number of patients, whereas country report does not



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[i] DOTS includes the following components shown in the pie chart at right: first-line drugs, NTP staff, programme management and supervision, and laboratory supplies and equipment.
[j] Total TB control costs for 2002–2005 are based on expenditure, whereas those for 2006–2007 are based on budgets . Estimates of the costs of clinic visits and hospitalization are WHO estimates based on data provided by the NTP and from other sources. See Methods for further details.
[k] NTP available funding for 2004–2005 is based on the amount of funding actually received, using retrospective data; available funding for 2003 and 2006–2007 is based on prospectively reported budget data, and estimated as the total budget minus any reported funding gap.
[l] Estimates in the Global Plan were presented for regions rather than countries. See Methods for explanation of calculation of individual country estimates from regional estimates.
[m] Global Plan estimates cover the full costs of collaborative TB/HIV activities, but these costs may be budgeted for by either the NTP or the National AIDS Programme. In this graph, country reports include only the NTP budget. This may explain the apparent discrepancy between the Global Plan and country reports.

– indicates not available; pop, population; ss+, sputum smear-positive; ss-, sputum smear-negative pulmonary; unk, pulmonary – sputum sputum smear not done or result unknown; yr, year.

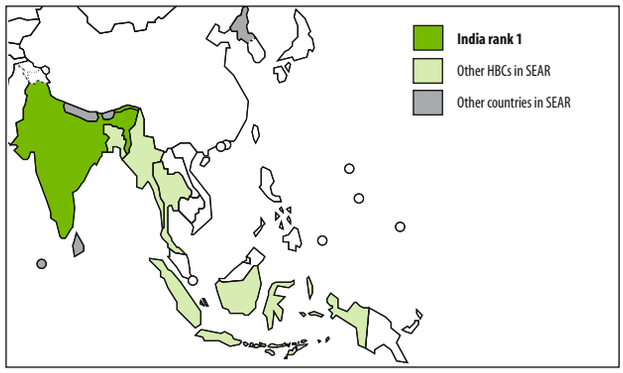
India

The Revised National Tuberculosis Control Programme (RNTCP, hereafter NTP) of India has achieved DOTS population coverage of all 632 districts. Since the inception of the revised programme in 1997, the NTP has trained more than half a million staff, evaluated more than 24 million people with suspected TB, examined more than 100 million sputum slides, treated more than 6 million patients, and probably prevented more than a million TB deaths. However, rapid programme expansion has outpaced the capacity of national and state health authorities to supervise the programme effectively and to maintain high quality. Government action is needed to reverse declines in case detection and cure rates in some states.

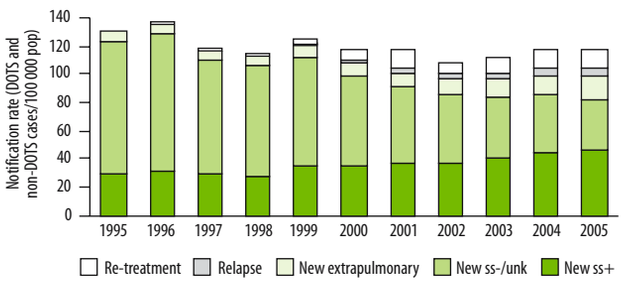
SURVEILLANCE AND EPIDEMIOLOGY

Population (thousands)[a]	1 103 371	
TB burden, 2005 estimates (with 2.5 and 97.5 centiles)[b]		
Incidence (all cases/100 000 pop/yr)	168	107–228
Trend in incidence rate (%/yr, 2004–2005)[c]	**0.0**	
Incidence (ss+/100 000 pop/yr)	75	48–102
Prevalence (all cases/100 000 pop)[c]	**299**	187–424
Mortality (deaths/100 000 pop/yr)[c]	**29**	18–42
Of new adult TB cases (15–49yrs), % HIV+[d]	5.2	3.0–8.0
New TB cases multidrug-resistant, 2004 (%)[e]	*2.5*	*1.0–5.0*
Previously treated TB cases multidrug-resistant, 2004 (%)[e]	*15*	*2.1–57*
Surveillance and DOTS implementation, 2005		
Notification rate (new and relapse/100 000 pop/yr)	105	
Notification rate (new ss+/100 000 pop/yr)	46	
DOTS case detection rate (new ss+, %)	**61**	45–96
DOTS treatment success (new ss+ cases, 2004 cohort, %)	**86**	
Of new pulmonary cases notified under DOTS, % smear-positive	56	
Of new cases notified under DOTS, % extrapulmonary	16	
Of new smear-positive cases notified under DOTS, % in women	31	
Of sub-national reports expected, % received at next reporting level[f]	100	
Laboratory services, 2005[g]		
Number of laboratories performing smear microscopy	11 465	
Number of laboratories performing culture	5	
Number of laboratories performing DST	5	
Of laboratories performing smear microscopy, % covered by EQA	100	
Management of MDR-TB, 2005		
Of new cases notified, % receiving DST at start of treatment	0.0	
Of new cases receiving DST at start of treatment, % MDR-TB	–	
Of re-treatment cases notified, % receiving DST	0.0	
Of re-treatment cases receiving DST, % MDR-TB	–	
Collaborative TB/HIV activities, 2005		
National policy of counselling and testing TB patients for HIV?	Yes (only in specific groups)	
National surveillance system for HIV-infection in TB patients?	Yes	
Of TB patients (new and re-treatment) notified, % tested for HIV	2.3	
Of TB patients tested for HIV, % HIV+	22	
Of HIV+ TB patients detected, % receiving CPT	–	
Of HIV+ TB patients detected, % receiving ART	–	
Budget and finance, 2007		
Government contribution to NTP budget (including loans, %)	62	
Government contribution to total cost of TB control (including loans, %)	76	
Government health spending used for TB control (%)	1.7	
NTP budget funded (%)	95	

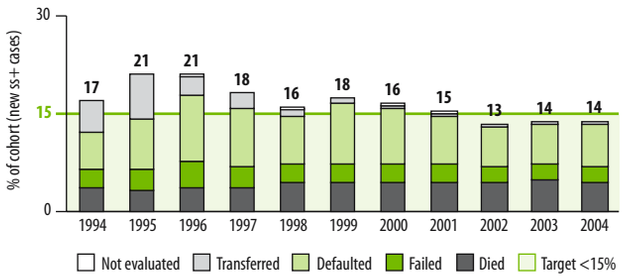
WHO South-East Asia Region (SEAR)
Rank based on estimated number of incident cases (all forms) in 2005



Case notifications
Notification rates for new smear-negative pulmonary cases declining slightly; those for other case types increasing



Unfavourable treatment outcomes, DOTS
Treatment success target reached for 2001 cohort and exceeded in subsequent years



DOTS expansion and enhancement	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
DOTS coverage (%)	1.5	2.0	2.3	9.0	14	30	45	52	67	84	91
DOTS notification rate (new & relapse/100 000 pop)	0.5	1.6	1.9	3.0	12	21	39	52	75	97	104
DOTS notification rate (new ss+/100 000 pop)	0.2	0.7	0.8	1.3	5.3	9.3	18	23	34	43	46
DOTS case detection rate (all new cases, %)	0.3	0.9	1.0	1.7	6.7	12	22	29	42	54	58
DOTS case detection rate (new ss+, %)	0.3	0.9	1.1	1.7	7.0	12	24	31	45	57	61
Case detection rate within DOTS areas (new ss+, %)[h]	19	44	46	19	52	41	53	60	67	68	67
DOTS treatment success (new ss+, %)	79	79	82	84	82	84	85	87	86	86	–
DOTS re-treatment success (ss+, %)	70	67	65	72	69	71	69	72	70	73	–

IMPLEMENTING THE STOP TB STRATEGY[1]

Pursue high-quality DOTS expansion and enhancement

Budget (2006): US$ 56 million — Gap (2006): US$ 0
Budget (2007): US$ 62 million — Gap (2007): US$ 1.9 million

Achievements

- Expanded DOTS to the entire country, with 100% geographical coverage in March 2006
- Received approval for GFATM round 6 proposal for TB control activities
- Completed expansion of EQA for smear microscopy to 6 large states; completed training of staff in EQA in remaining states, and revised the NTP guidelines for EQA
- Revised standardized NTP training modules to include all components of the Stop TB Strategy
- Produced 6th annual report of NTP activities

Planned activities

- Strengthen human resource capacity of central TB division using regular MoH budget
- Advocate with state authorities to provide continued political and financial support to TB control as a critical health priority
- Improve the capacity of supervisors at all levels to analyse programme data and to improve performance
- Complete EQA expansion to all states by end of 2006, and evaluate EQA procedures and implementation to date
- Strengthen state-level intermediate reference laboratories in an additional 10 sites
- Establish a network of at least 24 state-level accredited laboratories with quality-controlled culture and DST facilities (by 2009)

Challenges

- Reversing the recent decreases in case detection and suspect investigation rates in several states
- Improving generally poor programme performance in several large states with weak general health systems to increase case detection and cure rates, and decrease defaulter rates
- Ensuring adequate numbers of national reference laboratory staff to carry out supervision to all states, and ensuring that posts of laboratory technicians and microbiologists at state level are filled
- Improving capacity to interpret and act on the large amount of data collected

Address TB/HIV, MDR-TB and other challenges

Budget (2006): US$ 0.7 million — Gap (2006): US$ 0
Budget (2007): US$ 3.1 million — Gap (2007): US$ 1.1 million

Achievements

- Initiated training on collaborative TB/HIV activities for staff in the NTP and NAP
- Completed HIV surveillance among TB patients in 4 sentinel sites in states with high HIV prevalence (13 million total population)
- Completed a DRS in 1 state (55 million population), started a DRS in another state (104 million), and planning DRS in 2 additional states (80 million and 184 million)
- Prepared a plan for gradual implementation of MDR-TB management
- Developed TB plan specifically for tribal population (about 8% of total population), and a plan to monitor programme performance in the country's poorest districts

Planned activities

- Establish a TB/HIV technical working group at national level
- Establish mechanism for the provision of CPT to HIV-infected TB patients
- Implement MDR-TB treatment in the states of Gujarat and Maharashtra, and accelerate implementation of the national plan to manage MDR-TB patients
- Decentralize DOT further, making treatment observation more convenient to patients, particularly in urban slum and remote and tribal areas

Challenges

- Coordinating TB/HIV services as NAP services are mainly provided at the district level, while RNTCP services are fully decentralized to the peripheral and community levels
- Despite increasing numbers of facilities providing HIV testing for TB patients, numbers of facilities providing ART and CPT for HIV-infected TB patients are limited
- Regulating the use of second-line anti-TB drugs, especially in the private sector

Contribute to health system strengthening

Budget[2] (2006): US$ 0 — Gap (2006): US$ 0
Budget (2007): US$ 0 — Gap (2007): US$ 0

Achievements

- Interacted with health authorities responsible for planning and implementing the National Rural Health Mission (NRHM: a reform programme aimed at improving primary health-care infrastructure, increasing public health staffing and improving coordination of public health programmes)
- Provided contractual NTP staff to perform general health service duties and duties for other programmes (e.g. contractual laboratory technicians perform malaria investigations and general laboratory duties in addition to smear microscopy)
- Upgraded laboratories and provided microscopes and consumables to laboratories in general health facilities

[1] Unless otherwise specified, achievements are for financial year 2005; planned activities are for financial year 2006. Budgets and gaps are for financial years.
[2] While there is no specific budget line for this component of the Stop TB Strategy, the NTP contributes significantly to health systems strengthening as illustrated by the activities listed here.

IMPLEMENTING THE STOP TB STRATEGY

Planned activities

- Continue interaction with NRHM at central, state and district levels to identify and address general weaknesses in the health system, such as vacancies, absenteeism, or frequent transfers of laboratory technicians and other staff
- Explore optimal sharing of human resources within the primary health-care network and across public health programmes, including laboratory technicians, medical officers, nurses and outreach workers

Challenges

- Low public health expenditure, with focus on hospital sector in urban areas and subsidization of the non-poor, as well as very low health insurance coverage
- Ensuring that anti-TB drug procurement, core full-time NTP staffing, reporting, and TB-specific financing are continued under the NRHM
- Lack of organized health care in urban slums and poor access to health care in remote and tribal areas
- Unregulated very large private sector, poor information system on the availability, distribution and competencies of private providers, and unregulated drug sales

Engage all care providers

Budget (2006): US$ 4.3 million
Budget (2007): US$ 4.7 million

Gap (2006): US$ 0
Gap (2007): US$ 0.4 million

Achievements

- Involved institutions belonging to organized health-care service networks, such as public hospitals, medical colleges, railway health facilities, and facilities covered by employer-based social insurance schemes in PPM initiatives
- Engaged the Indian Medical Association fully to advocate the application of International Standards for Tuberculosis Care among its members
- Expanded intensified PPM from 14 districts (47 million population) to 70 districts (146 million population), and scaled up engagement of NGOs and private practitioners nationwide
- Developed training modules for private practitioners, incorporating the International Standards for Tuberculosis Care
- Developed and distributed PPM kit for advocacy among private practitioners

Planned activities

- Implement a large-scale PPM initiative
- Indian Medical Association to disseminate the International Standards for Tuberculosis Care in 5 states (GFATM-supported activity)
- Review and revise existing guidelines for NGO and PPM schemes to include corporate sector involvement

Challenges

- Enormous number of private practitioners, private hospitals, NGO/mission hospitals, and various public sector providers still not involved in PPM initiatives
- Consolidating public sector commitment at state and district levels to engage with private sector providers
- Weak regulatory framework for private sector health care

Empower people with TB, and communities

Budget (2006): US$ 4.2 million
Budget (2007): US$ 4.6 million

Gap (2006): US$ 0
Gap (2007): US$ 0.03 million

Achievements

- Used cured patients and community volunteers in advocacy activities and DOT provision

Planned activities

- Recruit NTP communication facilitators to generate awareness and social mobilization in a selected small number of districts
- Improve communication in the community to alert people to the location of facilities providing TB diagnosis and treatment free-of-charge

Challenges

- Planning and conducting ACSM activities

Enable and promote research

Budget (2006): US$ 0.7 million
Budget (2007): US$ 0.1 million

Gap (2006): US$ 0
Gap (2007): US$ 0.02 million

Achievements

- Developed an extensive operational research agenda, including impact assessment studies, in consultation with experts, and widely disseminated the results through the NTP web site
- Offered a special thesis grant to postgraduate students at medical colleges interested in conducting TB-related research

Planned activities

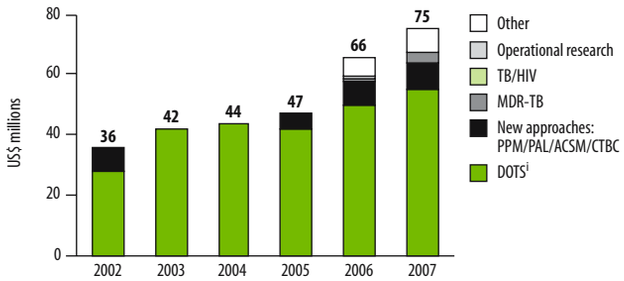
- Plan a sub-national population-based prevalence of disease survey in 6 sub-district sentinel sites for 2007-2010, and compare with data from 2000
- Conduct a population-based prevalence of infection survey, using a national sample divided into 4 zones in 2007–2009, and compare with results from the 2001–2003 survey
- Conducted a population-based mortality survey in 2 states (combined population of 119 million) using verbal autopsy, expand mortality study to 1 additional state in 2007–2008, and repeat it in all 3 states in 2011–2013

Challenges

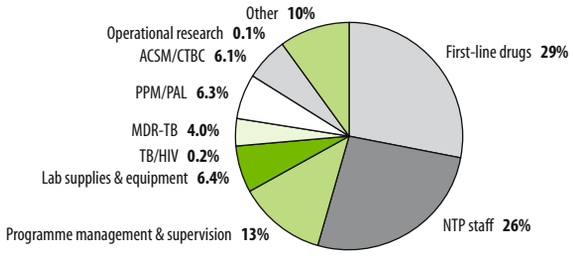
- Finding necessary resources to conduct impact assessments (i.e. funding, staff time and technical expertise)

FINANCING THE STOP TB STRATEGY

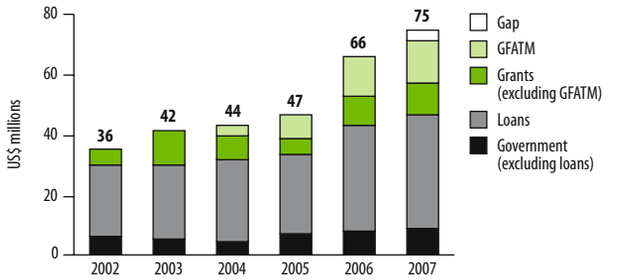
NTP budget by line item
Budget steadily growing with increasing share for PPM, ACSM and MDR-TB treatment in 2006 and 2007



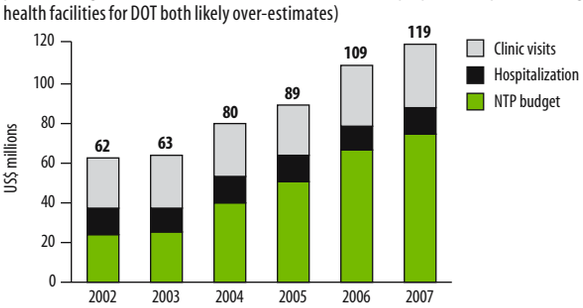
NTP budget by line item, 2007
Component 1 of Stop TB Strategy (Pursue high-quality DOTS expansion and enhancement) accounts for 74% of NTP budget



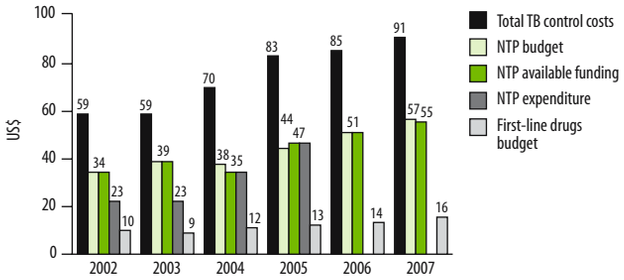
NTP budget by source of funding
Substantial increase in budget and funding in 2006 and 2007, mainly from the GFATM and a World Bank loan



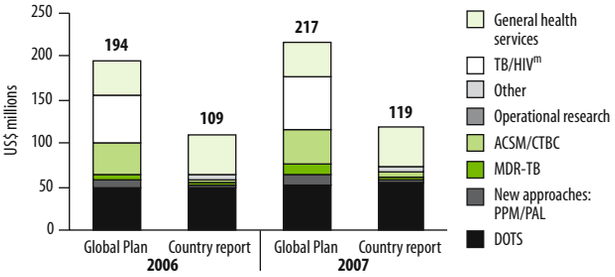
Total TB control costs by line item[j]
Hospitalization costs are for 11 700 dedicated TB beds, costs for clinic visits based on 75% patients using health facilities for DOT (number of beds and proportion of patients using health facilities for DOT both likely over-estimates)



Per patient costs, budgets and expenditures[k]
Increasing budget per patient as TB control is broadened in line with the Stop TB Strategy



Comparison of country report and Global Plan:[l] total TB control costs, 2006–2007
Global Plan and country report similar except for TB/HIV and ACSM; in India most activities related to TB/HIV are included in NAP rather than NTP budgets, ACSM estimates in Global Plan were based on evidence from outside India



SOURCES, METHODS AND ABBREVIATIONS

[a] *World population prospects – the 2004 revision*. New York, United Nations Population Division, 2005.

[b] Incidence, prevalence and mortality estimates include patients infected with HIV. Estimate of smear-positive incidence based on 3-year national tuberculin survey completed during 2003 (Chadha, VK. Tuberculosis epidemiology in India: a review. International Journal of Tuberculosis and Lung Disease, 2005, 9:1072–1082). Estimates of smear-positive prevalence from Gopi PG et al. Estimation of burden of tuberculosis in India for the year 2000. *Indian Journal of Medical Research*, 2005, 122:243–248. WHO estimate of total prevalence of TB (458/100 000 pop in year 2000) is lower than that derived directly from survey (846/100 000 pop). Incidence rate assumed to be constant in absence of contrary evidence, but estimated prevalence and mortality rates decline with growing proportion of cases treated.

[c] MDG and STB Partnership indicators shown in bold. Targets are 70% case detection of smear-positive cases under DOTS, 85% treatment success, to ensure that the incidence rate is falling by 2015, and to reduce incidence rates and halve 1990 prevalence and mortality rates by 2015. Estimates for 1990 are prevalence 570/100 000 pop and mortality 42/100 000 pop/yr.

[d] Estimate of HIV prevalence in incident TB cases (15–49 yo) derived from UNAIDS estimate of HIV prevalence in the general population, using assumed incidence rate ratio of 6.

[e] MDR-TB figures shown in regular type are survey data from the database of the WHO/IUATLD Global Project on Anti-Tuberculosis Drug Resistance Surveillance. Figures in italics are estimates from the following source: Zignol M et al. Global incidence of multidrug-resistant tuberculosis. *Journal of Infectious Diseases*, 2006, 194:479–485.

[f] Completeness of reporting assessed at lowest level in reporting heirarchy for which information is available.

[g] For routine diagnosis, there should be at least one laboratory providing smear microscopy per 100 000 population. By 2009, the NTP plans to have established a network of at least 24 state-level accredited laboratories with quality-controlled culture and DST facilities in order to meet the requirements of the programme, including the routine management of MDR-TB.

[h] The Indian RNTCP has estimated subnational incidence rates, and can therefore calculate a more precise estimate of the case detection rate within DOTS areas than the ratio of DOTS case detection rate to DOTS coverage (the measure used in this report for all other countries).

[i] DOTS includes the following components shown in the pie chart at right: first-line drugs, NTP staff, programme management and supervision, and laboratory supplies and equipment.

[j] Total TB control costs for 2002–2005 are based on expenditure, whereas those for 2006–2007 are based on budgets. Estimates of the costs of clinic visits and hospitalization are WHO estimates based on data provided by the NTP and from other sources. See Methods for further details.

[k] NTP available funding for 2004–2005 is based on the amount of funding actually received, using retrospective data; available funding for 2002–2003 and 2006–2007 is based on prospectively reported budget data, and estimated as the total budget minus any reported funding gap.

[l] Estimates in the Global Plan were presented for regions rather than countries. See Methods for explanation of calculation of individual country estimates from regional estimates.

[m] Global Plan estimates cover the full costs of collaborative TB/HIV activities, but these costs may be budgeted for by either the NTP or the National AIDS Programme. In this graph, country reports include only the NTP budget. This may explain the apparent discrepancy between the Global Plan and country reports.

– indicates not available; pop, population; ss+, sputum smear-positive; ss-, sputum smear-negative pulmonary; unk, pulmonary – sputum smear not done or result unknown; yr, year.

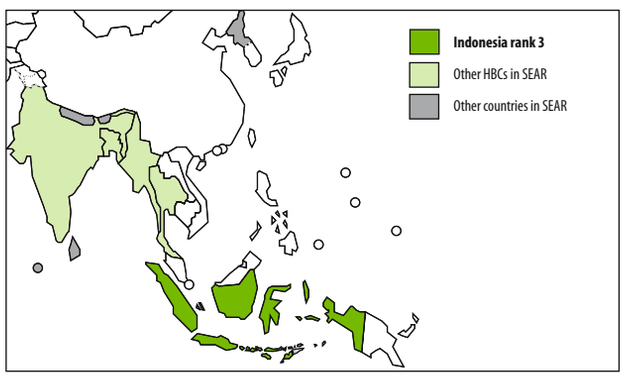
Indonesia

Indonesia continues to make substantial increases in its case detection rate, but has fallen just short of the global target of 70% at the end of 2005. Improvements in the quality of DOTS services in health centres, including improved management and accelerated training of staff, have been the foundation for this progress. However, the laboratory network requires strengthening to sustain these gains and embark on services for culture and DST. An increased budget for new initiatives such as PPM and community involvement should result in a higher case detection rate in the coming years.

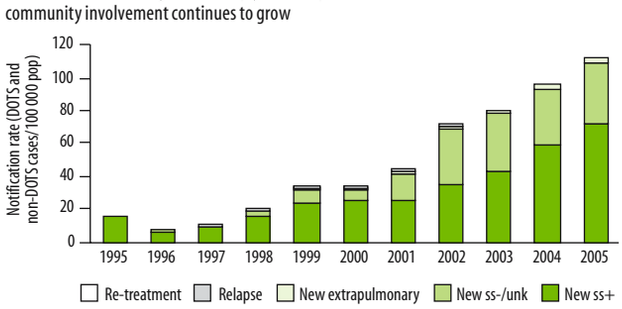
SURVEILLANCE AND EPIDEMIOLOGY

Population (thousands)[a]	222 781	
TB burden, 2005 estimates (with 2.5 and 97.5 centiles)[b]		
Incidence (all cases/100 000 pop/yr)	239	154–330
Trend in incidence rate (%/yr, 2004–2005)[c]	**-2.4**	
Incidence (ss+/100 000 pop/yr)	108	68–150
Prevalence (all cases/100 000 pop)[c]	**262**	162–379
Mortality (deaths/100 000 pop/yr)[c]	**41**	25–60
Of new adult TB cases (15–49yrs), % HIV+[d]	0.8	0.5–1.3
New TB cases multidrug-resistant, 2004 (%)[e]	*1.6*	*0.3–8.7*
Previously treated TB cases multidrug-resistant, 2004 (%)[e]	*14*	*2.2–58*
Surveillance and DOTS implementation, 2005		
Notification rate (new and relapse/100 000 pop/yr)	114	
Notification rate (new ss+/100 000 pop/yr)	71	
DOTS case detection rate (new ss+, %)	**66**	47–105
DOTS treatment success (new ss+ cases, 2004 cohort, %)	**90**	
Of new pulmonary cases notified under DOTS, % smear-positive	65	
Of new cases notified under DOTS, % extrapulmonary	2.5	
Of new smear-positive cases notified under DOTS, % in women	41	
Of sub-national reports expected, % received at next reporting level[f]	93	
Laboratory services, 2005[g]		
Number of laboratories performing smear microscopy	3 320	
Number of laboratories performing culture	41	
Number of laboratories performing DST	22	
Of laboratories performing smear microscopy, % covered by EQA	99	
Management of MDR-TB, 2005		
Of new cases notified, % receiving DST at start of treatment	–	
Of new cases receiving DST at start of treatment, % MDR-TB	–	
Of re-treatment cases notified, % receiving DST	–	
Of re-treatment cases receiving DST, % MDR-TB	–	
Collaborative TB/HIV activities, 2005		
National policy of counselling and testing TB patients for HIV?	No	
National surveillance system for HIV-infection in TB patients?	No	
Of TB patients (new and re-treatment) notified, % tested for HIV	–	
Of TB patients tested for HIV, % HIV+	–	
Of HIV+ TB patients detected, % receiving CPT	–	
Of HIV+ TB patients detected, % receiving ART	–	
Budget and finance, 2007		
Government contribution to NTP budget (including loans, %)	42	
Government contribution to total cost of TB control (including loans, %)	46	
Government health spending used for TB control (%)	2.7	
NTP budget funded (%)	100	

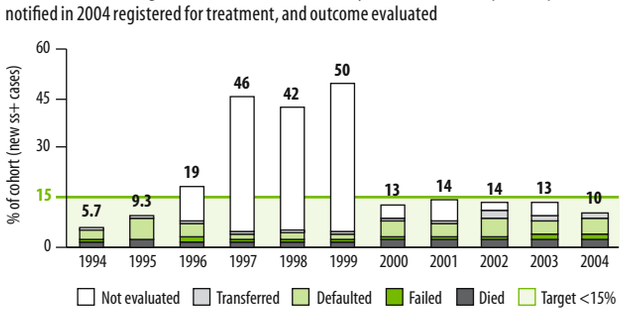
WHO South-East Asia Region (SEAR)
Rank based on estimated number of incident cases (all forms) in 2005



Case notifications
Notifications continuing to rise steeply as more providers collaborate with the NTP and community involvement continues to grow



Unfavourable treatment outcomes, DOTS
Treatment success target reached for 5th consecutive year; all new smear-positive patients notified in 2004 registered for treatment, and outcome evaluated



DOTS expansion and enhancement	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
DOTS coverage (%)	6.0	14	28	80	90	98	98	98	98	98	98
DOTS notification rate (new & relapse/100 000 pop)	1.9	7.3	11	20	33	32	44	72	80	96	114
DOTS notification rate (new ss+/100 000 pop)	1.8	5.9	9.7	16	24	24	25	36	43	59	71
DOTS case detection rate (all new cases, %)	0.6	2.4	3.7	6.8	12	12	16	27	32	39	47
DOTS case detection rate (new ss+, %)	1.3	4.4	7.4	12	19	20	22	31	38	53	66
Case detection rate within DOTS areas (new ss+, %)[h]	22	32	26	16	21	20	22	31	39	54	68
DOTS treatment success (new ss+, %)	91	81	54	58	50	87	86	86	87	90	–
DOTS re-treatment success (ss+, %)	32	–	–	73	70	72	83	78	78	82	–

IMPLEMENTING THE STOP TB STRATEGY[1]

Pursue high-quality DOTS expansion and enhancement

Budget (2006): US$ 42 million Gap (2006): US$ 0
Budget (2007): US$ 38 million Gap (2007): US$ 0

Achievements

- Incorporated Stop TB Strategy into 2006–2010 strategic plan to control TB in Indonesia
- Accelerated training of health centre staff in DOTS to clear backlog of untrained staff
- Secured full funding for all planned TB control activities
- Increased case-finding as a result of strengthening and optimizing DOTS delivery through health centres, and expanding into hospitals and other governmental agencies
- Computerized reporting system functioning well, with over 95% of district reports received by provinces, and all provinces reporting to the national level; efforts made by NTP to evaluate impact of missing reports, and to obtain them in due course
- Produced annual report of NTP activities
- Established national TB laboratory working group to assist in the improvement of the laboratory network, review and update TB laboratory guidelines and training curriculum, and assist in the planning, monitoring and evaluation of TB laboratory activities

Planned activities

- Update the EQA guidelines and train provincial-level laboratories on EQA to streamline and standardize the EQA programme

Challenges

- Reducing user fees in hospitals in order to improve case holding
- Ensuring consistent implemenation of EQA by provincial and intermediate laboratories in absence of NRL
- Strengthening supervisory capacity at central, provincial and district levels, and ensuring consistent use of standardized checklists and written feedback

Address TB/HIV, MDR-TB and other challenges

Budget (2006): US$ 0.8 million Gap (2006): US$ 0
Budget (2007): US$ 2.5 million Gap (2007): US$ 0

Achievements

- Finalized and produced guidelines on the treatment of TB among HIV-infected patients
- Piloted a TB/HIV seroprevalence study in one province
- Prepared a plan for the implementation of an MDR-TB pilot project
- Introduced DOTS in prison clinics in collaboration with the Ministry of Justice
- Re-established TB services in tsunami- and earthquake-affected areas
- Piloted provision of food aid for TB patients in collaboration with the World Food Programme

Planned activities

- Establish DOTS centres in 24 hospitals with ART services and plan to scale up DOTS and ART services to 75 hospitals
- Include collaborative TB/HIV activities in revised national TB control guidelines
- Apply to the GLC for provision of second-line anti-TB drugs, in context of a fully funded GFATM proposal for the management of MDR-TB patients

Challenges

- Improving collaboration between NTP and NAP at central and health facility levels
- Establishing VCT centres at health facilities
- Assuring quality of laboratories before expanding surveys of drug resistance

Contribute to health system strengthening

Budget (2006): US$ 1.1 million Gap (2006): US$ 0
Budget (2007): US$ 1.9 million Gap (2007): US$ 0

Achievements

- Focused on optimizing public health centre activities in eastern Indonesia using findings from the TB prevalence survey
- Strengthened managerial capacity at provincial level through establishment of DOTS teams
- Improved general recording and reporting system through widespread use of TB electronic recording and reporting system

Planned activities

- Add monitoring and evaluation officers to the provincial DOTS teams

Challenges

- Improving infrastructure and increasing number of staff in eastern Indonesia where prevalence of TB is highest
- Expanding partnerships (TB Gerdunas) at the provincial and district levels to strengthen bonds between the NTP and various agencies (e.g. government sectors, NGOs, professional organizations)

[1] Unless otherwise specified, achievements are for financial year 2005; planned activities are for financial year 2006. Budgets and gaps are for financial years.

IMPLEMENTING THE STOP TB STRATEGY

Engage all care providers

Budget (2006): US$ 8.1 million Gap (2006): US$ 0
Budget (2007): US$ 8.2 million Gap (2006): US$ 0

Achievements

- Improved links with hospital and public health care system through training
- Expanded DOTS to hospitals and other governmental institutions
- Used university and hospital laboratories as referral laboratories for EQA cross-checking of microscopy slides
- International Standards for Tuberculosis Care officially endorsed by 5 professional organizations on World TB Day 2006
- Translated the International Standards for Tuberculosis Care and produced into a pocket book for health facility use

Planned activities

- Finalize and print the hospital DOTS linkage guidelines
- Hold sensitization workshops with pulmonologists and hospital staff to roll out the International Standards for Tuberculosis Care
- Assess TB workload and practices in hospitals as well as potential for TB/HIV collaboration and management of MDR-TB patients

Challenges

- Involving large numbers of hospitals in DOTS: it is likely that a large number of TB patients are treated in hospitals which are not implementing DOTS
- Strengthening support structures for PPM at provincial and district levels, including interface mechanisms between hospitals, lung clinics, the NTP and health-care centres

Empower people with TB, and communities

Budget (2006): US$ 2.1 million Gap (2006): US$ 0
Budget (2007): US$ 4.7 million Gap (2007): US$ 0

Achievements

- Continued to involve communities in different parts of the country in TB control services, including Ninik Mamak (clan leaders), Bidan Desa (midwives), Aisyiah (Islamic women's organizations), women's groups (PKK) and district-level coalitions
- Mobilized communities in TB control in 10% of the population, including in treatment support, case detection and advocacy for local political commitment
- Patients' Charter for Tuberculosis Care translated, and launched by the MoH on World TB Day 2006
- Mobilized substantial increase in funding for ACSM activities
- Involved over 25 NGOs in TB control through national TB Gerdunas as part of the Stop TB Partnership Forum

Planned activities

- Assess NGO and community potential, and involve more NGOs through subcontracting of services
- Pilot-test "community TB posts" to improve access to TB diagnosis and treatment in remote areas with poor access to health-care services
- Organize and map financial and socioeconomic information to inform activities to control TB
- Develop training material and network to ensure adequate implementation of activities
- Hold nationwide yearlong mass media TB Campaign to raise awareness of TB and its control

Challenges

- Improving access to diagnosis and treatment for people living in geographically diverse and remote areas and islands, including by reducing transport costs
- Expanding human resources for ACSM and developing new capacity-building strategy and materials
- Designing and implementing a monitoring and evaluation system for ACSM

Enable and promote research

Budget (2006): US$ 2.0 million Gap (2006): US$ 0
Budget (2007): US$ 2.1 million Gap (2007): US$ 0

Achievements

- Established national TB operational research group with a core group of researchers and links with universities and research institutions
- Initiated TB mortality study in collaboration with the Indonesian Mortality Registration System
- Introduced tuberculin survey in 2006 in one province, to be phased into other provinces in 2007
- Started drug resistance survey in one large province
- Analysed and put into operation the national prevalence survey findings for area-specific planning

Planned activities

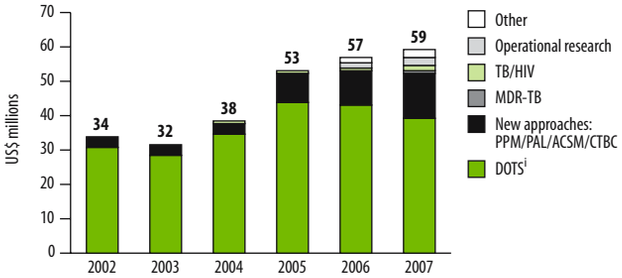
- Improve information about mortality through the Indonesian Mortality Registration Strengthening System
- Use results of past (2004) and planned (2009–2010) national population-based surveys of disease, infection and mortality, in conjunction with analysis of routinely collected data (analysis of trends, geographical comparisons) to assess impact of TB control
- Undertake a cost-effectiveness study on various PPM models, and a district financing study

Challenges

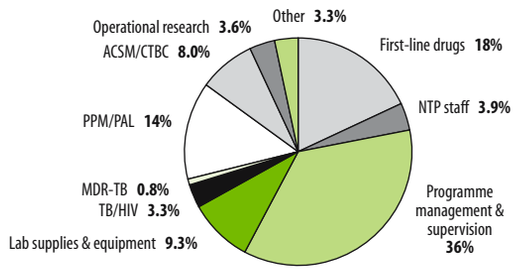
- Involving the NTP in operational research projects, which are currently implemented in collaboration between province/district and donor/research agencies without national involvement, in an era of decentralization
- Reconciling the various budgeting and operational approaches required to address the wide variability of geographical and operational aspects in different regions of the country

FINANCING THE STOP TB STRATEGY

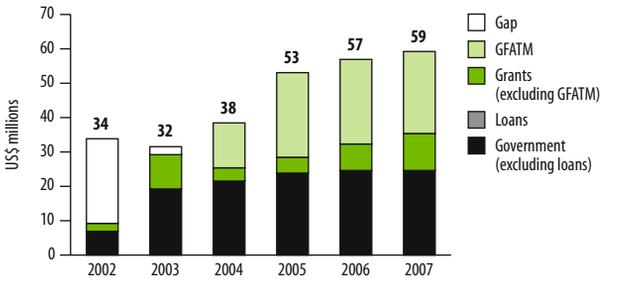
NTP budget by line item
Most of the budget is for component 1 of the Stop TB Strategy (Pursue high-quality DOTS expansion and enhancement), but there is a growing budget for other components, notably PPM and ACSM



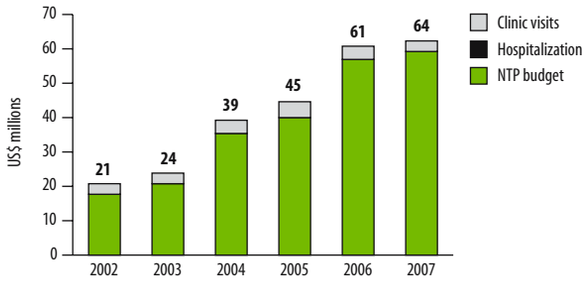
NTP budget by line item, 2007
Compared with other Asian HBCs, a relatively large share of the budget is for PPM and a relatively small share is for staff



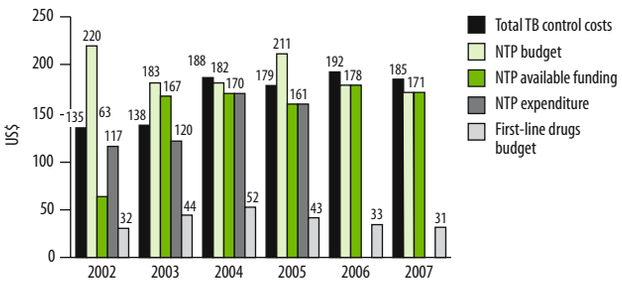
NTP budget by source of funding
Substantial increase in funding over the past five years, mainly as a result of successful GFATM applications, with full funding since 2004



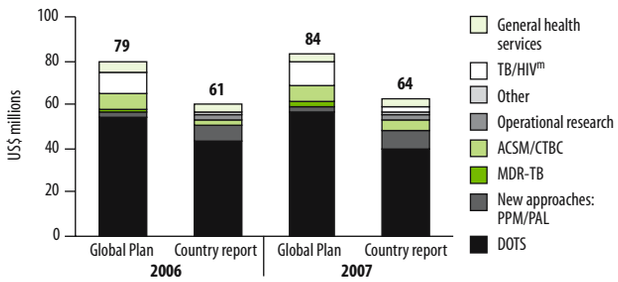
Total TB control costs by line item[j]
NTP budget accounts for biggest share of total TB control costs



Per patient costs, budgets and expenditures[k]
Budget per patient similar in 2006 and 2007



Comparison of country report and Global Plan:[l] total TB control costs, 2006–2007
Cost for TB/HIV and ACSM higher in Global Plan compared with country report; otherwise similar, allowing for fact that budget for "new approaches" already being implemented in 2005 was part of "DOTS" in Global Plan



SOURCES, METHODS AND ABBREVIATIONS

[a] *World population prospects – the 2004 revision*. New York, United Nations Population Division, 2005.
[b] Incidence, prevalence and mortality estimates include patients infected with HIV. Estimates of incidence and prevalence, and trend in incidence, revised in 2004 following national TB prevalence survey.
[c] MDG and STB Partnership indicators shown in bold. Targets are 70% case detection of smear-positive cases under DOTS, 85% treatment success, to ensure that the incidence rate is falling by 2015, and to reduce incidence rates and halve 1990 prevalence and mortality rates by 2015. Estimates for 1990 are prevalence 440/100 000 pop and mortality 91/100 000 pop/yr.
[d] Estimate of HIV prevalence in incident TB cases (15–49 yo) derived from UNAIDS estimate of HIV prevalence in the general population, using assumed incidence rate ratio of 6.
[e] MDR-TB figures shown in regular type are survey data from the database of the WHO/IUATLD Global Project on Anti-Tuberculosis Drug Resistance Surveillance. Figures in italics are estimates from the following source: Zignol M et al. Global incidence of multidrug-resistant tuberculosis. *Journal of Infectious Diseases*, 2006, 194:479–485.
[f] Completeness of reporting assessed at lowest level in reporting hierarchy for which information is available.
[g] For routine diagnosis, there should be at least one laboratory providing smear microscopy per 100 000 population. To provide culture for diagnosis of paediatric, extra-pulmonary and ss-/HIV+ TB, as well as DST for re-treatment and failure cases, there should be at least one culture facility and one DST facility in each of the 30 states.
[h] Case detection within DOTS areas calculated by dividing national case detection rate (new ss+) by DOTS coverage.
[i] DOTS includes the following components shown in the pie chart at right: first-line drugs, NTP staff, programme management and supervision, and laboratory supplies and equipment.
[j] Total TB control costs for 2002–2005 are based on expenditure, whereas those for 2006–2007 are based on budgets. Estimates of the costs of clinic visits and hospitalization are WHO estimates based on data provided by the NTP and from other sources. See Methods for further details.
[k] NTP available funding for 2004–2005 is based on the amount of funding actually received, using retrospective data; available funding for 2002–2003 and 2006–2007 is based on prospectively reported budget data, and estimated as the total budget minus any reported funding gap.
[l] Estimates in the Global Plan were presented for regions rather than countries. See Methods for explanation of calculation of individual country estimates from regional estimates.
[m] Global Plan estimates cover the full costs of collaborative TB/HIV activities, but these costs may be budgeted for by either the NTP or the National AIDS Programme. In this graph, country reports include only the NTP budget. This may explain the apparent discrepancy between the Global Plan and country reports.

– indicates not available; pop, population; ss+, sputum smear-positive; ss-, sputum smear-negative pulmonary; unk, pulmonary – sputum smear not done or result unknown; yr, year.

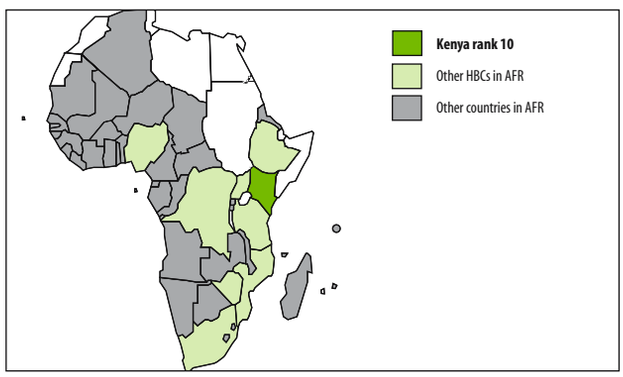
Kenya

The estimated case detection rate for Kenya is still about 50%, but with new data available concerning HIV in TB patients and improved monitoring and evaluation it should soon be possible to revise this estimate. Laboratory infrastructure and performance remain weak. The NTP has started to implement new initiatives in PPM and community involvement to improve the quality of TB control services and increase case-finding. Current initiatives in TB/HIV have been strengthened and by the end of 2006, collaborative TB/HIV activities were expanded to 70% of districts. HIV testing of TB patients has increased rapidly, with 60% of all TB patients tested for HIV in the last quarter of 2006. To maintain these initiatives and to implement them more widely, the currently large funding gap for 2007 needs to be filled.

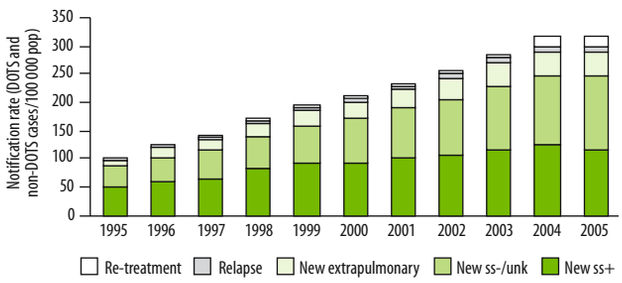
SURVEILLANCE AND EPIDEMIOLOGY

Population (thousands)[a]	34 256	
TB burden, 2005 estimates (with 2.5 and 97.5 centiles)[b]		
Incidence (all cases/100 000 pop/yr)	641	490–806
Trend in incidence rate (%/yr, 2004–2005)[c]	**5.5**	
Incidence (ss+/100 000 pop/yr)	276	207–353
Prevalence (all cases/100 000 pop)[c]	**936**	657–1265
Mortality (deaths/100 000 pop/yr)c	**140**	102–182
Of new adult TB cases (15–49yrs), % HIV+[d]	29	21–34
New TB cases multidrug-resistant, 1995 (%)[e]	0.0	0.0–0.7
Previously treated TB cases multidrug-resistant, 1995 (%)[e]	0.0	0.0–6.3
Surveillance and DOTS implementation, 2005		
Notification rate (new and relapse/100 000 pop/yr)	300	
Notification rate (new ss+/100 000 pop/yr)	118	
DOTS case detection rate (new ss+, %)	**43**	32–54
DOTS treatment success (new ss+ cases, 2004 cohort, %)	**80**	
Of new pulmonary cases notified under DOTS, % smear-positive	48	
Of new cases notified under DOTS, % extrapulmonary	15	
Of new smear-positive cases notified under DOTS, % in women	43	
Of sub-national reports expected, % received at next reporting level[f]	100	
Laboratory services, 2005[g]		
Number of laboratories performing smear microscopy	619	
Number of laboratories performing culture	1	
Number of laboratories performing DST	1	
Of laboratories performing smear microscopy, % covered by EQA	12	
Management of MDR-TB, 2005		
Of new cases notified, % receiving DST at start of treatment	0.0	
Of new cases receiving DST at start of treatment, % MDR-TB	–	
Of re-treatment cases notified, % receiving DST	20	
Of re-treatment cases receiving DST, % MDR-TB	2.4	
Collaborative TB/HIV activities, 2005		
National policy of counselling and testing TB patients for HIV?	Yes	
National surveillance system for HIV-infection in TB patients?	Yes	
Of TB patients (new and re-treatment) notified, % tested for HIV	14	
Of TB patients tested for HIV, % HIV+	57	
Of HIV+ TB patients detected, % receiving CPT	80	
Of HIV+ TB patients detected, % receiving ART	20	
Budget and finance, 2007		
Government contribution to NTP budget (including loans, %)	3.1	
Government contribution to total cost of TB control (including loans, %)	9.1	
Government health spending used for TB control (%)	13	
NTP budget funded (%)	6.9	

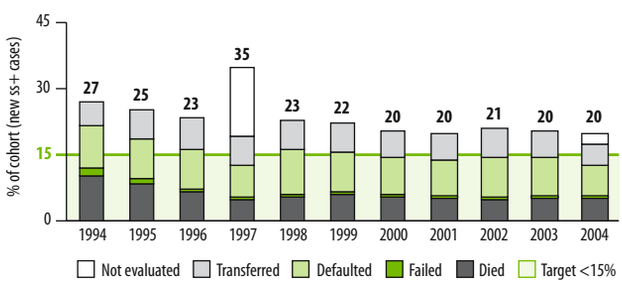
WHO African Region (AFR)
Rank based on estimated number of incident cases (all forms) in 2005



Case notifications
Rising notification rates are likely to reflect both improvements in case-finding and increased incidence linked to HIV; the proportion of pulmonary cases confirmed by smear is low and falling, perhaps due to poor diagnosis or HIV coinfection



Unfavourable treatment outcomes, DOTS
Treatment success rate high compared with other high-HIV settings in Africa; steps to reduce the number of patients classified as not evalulated, defaulted or transferred would probably improve outcomes further



DOTS expansion and enhancement	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
DOTS coverage (%)	15	100	100	100	100	100	100	100	100	100	100
DOTS notification rate (new & relapse/100 000 pop)	103	125	139	167	191	189	233	250	280	301	300
DOTS notification rate (new ss+/100 000 pop)	51	61	66	82	91	85	100	107	117	123	118
DOTS case detection rate (all new cases, %)	46	48	45	47	48	42	47	46	47	48	45
DOTS case detection rate (new ss+, %)	55	57	53	56	55	46	49	48	48	47	43
Case detection rate within DOTS areas (new ss+, %)[h]	370	57	53	56	55	46	49	48	48	47	43
DOTS treatment success (new ss+, %)	75	77	65	77	78	80	80	79	80	80	–
DOTS re-treatment success (ss+, %)	72	59	55	64	73	76	77	77	75	76	–

IMPLEMENTING THE STOP TB STRATEGY[1]

Pursue high-quality DOTS expansion and enhancement

Budget (2006): US$ 17 million
Budget (2007): US$ 18 million
Gap (2006): US$ 12 million
Gap (2007): US$ 17 million

Achievements

- Finalized the national strategic TB control plan for 2006–2010 in line with the Global Plan following a national workshop in 2005
- Developed a country emergency plan in collaboration with key national and international partners, in response to the declaration by WHO of TB as an emergency in Africa
- Received approval for GFATM round 6 proposal for TB control activities
- Improved and strengthened monitoring and evaluation of DOTS activities, including quarterly supervision to the provinces/districts; completed reporting from districts to provinces; forwarded supervision reports to national office when follow-up required from national level
- Introduced a new national recording and reporting system in 2005 that includes core indicators for TB/HIV
- Initiated EQA for smear microscopy
- Produced 26th annual report of NTP activities

Planned activities

- Conduct an HR assessment of the NTP, including of the TB/HIV component
- Pilot transition from an 8-month treatment regimen to a 6-month treatment regimen in the first quarter of 2007 in Nairobi, with gradual expansion to the rest of the country
- Expand culture and DST services for TB diagnosis for re-treatment cases

Challenges

- Meeting dramatically increased training needs resulting from the introduction of new initiatives, including new recording and reporting tools
- Maintaining salaries of TB health-care workers in the face of likely stoppage of ISAC funding
- Formulating a comprehensive strategic plan for HRD for TB control and identifying a focal person for its development
- Improving laboratory perfomance; only half of microscopy units with at least one round of EQA showed adequate performance (45 out of 90) in 2005 (corrective action taken in all laboratories with inadequate performance)
- Improving supply of high-quality microscopes, ensuring adequate supervision of provincial and district laboratory staff
- Ensuring adequate coverage of laboratory services following closure of more than 50 laboratories in rural areas since the abolition of user fees; these closures have contributed to decreases in case-finding
- Continuing supervision and reporting by district and provincial TB coordinators given uncertain flows of funding; financial management problems of donors affected these activities in the second half of 2005

Address TB/HIV, MDR-TB and other challenges

Budget (2006): US$ 6.3 million
Budget (2007): US$ 6.3 million
Gap (2006): US$ 3.8 million
Gap (2007): US$ 5.5 million

Achievements

- Established active TB/HIV coordination committees in 10 regions and 30 districts
- Rapidly expanded collaborative TB/HIV activities to more than 70% of districts
- Introduced diagnostic testing and counselling for TB patients throughout the country; by mid 2006, 60% of TB patients were being tested for HIV and this number is expected to increase to 85% by the end of 2006
- Developed and printed TB/HIV training curriculum, referral and recording and reporting tools
- Placed more than 80% of HIV-infected TB patients on CPT
- Enrolled 1779 HIV-positive TB patients on ART (20% of those diagnosed as HIV-infected); by mid-2006 this percentage had risen to 29%
- Hired TB/HIV focal point through PATH country office to implement TB/HIV activities in 10 districts linked to the PEPFAR/PATH grant in line with the national plan
- Expanded comprehensive care centres for TB/HIV services from 38 in 2003 to 210 in 2006, with plans to increase the number to 400 by end of 2008

Planned activities

- Improve infrastructure to create space for HIV testing of TB patients
- Hold joint planning and meetings with NTP and NAP in order to strengthen collaboration
- Increase enrolment on ART to about 10 000 HIV-infected TB patients in 2006
- Start GLC-approved GFATM proposal for treatment of MDR-TB patients headed by Kenyatta Central Hospital, in collaboration with existing MDR-TB task group
- Develop capacity of NRL for sensitivity testing to second-line anti-TB drugs

Challenges

- Securing additional funding for collaborative TB/HIV activities, including training, test kits and infrastructure for testing centres
- Improving the limited access to ART (most comprehensive care centres are centralized in hospitals)
- Resolving new demand for more health-care workers to handle added responsibilities related to TB/HIV care in TB clinics
- Increasing supply of HIV test kits and of anti-retroviral drugs
- Developing a plan to improve case-finding and patient management in underserved slum areas

[1] Unless otherwise specified, achievements are for financial year 2005; planned activities are for financial year 2006. Budgets and gaps are for financial years.

IMPLEMENTING THE STOP TB STRATEGY

Contribute to health system strengthening

Budget (2006): US$ 0 Gap (2006): US$ 0
Budget (2006): US$ 0 Gap (2007): US$ 0

Achievements

- Full participation of the NTP in health sector reform at MoH level

Planned activities

- Improve number and skills of laboratory staff, and equip laboratories with high-quality microscopes
- Hire nurses and medical assistants through the NTP; these staff will benefit the general health system
- Initiate PAL activities in 2006–2007

Challenges

- Improving the poor quality and outdated infrastructure of general health services

Engage all care providers

Budget (2006): US$ 0.5 million Gap (2006): US$ 0.4 million
Budget (2007): US$ 0.3 million Gap (2007): US$ 0.004 million

Achievements

- Scaled up PPM in urban areas, with focus on private hospitals and chest specialists
- Established supervision of private sector providers by district TB officers, and participation by private sector in the national technical assistance teams to the provinces/districts
- Scaled up PPM projects to cover 20 districts, with funding from FIDELIS
- Collaborated with non-NTP laboratories (including those run by private organizations, NGOs, faith-based organizations and the penitentiary system); NTP trained and supervised staff, and provided reagents
- Provided high-quality anti-TB drugs for standardized regimens to the private sector
- Mobilized funding to cover all planned PPM activities

Planned activities

- Maintain PPM in existing areas, and expand PPM to include drug shops, clinical officers, nurses and traditional healers
- Use new recording and reporting tools to capture number of TB patients diagnosed and treated by non-NTP providers

Challenges

- Quantifying the involvement of private-for-profit practitioners in diagnosis, referral and treatment of TB patients across the country
- Establishing a national legal framework for PPM implementation
- Improving skills of NTP staff in order to effectively engage with the private sector
- Defining PPM in the context of TB/HIV (provision of HIV testing, CPT and ART)

Empower people with TB, and communities

Budget (2006): US$ 5.1 million Gap (2006): US$ 3.1 million
Budget (2007): US$ 5.6 million Gap (2007): US$ 5.6 million

Achievements

- Expanded community contribution to TB control (treatment support, defaulter tracing, referral of suspects for screening, health education, social support) to 25% of districts
- Implemented local community initiatives to generate income from the community to pay laboratory staff in rural areas where user fees were abolished
- Developed ACSM policy and implementation plan

Planned activities

- Expand community involvement initiatives to more districts through additional training of health-care workers and supervision support at all levels
- Promote the Patients' Charter for Tuberculosis Care by working closely with affected individuals and communities

Challenges

- Increasing community awareness of TB services in order to reduce delays to diagnosis, and of continued stigma to TB (due to the association with HIV)

Enable and promote research

Budget (2006): US$ 0.2 million Gap (2006): US$ 0.2 million
Budget (2007): US$ 0.2 million Gap (2007): US$ 0.2 million

Achievements

- Developed a national operational research agenda, and hired a biostatistician at the central unit
- Initiated national population-based prevalence of infection survey (ARI), to be completed in first quarter of 2007

Planned activities

- Start a sub-national population-based prevalence of disease survey in one province in 2006–2007, and expand to other parts of the country once funds become available
- Implement operational research projects in TB diagnosis in partnership with national research institutions
- Conduct operational research projects to determine feasibility of HIV testing for all TB suspects rather than just confirmed TB patients
- Plan for the third national drug resistance survey to start in 2007

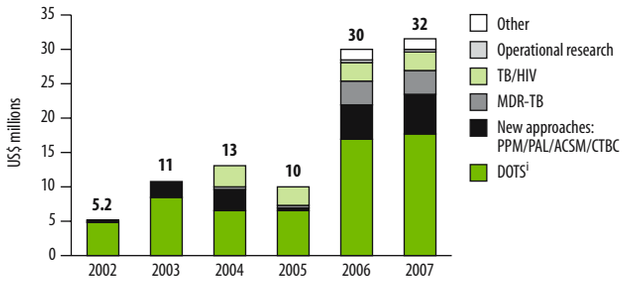
Challenges

- Strengthening HR capacity to implement operational research, and coordinating involvement of research institutions and existing universities and medical schools

FINANCING THE STOP TB STRATEGY

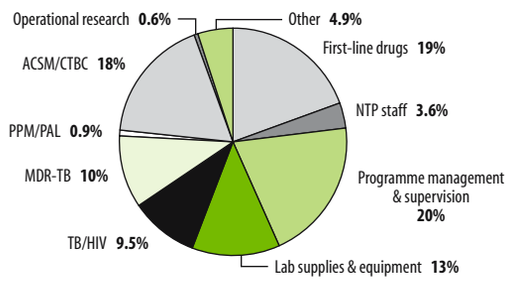
NTP budget by line item

Substantial increase in budget in 2006 and 2007 reflects wide range of planned activities including PPM, CTBC, ACSM, TB/HIV and MDR-TB, as well as strengthening of programme management and supervision and purchase of a buffer stock of first-line drugs



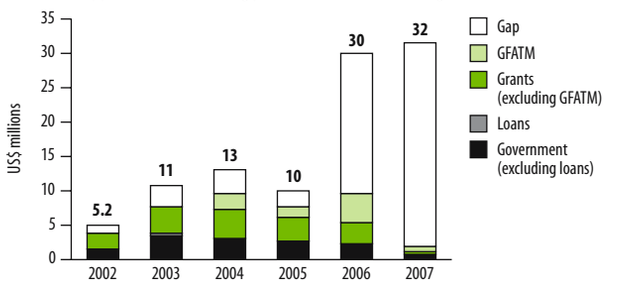
NTP budget by line item, 2007

TB/HIV accounts for largest share of budget among HBCs; this budget covers some costs associated with routine diagnostic testing and ART for HIV+ TB patients, CPT, IPT, training, coordination meetings and a full-time post in the central unit



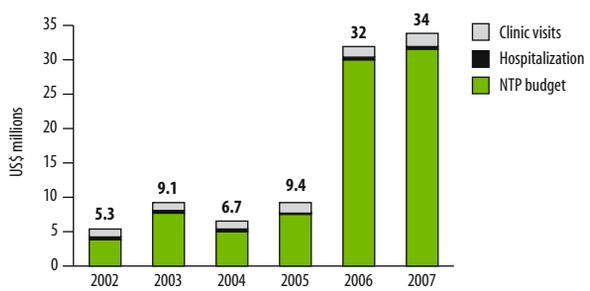
NTP budget by source of funding

Substantial increase in budget for 2006 and 2007, but funding gaps are large; gap in 2007 particularly big due to need to renegotiate multi-year grants and uncertainty about funding that will be approved within existing performance-based GFATM grants



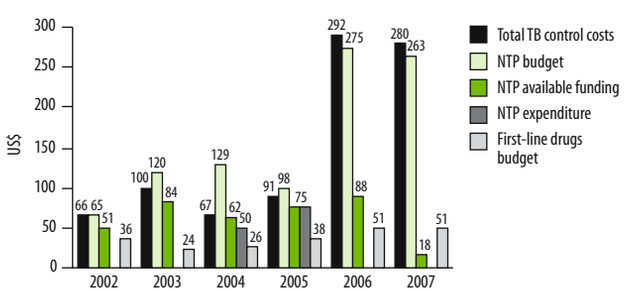
Total TB control costs by line item[j]

Clinic visits for DOT estimated based on 17 visits per new ss+ TB patient and 14 visits per new ss-/EP TB patient



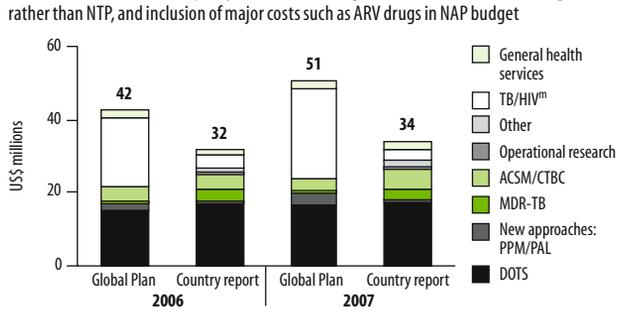
Per patient costs, budgets and expenditures[k]

Budget per patient is increasing, but available funding is not growing to the same extent



Comparison of country report and Global Plan:[l] total TB control costs, 2006–2007

Implementation of key TB/HIV interventions (e.g. HIV testing for TB patients, ART) is in line with Global Plan; cost discrepancy due to channelling of around US$ 7 million through NGOs rather than NTP, and inclusion of major costs such as ARV drugs in NAP budget



SOURCES, METHODS AND ABBREVIATIONS

[a] *World population prospects – the 2004 revision*. New York, United Nations Population Division, 2005.

[b] Incidence, prevalence and mortality estimates include patients infected with HIV. Incidence originally based on assumption of 55% ss+ case detection rate in 1997 (DOTS and non-DOTS). Trend in incidence estimated from 3-year moving average of notification rate (new and relapse).

[c] MDG and STB Partnership indicators shown in bold. Targets are 70% case detection of smear-positive cases under DOTS, 85% treatment success, to ensure that the incidence rate is falling by 2015, and to reduce incidence rates and halve 1990 prevalence and mortality rates by 2015. Estimates for 1990 are prevalence 165/100 000 pop and mortality 22/100 000 pop/yr.

[d] Estimate of HIV prevalence in incident TB cases (15–49 yo) derived from UNAIDS estimate of HIV prevalence in the general population, using assumed incidence rate ratio of 6.

[e] MDR-TB figures shown in regular type are survey data from the database of the WHO/IUATLD Global Project on Anti-Tuberculosis Drug Resistance Surveillance. Figures in italics are estimates from the following source: Zignol M et al. Global incidence of multidrug-resistant tuberculosis. *Journal of Infectious Diseases*, 2006, 194:479–485.

[f] Completeness of reporting assessed at lowest level in reporting hierarchy for which information is available.

[g] For routine diagnosis, there should be at least one laboratory providing smear microscopy per 100 000 population. To provide culture for diagnosis of paediatric, extrapulmonary and ss-/HIV+ TB, as well as DST for re-treatment and failure cases, most countries will need one culture facility per 5 million population and one DST facility per 10 million population.

[h] Case detection within DOTS areas calculated by dividing national case detection rate (new ss+) by DOTS coverage.

[i] DOTS includes the following components shown in the pie chart at right: first-line drugs, NTP staff, programme management and supervision, and laboratory supplies and equipment.

[j] Total TB control costs for 2002–2003 are based on available funding, whereas those for 2004–2005 are based on expenditure, and those for 2006–2007 are based on budgets. Estimates of the costs of clinic visits and hospitalization are WHO estimates based on data provided by the NTP and from other sources. See Methods for further details.

[k] NTP available funding for 2004–2005 is based on the amount of funding actually received, using retrospective data; available funding for 2002–2003 and 2006–2007 is based on prospectively reported budget data, and estimated as the total budget minus any reported funding gap.

[l] Estimates in the Global Plan were presented for regions rather than countries. See Methods for explanation of calculation of individual country estimates from regional estimates.

[m] Global Plan estimates cover the full costs of collaborative TB/HIV activities, but these costs may be budgeted for by either the NTP or the National AIDS Programme. In this graph, country reports include only the NTP budget. This may explain the apparent discrepancy between the Global Plan and country reports.

– indicates not available; pop, population; ss+, sputum smear-positive; ss-, sputum smear-negative pulmonary; unk, pulmonary – sputum smear not done or result unknown; yr, year.

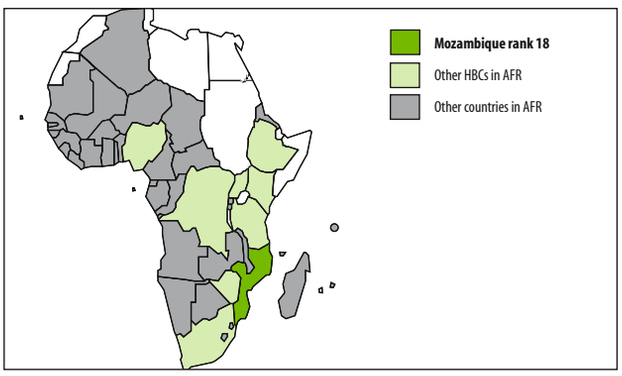
Mozambique

Human resource limitations remain one of the most significant barriers to improving case detection and treatment success in Mozambique. The development of an HRD plan for TB control and funding for staff and training are important steps to start overcoming these limitations. Further implementation and expansion of collaborative TB/HIV activities are urgently needed, given the high HIV prevalence throughout the country. Although there are considerable financial resources for TB activities in Mozambique, mostly from the GFATM, slow absorption and utilization could jeopardize future funding.

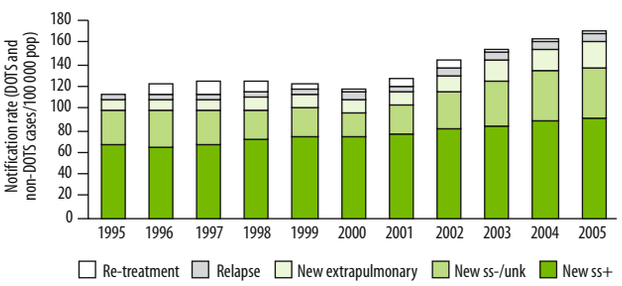
SURVEILLANCE AND EPIDEMIOLOGY

Population (thousands)[a]	19 792	
TB burden, 2005 estimates (with 2.5 and 97.5 centiles)[b]		
Incidence (all cases/100 000 pop/yr)	447	357–544
Trend in incidence rate (%/yr, 2004–2005)[c]	**-0.1**	
Incidence (ss+/100 000 pop/yr)	185	145–231
Prevalence (all cases/100 000 pop)[c]	**597**	435–786
Mortality (deaths/100 000 pop/yr)[c]	**124**	97–151
Of new adult TB cases (15–49yrs), % HIV+[d]	50	41–58
New TB cases multidrug-resistant, 1999 (%)[e]	3.5	2.5–4.8
Previously treated TB cases multidrug-resistant, 1999 (%)[e]	3.3	0.9–8.2
Surveillance and DOTS implementation, 2005		
Notification rate (new and relapse/100 000 pop/yr)	168	
Notification rate (new ss+/100 000 pop/yr)	90	
DOTS case detection rate (new ss+, %)	49	39–62
DOTS treatment success (new ss+ cases, 2004 cohort, %)	77	
Of new pulmonary cases notified under DOTS, % smear-positive	66	
Of new cases notified under DOTS, % extrapulmonary	15	
Of new smear-positive cases notified under DOTS, % in women	–	
Of sub-national reports expected, % received at next reporting level[f]	100	
Laboratory services, 2005[g]		
Number of laboratories performing smear microscopy	252	
Number of laboratories performing culture	1	
Number of laboratories performing DST	1	
Of laboratories performing smear microscopy, % covered by EQA	83	
Management of MDR-TB, 2005		
Of new cases notified, % receiving DST at start of treatment	0.4	
Of new cases receiving DST at start of treatment, % MDR-TB	16	
Of re-treatment cases notified, % receiving DST	16	
Of re-treatment cases receiving DST, % MDR-TB	32	
Collaborative TB/HIV activities, 2005		
National policy of counselling and testing TB patients for HIV?	No	
National surveillance system for HIV-infection in TB patients?	No	
Of TB patients (new and re-treatment) notified, % tested for HIV	–	
Of TB patients tested for HIV, % HIV+	–	
Of HIV+ TB patients detected, % receiving CPT	–	
Of HIV+ TB patients detected, % receiving ART	–	
Budget and finance, 2007		
Government contribution to NTP budget (including loans, %)	5.7	
Government contribution to total cost of TB control (including loans, %)	46	
Government health spending used for TB control (%)	0.4	
NTP budget funded (%)	4.3	

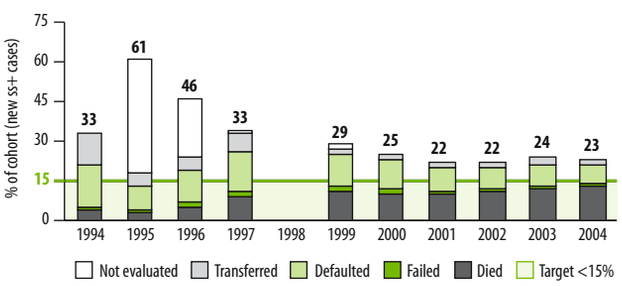
WHO African Region (AFR)
Rank based on estimated number of incident cases (all forms) in 2005



Case notifications
Notifications continuing to rise, either as a result of increasing incidence and/or of improvements in case detection; proportion of cases smear-negative is low, suggesting poor case-finding of these cases



Unfavourable treatment outcomes, DOTS
Treatment success consistently below target; high death rates



DOTS expansion and enhancement	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
DOTS coverage (%)	97	100	84	95	–	100	100	100	100	100	100
DOTS notification rate (new & relapse/100 000 pop)	113	113	113	115	–	118	121	137	150	160	168
DOTS notification rate (new ss+/100 000 pop)	67	64	66	71	–	74	76	82	85	88	90
DOTS case detection rate (all new cases, %)	37	34	32	30	30	27	27	30	32	34	36
DOTS case detection rate (new ss+, %)	52	47	46	47	–	44	44	45	46	47	49
Case detection rate within DOTS areas (new ss+, %)[h]	54	47	55	49	–	44	44	45	46	47	49
DOTS treatment success (new ss+, %)	39	54	67	–	71	75	78	78	76	77	–
DOTS re-treatment success (ss+, %)	–	70	64	–	71	71	68	67	68	–	–

IMPLEMENTING THE STOP TB STRATEGY[1]

Pursue high-quality DOTS expansion and enhancement

Budget (2006): US$ 12 million
Budget (2007): US$ 12 million

Gap (2006): US$ 2.6 million
Gap (2007): US$ 8.0 million

Achievements

- Substantial increase in funding following the first disbursement of GFATM round 2 funds in January 2005
- Expanded gradually the 6-month treatment regimen with FDC anti-TB drugs throughout the country
- Conducted training on NTP modules for clinicians in 5 provinces in 2005
- Held an international review of the NTP in February 2006 to evaluate it in context of the health sector reforms of the past 5 years, the declaration of TB as a regional emergency in Maputo in August 2005, the Global Plan and the Stop TB Strategy.
- Included NTP-recommended TB control guidelines in the curricula for doctors, nurses and laboratory staff

Planned activities

- Revise the National TB Strategic Plan (currently 2003–2008) to 2006–2010 while ensuring that it follows the Global Plan and the Stop TB Strategy and addresses the recommendations of the international NTP review
- Develop a new HRD plan for TB control for national and provincial levels and include it in the updated NTP strategic plan for 2006–2010
- Renovate and equip TB treatment areas in selected health centres
- Develop a mechanism to ensure sustained support of provincial co-ordinators to undertake laboratory quality control
- Open 6 new peripheral-level laboratories in 2006, incorporating TB laboratory services, and a second TB reference laboratory in Beira
- Reinstate regular microscopy training at provincial level in 2006 (lack of funds prevented training sessions in 2005)
- Recruit additional laboratory staff (4 biologists and 2 skilled technicians)
- Conduct analysis of routine surveillance data to monitor case reporting, trends in TB mortality, HIV prevalence in TB patients and MDR-TB

Challenges

- Utilizing all available funds for TB control, especially those from the GFATM
- Expanding training on TB case detection and treatment (only 15% of health care units have at least one health-care professional trained in TB)
- Carrying out refresher and standard microscopy training, which are needed throughout the country
- Implementing laboratory standard operating procedures, revising the laboratory supervision guide and conducting laboratory supervision
- Coordinating multiple national and international partners involved in TB services in Mozambique

Address TB/HIV, MDR-TB and other challenges

Budget (2006): US$ 0.1 million
Budget (2007): US$ 1.5 million

Gap (2006): US$ 0.1 million
Gap (2007): US$ 0

Achievements

- Initial implementation of some collaborative TB/HIV activities in several parts of the country, such as VCT for TB patients and CPT for HIV-infected TB patients
- Held meeting between NTP and NAP to discuss implementation of counselling and testing, provision of CPT and ART, and referral of patients between NTP and NAP
- Developed national guidelines and training material for the management of MDR-TB patients
- Trained provincial clinical staff on the management of MDR-TB patients
- Mobilized substantial new funding, which is mostly (US$ 1.4 million) for MDR-TB treatment

Planned activities

- Train provincial supervisors and treating nurses on HIV counselling and testing
- Provide CPT and ART to HIV-infected TB patients
- Conduct an HIV seroprevalence survey in TB patients
- Train personnel in screening and outpatients departments in TB/HIV, including HIV counselling and testing
- Train doctors in the management of MDR-TB patients
- Submit application to the GLC for funding and technical support for management of MDR-TB patients

Challenges

- Implementing a functional TB/HIV coordination mechanism at all levels (national, provincial and district levels) between the NTP and the NAP
- Coordinating TB/HIV activities given that ART is centralized at hospital level while anti-TB treatment is decentralized to the health centre level
- Strengthening surveillance of HIV in TB patients and implementing the revised TB form that includes TB/HIV indicators
- Securing funding for second line anti-TB drugs
- Addressing special populations and high-risk groups, other than prisoners and military

[1] Unless otherwise specified, achievements are for financial year 2005; planned activities are for financial year 2006. Budgets and gaps are for financial years.

IMPLEMENTING THE STOP TB STRATEGY

Contribute to health system strengthening

Budget (2006): US$ 0 Gap (2006): US$ 0
Budget (2007): US$ 0 Gap (2007): US$ 0

Achievements

- Aligned TB control plan and budget with national health development plan and sector-wide approach (SWAp), and developed SWAp working groups to follow up on priorities set out in the health sector strategic plan
- Provided support to upgrade existing health infrastructure

Planned activities

- Training the 11 medical coordinators responsible for control of malaria, HIV, STIs, leprosy and TB
- Training clinicians at provincial hospitals, some health centres and some district hospitals in infection control

Challenges

- Using and monitoring GFATM funds, particularly now that they are part of a "common basket" within the SWAp strategy
- Improving working conditions and motivation of health staff
- Addressing the lack of health workers in rural areas

Engage all care providers

Budget (2006): US$ 0.04 million Gap (2006): US$ 0.04 million
Budget (2007): US$ 0.05 million Gap (2007): US$ 0.05 million

Achievements

- Held meetings with representatives of private clinics on TB control
- Developed basic collaborative norms between the NTP and private institutions
- Coordinated planning with NGOs involved in TB control
- Conducted specific training for non-NTP health-care providers

Planned activities

- Meet with NGOs and faith-based organizations to scale up DOTS

Challenges

- Involving further all private sector providers in high-quality diagnosis, treatment and reporting of TB patients

Empower people with TB, and communities

Budget (2006): US$ 0.03 million Gap (2006): US$ 0.03 million
Budget (2007): US$ 0.05 million Gap (2007): US$ 0

Achievements

- Involved communities in TB case-finding and treatment support of TB patients
- Involved some TB support groups and patient-centred organizations in HIV counselling and testing, provision of CPT and ART, and training in collaborative TB/HIV activities
- Produced an IEC package for communities

Planned activities

- Introduce and expand community-based treatment support to more provinces
- Train additional volunteers to support engagement of patients and communities

Challenges

- Developing appropriate IEC messages given the geographical, linguistic and cultural diversities in the country
- Improving staff capacity and resources to implement ACSM activities

Enable and promote research

Budget (2006): US$ 0.1 million Gap (2006): US$ 0.1 million
Budget (2007): US$ 0.1 million Gap (2007): US$ 0

Achievements

- Included operational research as part of the current NTP strategic plan

Planned activities

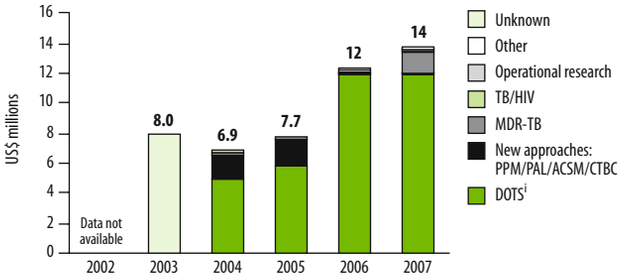
- Conduct a national drug resistance survey after more than 3 years of planning

Challenges

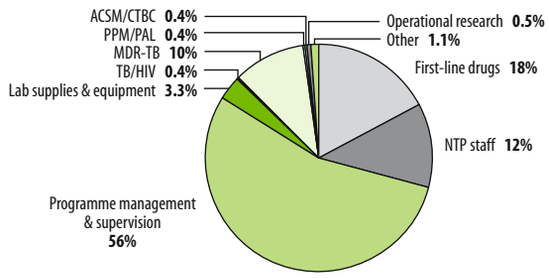
- Developing a systematic programme of TB research and identifying an NTP focal person to monitor TB research

FINANCING THE STOP TB STRATEGY

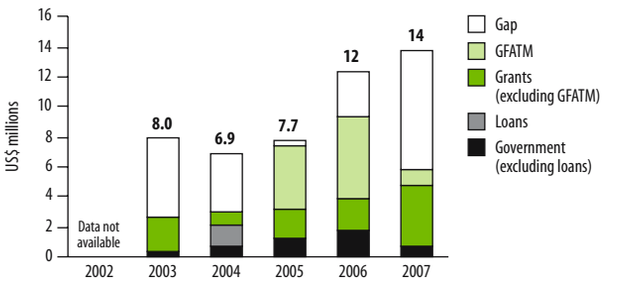
NTP budget by line item
Increased budget in 2006 and 2007 for routine programme management and supervision, mainly for the purchase of vehicles and computers, and for NTP staff; budget for MDR-TB is higher than for TB/HIV



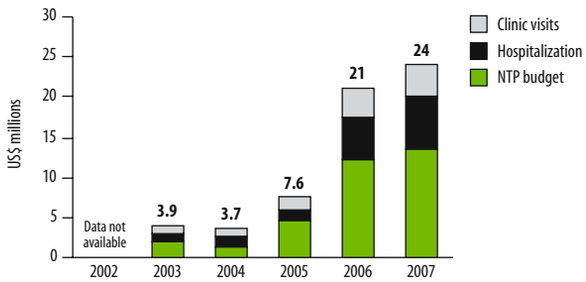
NTP budget by line item, 2007
Routine programme management and supervision account for more than half of the budget, much higher than in any other HBC



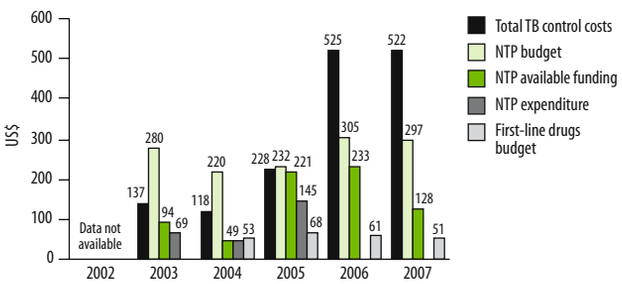
NTP budget by source of funding
Large increase in budget and funding since 2005, mostly from GFATM; funding gap in 2007 is mainly for routine programme management and supervision



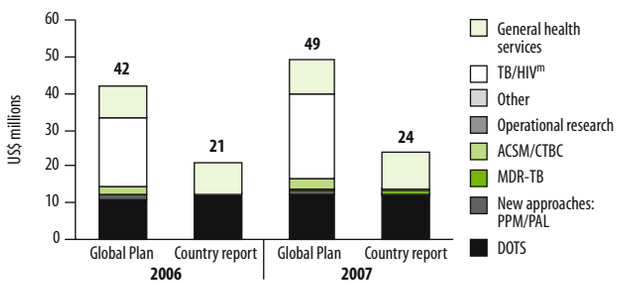
Total TB control costs by line item[j]
Cost of clinic visits for DOT per TB patient based on 52 visits (2003–2005) and 92 visits (2006–2007); hospitalization cost based on estimate that 10–25% (2003–2005) and 68% (2006–2007) of TB patients are admitted for an average of 65 days (2003–2007)



Per patient costs, budgets and expenditures[k]
Increasing costs and expenditure per patient



Comparison of country report and Global Plan:[l] total TB control costs, 2006–2007
Global Plan includes much higher costs for collaborative TB/HIV activities; budget for DOTS is similar in Global Plan and country report



SOURCES, METHODS AND ABBREVIATIONS

[a] *World population prospects – the 2004 revision*. New York, United Nations Population Division, 2005.
[b] Incidence, prevalence and mortality estimates include patients infected with HIV. Incidence estimate originally based on assumption of 70% ss+ case detection rate in 1997 (DOTS and non-DOTS). Trend in incidence estimated from 3-year moving average of notifications from those countries in region judged to be detecting an unchanging proportion of cases.
[c] MDG and STB Partnership indicators shown in bold. Targets are 70% case detection of smear-positive cases under DOTS, 85% treatment success, to ensure that the incidence rate is falling by 2015, and to reduce incidence rates and halve 1990 prevalence and mortality rates by 2015. Estimates for 1990 are prevalence 296/100 000 pop and mortality 34/100 000 pop/yr.
[d] Estimate of HIV prevalence in incident TB cases (15–49 yo) derived from UNAIDS estimate of HIV prevalence in the general population, using assumed incidence rate ratio of 6.
[e] MDR-TB figures shown in regular type are survey data from the database of the WHO/IUATLD Global Project on Anti-Tuberculosis Drug Resistance Surveillance. Figures in italics are estimates from the following source: Zignol M et al. Global incidence of multidrug-resistant tuberculosis. *Journal of Infectious Diseases*, 2006, 194:479–485.
[f] Completeness of reporting assessed at lowest level in reporting hierarchy for which information is available.
[g] For routine diagnosis, there should be at least one laboratory providing smear microscopy per 100 000 population. To provide culture for diagnosis of paediatric, extrapulmonary and ss-/HIV+ TB, as well as DST for re-treatment and failure cases, most countries will need one culture facility per 5 million population and one DST facility per 10 million population.
[h] Case detection within DOTS areas calculated by dividing national case detection rate (new ss+) by DOTS coverage.
[i] DOTS includes the following components shown in the pie chart at right: first-line drugs, NTP staff, programme management and supervision, and laboratory supplies and equipment.
[j] Total TB control costs for 2003–2005 are based on expenditure, whereas those for 2006–2007 are based on budgets. Estimates of the costs of clinic visits and hospitalization are WHO estimates based on data provided by the NTP and from other sources. See Methods for further details.
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[m] Global Plan estimates cover the full costs of collaborative TB/HIV activities, but these costs may be budgeted for by either the NTP or the National AIDS Programme. In this graph, country reports include only the NTP budget. This may explain the apparent discrepancy between the Global Plan and country reports.

– indicates not available; pop, population; ss+, sputum smear-positive; ss-, sputum smear-negative pulmonary; unk, pulmonary – sputum smear not done or result unknown; yr, year.

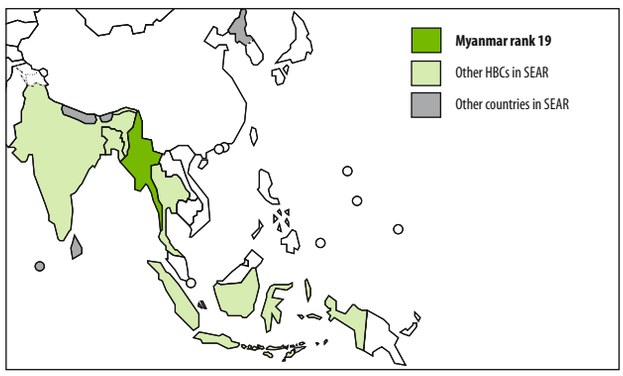
Myanmar

Despite limited resources, the NTP continues to improve the quality of and access to TB services, and is close to reaching the global target for treatment success. Although Myanmar maintains a high rate of case detection, analysis from a recent TB prevalence survey in Yangon is likely to show an underestimate of the TB burden. The arrival of the new Three Diseases Fund will allow the NTP to continue basic programme needs while scaling up collaborative TB/HIV activities and initiatives to engage all care providers and involve the community.

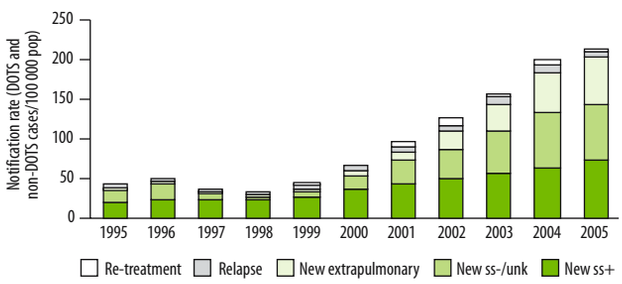
SURVEILLANCE AND EPIDEMIOLOGY

Population (thousands)[a]	50 519	
TB burden, 2005 estimates (with 2.5 and 97.5 centiles)[b]		
Incidence (all cases/100 000 pop/yr)	171	98–246
Trend in incidence rate (%/yr, 2004–2005)[c]	**0.0**	
Incidence (ss+/100 000 pop/yr)	76	43–111
Prevalence (all cases/100 000 pop)[c]	**170**	87–272
Mortality (deaths/100 000 pop/yr)[c]	**15**	6.9–27
Of new adult TB cases (15–49yrs), % HIV+[d]	7.1	4.1–11
New TB cases multidrug-resistant, 2004 (%)[e]	4.4	3.1–6.1
Previously treated TB cases multidrug-resistant, 2004 (%)e	16	9.5–23
Surveillance and DOTS implementation, 2005		
Notification rate (new and relapse/100 000 pop/yr)	212	
Notification rate (new ss+/100 000 pop/yr)	72	
DOTS case detection rate (new ss+, %)	**95**	65–168
DOTS treatment success (new ss+ cases, 2004 cohort, %)	**84**	
Of new pulmonary cases notified under DOTS, % smear-positive	51	
Of new cases notified under DOTS, % extrapulmonary	30	
Of new smear-positive cases notified under DOTS, % in women	34	
Of sub-national reports expected, % received at next reporting level[f]	97	
Laboratory services, 2005[g]		
Number of laboratories performing smear microscopy	310	
Number of laboratories performing culture	2	
Number of laboratories performing DST	1	
Of laboratories performing smear microscopy, % covered by EQA	5	
Management of MDR-TB, 2005		
Of new cases notified, % receiving DST at start of treatment	0.0	
Of new cases receiving DST at start of treatment, % MDR-TB	–	
Of re-treatment cases notified, % receiving DST	–	
Of re-treatment cases receiving DST, % MDR-TB	–	
Collaborative TB/HIV activities, 2005		
National policy of counselling and testing TB patients for HIV?	No	
National surveillance system for HIV-infection in TB patients?	Yes	
Of TB patients (new and re-treatment) notified, % tested for HIV	–[h]	
Of TB patients tested for HIV, % HIV+	–	
Of HIV+ TB patients detected, % receiving CPT	–	
Of HIV+ TB patients detected, % receiving ART	–	
Budget and finance, 2007		
Government contribution to NTP budget (including loans, %)	3.0	
Government contribution to total cost of TB control (including loans, %)	18	
Government health spending used for TB control (%)	0.5	
NTP budget funded (%)	44	

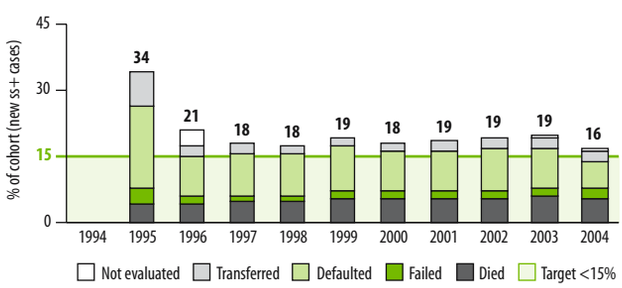
WHO South-East Asia Region (SEAR)
Rank based on estimated number of incident cases (all forms) in 2005



Case notifications
Notifications have increased rapidly as DOTS expands



Unfavourable treatment outcomes, DOTS
Treatment success close to target; if default rate continues to decline, target should soon be met



DOTS expansion and enhancement	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
DOTS coverage (%)	–	59	60	60	64	77	84	88	95	95	95
DOTS notification rate (new & relapse/100 000 pop)	–	44	35	32	42	65	86	117	153	193	212
DOTS notification rate (new ss+/100 000 pop)	–	19	20	22	24	36	43	49	55	63	72
DOTS case detection rate (all new cases, %)	–	24	18	16	22	35	46	64	84	108	119
DOTS case detection rate (new ss+, %)	–	26	26	29	32	48	56	65	73	83	95
Case detection rate within DOTS areas (new ss+, %)[i]	–	43	43	47	50	62	67	74	77	87	100
DOTS treatment success (new ss+, %)	66	79	82	82	81	82	81	81	81	84	–
DOTS re-treatment success (ss+, %)	64	78	74	76	71	74	74	75	70	73	–

IMPLEMENTING THE STOP TB STRATEGY[1]

Pursue high-quality DOTS expansion and enhancement

Budget (2006): US$ 14 million
Budget (2007): US$ 14 million

Gap (2006): US$ 7.2 million
Gap (2007): US$ 6.6 million

Achievements

- Developed 3-year national operational plan (2006/7–2008/9) based on the national NTP strategic plan (2006–2010) for use as the basis for resource mobilization efforts
- Strengthened HRD activities with remaining GFATM support
- Extended supervision, monitoring and quarterly evaluation to township level
- Designated a full-time NTP staff responsible for HRD activities for comprehensive TB control and developed a strategic HRD plan for TB control linked to the national human resources for health plan
- Procured additional supplies and equipment for TB diagnosis
- Received funding for a bridge period between termination of the GFATM grant and start of a new Three Diseases Fund established to fund TB, HIV/AIDS and malaria control activities for 5 years for US$ 100 million
- Received extension of GDF grant to supply first-line anti-TB drugs for a second 3-year term (2006–2008)
- Strengthened links with supranational reference laboratories in Belgium and Thailand to obtain comprehensive technical laboratory assistance
- Produced 13th annual report of NTP activities

Planned activities

- Hold training courses for health staff at all levels on leadership, logistic management, budget and planning
- Upgrade the Upper Myanmar TB laboratory to increase capacity to provide culture and DST services to the northern part of the country
- Develop guidelines for the management of TB in children

Challenges

- Filling the almost 25% of NTP posts that are vacant because of high staff turnover
- Expanding EQA for smear microscopy to all diagnostic units (currently less than 5% of laboratories are covered)
- Completing implementation of laboratory supervision plan, which has been delayed due to lack of funding for transport and staff
- Improving case-finding and treatment outcomes in a selected number of important townships (border and remote) with high treatment interruption rates and low community involvement in TB control
- Reconciling the major funding gaps for staff and programme supervision activities following termination of GFATM grant support in August 2006
- Mobilizing resources for first-line anti-TB drugs after GDF grant expires in 2008

Address TB/HIV, MDR-TB and other challenges

Budget (2006): US$ 0.4 million
Budget (2007): US$ 1.1 million

Gap (2006): US$ 0.3 million
Gap (2007): US$ 1.0 million

Achievements

- Formed national TB/HIV coordinating body
- Published guidelines for the treatment of HIV-infected TB patients
- Established 2 additional pilot sites for collaborative TB/HIV activities (Myitkyina and Taunggyi), and performed integrated TB/HIV surveillance in 5 sites
- Established committee to develop national guidelines on the programmatic management of MDR-TB patients

Planned activities

- Initiate pilot project on IPT for people with HIV
- Scale up collaborative TB/HIV activities to additional sites, including VCT at TB centres
- Apply to the GLC for second-line anti-TB drugs for the management of MDR-TB patients in Yangon and Mandalay divisions
- Establish mobile teams to reach communities and TB patients in remote areas for better case detection and treatment success (each team is provided with transport, microscopes, drugs, reagents, consumables and core staff)

Challenges

- Obtaining funding for expansion of collaborative TB/HIV activities
- Improving availability of ART services (including antiretroviral drugs) for HIV-infected TB patients
- Strengthening supervision, monitoring and evaluation of collaborative TB/HIV activities
- Improving capacity to diagnose and treat MDR-TB patients
- Providing high-quality TB services for the Thai–Myanmar cross-border populations

Contribute to health system strengthening

Budget (2006): US$ 0
Budget (2007): US$ 0

Gap (2006): US$ 0
Gap (2007): US$ 0

Achievements

- Provided sputum collection or microscopy centres to station hospitals, and supplied binocular microscopes to townships
- Offered training in diagnosis and treatment of TB for basic health staff
- Involved Ministries of Labour, Defence and Home Affairs in planning of TB control activities

Planned activities

- Initiate PAL activities in 2007

Challenges

- Increasing the number of laboratory technicians working in the health system

[1] Unless otherwise specified, achievements are for financial year 2005; planned activities are for financial year 2006. Budgets and gaps are for financial years.

IMPLEMENTING THE STOP TB STRATEGY

Engage all care providers

Budget (2006): US$ 0.4 million
Budget (2007): US$ 0.04 million
Gap (2006): US$ 0.3 million
Gap (2007): US$ 0.04 million

Achievements

- Included PPM in the 3-year national operational plan and the plan under the Three Diseases Fund
- Collaborated with Population Services International, which is scaling up engagement of private general practitioners through a social franchise scheme
- Engaged with the Myanmar Medical Association (MMA) to enhance TB referral system and introduce PPM projects in 25 townships through the MMA
- Developed PPM training materials and provided training to private practitioners on TB control

Planned activities

- Continue PPM activities in 11 townships, scale up PPM activities in 1 township and start up 5 additional township projects in collaboration with MMA, JICA and Population Services International (PSI)
- Improve public–public partnerships
- Pilot PPM in the new Yangon General Hospital to cover an additional 1.7 million population

Challenges

- Maintaining the quality of services during PPM scale up
- Improving the implementation of DOTS in large hospitals outside the NTP and by ministries other than the MoH, including weak referral and feedback mechanisms with high default rates

Empower people with TB, and communities

Budget (2006): US$ 1.7 million
Budget (2007): US$ 0.6 million
Gap (2006): US$ 0.9 million
Gap (2007): US$ 0.6 million

Achievements

- Involved communities in 20% of townships in treatment support for TB patients, and TB case-finding
- Continued collaboration between NTP and the Myanmar Maternal and Child Welfare Association

Planned activities

- Develop targeted IEC materials and ACSM national strategy
- Hold more than 1500 advocacy meetings at all levels by the end of 2006 to mobilize partners countrywide to strengthen TB prevention and control

Challenges

- Promoting the Patients' Charter for Tuberculosis Care
- Increasing the number of communities involved in TB control through advocacy meetings, training and mass media activities

Enable and promote research

Budget (2006): US$ 0.2 million
Budget (2007): US$ 0.3 million
Gap (2006): US$ 0.04 million
Gap (2007): US$ 0.3 million

Achievements

- Included operational research in the 5-year national TB strategic plan
- Conducted research into effectiveness of FDCs and daily regimens, treatment delay, and effectiveness of LQA vs. conventional EQA
- Conducted sub-national TB prevalence survey in Yangon in partnership with NTP, WHO, JICA, RIT, GFATM and UNDP
- Published data from 2002 national drug resistance survey in an international journal

Planned activities

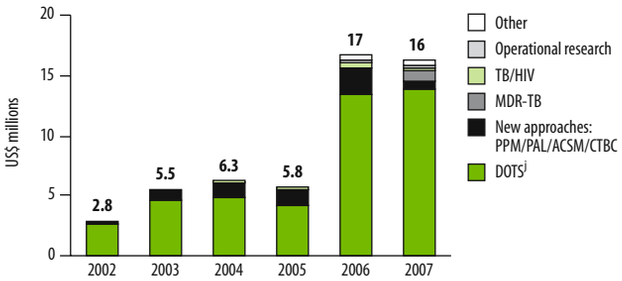
- Conduct a TB KAP survey, including a health-seeking behaviour component, with focus on populations in remote areas
- Carry out a second national drug resistance survey
- Plan a national prevalence disease survey for 2008

Challenges

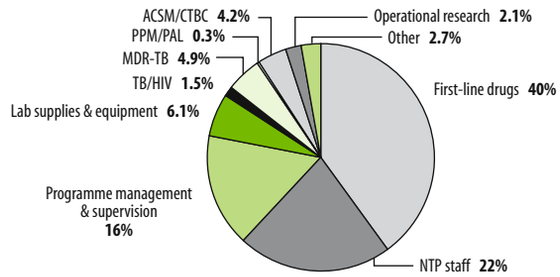
- Securing funding to urgently start the second national drug resistance survey

FINANCING THE STOP TB STRATEGY

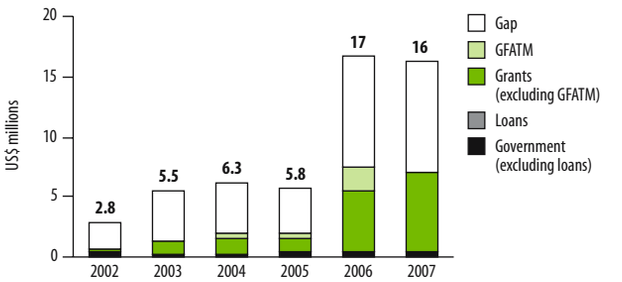
NTP budget by line item
Increased budget, mainly component 1 of Stop TB Strategy (Pursue high-quality DOTS expansion and enhancement); PPM budget in 2007 likely to increase when budget for all implementing partners is included; operational research includes budget for national disease prevalence survey



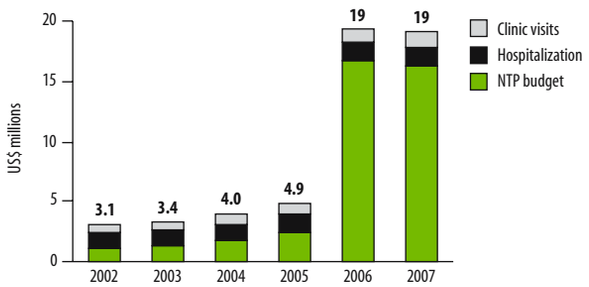
NTP budget by line item, 2007
Budget for first-line drugs includes a 1-year buffer stock



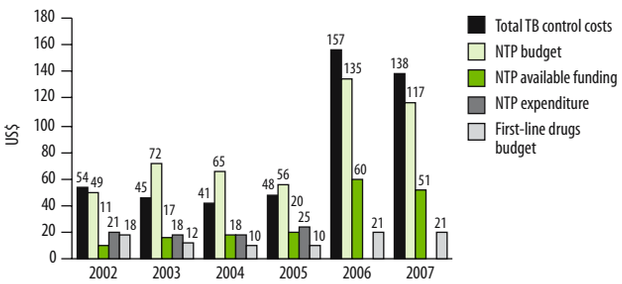
NTP budget by source of funding
Important increase in budget for 2006 and 2007, mainly due to revision of needs and inclusion of all implementing partners; part of funding gap in 2006 and 2007 likely to be filled by the 3 Diseases Fund and implementing partners



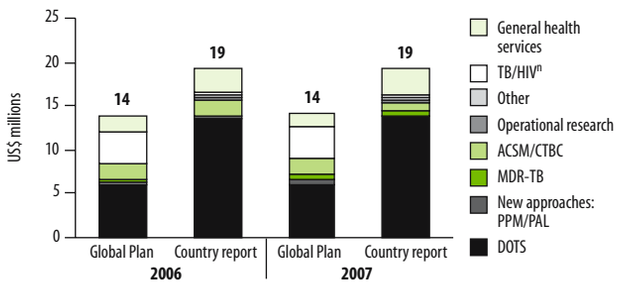
Total TB control costs by line item[k]
Cost of hospitalization estimated based on the number of TB beds available in the country (n = 1500)



Per patient costs, budgets and expenditures[l]
Budget per patient increasing; expenditures similar to available funding suggests good absorption capacity



Comparison of country report and Global Plan:[m] total TB control costs, 2006–2007
Global Plan estimates for DOTS are lower because projected number of patients to be treated is less than in country report



SOURCES, METHODS AND ABBREVIATIONS

[a] *World population prospects – the 2004 revision*. New York, United Nations Population Division, 2005.
[b] Incidence, prevalence and mortality estimates include patients infected with HIV. Estimates of burden based on prevalence surveys carried out up to 1994. Incidence rate assumed to be constant in absence of contrary evidence, but estimated prevalence and mortality rates decline with growing proportion of cases treated.
[c] MDG and STB Partnership indicators shown in bold. Targets are 70% case detection of smear-positive cases under DOTS, 85% treatment success, to ensure that the incidence rate is falling by 2015, and to reduce incidence rates and halve 1990 prevalence and mortality rates by 2015. Estimates for 1990 are prevalence 417/100 000 pop and mortality 50/100 000 pop/yr.
[d] Estimate of HIV prevalence in incident TB cases (15–49 yo) derived from UNAIDS estimate of HIV prevalence in the general population, using assumed incidence rate ratio of 6.
[e] MDR-TB figures shown in regular type are survey data from the database of the WHO/IUATLD Global Project on Anti-Tuberculosis Drug Resistance Surveillance. Figures in italics are estimates from the following source: Zignol M et al. Global incidence of multidrug-resistant tuberculosis. *Journal of Infectious Diseases*, 2006, 194:479–485.
[f] Completeness of reporting assessed at lowest level in reporting hierarchy for which information is available.
[g] For routine diagnosis, there should be at least one laboratory providing smear microscopy per 100 000 population. To provide culture for diagnosis of paediatric, extrapulmonary and ss-/HIV+ TB, as well as DST for re-treatment and failure cases, most countries will need one culture facility per 5 million population and one DST facility per 10 million population.
[h] No national data available; 2109 TB patients tested for HIV as part of Integrated HIV Care pilot project in Mandalay province in 2005, of whom 29% found HIV-positive. Of HIV-positive TB patients in pilot project, 50% received CPT, 31% received ART.
[i] Case detection within DOTS areas calculated by dividing national case detection rate (new ss+) by DOTS coverage.
[j] DOTS includes the following components shown in the pie chart at right: first-line drugs, NTP staff, programme management and supervision, and laboratory supplies and equipment.
[k] Total TB control costs for 2002–2005 are based on expenditure, whereas those for 2006–2007 are based on budgets. Estimates of the costs of clinic visits and hospitalization are WHO estimates based on data provided by the NTP and from other sources. See Methods for further details.
[l] NTP available funding for 2004–2005 is based on the amount of funding actually received, using retrospective data; available funding for 2002–2003 and 2006–2007 is based on prospectively reported budget data, and estimated as the total budget minus any reported funding gap.
[m] Estimates in the Global Plan were presented for regions rather than countries. See Methods for explanation of calculation of individual country estimates from regional estimates.
[n] Global Plan estimates cover the full costs of collaborative TB/HIV activities, but these costs may be budgeted for by either the NTP or the National AIDS Programme. In this graph, country reports include only the NTP budget. This may explain the apparent discrepancy between the Global Plan and country reports.

– indicates not available; pop, population; ss+, sputum smear-positive; ss-, sputum smear-negative pulmonary; unk, pulmonary – sputum smear not done or result unknown; yr, year.

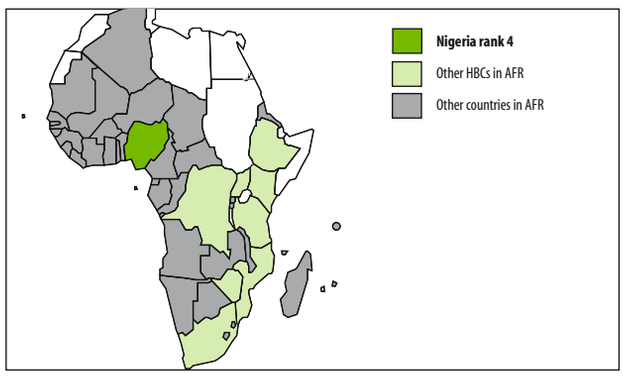
Nigeria

A considerable proportion of the Nigerian population lives in areas still not covered by DOTS services, and only 22% of estimated smear-positive cases were detected in 2005 (based on uncertain estimates of incidence). The case detection rate is slowly increasing as DOTS expands, but is still low within DOTS areas. Although there was a substantially larger budget in 2006 for DOTS expansion as a result of the accepted round 5 GFATM proposal, no funds have yet been disbursed. Additional planned and fully funded activities for 2007 in TB/HIV, PPM and ACSM should lead to increases in DOTS coverage and improved case-finding.

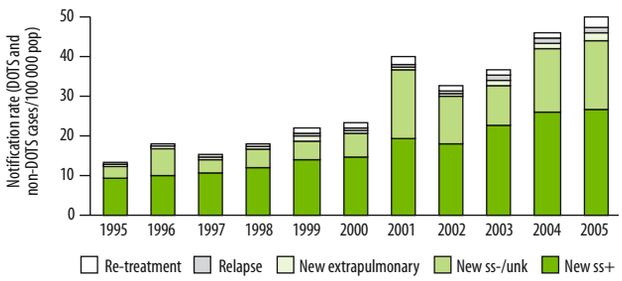
SURVEILLANCE AND EPIDEMIOLOGY

Population (thousands)[a]		131 530
TB burden, 2005 estimates (with 2.5 and 97.5 centiles)[b]		
Incidence (all cases/100 000 pop/yr)	283	147–421
Trend in incidence rate (%/yr, 2004–2005)[c]	**-0.1**	
Incidence (ss+/100 000 pop/yr)	123	63–186
Prevalence (all cases/100 000 pop)[c]	**536**	254–846
Mortality (deaths/100 000 pop/yr)[c]	**76**	43–112
Of new adult TB cases (15–49yrs), % HIV+[d]	19	12–26
New TB cases multidrug-resistant, 2004 (%)e	*1.7*	*0.3–9.0*
Previously treated TB cases multidrug-resistant, 2004 (%)e	*7.9*	*1.1–38*
Surveillance and DOTS implementation, 2005		
Notification rate (new and relapse/100 000 pop/yr)	48	
Notification rate (new ss+/100 000 pop/yr)	27	
DOTS case detection rate (new ss+, %)	**22**	14–42
DOTS treatment success (new ss+ cases, 2004 cohort, %)	**73**	
Of new pulmonary cases notified under DOTS, % smear-positive	61	
Of new cases notified under DOTS, % extrapulmonary	4.7	
Of new smear-positive cases notified under DOTS, % in women	41	
Of sub-national reports expected, % received at next reporting level[f]	100	
Laboratory services, 2005[g]		
Number of laboratories performing smear microscopy	580	
Number of laboratories performing culture	0	
Number of laboratories performing DST	0	
Of laboratories performing smear microscopy, % covered by EQA	52	
Management of MDR-TB, 2005		
Of new cases notified, % receiving DST at start of treatment	–	
Of new cases receiving DST at start of treatment, % MDR-TB	–	
Of re-treatment cases notified, % receiving DST	0.0	
Of re-treatment cases receiving DST, % MDR-TB	–	
Collaborative TB/HIV activities, 2005		
National policy of counselling and testing TB patients for HIV?	Yes	
National surveillance system for HIV-infection in TB patients?	No	
Of TB patients (new and re-treatment) notified, % tested for HIV	10	
Of TB patients tested for HIV, % HIV+	18	
Of HIV+ TB patients detected, % receiving CPT	–	
Of HIV+ TB patients detected, % receiving ART	–	
Budget and finance, 2007		
Government contribution to NTP budget (including loans, %)	47	
Government contribution to total cost of TB control (including loans, %)	63	
Government health spending used for TB control (%)	7.4	
NTP budget funded (%)	94	

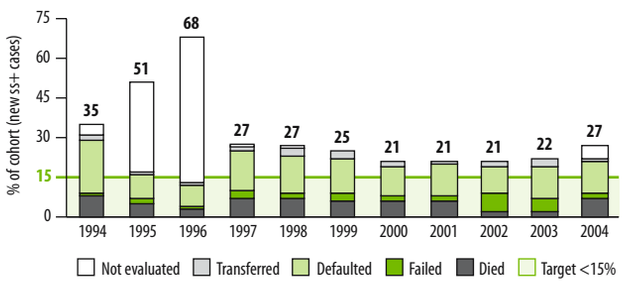
WHO African Region (AFR)
Rank based on estimated number of incident cases (all forms) in 2005



Case notifications
Notification rates increasing as DOTS expands; case-finding within DOTS areas may also be improving slightly



Unfavourable treatment outcomes, DOTS
Late or incomplete reporting and poor treatment outcomes for those patients whose outcomes are evaluated



DOTS expansion and enhancement	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
DOTS coverage (%)	47	30	40	45	45	47	55	55	60	65	65
DOTS notification rate (new & relapse/100 000 pop)	13	14	15	18	21	22	25	24	35	44	48
DOTS notification rate (new ss+/100 000 pop)	9.1	10	10	12	14	15	16	16	22	26	27
DOTS case detection rate (all new cases, %)	6.8	8.7	6.9	7.6	8.2	8.5	9.0	8.4	12	15	16
DOTS case detection rate (new ss+, %)	11	11	11	12	13	13	14	13	18	21	22
Case detection rate within DOTS areas (new ss+, %)[h]	24	38	27	26	28	29	25	24	30	33	33
DOTS treatment success (new ss+, %)	49	32	73	73	75	79	79	79	78	73	–
DOTS re-treatment success (ss+, %)	–	71	–	–	74	71	71	73	–	73	–

IMPLEMENTING THE STOP TB STRATEGY[1]

Pursue high-quality DOTS expansion and enhancement

Budget (2006): US$ 13 million
Budget (2007): US$ 16 million
Gap (2006): US$ 1.6 million
Gap (2007): US$ 1.3 million

Achievements

- Expanded DOTS services to 86 new health facilities in 43 new local government areas (LGAs) in 17 states (548/774 LGAs implementing DOTS by the end of 2005); opened 55 new microscopy centres in these 43 LGAs
- Trained 358 general health workers including doctors, nurses and community workers on NTP-recommended TB control strategies
- Strengthened supervision of DOTS services from central, zonal and state levels to the peripheral health facilities and clinics in 3 zones (South East, South South, North Central)
- Produced 5th annual report of NTP activities

Planned activities

- Expand DOTS services to an additional 102 LGAs in the country
- Finalize and implement the EQA strategic plan, and identify and train state QA focal persons for all 37 states
- Use surveillance data, vital registration data, population-based mortality surveys and surveys of prevalence of disease and of infection to improve estimates of TB burden

Challenges

- Improving the low and only slowly increasing case detection rate within DOTS areas (national case detection rate divided by coverage)
- Reducing the high default rates in order to improve the rate of treatment success
- Obtaining funding for laboratory supervision from the Federal MOH; all laboratory activities are funded by donors
- Increasing the number of health care units with staff trained in TB case detection and treatment
- Filling NTP posts with trained staff
- Securing funds to fully establish and equip the 6 zonal reference laboratories, and strengthen the 2 NRLs
- Successfully and rapidly implementing activities funded by the round 5 GFATM grant

Address TB/HIV, MDR-TB and other challenges

Budget (2006): US$ 3.5 million
Budget (2007): US$ 7.0 million
Gap (2006): US$ 0.5 million
Gap (2007): US$ 0

Achievements

- Trained 58 general health workers from 16 DOTS centres and 4 ART sites in 4 states on collaborative TB/HIV activities
- Developed a strategic framework and guidelines for implementation of collaborative TB/HIV activities
- Created a national TB/HIV working group with terms of reference and list of members, with NGO and partner support
- Recruited an additional National Professional Officer to oversee collaborative TB/HIV activities

Planned activities

- Expand collaborative TB/HIV activities and DOTS services to all 25 existing ART facilities
- Ensure effective functioning of the national TB/HIV working group, and establish state chapters

Challenges

- Standardizing reporting and recording forms, treatment regimens and screening algorithms for management of HIV-infected TB patients
- Securing sufficient resources to establish an MDR-TB treatment programme (priority currently given to DOTS expansion and improvement of treatment success rates)

Contribute to health system strengthening

Budget (2006): US$ 0
Budget (2007): US$ 0
Gap (2006): US$ 0
Gap (2007): US$ 0

Achievements

- Trained general health workers at public health care centres and laboratory technicians, and provided microscope and laboratory reagents to each LGA

Planned activities

- Train general health workers from 102 additional LGAs in DOTS implementation
- Train general health workers from DOTS and HIV/AIDS service delivery facilities in 6 states in implementation of TB/HIV collaborative activities
- Strengthen 82 additional laboratories to provide AFB microscopy services
- Strengthen 16 laboratories to offer HIV testing

Challenges

- Integrating distribution and management of anti-TB drugs into the general drug management system

[1] Unless otherwise specified, achievements are for financial year 2005; planned activities are for financial year 2006. Budgets and gaps are for financial years.

IMPLEMENTING THE STOP TB STRATEGY

Engage all care providers

Budget (2006): US$ 1.5 million
Budget (2007): US$ 2.5 million

Gap (2006): US$ 1.0 million
Gap (2007): US$ 1.0 million

Achievements

- Trained private health-care providers in Anambra and Enugu states on DOTS, with support from GLRA
- Collaborated with private sector laboratories (including those run by NGOs, faith-based organizations, universities, the military and prisons) in reporting, QA, training and provision of supplies

Planned activities

- Initiate phased implementation of PPM in 48 health facilities in 24 LGAs in 6 pilot sites
- Hold a national consensus-building meeting with medical directors of private hospitals
- Review and finalize the PPM guidelines

Challenges

- Mobilizing additional funding for PPM and filling the budget gaps
- Reviewing the curricula of medical and paramedical schools to include TB control

Empower people with TB, and communities

Budget (2006): US$ 6.2 million
Budget (2007): US$ 7.7 million

Gap (2006): US$ 2.0 million
Gap (2007): US$ 0

Achievements

- Mobilized substantial funding for ACSM activities from the GFATM
- Trained 4 community TB/HIV support groups in referral and identification of TB suspects
- Received support of partners to implement ACSM activities, including the local NGO PATHS (technical support and printing of ACSM materials) and ILEP (International Federation of Anti-Leprosy Associations) (radio and TV jingles and broadcasts)
- Collaborated with 120 TB support organizations, with cured patients as members in case detection, community mobilization, consultation with NTP and activism for resource mobilization

Planned activities

- Increase the number and improve the quality of ACSM activities in line with the 2006–2010 NTP strategic plan

Challenges

- Increase the percentage of the country involving communities in TB control through trainings, incentives and promotion of group meetings
- Implementing ACSM activities, including setting up a monitoring and evaluation system for ACSM
- Identifying and reaching target groups
- Filling the remaining funding gap for ACSM in 2006

Enable and promote research

Budget (2006): US$ 0.5 million
Budget (2007): US$ 1.1 million

Gap (2006): US$ 0.1 million
Gap (2007): US$ 0

Achievements

- Included operational research in the budget for the 2006–2010 NTP plan
- Initiated a health system research study in 2 states (Ondo and River) to investigate factors responsible for low TB case-finding
- Participated in a multi-country study on the acceptability and use of GDF laboratory diagnostic kits in 17 states

Planned activities

- Conduct national prevalence of disease and of infection survey for 2007
- Implement the WHO Special Programme for Research and Training in Tropical Diseases (TDR) multi-centre research trial on 4-FDC anti-TB drugs in Ebonyi State, in collaboration with GLRA

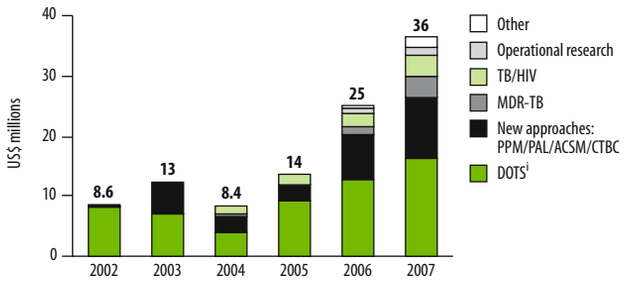
Challenges

- Expanding knowledge about operational research among NTP staff
- Securing additional financial resources

FINANCING THE STOP TB STRATEGY

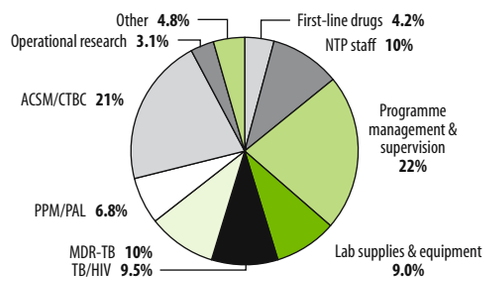
NTP budget by line item

Increased budget for new approaches to DOTS implementation, especially for ACSM, through GFATM funding; MDR-TB budget included for the first time in 2006



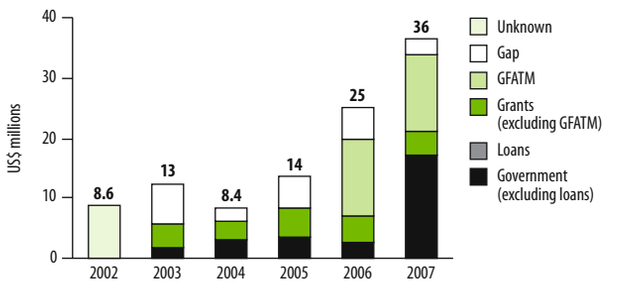
NTP budget by line item, 2007

All components of the Stop TB Strategy are budgeted for



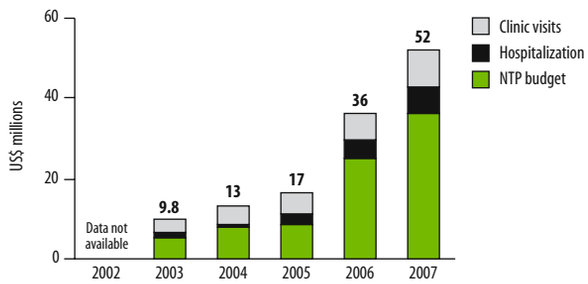
NTP budget by source of funding

Important increase in budget and in funding from grants, especially from GFATM; budget 2007 includes state needs and funding for the first time



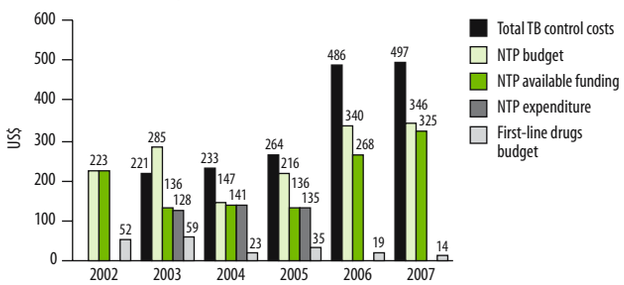
Total TB control costs by line item[j]

NTP budget accounts for biggest share of total TB control costs; increased hospitalization costs are linked to increasing HIV prevalence among TB patients



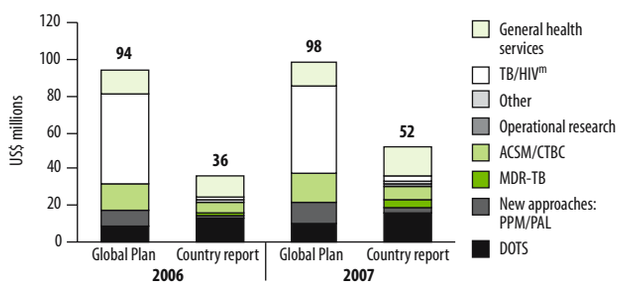
Per patient costs, budgets and expenditures[k]

Budget per patient for first-line drugs falls because projected number of patients to be treated increases but budget does not



Comparison of country report and Global Plan:[l] total TB control costs, 2006–2007

As in all other African HBCs the biggest difference between Global Plan and country report is costs for TB/HIV



SOURCES, METHODS AND ABBREVIATIONS

[a] *World population prospects – the 2004 revision*. New York, United Nations Population Division, 2005.

[b] Incidence, prevalence and mortality estimates include patients infected with HIV. Incidence estimate originally based on assumption of 10% ss+ case detection rate in 1997 (DOTS and non-DOTS). Trend in incidence estimated from 3-year moving average of notifications from those countries in region judged to be detecting an unchanging proportion of cases.

[c] MDG and STB Partnership indicators shown in bold. Targets are 70% case detection of smear-positive cases under DOTS, 85% treatment success, to ensure that the incidence rate is falling by 2015, and to reduce incidence rates and halve 1990 prevalence and mortality rates by 2015. Estimates for 1990 are prevalence 228/100 000 pop and mortality 26/100 000 pop/yr.

[d] Estimate of HIV prevalence in incident TB cases (15–49 yo) derived from UNAIDS estimate of HIV prevalence in the general population, using assumed incidence rate ratio of 6.

[e] MDR-TB figures shown in regular type are survey data from the database of the WHO/IUATLD Global Project on Anti-Tuberculosis Drug Resistance Surveillance. Figures in italics are estimates from the following source: Zignol M et al. Global incidence of multidrug-resistant tuberculosis. *Journal of Infectious Diseases*, 2006, 194:479–485.

[f] Completeness of reporting assessed at lowest level in reporting hierarchy for which information is available.

[g] For routine diagnosis, there should be at least one laboratory providing smear microscopy per 100 000 population. To provide culture for diagnosis of paediatric, extrapulmonary and ss-/HIV+ TB, as well as DST for re-treatment and failure cases, there should be at least one culture facility and one DST facility in each of the 37 states.

[h] Case detection within DOTS areas calculated by dividing national case detection rate (new ss+) by DOTS coverage.

[i] DOTS includes the following components shown in the pie chart at right: first-line drugs, NTP staff, programme management and supervision, and laboratory supplies and equipment.

[j] Total TB control costs for 2003–2005 are based on expenditure, whereas those for 2006–2007 are based on budgets. Estimates of the costs of clinic visits and hospitalization are WHO estimates based on data provided by the NTP and from other sources. See Methods for further details.

[k] NTP available funding for 2004–2005 is based on the amount of funding actually received, using retrospective data; available funding for 2002–2003 and 2006–2007 is based on prospectively reported budget data, and estimated as the total budget minus any reported funding gap.

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– indicates not available; pop, population; ss+, sputum smear-positive; ss-, sputum smear-negative pulmonary; unk, pulmonary – sputum smear not done or result unknown; yr, year.

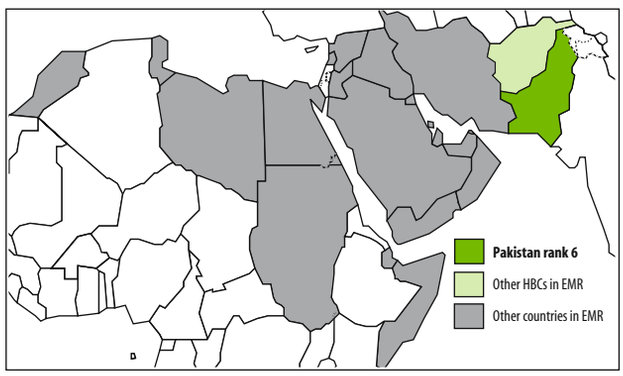
Pakistan

Political commitment in Pakistan to implement and fund the NTP strategic plan remains strong. However, significant resources need to be mobilized to ensure funding for the 2006 and 2007 budgets. Improvements in the quality of DOTS services, especially through EQA initiation and improvements in training and staffing, have led to a significant increase in smear-positive cases notified. To maintain these gains, monitoring and supervision must be strengthened, and initiatives with other private and public providers will need to be expanded. Currently, there are no national polices or guidelines for collaborative TB/HIV activities or for the management of MDR-TB patients.

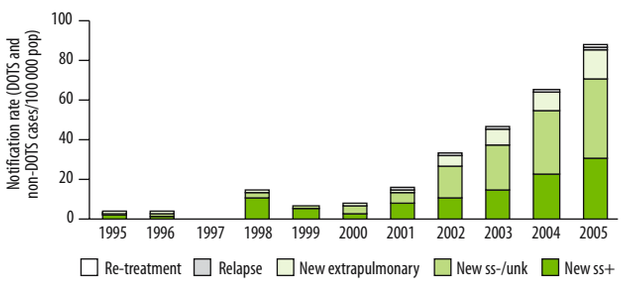
SURVEILLANCE AND EPIDEMIOLOGY

Population (thousands)[a]	157 935	
TB burden, 2005 estimates (with 2.5 and 97.5 centiles)[b]		
Incidence (all cases/100 000 pop/yr)	181	122–246
Trend in incidence rate (%/yr, 2004–2005)[c]	**0.0**	
Incidence (ss+/100 000 pop/yr)	82	54–113
Prevalence (all cases/100 000 pop)[c]	**297**	194–413
Mortality (deaths/100 000 pop/yr)[c]	**37**	25–53
Of new adult TB cases (15–49yrs), % HIV+[d]	0.6	0.3–1.1
New TB cases multidrug-resistant, 2004 (%)[e]	*1.9*	*0.3–10*
Previously treated TB cases multidrug-resistant, 2004 (%)[e]	*28*	*4.9–74*
Surveillance and DOTS implementation, 2005		
Notification rate (new and relapse/100 000 pop/yr)	87	
Notification rate (new ss+/100 000 pop/yr)	30	
DOTS case detection rate (new ss+, %)	**37**	26–55
DOTS treatment success (new ss+ cases, 2004 cohort, %)	**82**	
Of new pulmonary cases notified under DOTS, % smear-positive	42	
Of new cases notified under DOTS, % extrapulmonary	17	
Of new smear-positive cases notified under DOTS, % in women	49	
Of sub-national reports expected, % received at next reporting level[f]	100	
Laboratory services, 2005[g]		
Number of laboratories performing smear microscopy	982	
Number of laboratories performing culture	0	
Number of laboratories performing DST	0	
Of laboratories performing smear microscopy, % covered by EQA	32	
Management of MDR-TB, 2005		
Of new cases notified, % receiving DST at start of treatment	0.0	
Of new cases receiving DST at start of treatment, % MDR-TB	–	
Of re-treatment cases notified, % receiving DST	0.0	
Of re-treatment cases receiving DST, % MDR-TB	–	
Collaborative TB/HIV activities, 2005		
National policy of counselling and testing TB patients for HIV?	No	
National surveillance system for HIV-infection in TB patients?	No	
Of TB patients (new and re-treatment) notified, % tested for HIV	0.0	
Of TB patients tested for HIV, % HIV+	–	
Of HIV+ TB patients detected, % receiving CPT	–	
Of HIV+ TB patients detected, % receiving ART	–	
Budget and finance, 2007		
Government contribution to NTP budget (including loans, %)	15	
Government contribution to total cost of TB control (including loans, %)	26	
Government health spending used for TB control (%)	4.9	
NTP budget funded (%)	26	

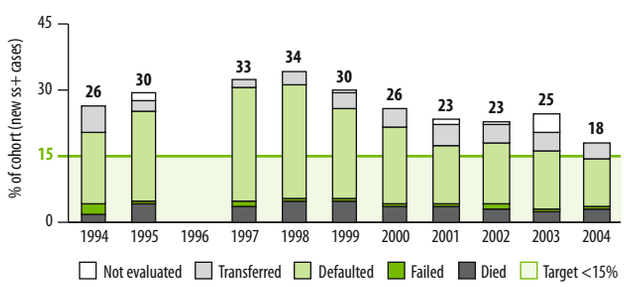
WHO Eastern Mediterranean Region (EMR)
Rank based on estimated number of incident cases (all forms) in 2005



Case notifications
Notifications have increased rapidly as DOTS expands, but case detection rate is still well below target



Unfavourable treatment outcomes, DOTS
Treatment success improving; default rates decreasing, but still most common unfavourable outcome



DOTS expansion and enhancement	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
DOTS coverage (%)	2.0	8.0	–	8.0	8.0	9.0	24	45	63	79	100
DOTS notification rate (new & relapse/100 000 pop)	2.8	3.3	–	7.0	3.4	7.8	12	32	46	66	87
DOTS notification rate (new ss+/100 000 pop)	0.8	1.4	–	3.1	1.6	2.3	4.3	10	14	22	30
DOTS case detection rate (all new cases, %)	1.5	1.8	–	3.7	1.8	4.1	6.3	17	25	35	47
DOTS case detection rate (new ss+, %)	1.0	1.8	–	3.7	2.0	2.8	5.3	13	17	27	37
Case detection rate within DOTS areas (new ss+, %)[h]	51	22	–	47	25	31	22	28	27	34	37
DOTS treatment success (new ss+, %)	70	–	67	66	70	75	77	77	75	82	–
DOTS re-treatment success (ss+, %)	70	–	57	92	75	54	–	76	65	78	–

IMPLEMENTING THE STOP TB STRATEGY[1]

Pursue high-quality dots expansion and enhancement

Budget (2006): US$ 10 million Gap (2006): US$ 4.2 million
Budget (2007): US$ 12 million Gap (2007): US$ 9.0 million

Achievements

- Created new posts in the NTP through the federal development plan (PC-1); recruitment started in July 2006
- Increased significantly the number of smear-positive cases notified from 2003 to 2005
- Designated a full-time HRD focal person in the NTP, with allocated funds for recruitment, training, supervision and monitoring
- Appointed and trained staff in peripheral-level health facilities as part of DOTS expansion
- Developed EQA guidelines and EQA implementation plan for 40 districts, with CIDA, JICA and GTZ support
- Performed pre-EQA implementation baseline survey in last quarter 2005 by NRL
- Developed a routine monitoring and supervision system, with a standardized checklist and field visits

Planned activities

- Expand EQA country-wide
- Develop guidelines for anti-TB drug management

Challenges

- Improving the quality of DOTS services through better TB diagnosis in PHC settings and strengthened monitoring and supervision within the district health system
- Improving case detection: case detection in 2005 was only 37%, despite 100% population DOTS coverage, based on current, uncertain, estimates of TB incidence
- Developing HRD policy and plan for TB control
- Revising curricula for basic training of doctors by Pakistan Medical and Dental Council, and of nurses by Pakistan Nursing Council, to include TB control
- Establishing quality-assured culture services
- Filling large funding gaps for laboratory supplies and equipment in 2006 and 2007, and for first-line drugs in 2007
- Assessing the true burden of TB in the country: no surveys or analyses are planned beyond routine analysis of programme data

Address TB/HIV, MDR-TB and other challenges

Budget (2006): US$ 0.7 million Gap (2006): US$ 0.5 million
Budget (2007): US$ 0.7 million Gap (2007): US$ 0.5 million

Achievements

- Established collaborative TB/HIV board at federal level
- Ensured plan of action for TB control for special populations: prison populations in the national TB strategic plan; refugee/displaced populations and immigrants in NGO plans; and earthquake affected populations in a special national plan
- Reinstated DOTS services to areas affected by the earthquake through an effective needs assessment, additional drug request and supply by the GDF, NTP contribution to relief activities, TB patient tracing, and promotion of community mobilization and health education

Planned activities

- Develop and finalize a national collaborative TB/HIV strategy
- Operationalize collaborative TB/HIV activities in 30 proposed sentinel sites

Challenges

- Expanding technical capacity and resources to develop and implement collaborative TB/HIV activities
- Developing and implementing a clear national strategy to manage and monitor patients with MDR-TB and chronic TB
- Strengthening laboratory capacity for drug susceptibility testing

Contribute to health system strengthening

Budget[2] (2006): US$ 0 Gap (2006): US$ 0
Budget (2007): US$ 0 Gap (2007): US$ 0

Achievements

- Established links between district, provincial and federal levels for general recording and reporting
- Commitment of district health authorities to contribute part of their general medicine budget towards procurement of anti-TB drugs

Planned activities

- None described

Challenges

- Developing system to manage distribution of anti-TB drugs from central to district level

Engage all care providers

Budget (2006): US$ 1.2 million Gap (2006): US$ 0
Budget (2007): US$ 1.9 million Gap (2007): US$ 0.4 million

Achievements

- Initiated the Greenstar TB control franchise (branded as "GoodLife") in January 2006, funded by GFATM round 3 grant, involving 565 private practitioners in 5 major urban areas (total population 25 million)
- Performed situational analysis of PPM initiatives and developed operational guidelines for PPM in Pakistan

[1] Unless otherwise specified, achievements are for financial year 2005; planned activities are for financial year 2006. Budgets and gaps are for financial years.

[2] While there is no specific budget line for this component of the Stop TB Strategy, the NTP contributes to health system strengthening in a number of ways, including the training of health-care personnel, strengthening of laboratories and improvements in managerial capacity.

IMPLEMENTING THE STOP TB STRATEGY

- Strengthened capacity of non-NTP laboratories (private, NGO, university, malaria control programme) by providing equipment, reagents and consumables through Public Sector Development Programme funds

Planned activities

- Increase case-finding through: (i) PPM, with a focus on private health sector, tertiary care hospitals and corporate health sector, and (ii) intersectoral collaboration
- Recruit a USAID-funded PPM focal person for central and provincial levels to assist scale up of PPM activities
- Scale up PPM activities based on the new operational guidelines

Challenges

- Ensuring and maintaining high-quality services and coordination (between implementers and NTP) as GoodLife and other PPM initiatives rapidly scale up
- Ability of PPM initiatives to reliably distribute effective quality-assured anti-TB drugs
- Limited involvement of tertiary care hospitals in NTP-recommended TB control services
- Funding gap for 2007 needs to be filled

Empower people with TB, and communities

Budget (2006): US$ 5.2 million — Gap (2006): US$ 3.6 million
Budget (2007): US$ 5.2 million — Gap (2006): US$ 4.1 million

Achievements

- Drafted ACSM strategy for NTP and requested GFATM funding for development of final ACSM strategy document
- Field-tested TB advocacy strategies among grass roots leaders in 20 selected districts
- Mobilized community through NGO partners in more than 40 districts including: interactive theatre, NGO/community-based organizations coalition, rural support pro-gramme, and Lady Health Worker (LHW) involvement

Planned activities

- Distribute awareness materials (TV spots, posters, leaflets, video documentaries) created by NTP and the Health Education Department of the MOH at end of 2006
- Promote the Patients' Charter for Tuberculosis Care

Challenges

- Implementing and rolling out the ACSM national strategy, including a workplan
- Designing and implementing a robust monitoring and evaluation system for ACSM activities
- Mobilizing substantial new funding for ACSM

Enable and promote research

Budget (2006): US$ 0.09 million — Gap (2006): US$ 0.04 million
Budget (2007): US$ 0.1 million — Gap (2007): US$ 0.02 million

Achievements

- Established 1 national and 4 provincial research core groups, and developed partnerships with Pakistan Medical Research Council at national and provincial levels
- Collaborated with the South Asian Association for Regional Cooperation (SAARC) in operational research projects in TB/HIV
- Conducted operational research on drug management in Punjab province, with JICA support, to be expanded to other provinces in the coming months
- Carried out several operational research projects in 2005 in the areas of treatment adherence and defaulter tracing; socio-behavioural barriers; atypical DOTS providers and case detection; surveillance; quality of peripheral-level laboratory services; community awareness; and the introduction of FDC anti-TB drugs

Planned activities

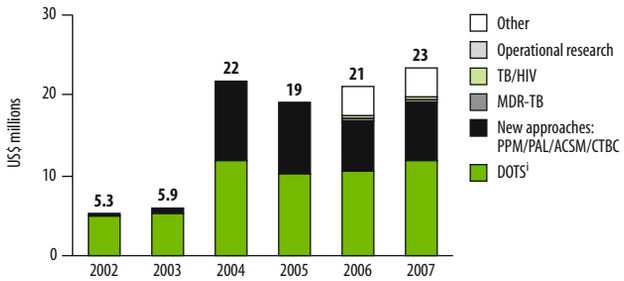
- Conduct a number of operational research studies/surveys including: drug resistance survey; TB drug management system study; HIV prevalence in TB patients survey; effect of incentives on case detection rate study; cost-effective analysis of 3 PPM models; and effect of LHW study on TB control outcomes

Challenges

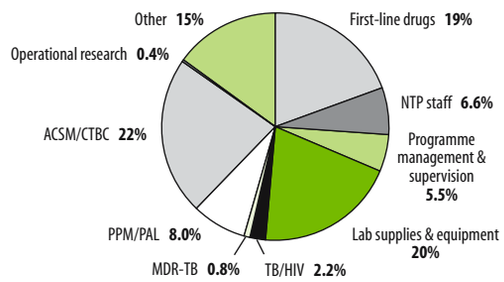
- Continuing mobilizing resources for operational research
- Performing appropriate analysis on data collected on routine basis at all levels to address real operational research questions

FINANCING THE STOP TB STRATEGY

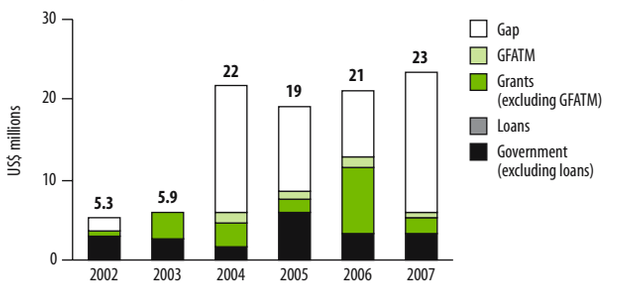
NTP budget by line item
Budget for DOTS and new approaches not increasing in line with projected 77% increase in number of patients to be treated between 2005 and 2007



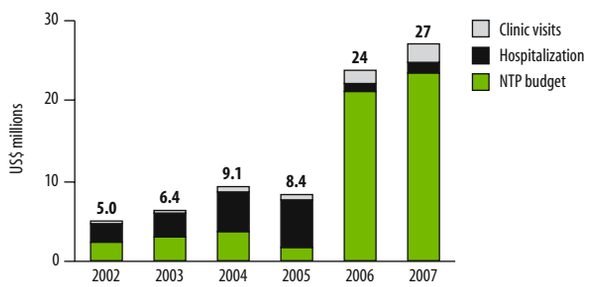
NTP budget by line item, 2007
Compared with other HBCs, relatively large share of budget is for ACSM and community-based TB care



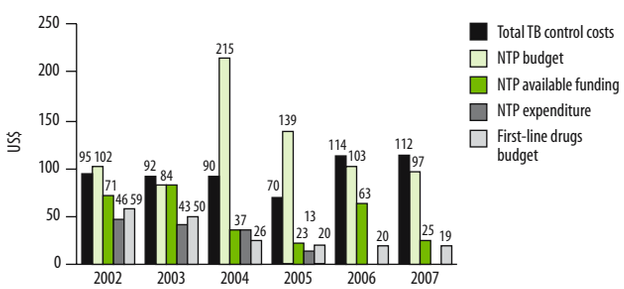
NTP budget by source of funding
Little change in budget for 2006 and 2007 despite important increase in projected number of patients to be treated; budget for 2007 mostly unfunded, with particularly large funding shortfalls for first-line drugs, laboratory supplies and ACSM



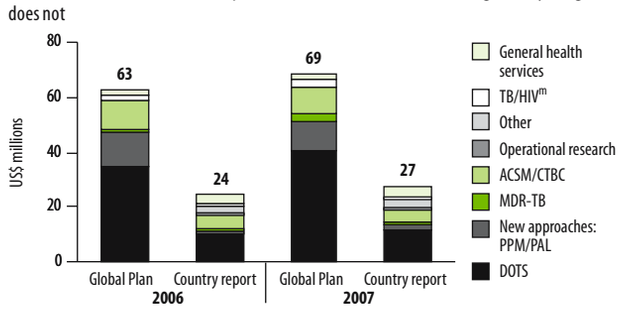
Total TB control costs by line item[j]
NTP budget accounts for biggest share of total TB control costs; use of hospitalization falling as DOTS expands



Per patient costs, budgets and expenditures[k]
Large difference between expenditures and budgets; budget per patient falling because it does not increase in line with the projected number of patients to be treated



Comparison of country report and Global Plan:[l] total TB control costs, 2006–2007
Big difference between Global Plan and country report; Global Plan allows budget for DOTS to increase in line with number of patients to be treated whereas existing country budget does not



SOURCES, METHODS AND ABBREVIATIONS

[a] *World population prospects – the 2004 revision*. New York, United Nations Population Division, 2005.
[b] Incidence, prevalence and mortality estimates include patients infected with HIV. Estimates of TB burden based on 1987–1988 prevalence survey and on notifications in DOTS areas in 1996. Incidence rate assumed to be constant in absence of contrary evidence, but estimated prevalence and mortality rates decline with growing proportion of cases treated.
[c] MDG and STB Partnership indicators shown in bold. Targets are 70% case detection of smear-positive cases under DOTS, 85% treatment success, to ensure that the incidence rate is falling by 2015, and to reduce incidence rates and halve 1990 prevalence and mortality rates by 2015. Estimates for 1990 are prevalence 429/100 000 pop and mortality 49/100 000 pop/yr.
[d] Estimate of HIV prevalence in incident TB cases (15–49 yo) derived from UNAIDS estimate of HIV prevalence in the general population, using assumed incidence rate ratio of 6.
[e] MDR-TB figures shown in regular type are survey data from the database of the WHO/IUATLD Global Project on Anti-Tuberculosis Drug Resistance Surveillance. Figures in italics are estimates from the following source: Zignol M et al. Global incidence of multidrug-resistant tuberculosis. *Journal of Infectious Diseases*, 2006, 194:479–485.
[f] Completeness of reporting assessed at lowest level in reporting hierarchy for which information is available.
[g] For routine diagnosis, there should be at least one laboratory providing smear microscopy per 100 000 population. To provide culture for diagnosis of paediatric, extrapulmonary and ss-/HIV+ TB, as well as DST for re-treatment and failure cases, there should be at least one culture facility and one DST facility in each of the 7 provinces.
[h] Case detection within DOTS areas calculated by dividing national case detection rate (new ss+) by DOTS coverage.
[i] DOTS includes the following components shown in the pie chart at right: first-line drugs, NTP staff, programme management and supervision, and laboratory supplies and equipment.
[j] Total TB control costs for 2002–2005 are based on expenditure, whereas those for 2006–2007 are based on budgets. Estimates of the costs of clinic visits and hospitalization are WHO estimates based on data provided by the NTP and from other sources. See Methods for further details.
[k] NTP available funding for 2004–2005 is based on the amount of funding actually received, using retrospective data; available funding for 2002–2003 and 2006–2007 is based on prospectively reported budget data, and estimated as the total budget minus any reported funding gap.
[l] Estimates in the Global Plan were presented for regions rather than countries. See Methods for explanation of calculation of individual country estimates from regional estimates.
[m] Global Plan estimates cover the full costs of collaborative TB/HIV activities, but these costs may be budgeted for by either the NTP or the National AIDS Programme. In this graph, country reports include only the NTP budget. This may explain the apparent discrepancy between the Global Plan and country reports.

– indicates not available; pop, population; ss+, sputum smear-positive; ss-, sputum smear-negative pulmonary; unk, pulmonary – sputum smear not done or result unknown; yr, year.

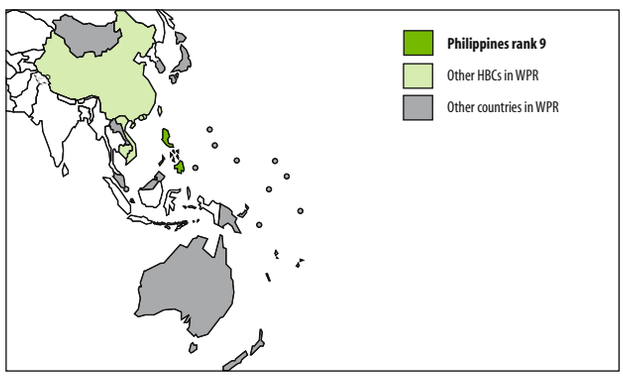
Philippines

Having reached the global targets for TB control in 2004, a major challenge for the Philippines is to sustain recent achievements. The expansion of EQA for smear microscopy has become one important mechanism for maintaining the quality of services. Successful PPM pilot initiatives have led to increased case detection, and scale-up is expected throughout the country. While private sector initiatives have addressed MDR-TB in the past, efforts are being made to manage MDR-TB patients within routine NTP activities.

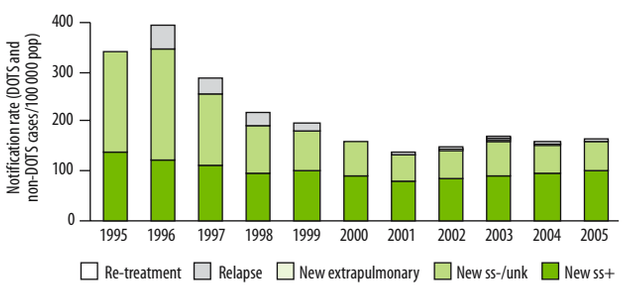
SURVEILLANCE AND EPIDEMIOLOGY

Population (thousands)[a]	83 054	
TB burden, 2005 estimates (with 2.5 and 97.5 centiles)b		
Incidence (all cases/100 000 pop/yr)	291	79–140
Trend in incidence rate (%/yr, 2004–2005)[c]	**-0.9**	
Incidence (ss+/100 000 pop/yr)	131	78–197
Prevalence (all cases/100 000 pop)[c]	**450**	259–696
Mortality (deaths/100 000 pop/yr)[c]	**47**	27–73
Of new adult TB cases (15–49yrs), % HIV+[d]	0.1	0.1–0.2
New TB cases multidrug-resistant, 2004 (%)[e]	*1.5*	*0.3–8.4*
Previously treated TB cases multidrug-resistant, 2004 (%)[e]	*14*	*2.1–56*
Surveillance and DOTS implementation, 2005		
Notification rate (new and relapse/100 000 pop/yr)	165	
Notification rate (new ss+/100 000 pop/yr)	98	
DOTS case detection rate (new ss+, %)	**75**	50–126
DOTS treatment success (new ss+ cases, 2004 cohort, %)	**87**	
Of new pulmonary cases notified under DOTS, % smear-positive	62	
Of new cases notified under DOTS, % extrapulmonary	0.9	
Of new smear-positive cases notified under DOTS, % in women	30	
Of sub-national reports expected, % received at next reporting level[f]	98	
Laboratory services, 2005[g]		
Number of laboratories performing smear microscopy	1 858	
Number of laboratories performing culture	3	
Number of laboratories performing DST	3	
Of laboratories performing smear microscopy, % covered by EQA	26	
Management of MDR-TB, 2005		
Of new cases notified, % receiving DST at start of treatment	0.0	
Of new cases receiving DST at start of treatment, % MDR-TB	100	
Of re-treatment cases notified, % receiving DST	3.5	
Of re-treatment cases receiving DST, % MDR-TB	86	
Collaborative TB/HIV activities, 2005		
National policy of counselling and testing TB patients for HIV?	No	
National surveillance system for HIV-infection in TB patients?	No	
Of TB patients (new and re-treatment) notified, % tested for HIV	–	
Of TB patients tested for HIV, % HIV+	–	
Of HIV+ TB patients detected, % receiving CPT	–	
Of HIV+ TB patients detected, % receiving ART	–	
Budget and finance, 2007		
Government contribution to NTP budget (including loans, %)	50	
Government contribution to total cost of TB control (including loans, %)	67	
Government health spending used for TB control (%)	2.8	
NTP budget funded (%)	89	

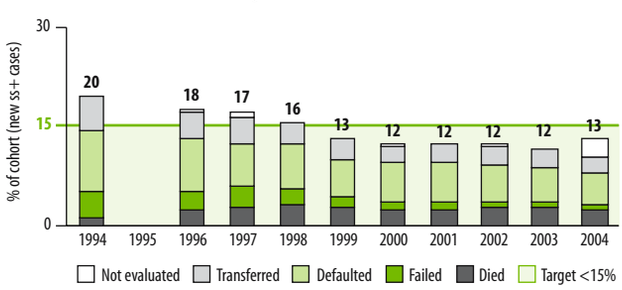
WHO Western Pacific Region (WPR)
Rank based on estimated number of incident cases (all forms) in 2005



Case notifications
Notifications fell in late 1990s, but are now fairly stable; proportion of new pulmonary cases smear-positive has risen to over 60%



Unfavourable treatment outcomes, DOTS
Proportion of patients not evaluated higher than in previous years due to missing reports but treatment success still above 85% target



DOTS expansion and enhancement	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
DOTS coverage (%)	4.3	2.0	15	17	43	90	95	98	100	100	100
DOTS notification rate (new & relapse/100 000 pop)	1.4	2.5	10	25	43	118	139	150	166	160	165
DOTS notification rate (new ss+/100 000 pop)	0.6	0.7	4.5	14	28	66	77	83	91	96	98
DOTS case detection rate (all new cases, %)	0.4	0.8	3.2	7.7	13	39	44	49	55	53	55
DOTS case detection rate (new ss+, %)	0.4	0.5	3.2	10	20	48	56	61	68	72	75
Case detection rate within DOTS areas (new ss+, %)[h]	10	23	21	60	46	54	59	63	68	72	75
DOTS treatment success (new ss+, %)	–	82	83	84	87	88	88	88	88	87	–
DOTS re-treatment success (ss+, %)	–	66	26	83	–	–	–	–	76	53	–

IMPLEMENTING THE STOP TB STRATEGY[1]

Pursue high-quality dots expansion and enhancement

Budget (2006): US$ 12 million
Budget (2007): US$ 12 million
Gap (2006): US$ 1.6 million
Gap (2007): US$ 0.9 million

Achievements

- Expanded EQA for smear microscopy to 2 additional provinces in 17 regions in 2006, with support from JICA and RIT
- Structured a strategic HRD plan for TB control in the 5-year NTP strategic plan that includes training and staffing for DOTS, management of MDR-TB and collaborative TB/HIV activities and implementation of PPM activities
- Tested policies and guidelines developed by the national Childhood TB Task Force for the management of TB in children in selected areas of the country
- Enhanced data management through introduction of an electronic TB register

Planned activities

- Expand EQA to all provinces and cities by August 2007
- Orient health workers on the revised fourth edition of the NTP manual
- Promote certification and accreditation of DOTS facilities to ensure quality of services and availability of the PhilHealth TB DOTS outpatient benefit package
- Hold data management workshops at the intermediate level in July 2007, in order to improve recording and reporting
- Introduce electronic TB register in one region in 2007, with funding from GFATM

Challenges

- Retaining staff working in microscopy units
- Securing political and financial commitment and support for the NTP from local governments, particularly for laboratory supervision and staffing

Address TB/HIV, MDR-TB and other challenges

Budget (2006): US$ 1.3 million
Budget (2007): US$ 2.1 million
Gap (2006): US$ 0.8 million
Gap (2007): US$ 0.8 million

Achievements

- Recognized collaborative TB/HIV activities as an important new activity for the NTP
- Developed national MDR-TB guidelines and training materials for the management of MDR-TB patients
- Designated the Lung Centre of the Philippines, a public hospital, as a satellite centre for treatment of MDR-TB patients, supporting the main treatment centre operated by the Tropical Diseases Foundation
- Trained prison physicians in TB control, and provided anti-TB drugs and laboratory supplies free of charge to prisons

Planned activities

- Establish strong collaboration between NTP and NAP, and create a national TB/HIV committee to formulate policies and guidelines for collaborative TB/HIV activities
- Advocate for local government executives to implement collaborative TB/HIV activities
- Establish surveillance of HIV in TB patients to determine prevalence and trends over time
- Scale-up the establishment of satellite treatment centres and treatment sites, as well as of culture centres, to support the expansion of programmatic management of MDR-TB

Challenges

- Improving technical expertise, funding and staff for collaborative TB/HIV activities
- Closing funding gaps for MDR-TB treatment
- Building upon existing MDR-TB initiatives in the private sector to mainstream the management of MDR-TB patients in NTP activities
- Expanding culture and DST facilities of both public and private laboratories to move the MDR-TB treatment programme forward
- Addressing the urban poor in the National Capital Region (Metro Manila)

Contribute to health system strengthening

Budget [2] (2006): US$ 0
Budget (2007): US$ 0
Gap (2006): US$ 0
Gap (2007): US$ 0

Achievements

- Included activities in the NTP strategic plan to strengthen the health system in areas of governance (i.e. scaling up PPM), service delivery (i.e. implementation of MDR-TB and collaborative TB/HIV activities), financing (i.e. expansion of social insurance coverage) and regulation (i.e. upgrading of DOTS facilities through certification)

Planned activities

- Data management workshops at intermediate level to improve recording and reporting (July 2007)
- Introduction of an electronic TB register in one region (in 2007) will contribute to strengthening the health information system

[1] Unless otherwise specified, achievements are for financial year 2005; planned activities are for financial year 2006. Budgets and gaps are for financial years.

[2] While there is no specific budget line for this component of the Stop TB Strategy, the NTP will continue to contribute to health system strengthening, including through planned activities to improve data mangement listed under "Pursue high-quality DOTS expansion and enhancement".

IMPLEMENTING THE STOP TB STRATEGY

Challenges

- Strengthening the health information system

Engage all care providers

Budget (2006): US$ 2.5 million
Budget (2007): US$ 3.8 million

Gap (2006): US$ 1.3 million
Gap (2007): US$ 0

Achievements

- Trained health staff on hospital-based DOTS in the DoH–retained and selected local government unit hospitals
- Established additional PPM units in coordination with the Philippines Coalition Against TB (PhilCAT) through GFATM support (total of 72 PPM units in the country), and through the Philippine Tuberculosis Initiatives for the Private Sector (PhilTIPS), with USAID assistance
- Continued training and orientation of private physicians on NTP policies and guidelines (3000 trained in total)
- Conducted monitoring and evaluation of DOTS centres, including PPM units
- Mobilized additional funding for PPM such that planned activities are fully funded in 2007

Planned activities

- Establish additional 100 PPM units under the GFATM supported project in 2007 and 2008, and install additional 237 PPM units through the USAID supported project (2006–2011)
- Conduct a national PPM implementation review
- Revise NTP manual in line with the International Standards for Tuberculosis Care

Challenges

- Standardizing NTP laboratory procedures in public and private sector laboratories
- Extending PPM to government hospitals and other government agencies operating outside of the NTP (through public-public mix), while replicating the achievements made in the private sector (public–private mix)
- Engaging the medical/paramedical colleges for integration of DOTS in their respective curricula

Empower people with TB, and communities

Budget (2006): US$ 0.4 million
Budget (2007): US$ 1.2 million

Gap (2006): US$ 0
Gap (2007): US$ 0.05 million

Achievements

- Partnered with the National Centre for Health Promotion and World Vision Development Foundation, Inc in the planning and implementation of the Kusog Baga Project (community treatment support activities)
- Involved community in case detection, referral, treatment support and defaulter tracing (25% of population covered)
- Involved cured MDR-TB patients in treatment support of other MDR-TB patients in Atimonan Municipality, Quezon Region
- Mobilized substantial new funding for ACSM activities

Planned activities

- Enhance community involvement by creating additional task forces in urban areas (composed of Barangay health workers, Barangay captains, former patients and members of community health committees) and by involving NGOs who work with communities
- Familiarize sub-national NTP staff with the Patients' Charter for Tuberculosis Care

Challenges

- Advocating for TB and TB/HIV issues through collaboration between HIV/AIDS community and the NTP, and helping to build capacity for collaborative TB/HIV activities

Enable and promote research

Budget (2006): US$ 0.04 million
Budget (2007): US$ 0.8 million

Gap (2006): US$ 0.03 million
Gap (2007): US$ 0.3 million

Achievements

- Included operational research in the NTP strategic plan, involving staff at all levels in collaboration with public and private sector partners
- Initiated operational research projects in PPM, including collaboration with pharmacies

Planned activities

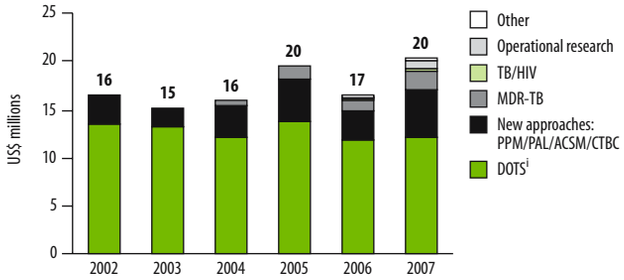
- Conduct a national population-based survey of the prevalence of disease and a national population-based survey of the prevalence of infection in 2007, to be compared with 1997 and 2017 surveys
- Continue a public-public DOTS research study looking at the effectiveness of referrals from public hospitals to public health centres, and initiate a study to examine the effectiveness of family members as treatment partners

Challenges

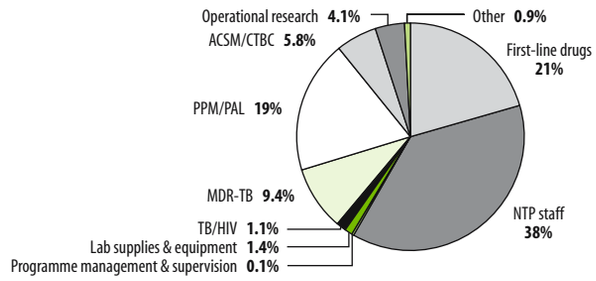
- Validating the performance of TB diagnostic committees for smear-negative patients

FINANCING THE STOP TB STRATEGY

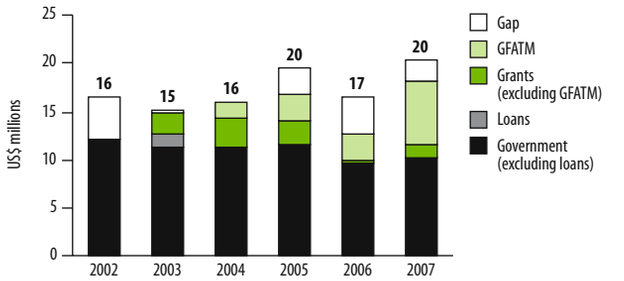
NTP budget by line item
Increasing budget to support scaling up of MDR-TB treatment; also increased budget for PPM and ACSM in 2007



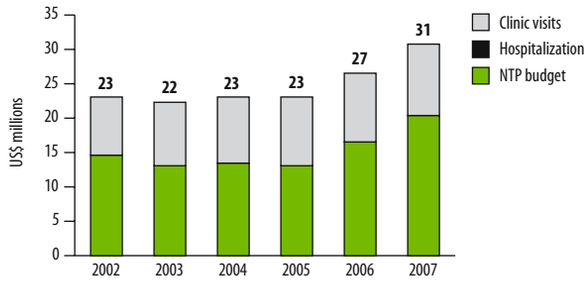
NTP budget by line item, 2007
Relatively large share of budget for PPM and MDR compared to other Asian HBCs



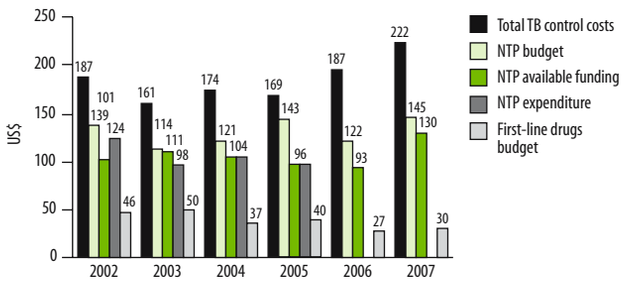
NTP budget by source of funding
Budget reduction in 2006 due to closure of PhilTIPS PPM project and revision of budget requirement for second-line drugs



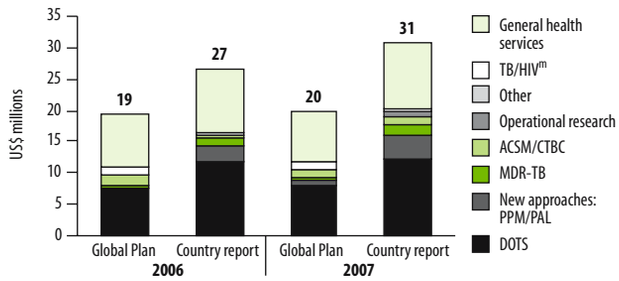
Total TB control costs by line item[j]
NTP budget accounts for increasing share of total costs of TB control as new components of Stop TB Strategy added to DOTS



Per patient costs, budgets and expenditures[k]
Generally stable costs and budgets per patient, most or all of available funding is spent



Comparison of country report and Global Plan:[l] total TB control costs, 2006–2007
Unlike most HBCs, scaling up of MDR-TB treatment is ahead of Global Plan; upward revision of budget per patient after finalization of Global Plan explains higher budget for DOTS in country report



SOURCES, METHODS AND ABBREVIATIONS

[a] *World population prospects – the 2004 revision*. New York, United Nations Population Division, 2005.
[b] Incidence, prevalence and mortality estimates include patients infected with HIV. Estimates of TB burden based on 1997 prevalence survey. Incidence assumed to be declining at 1% per yr as in other countries in WPR.
[c] MDG and STB Partnership indicators shown in bold. Targets are 70% case detection of smear-positive cases under DOTS, 85% treatment success, to ensure that the incidence rate is falling by 2015, and to reduce incidence rates and halve 1990 prevalence and mortality rates by 2015. Estimates for 1990 are prevalence 820/100 000 pop and mortality 80/100 000 pop/yr.
[d] Estimate of HIV prevalence in incident TB cases (15–49 yo) derived from UNAIDS estimate of HIV prevalence in the general population, using assumed incidence rate ratio of 6.
[e] MDR-TB figures shown in regular type are survey data from the database of the WHO/IUATLD Global Project on Anti-Tuberculosis Drug Resistance Surveillance. Figures in italics are estimates from the following source: Zignol M et al. Global incidence of multidrug-resistant tuberculosis. *Journal of Infectious Diseases*, 2006, 194:479–485.
[f] Completeness of reporting assessed at lowest level in reporting heirachy for which information is available.
[g] For routine diagnosis, there should be at least one laboratory providing smear microscopy per 100 000 population. To provide culture for diagnosis of paediatric, extrapulmonary and ss-/HIV+ TB, as well as DST for re-treatment and failure cases, there should ideally be at least one culture facility and one DST facility in each province.
[h] Case detection within DOTS areas calculated by dividing national case detection rate (new ss+) by DOTS coverage.
[i] DOTS includes the following components shown in the pie chart at right: first-line drugs, NTP staff, programme management and supervision, and laboratory supplies and equipment.
[j] Total TB control costs for 2002–2005 are based on expenditure, whereas those for 2006–2007 are based on budgets. Estimates of the costs of clinic visits and hospitalization are WHO estimates based on data provided by the NTP and from other sources. See Methods for further details.
[k] NTP available funding for 2004–2005 is based on the amount of funding actually received, using retrospective data; available funding for 2002–2003 and 2006–2007 is based on prospectively reported budget data, and estimated as the total budget minus any reported funding gap.
[l] Estimates in the Global Plan were presented for regions rather than countries. See Methods for explanation of calculation of individual country estimates from regional estimates.
[m] Global Plan estimates cover the full costs of collaborative TB/HIV activities, but these costs may be budgeted for by either the NTP or the National AIDS Programme. In this graph, country reports include only the NTP budget. This may explain the apparent discrepancy between the Global Plan and country reports.

– indicates not available; pop, population; ss+, sputum smear-positive; ss-, sputum smear-negative pulmonary; unk, pulmonary – sputum smear not done or result unknown; yr, year.

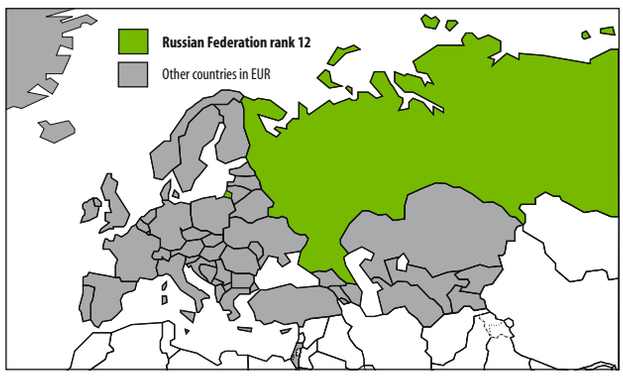
Russian Federation

The current positive momentum in TB control in the Russian Federation is partly due to the successful implementation of a number of pilot projects carried out in selected oblasts, supported by international technical partners. The implementation of the World Bank and GFATM projects by the federal government will help to consolidate and build on these achievements. However, major efforts are still needed to establish the Stop TB Strategy as the dominant approach to TB control in all territories, including procedures to address the threat of MDR-TB and extensively drug-resistant TB and of TB/HIV, as well as to start involving the community in TB control.

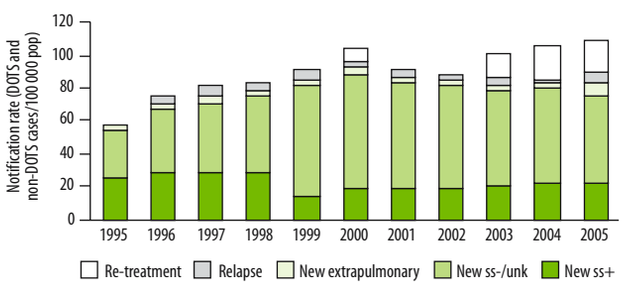
SURVEILLANCE AND EPIDEMIOLOGY

Population (thousands)[a]	143 202	
TB burden, 2005 estimates (with 2.5 and 97.5 centiles)[b]		
Incidence (all cases/100 000 pop/yr)	119	102–138
Trend in incidence rate (%/yr, 2004–2005)[c]	**0.3**	
Incidence (ss+/100 000 pop/yr)	53	44–63
Prevalence (all cases/100 000 pop)[c]	**150**	112–197
Mortality (deaths/100 000 pop/yr)[c]	**20**	15–26
Of new adult TB cases (15–49yrs), % HIV+[d]	6.2	3.6–9.5
New TB cases multidrug-resistant, 2004 (%)[e]	*10*	*7.3–13*
Previously treated TB cases multidrug-resistant, 2004 (%)[e]	*48*	*40–56*
Surveillance and DOTS implementation, 2005		
Notification rate (new and relapse/100 000 pop/yr)	89	
Notification rate (new ss+/100 000 pop/yr)	23	
DOTS case detection rate (new ss+, %)	**30**	25–36
DOTS treatment success (new ss+ cases, 2004 cohort, %)	**59**	
Of new pulmonary cases notified under DOTS, % smear-positive	30	
Of new cases notified under DOTS, % extrapulmonary	10	
Of new smear-positive cases notified under DOTS, % in women	–	
Of sub-national reports expected, % received at next reporting level[f]	–	
Laboratory services, 2005[g]		
Number of laboratories performing smear microscopy	4 953	
Number of laboratories performing culture	–	
Number of laboratories performing DST	–	
Of laboratories performing smear microscopy, % covered by EQA	–	
Management of MDR-TB, 2005		
Of new cases notified, % receiving DST at start of treatment	–	
Of new cases receiving DST at start of treatment, % MDR-TB	–	
Of re-treatment cases notified, % receiving DST	–	
Of re-treatment cases receiving DST, % MDR-TB	–	
Collaborative TB/HIV activities, 2005		
National policy of counselling and testing TB patients for HIV?	Yes	
National surveillance system for HIV-infection in TB patients?	Yes	
Of TB patients (new and re-treatment) notified, % tested for HIV	–[h]	
Of TB patients tested for HIV, % HIV+	–[h]	
Of HIV+ TB patients detected, % receiving CPT	–	
Of HIV+ TB patients detected, % receiving ART	–	
Budget and finance, 2007		
Government contribution to NTP budget (including loans, %)	60	
Government contribution to total cost of TB control (including loans, %)	64	
Government health spending used for TB control (%)	0.4	
NTP budget funded (%)	64	

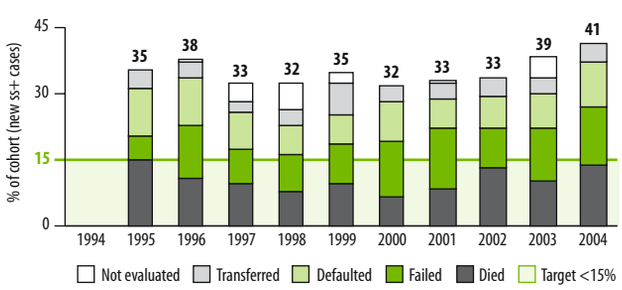
WHO European Region (EUR)
Rank based on estimated number of incident cases (all forms) in 2005



Case notifications
Notification rate of new pulmonary cases continues to fall slightly, with increasing proportion confirmed by smear microscopy; other case types increasing



Unfavourable treatment outcomes, DOTS
Death, treatment failure and default all contribute to low treatment success rate



DOTS expansion and enhancement	1995		1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
DOTS coverage (%)	0.0	2.3	2.3	5.0	5.0	12	16	25	25	45	83	
DOTS notification rate (new & relapse/100 000 pop)	–	0.6	1.2	1.2	2.6	7.8	10	12	15	24	58	
DOTS notification rate (new ss+/100 000 pop)	–	0.2	0.5	0.5	0.9	2.5	2.8	3.6	4.4	6.9	16	
DOTS case detection rate (all new cases, %)	–	0.6	1.1	1.0	2.0	5.7	7.4	9.4	12	19	45	
DOTS case detection rate (new ss+, %)	–	0.4	0.9	0.9	1.6	4.4	5.0	6.6	8.3	13	30	
Case detection rate within DOTS areas (new ss+, %)[i]	–	19	41	18	32	37	31	26	33	29	36	
DOTS treatment success (new ss+, %)	65	62	67	68	65	68	67	67	61	59	–	
DOTS re-treatment success (ss+, %)	58	64	–	49	45	49	48	46	45	34	–	

IMPLEMENTING THE STOP TB STRATEGY[1]

Pursue high-quality DOTS expansion and enhancement

Budget (2006): US$ 301 million
Budget (2007): US$ 350 million

Gap (2006): US$ 5.9 million
Gap (2007): US$ 86 million

Achievements

- Implemented the revised TB control strategy in 85 out of 88 regions in 2006 with support from the World Bank and GFATM
- Positive outcome of the World Bank's project Mid-term Review (October 2006) and advanced results in implementation of the GFATM project
- Positive results of the External Review of International TB Control Projects (July 2006)
- Introduced TB treatment standards and new forms for reporting on TB notification and treatment results in 68 regions in 2005 (83% population coverage)
- Introduced new reporting and recording system for TB laboratories
- Strengthened infrastructure of TB laboratory services with the support of the World Bank and GFATM projects
- Developed national guidelines for laboratory diagnostics of TB (microscopy, culture, DST) in line with international recommendations
- Adapted and field-tested national training course on TB management at the municipal level (approved by the Ministry of Health and Social Development); trained trainers to teach TB doctors countrywide
- Ensured national stock of first-line anti-TB drugs for 2 years
- Involved 8 Russian drug manufacturers in training sessions within the WHO prequalification project, 5 of them being under international GMP inspection supported by GFATM

Planned activities

- Continue to implement the revised national TB control strategy at the regional level with support from the World Bank and GFATM
- Perform assessment HRD needs in TB control at regional and national levels
- Develop a 2007–2011 draft strategic TB plan in line with the Global Plan
- Train TB and primary health-care (PHC) doctors in TB control at the municipal level countrywide
- Train laboratory staff of TB clinics and PHC services in TB diagnosis countrywide

Challenges

- Developing a comprehensive HRD plan and designating an HR focal person within the NTP; some HRD planning has been done as part of the World Bank and GFATM projects
- Obtaining sufficient funds to maintain five NRLs; having these laboratories officially designated as NRLs by the Ministry of Health and Social Development
- Ensuring that all TB microscopy units have at least one staff member trained in smear microscopy
- Implementing EQA for smear microscopy in a systematic manner in all parts of the country
- Encouraging TB patients from socially marginalized groups (the alcohol-dependent, ex-prisoners, the homeless, etc.) to complete treatment; these groups tend to show low treatment adherence
- Collecting and analysing surveillance data; the introduction of a new recording and reporting system for TB control caused some initial difficulties in 2006

Address TB/HIV, MDR-TB and other challenges

Budget (2006): US$ 72 million
Budget (2007): US$ 269 million

Gap (2006): US$ 37 million
Gap (2007): US$ 151 million

Achievements

- National Coordination Council for prevention and treatment of TB/HIV established by the Ministry of Health and Social Development
- Introduced surveillance of HIV prevalence in TB patients
- Developed training materials and revised national guidelines for collaborative TB/HIV activities based on WHO recommendations
- Conducted 6 training courses for TB/HIV coordinators, with GFATM support
- Implemented proficiency testing of laboratories in cooperation with supranational laboratories in 38 regions
- Initiated collection of standardized drug susceptibility testing data in 10 regions
- Began revision of national MDR-TB control strategy to bring it in line with new WHO guidelines
- Implemented GLC-approved projects for treatment of MDR-TB in 5 regions; more than 800 MDR-TB patients enrolled
- Received GLC approval for project to treat 3010 patients within the GFATM project (11 regions)
- Prepared plan with WHO TB Control Programme's assistance to enrol 7500 MDR-TB patients
- Provided food, transportation, psychological support and legal services for TB patients in several territories
- Improved prison TB control, including substantial investments in laboratory equipment and infrastructure, case management, monitoring and training

Planned activities

- Designate 5 federal centres of excellence for the treatment of MDR-TB in the civilian sector, and 8 in the penal system
- Implement and scale up activities for MDR-TB management in several new territories, with GFATM support
- Implement services for HIV-infected TB patients
- Improve surveillance of HIV infection among TB patients
- Prepare comprehensive guidelines for collaborative TB/HIV activities

Challenges

- Improving the performance of laboratories by ensuring that personnel are adequately trained and laboratories well equipped
- Regulating the use of second-line anti-TB drugs in line with international guidelines
- Improving provision of ART for HIV-infected TB patients
- Establishing commitment to collaborative TB/HIV activities in both the national TB control programme and the HIV programme, and coordinating the activities of these programmes

[1] Unless otherwise specified, achievements are for financial year 2005; planned activities are for financial year 2006. Budgets and gaps are for financial years 2006/2007.

IMPLEMENTING THE STOP TB STRATEGY

Contribute to health system strengthening

Budget (2006): US$ 0 Gap (2006): US$ 0
Budget (2007): US$ 0 Gap (2007): US$ 0

Achievements

- Health systems strengthening included as objective in the federal TB programme, national TB project, the World Bank project and the GFATM project
- Integrated anti-TB drug procurement, distribution and stock management into the general drug management system

Planned activities

- Strengthen managerial capacity of TB managers

Challenges

- Improving infrastructure and human resources in the health-care sector

Engage all care providers

Budget (2006): US$ 0 Gap (2006): US$ 0
Budget (2007): US$ 1.0 million Gap (2007): US$ 0.5 million

Achievements

- Developed TB control guidelines for general health-care workers, in line with WHO/EURO recommendations
- Translated International Standards for Tuberculosis Care into Russian
- Developed draft National Standards for Tuberculosis Care, in line with international standards
- Improved coordination between civilian and prison TB services, and other federal agencies
- Increased involvement of family practitioners and PHC providers in TB control
- Promoted involvement of NGOs and non-state health-care providers (including Russian Red Cross visiting nurses)

Planned activities

- Develop training materials on TB control for PHC providers based on newly developed guidelines, and begin training programme
- Disseminate National Standards for Tuberculosis Care and translation of International Standards for Tuberculosis Care
- Improve further coordination between TB and PHC services, civilian and prison TB services

Challenges

- Involving private practitioners formally in TB control activities
- Establishing legal and financial framework for involvement of PHC doctors in TB control
- Defining responsibilities of TB services and PHC providers in care of TB patients

Empower people with TB, and communities

Budget (2006): US$ 53 million Gap (2006): US$ 0
Budget (2007): US$ 10 million Gap (2007): US$ 7.4 million

Achievements

- Included ACSM activities in the national 5-year TB control plan, NTP framework and GFATM project
- Held workshops and competitions for journalists on the subject of TB control
- Organized World TB Day campaigns

Planned activities

- Improve education of community through the promotion of the Stop TB Strategy and the Global Plan by mass media
- Implement ACSM activities supported by the GFATM project
- Repeat TB workshops and competitions for journalists
- Organize public education and advocacy campaign for World TB Day 2007
- Promote the Patients' Charter (translated into Russian)

Challenges

- Mobilizing additional resources to fund ACSM activities
- Establishing a national focal point for ACSM, and including ACSM in the national TB control plan
- Encouraging the creation of patient-centred organizations

Enable and promote research

Budget (2006): US$ 0 Gap (2006): US$ 0
Budget (2007): US$ 5.0 million Gap (2007): US$ 4.3 million

Achievements

- Included operational research in the NTP strategic plan and research implemented by the federal research institutes of phthisiopulmonology
- Analysed role of social support to improve treatment adherence

Planned activities

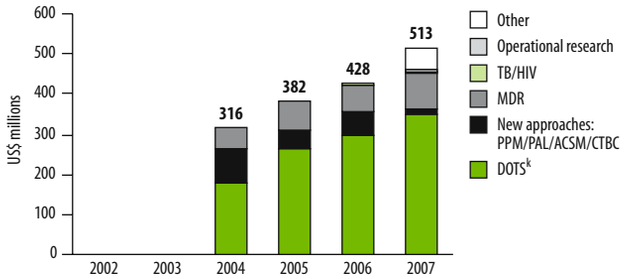
- Use cohort analysis to assess efficacy of treatment in newly diagnosed TB patients and pulmonary relapse patients
- Support, in cooperation with partners, operational research in the following aspects of TB control: new diagnostics tools, treatment regimens for MDR-TB, "case management – a complex approach (psychological testing and support, narcologist consultations, social workers and education)", treatment of TB in alcohol-dependent patients, use of staff incentives to improve case detection and treatment success

Challenges

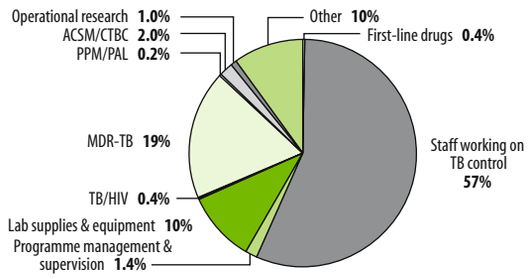
- Securing funding for operational research
- Training TB staff in epidemiology

FINANCING THE STOP TB STRATEGY

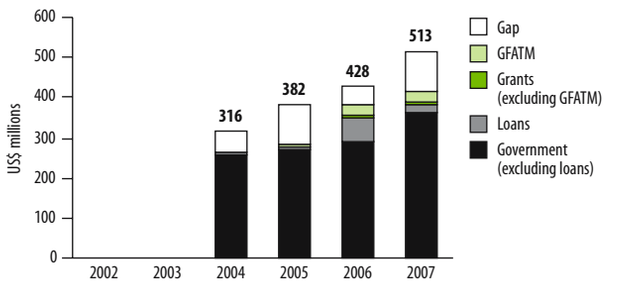
NTP budget by line item[j]
Increasing budget – much higher than in any other HBC; "other" includes construction and reconstruction of TB facilities as well as purchase of X-ray and fluorography machines



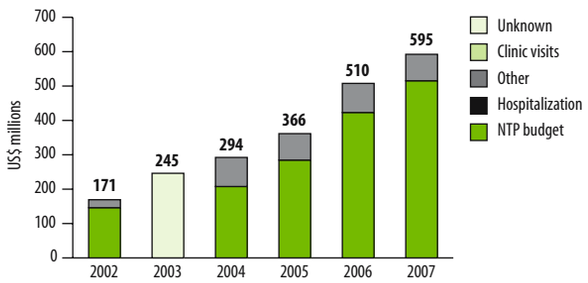
NTP budget by line item, 2007
Share of budget for staff working on TB control and MDR-TB very high compared with other HBCs



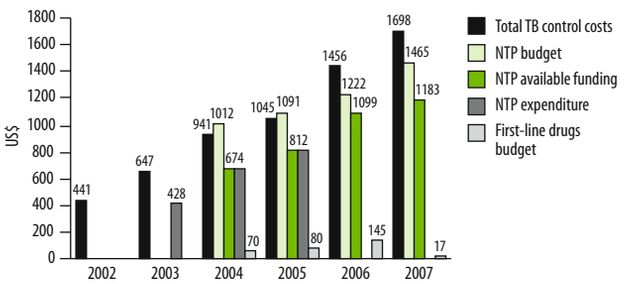
NTP budget by source of funding
Funding for TB control, especially from government, is increasing; nonetheless, large funding gap in 2007, mainly for staff and laboratory supplies and equipment



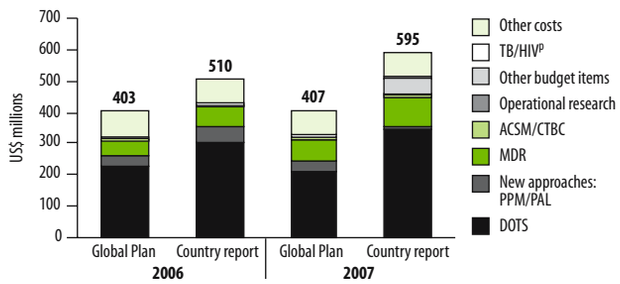
Total TB control costs by line item[l]
The Russian Federation will account for almost half of the cost of TB control in HBCs in 2007 if budget is fully funded; almost half of the budget is for staff working in TB hospitals which in total have about 80 000 beds



Per patient costs, budgets and expenditures[m,n]
Budget per patient is the highest among HBCs, reflecting substantial use of hospitalization and a large number of MDR-TB cases



Comparison of country report and Global Plan:[o] total TB control costs, 2006–2007
Country report indicates much greater investment in treatment of MDR-TB than included in Global Plan



SOURCES, METHODS AND ABBREVIATIONS

[a] *World population prospects – the 2004 revision*. New York, United Nations Population Division, 2005.
[b] Incidence, prevalence and mortality estimates include patients infected with HIV. Incidence estimates based on the assumption of that 60% of cases (new and relapse) were detected in 1997 (DOTS and non-DOTS). Moving average of notification rate (new and relapse, DOTS and non-DOTS combined) used as trend in incidence.
[c] MDG and STB Partnership indicators shown in bold. Targets are 70% case detection of smear-positive cases under DOTS, 85% treatment success, to ensure that the incidence rate is falling by 2015, and to reduce incidence rates and halve 1990 prevalence and mortality rates by 2015. Estimates for 1990 are prevalence 82/100 000 pop and mortality 10/100 000 pop/yr.
[d] Estimate of HIV prevalence in incident TB cases (15–49 yo) derived from UNAIDS estimate of HIV prevalence in the general population, using assumed incidence rate ratio of 6.
[e] MDR-TB figures shown in regular type are survey data from the database of the WHO/IUATLD Global Project on Anti-Tuberculosis Drug Resistance Surveillance. Figures in italics are estimates from the following source: Zignol M et al. Global incidence of multidrug-resistant tuberculosis. *Journal of Infectious Diseases*, 2006, 194:479–485.
[f] Completeness of reporting assessed at lowest level in reporting hierarchy for which information is available.
[g] For routine diagnosis, there should be at least one laboratory providing smear microscopy per 100 000 population. To provide culture for diagnosis of paediatric, extrapulmonary and ss-/HIV+ TB, as well as DST for re-treatment and failure cases, there should be at least one culture facility and one DST facility in each of the 88 oblasts and equivalent administrative regions.
[h] Number of notified patients tested for HIV in 2005 not available. Of "prevalent" TB cases, 73% were tested for HIV, and 1.6% found to be infected. Of new cases notified in 2005, 72% were tested for HIV; proportion infected is not available.
[i] Case detection within DOTS areas calculated by dividing national case detection rate (new ss+) by DOTS coverage.
[j] Financial data were compiled by WHO (Moscow Office) in collaboration with the Ministry of Health and Social Development and the Federal Agency for Health and Social Development.
[k] DOTS includes the following components shown in the pie chart at right: first-line drugs, staff working on TB control, programme management and supervision, and laboratory supplies and equipment.
[l] Total TB control costs for 2002–2005 are based on expenditure, whereas those for 2006–2007 are based on budgets. "Other" includes costs for hospitalization (excluding staff) and for fluorography, which are excluded from the budget reported to WHO.
[m] NTP available funding for 2004–2005 is based on the amount of funding actually received, using retrospective data; available funding for 2006–2007 is based on prospectively reported budget data, and estimated as the total budget minus any reported funding gap.
[n] Per patient figures are based on prevalent cases except for first-line drugs, where incident cases were used.
[o] Estimates in the Global Plan were presented for regions rather than countries. See Methods for explanation of calculation of individual country estimates from regional estimates.
[p] Global Plan estimates cover the full costs of collaborative TB/HIV activities, but these costs may be budgeted for by either the NTP or the National AIDS Programme. In this graph, country reports include only the NTP budget. This may explain the apparent discrepancy between the Global Plan and country reports.

– indicates not available; pop, population; ss+, sputum smear-positive; ss-, sputum smear-negative pulmonary; unk, pulmonary – sputum smear not done or result unknown; yr, year.

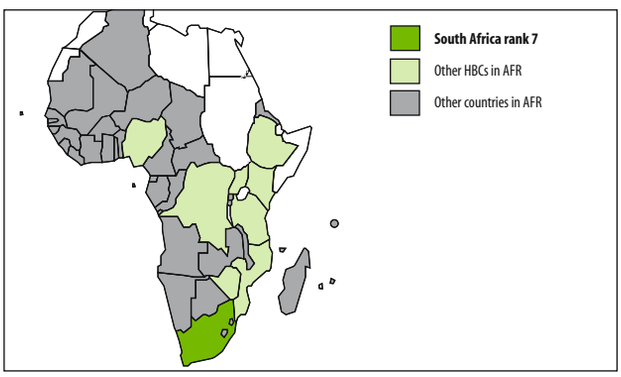
South Africa

Notification rates in South Africa have continued to increase due to improved reporting and better case-finding. It is possible that TB incidence has been underestimated, and that the estimated case detection rate is therefore too high. Treatment success is increasing only slowly, and remains low at 70% for the 2004 cohort. The emergence of extensively drug-resistant tuberculosis (XDR-TB) in South Africa and the associated high mortality demands an urgent response. Better surveillance for drug resistance is urgently needed to determine the level and extent of MDR-TB and XDR-TB, especially in relation to the HIV status of TB patients. More effective patient support, especially for those patients with drug-resistant TB, plus improved infection control, are vital to avoid the further development and spread of strains resisiant to first- and second-line drugs.

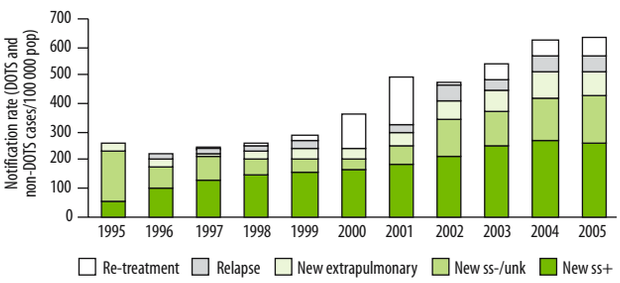
SURVEILLANCE AND EPIDEMIOLOGY

Population (thousands)[a]	47 432	
TB burden, 2005 estimates (with 2.5 and 97.5 centiles)[b]		
Incidence (all cases/100 000 pop/yr)	600	501–720
Trend in incidence rate (%/yr, 2004–2005)c	**-0.1**	
Incidence (ss+/100 000 pop/yr)	245	200–302
Prevalence (all cases/100 000 pop)c	**511**	344–718
Mortality (deaths/100 000 pop/yr)c	**71**	47–107
Of new adult TB cases (15–49yrs), % HIV+d	58	49–65
New TB cases multidrug-resistant, 2002 (%)e	1.8	1.4–2.3
Previously treated TB cases multidrug-resistant, 2002 (%)e	6.7	5.5–8.1
Surveillance and DOTS implementation, 2005		
Notification rate (new and relapse/100 000 pop/yr)	570	
Notification rate (new ss+/100 000 pop/yr)	265	
DOTS case detection rate (new ss+, %)	**103**	84–126
DOTS treatment success (new ss+ cases, 2004 cohort, %)	**70**	
Of new pulmonary cases notified under DOTS, % smear-positive	62	
Of new cases notified under DOTS, % extrapulmonary	16	
Of new smear-positive cases notified under DOTS, % in women	45	
Of sub-national reports expected, % received at next reporting level[f]	100	
Laboratory services, 2005[g]		
Number of laboratories performing smear microscopy	143	
Number of laboratories performing culture	18	
Number of laboratories performing DST	18	
Of laboratories performing smear microscopy, % covered by EQA	0.0	
Management of MDR-TB, 2005		
Of new cases notified, % receiving DST at start of treatment	–	
Of new cases receiving DST at start of treatment, % MDR-TB	–	
Of re-treatment cases notified, % receiving DST	–	
Of re-treatment cases receiving DST, % MDR-TB	–	
Collaborative TB/HIV activities, 2005		
National policy of counselling and testing TB patients for HIV?	Yes	
National surveillance system for HIV-infection in TB patients?	No	
Of TB patients (new and re-treatment) notified, % tested for HIV	22	
Of TB patients tested for HIV, % HIV+	52	
Of HIV+ TB patients detected, % receiving CPT	100	
Of HIV+ TB patients detected, % receiving ART	33	
Budget and finance, 2007		
Government contribution to NTP budget (including loans, %)	93	
Government contribution to total cost of TB control (including loans, %)	97	
Government health spending used for TB control (%)	4.4	
NTP budget funded (%)	100	

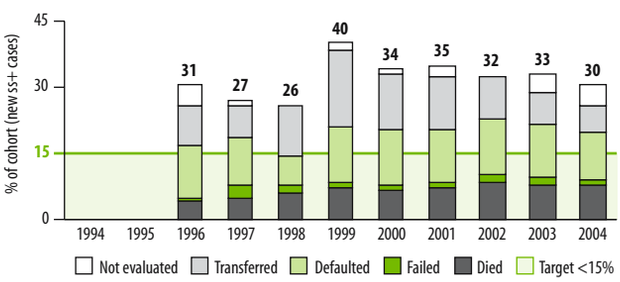
WHO African Region (AFR)
Rank based on estimated number of incident cases (all forms) in 2005



Case notifications
Notifications continue to rise as case-finding and reporting improve



Unfavourable treatment outcomes, DOTS
Treatment outcomes gradually improving; default still main barrier to reaching the target for treatment success



DOTS expansion and enhancement	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
DOTS coverage (%)	0.0	0.0	13	22	66	77	77	98	100	93	94
DOTS notification rate (new & relapse/100 000 pop)	–	–	15	50	201	193	262	457	484	546	549
DOTS notification rate (new ss+/100 000 pop)	–	–	10	37	121	137	155	210	248	256	253
DOTS case detection rate (all new cases, %)	–	–	2.9	9.4	35	36	44	70	75	82	82
DOTS case detection rate (new ss+, %)	–	–	5.0	18	57	62	67	88	101	104	103
Case detection rate within DOTS areas (new ss+, %)[h]	–	–	38	83	87	81	88	89	101	112	110
DOTS treatment success (new ss+, %)	–	69	73	74	60	66	65	68	67	70	–
DOTS re-treatment success (ss+, %)	–	67	68	71	47	52	53	53	52	56	–

IMPLEMENTING THE STOP TB STRATEGY[1]

Pursue high-quality DOTS expansion and enhancement

Budget (2006): US$ 31 million Gap (2006): US$ 0
Budget (2007): US$ 38 million Gap (2007): US$ 0

Achievements

- Commenced phased reintroduction of DOTS in Mpumalanga Province
- Included NTP guidelines in the curricula for basic training of doctors (in some institutions) and nurses (in some training colleges)
- Designated 2 full-time staff at central level NTP responsible for HRD activities for comprehensive TB control
- Mobilized full funding for all planned activities

Planned activities

- Develop 2007–2011 NTP strategic plan in line with *The Global Plan to Stop TB, 2006–2015*
- Continue to mobilize resources for TB control activities
- Implement the National TB Crisis Management Plan, to intensify efforts towards TB control

Challenges

- Improving treatment success rates by strengthening DOT practices in clinics for both drug-sensitive and drug-resistant TB patients; the proportions of patients who defaulted, transferred out or were not evaluated were unacceptably high in most provinces
- Establishing mechanism for exchange of data between laboratories, provinces, NTP and National Department of Health
- Strengthening the link between health facilities managing patients with TB and National Health Laboratory Services
- Reviewing and improving infection control practices
- Establishing functional NRL and EQA system; both are expected to begin operation in 2007
- Improving the quality of routinely collected data; more cases registered for treatment in 2004 than were notified in that year, but treatment outcomes provided for only 96% of those patients

Address TB/HIV, MDR-TB and other challenges

Budget (2006): US$ 42 million Gap (2006): US$ 0
Budget (2007): US$ 50 million Gap (2007): US$ 0

Achievements

- Started joint planning between the NTP and NAP for collaborative TB/HIV activities
- Conducted training for MDR-TB management, and developed, disseminated and began implementation of national guidelines on the programmatic management of MDR-TB
- Reviewed and strengthened MDR-TB treatment facilities in all 9 provinces
- Detected the outbreak of XDR-TB in KwaZulu-Natal Province
- Ongoing training of primary health-care workers to use patient-centred rather than disease-centred approach, in order to improve uptake of HIV counselling and testing by TB patients

Planned activities

- Ensure that NTP and NAP recording and reporting systems capture information about TB/HIV, and establishing mechanisms for transferring data from the databases of each programme to the District Health Information System
- Develop recording and reporting system and surveillance system for drug-resistant TB (2006–2007), and begin implementation of these systems (2007–2008)
- Carry out rapid surveys in each province to determine the extent and magnitude of XDR-TB
- Establish demonstration sites to evaluate new rapid rifampicin susceptibility tests
- Update guidelines for programmatic treatment of MDR-TB to reflect 2006 WHO guidelines

Challenges

- Improving integration at primary health-care level to ensure comprehensive management of HIV-infected TB patients
- Increasing training and number of staff for management of drug-resistant TB patients in the HRD plan
- Developing a specific plan of action for TB control in all high-risk groups (currently plans exist only for prison and mining populations)

[1] Unless otherwise specified, achievements are for financial year 2005; planned activities are for financial year 2006. Budgets and gaps are for financial years.

IMPLEMENTING THE STOP TB STRATEGY

Contribute to health system strengthening

Budget (2006): US$ 0 Gap (2006): US$ 0
Budget (2007): US$ 0 Gap (2007): US$ 0

Achievements

- Developed and field tested PALSA-Plus guidelines incorporating management of HIV-positive patients
- Implemented PALSA-Plus activities in 2 provinces (Free State and Western Cape)

Planned activities

- Implement PALSA-Plus as part of the National TB Crisis Management Plan

Challenges

- Increasing management capacity at district level
- Expanding human and financial resources for health care
- Improving access to laboratory services

Engage all care providers

Budget (2006): US$ 0 Gap (2006): US$ 0
Budget (2007): US$ 0 Gap (2007): US$ 0

Achievements

- Engaged pharmacists, private sector general medical practitioners, traditional health practitioners, community care givers and community-based organizations in referral and support of TB patients
- Collaborated with NGOs for provision of treatment and care services in communities
- Collaborated with non-NTP laboratories (private, university, military, prison), and the supranational laboratory for TB diagnosis

Planned activities

- Include the International Standards for Tuberculosis Care in the 2007–2011 NTP strategic plan

Challenges

- Including training and staffing for PPM activities in the HRD plan
- Expanding PPM activities (most PPM activities are currently limited to the mining industry)

Empower people with TB, and communities

Budget (2006): US$ 2.9 million Gap (2006): US$ 0
Budget (2007): US$ 3.0 million Gap (2007): US$ 0

Achievements

- Developed national and provincial ACSM plans, but not fully implemented in the provinces because insufficient funds were allocated for these activities

Planned activities

- Include the Patients' Charter for Tuberculosis Care in the 2007–2011 NTP strategic plan

Challenges

- Increasing awareness of TB among communities
- Empowering TB patients to take responsibility for their own health
- Encouraging communities to participate actively in TB control

Enable and promote research

Budget (2006): US$ 0.2 million Gap (2006): US$ 0
Budget (2007): US$ 0.4 million Gap (2007): US$ 0

Achievements

- Conducted research on the risk factors for default among TB patients in collaboration with the Medical Research Council

Planned activities

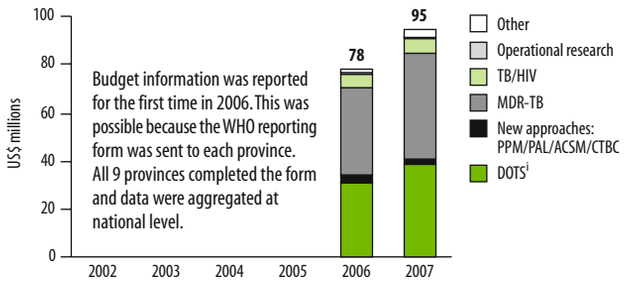
- Incorporate operational research into the 2007–2011 NTP plan
- Strengthen collaborations with academic and research institutions through the establishment of a national TB research initiative
- Perform provincial drug resistance surveys in 2007–2008, incorporating HIV testing
- Conduct a population-based TB prevalence survey in all 9 provinces in 2007–2008, incorporating HIV testing, and repeat every 3 years

Challenges

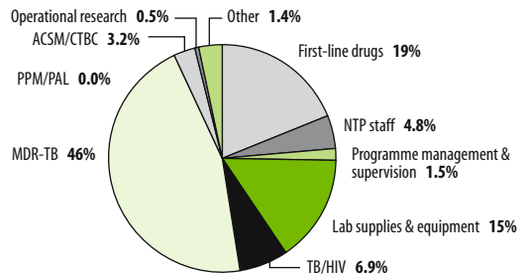
- Interpretting trends in notification data, given that the phased implementation of the new electronic TB register as a recording and reporting system in recent years has led to inconsistencies in the data
- Improving cooperation and collaboration from and among research and academic institutions conducting TB research
- Overcoming donor-driven research agendas which neither address national priorities nor inform policy
- Establishing field sites for clinical trials and evaluation of diagnostics
- Increasing funding for TB research

FINANCING THE STOP TB STRATEGY

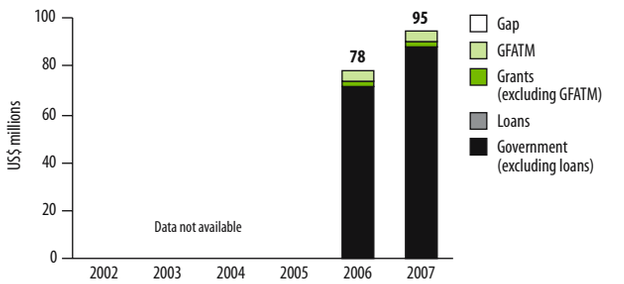
NTP budget by line item
Increased budget in 2007 mainly for MDR-TB, establishment of culture facilities in 2 provinces, and laboratory strengthening in 3 provinces



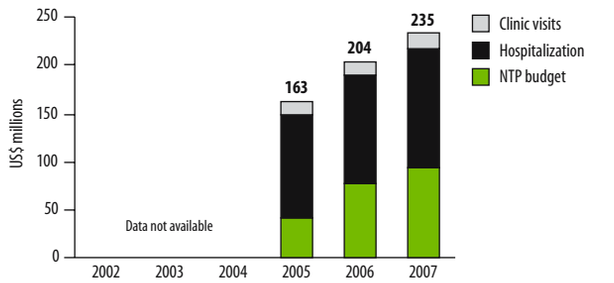
NTP budget by line item, 2007
Largest budget item is for MDR-TB treatment, equivalent to US$ 7193 per patient treated



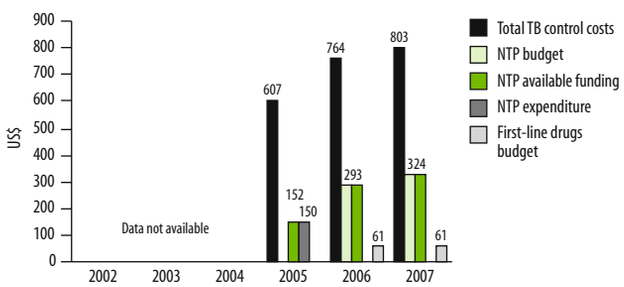
NTP budget by source of funding
Almost all of the budget is financed domestically; external funding predominantly for TB/HIV



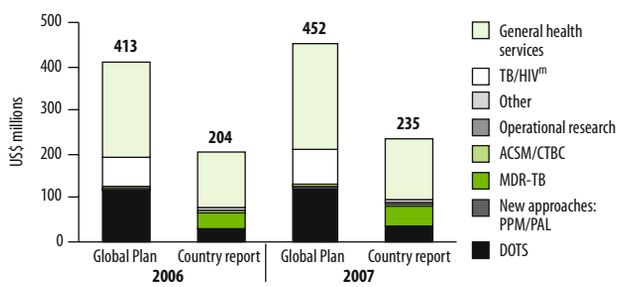
Total TB control costs by line item[j]
Hospitalization costs based on estimates that 60% of ss-/EP patients are hospitalized for an average of 74 days and 15% of ss+ are hospitalized for an average of 3 days



Per patient costs, budgets and expenditures[k]
Data reported by NTP in 2006 show much lower use of hospitalization compared to assumptions used in earlier WHO reports; as a consequence the cost per patient treated is lower than previously estimated



Comparison of country report and Global Plan:[l] total TB control costs, 2006–2007
Global Plan estimates were made prior to downward revision in the use of hospitalization for ss+ patients; also, projected number of patients to be treated is higher in Global Plan



SOURCES, METHODS AND ABBREVIATIONS

[a] *World population prospects – the 2004 revision*. New York, United Nations Population Division, 2005.
[b] Incidence, prevalence and mortality estimates include patients infected with HIV. Estimates of TB burden revised in 2005 following analysis of vital registration data for year 2001. Trend in incidence estimated from 3-year moving average of notification rate (new and relapse, non-DOTS and DOTS combined, years 1999–2001 interpolated).
[c] MDG and STB Partnership indicators shown in bold. Targets are 70% case detection of smear-positive cases under DOTS, 85% treatment success, to ensure that the incidence rate is falling by 2015, and to reduce incidence rates and halve 1990 prevalence and mortality rates by 2015. Estimates for 1990 are prevalence 579/100 000 pop and mortality 64/100 000 pop/yr.
[d] Estimate of HIV prevalence in incident TB cases (15–49 yo) derived from UNAIDS estimate of HIV prevalence in the general population, using assumed incidence rate ratio of 6.
[e] MDR-TB figures shown in regular type are survey data from the database of the WHO/IUATLD Global Project on Anti-Tuberculosis Drug Resistance Surveillance. Figures in italics are estimates from the following source: Zignol M et al. Global incidence of multidrug-resistant tuberculosis. *Journal of Infectious Diseases*, 2006, 194:479–485.
[f] Completeness of reporting assessed at lowest level in reporting hierarchy for which information is available.
[g] To ensure adequate laboratory services coverage there should be at least one laboratory providing smear microscopy per 100 000 population, one culture facility per 5 million population and one DST facility per 10 million population.
[h] Case detection within DOTS areas calculated by dividing national case detection rate (new ss+) by DOTS coverage.
[i] DOTS includes the following components shown in the pie chart at right: first-line drugs, NTP staff, programme management and supervision, and laboratory supplies and equipment.
[j] Total TB control costs for 2005 are based on expenditure and those for 2006–2007 are based on budgets. Estimates of the costs of clinic visits and hospitalization are WHO estimates based on data provided by the NTP and from other sources. See Methods for further details.
[k] NTP available funding for 2005 is based on the amount of funding actually received, using retrospective data; available funding for 2006–2007 is based on prospectively reported budget data, and estimated as the total budget minus any reported funding gap.
[l] Estimates in the Global Plan were presented for regions rather than countries. See Methods for explanation of calculation of individual country estimates from regional estimates.
[m] Global Plan estimates cover the full costs of collaborative TB/HIV activities, but these costs may be budgeted for by either th e NTP or the National AIDS Programme. In this graph, country reports include only the NTP budget. This may explain the apparent discrepancy between the Global Plan and country reports.

– indicates not available; pop, population; ss+, sputum smear-positive; ss-, sputum smear-negative pulmonary; unk, pulmonary – sputum smear not done or result unknown; yr, year.

Thailand

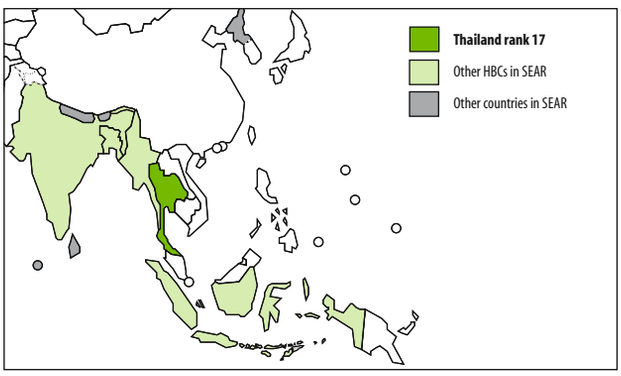
Thailand has historically had a successful TB control programme, however the gains made by the NTP in the past are being jeopardized by the national health services reform, which resulted in substantial decentralization of roles and responsibilities, and subsequently weakened monitoring and supervision at all levels. The treatment success rate is well below the target of 85%. The NTP will also need to focus on initiatives to expand services to the increasing number of migrants and TB cases in the workforce served mostly by the private sector.

SURVEILLANCE AND EPIDEMIOLOGY

Population (thousands)[a]	64 233	
TB burden, 2005 estimates (with 2.5 and 97.5 centiles)[b]		
Incidence (all cases/100 000 pop/yr)	142	93–204
Trend in incidence rate (%/yr, 2004–2005)[c]	**0.0**	
Incidence (ss+/100 000 pop/yr)	63	41–92
Prevalence (all cases/100 000 pop)[c]	**204**	128–305
Mortality (deaths/100 000 pop/yr)[c]	**19**	11–29
Of new adult TB cases (15–49yrs), % HIV+[d]	7.6	4.4–11
New TB cases multidrug-resistant, 2001 (%)[e]	0.9	0.5–1.6
Previously treated TB cases multidrug-resistant, 2001 (%)[e]	20	15–27
Surveillance and DOTS implementation, 2005		
Notification rate (new and relapse/100 000 pop/yr)	90	
Notification rate (new ss+/100 000 pop/yr)	46	
DOTS case detection rate (new ss+, %)	**73**	50–113
DOTS treatment success (new ss+ cases, 2004 cohort, %)	**74**	
Of new pulmonary cases notified under DOTS, % smear-positive	61	
Of new cases notified under DOTS, % extrapulmonary	13	
Of new smear-positive cases notified under DOTS, % in women	30	
Of sub-national reports expected, % received at next reporting level[f]	81	
Laboratory services, 2005[g]		
Number of laboratories performing smear microscopy	846	
Number of laboratories performing culture	40	
Number of laboratories performing DST	8	
Of laboratories performing smear microscopy, % covered by EQA	100	
Management of MDR-TB, 2005		
Of new cases notified, % receiving DST at start of treatment	–	
Of new cases receiving DST at start of treatment, % MDR-TB	–	
Of re-treatment cases notified, % receiving DST	–	
Of re-treatment cases receiving DST, % MDR-TB	–	
Collaborative TB/HIV activities, 2005		
National policy of counselling and testing TB patients for HIV?	Yes (only in specific groups)	
National surveillance system for HIV-infection in TB patients?	No	
Of TB patients (new and re-treatment) notified, % tested for HIV	–	
Of TB patients tested for HIV, % HIV+	–	
Of HIV+ TB patients detected, % receiving CPT	–	
Of HIV+ TB patients detected, % receiving ART	–	
Budget and finance, 2007		
Government contribution to NTP budget (including loans, %)	–	
Government contribution to total cost of TB control (including loans, %)	–	
Government health spending used for TB control (%)	–	
NTP budget funded (%)	–	

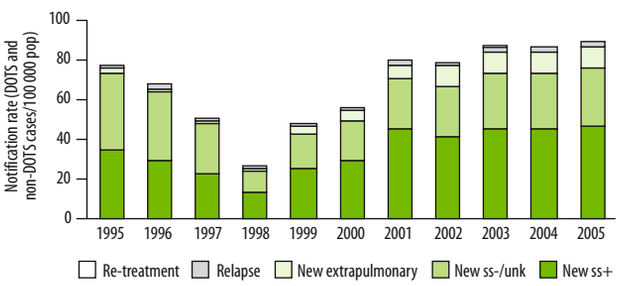
WHO South-East Asia Region (SEAR)

Rank based on estimated number of incident cases (all forms) in 2005



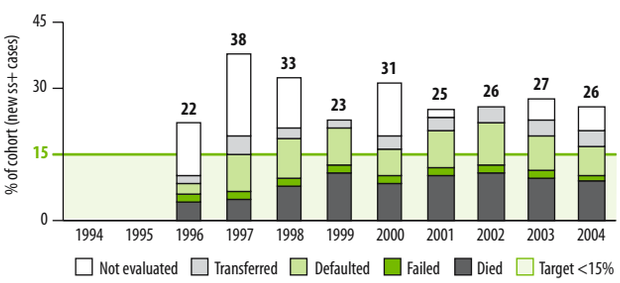
Case notifications

Notification rates rose steeply from 1997 to 2001, but have since been fairly stable



Unfavourable treatment outcomes, DOTS

Consistently poor treatment outcomes; large proportions who patients die, default, or transfer with no follow-up; 5% of 2004 cohort not evaluated



DOTS expansion and enhancement	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
DOTS coverage (%)	0.0	1.1	4.0	32	59	70	82	100	100	100	100
DOTS notification rate (new & relapse/100 000 pop)	–	0.4	5.9	26	48	56	80	79	86	87	90
DOTS notification rate (new ss+/100 000 pop)	–	0.2	3.1	13	25	29	46	41	45	45	46
DOTS case detection rate (all new cases, %)	–	0.3	3.9	18	33	38	55	54	59	59	61
DOTS case detection rate (new ss+, %)	–	0.3	5.0	21	39	46	72	65	71	70	73
Case detection rate within DOTS areas (new ss+, %)[h]	–	29	125	65	66	65	88	65	71	70	73
DOTS treatment success (new ss+, %)	–	78	62	68	77	69	75	74	73	74	–
DOTS re-treatment success (ss+, %)	–	57	55	55	68	–	49	62	62	56	–

IMPLEMENTING THE STOP TB STRATEGY[1]

Pursue high-quality DOTS expansion and enhancement

Budget (2006): national data not available
Gap (2006): national data not available
Budget (2007): national data not available
Gap (2007): national data not available

Achievements

- Developed NTP strategic plan for 2006–2015
- TB treatment success rate accepted as one indicator in the Health Inspection System of the Ministry of Public Health to monitor TB control performance of all public health facilities
- National reference laboratory designated a supranational reference laboratory for the South-East Asia Region
- Increased laboratory capacity for EQA and strengthened culture and DST facilities in 5 out of 12 regional laboratories
- Initiated development of a comprehensive HRD plan for TB control for 2007–2010
- Received approval for GFATM round 6 proposal for TB control activities
- Produced 4th annual report of NTP activities

Planned activities

- Host an international review of the NTP in July 2007
- Strengthen supervision to provincial and district public laboratory networks and start implementation of EQA for microscopy according to international recommendations
- Scale up EQA for smear microscopy in private laboratories with funding from GFATM grant
- Strengthen capacity for smear culture at intermediate-level laboratories
- Finalize HRD plan for 2007–2010; plan will include training and staffing needs for DOTS enhancement and sustainability, and management of collaborative TB/HIV activities

Challenges

- Monitoring regional, provincial and district-level TB control activities; health systems reform and decentralization have resulted in a lack of information about funding and human resources at national level, making the collection and verification of case-finding and treatment outcome reports difficult (of district case-finding and treatment outcome reports, only 81% were received at provincial level)

Address TB/HIV, MDR-TB and other challenges

Budget (2006): national data not available
Gap (2006): national data not available
Budget (2007): national data not available
Gap (2007): national data not available

Achievements

- Fully implemented collaborative TB/HIV activities at district-level hospitals
- Held second Intercountry Training of Trainers on TB/HIV in Bangkok in February 2006
- Introduced HIV counselling and testing services in 14 tertiary hospitals
- Revised standard treatment outcome forms to include information about HIV
- Produced manual on the management of patients with MDR-TB
- Increased access to TB care among marginalized populations in collaboration with NGOs

Planned activities

- Commence sentinel surveillance of HIV and drug resistance in border areas in collaboration with the United States Centers for Disease Control and Prevention
- Revise the MDR-TB manual to align it with recent WHO guidelines
- Initiate systematic recording and reporting of MDR-TB

Challenges

- Implementing collaborative TB/HIV activities in tertiary hospitals (provincial or regional) where most HIV/AIDS patients are treated
- Developing an effective strategy and approach for providing HIV testing and counselling services to TB patients that addresses the currently limited promotion of these services by staff and high rates of patient refusal
- Improving quality control for second-line drugs
- Engaging partners to collaborate in the piloting of MDR-TB management
- Providing high-quality TB services to the large population of unregistered migrants from neighbouring countries; currently diagnostic and referral services are weak in border regions, with little or no supervision
- Strengthening collaboration between civilian and prisons authorities in Bangkok

Contribute to health system strengthening

Budget (2006): national data not available
Gap (2006): national data not available
Budget (2007): national data not available
Gap (2007): national data not available

Achievements

- Established TB laboratory network
- Instituted TB clinics in most hospitals

Planned activities

- Further consolidate the laboratory network, including improving infrastructure and equipment at NTP regional and provincial levels through GFATM funding

[1] Unless otherwise specified, achievements are for financial year 2005; planned activities are for financial year 2006. Budgets and gaps are for financial years.

IMPLEMENTING THE STOP TB STRATEGY

- Strengthen delivery of public health care for TB control in provinces with large non-Thai populations in collaboration with NGOs (World Vision Foundation of Thailand and the American Refugee Committee)

Challenges

- Involving ministries other than the Ministry of Public Health in TB control activities
- Tightening legal regulations for recording and reporting of TB cases
- Strengthening technical and managerial capacity and supervision of general health staff at all levels

Engage all care providers

Budget (2006): national data not available
Gap (2006): national data not available
Budget (2007): national data not available
Gap (2007): national data not available

Achievements

- Involved all general public hospitals, social insurance services and prisons, as well as the military and some medical colleges, in referring, diagnosing and treating TB patients
- Initiated the Thailand TB Active Surveillance Network, an innovative PPM partnership for TB control implemented by the NTP and the Thailand–MoH US CDC Collaboration (TUC), which has resulted in a 30% increase in case reporting from the private sector
- Collaborated with non-NTP laboratories (private, NGO, university, prison) in reporting of TB cases, EQA and operational research

Planned activities

- Strengthen PPM in Bangkok, documenting the successful PPM models and developing policy guidelines based on these models
- Collaborate with the national health insurance office to develop a standard of TB care for primary health-care units consistent with the International Standards for Tuberculosis Care

Challenges

- Increasing the involvement of private practitioners in referral, diagnosis and treatment of TB patients
- Developing specific guidelines for private sector involvement in TB control
- Incorporating NTP-recommended TB control services in hospitals contracted through the social security fund for the growing workforce population

Empower people with TB, and communities

Budget (2006): national data not available
Gap (2006): national data not available
Budget (2007): national data not available
Gap (2007): national data not available

Achievements

- Started involving communities in treatment support for TB patients

Planned activities

- Conduct a workshop on TB for local community radio stations
- Strengthen the collaboration between health centres and community leaders and initiate community TB care

Challenges

- Encouraging local governments to become involved in TB control

Enable and promote research

Budget (2006): national data not available
Gap (2006): national data not available
Budget (2007): national data not available
Gap (2007): national data not available

Achievements

- Included operational research as part of the NTP strategic plan, with trials of training held in several provinces

Planned activities

- Conduct a health facilities survey using indicators based on the International Standards for Tuberculosis Care
- Further strengthen the operational research agenda with funds from GFATM
- Study effect of community TB care on the quality of DOTS

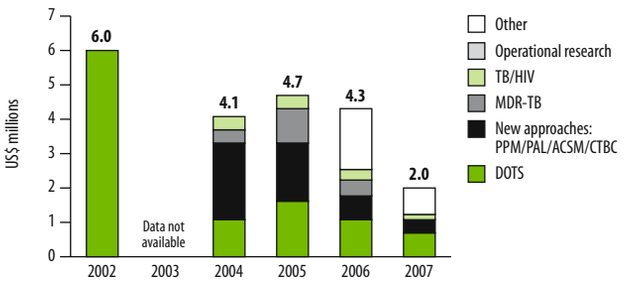
Challenges

- Assessing the burden of TB and the impact of control given that not all subnational data are available at national level, and in the absence of any planned population-based surveys

FINANCING THE STOP TB STRATEGY

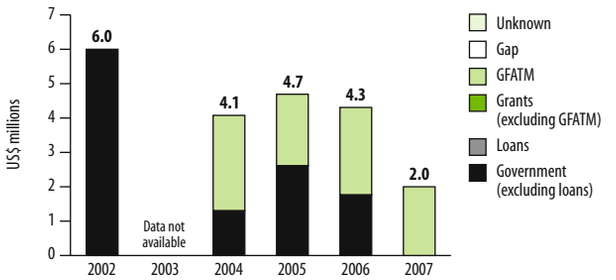
NTP budget by line item

Budgets since 2004 are for the TB cluster in Bangkok only; in 2007 only the budget that is funded by the GFATM was reported



NTP budget by source of funding

Budgets since 2004 are for the TB cluster in Bangkok only, with most funding at this level from the GFATM; in 2007 only funding from the GFATM was reported



In 2002, the NTP budget was managed at central level and covered all inputs specific to TB control for the entire country. This changed in 2003, when a new health insurance system was introduced. As part of this system, budgets for clinical care (including TB diagnosis and treatment) are allocated to provincial and district hospitals on the basis of fixed per capita rates. It is not known how much of these budgets is being used for TB control, and therefore the total budget for TB control in Thailand cannot be estimated. The full cost of TB control (including costs associated with use of general health facilities) cannot be calculated accurately either, because the most recent costing study was undertaken more than 10 years ago.

Progress made with the reporting of financial data in South Africa in 2006, which like Thailand has a decentralized system for management of TB control, illustrates two ways in which an up-to-date and comprehensive assessment of the cost of TB control in Thailand could be made. The first, as noted in the country profile for South Africa, would be to send the WHO financial data collection form to each province in Thailand, and to aggregate these reports at national level. A second approach would be to use the WHO planning and budgeting tool to carry out a detailed costing study, as was done in one province in South Africa in 2006.

SOURCES, METHODS AND ABBREVIATIONS

[a] *World population prospects – the 2004 revision*. New York, United Nations Population Division, 2005.

[b] Incidence, prevalence and mortality estimates include patients infected with HIV. Estimates of burden based on prevalence survey in 1991–1992. Incidence rate assumed to be constant in absence of contrary evidence, but estimated prevalence and mortality rates decline with growing proportion of cases treated.

[c] MDG and STB Partnership indicators shown in bold. Targets are 70% case detection of smear-positive cases under DOTS, 85% treatment success, to ensure that the incidence rate is falling by 2015, and to reduce incidence rates and halve 1990 prevalence and mortality rates by 2015. Estimates for 1990 are prevalence 355/100 000 pop and mortality 27/100 000 pop/yr.

[d] Estimate of HIV prevalence in incident TB cases (15–49 yo) derived from UNAIDS estimate of HIV prevalence in the general population, using assumed incidence rate ratio of 6.

[e] MDR-TB figures shown in regular type are survey data from the database of the WHO/IUATLD Global Project on Anti-Tuberculosis Drug Resistance Surveillance. Figures in italics are estimates from the following source: Zignol M et al. Global incidence of multidrug-resistant tuberculosis. *Journal of Infectious Diseases*, 2006, 194:479–485.

[f] Completeness of reporting assessed at lowest level in reporting hierarchy for which information is available.

[g] To ensure adequate laboratory services coverage there should be at least one laboratory providing smear microscopy per 100 000 population, one culture facility per 5 million population and one DST facility per 10 million population.

[h] Case detection within DOTS areas calculated by dividing national case detection rate (new ss+) by DOTS coverage.

– indicates not available; pop, population; ss+, sputum smear-positive; ss-, sputum smear-negative pulmonary; unk, pulmonary – sputum smear not done or result unknown; yr, year.

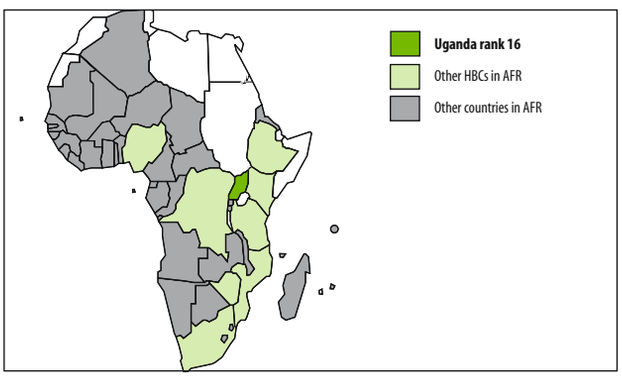
Uganda

If the TB case-load has stabilized or begun to decline in Uganda, this is more likely to be due to falling HIV prevalence than to NTP performance. The estimated case detection rate is still well below the 70% target. Treatment success has been improving, but the overall result remains poor because few patients have documented smear conversions (31%) and because far too many die during treatment, default, or transfer without follow-up. Neither diagnosis by sputum smear microscopy nor direct observation of treatment are routine in all health units, and collaborative TB/HIV activities were under way in only 12 out of 56 districts in 2005. Without timely disbursement of GFATM funding, activities such as laboratory diagnosis, training and supervision will suffer, and the quality of the programme is unlikely to improve.

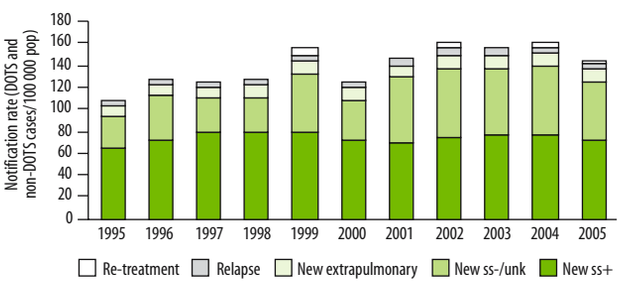
SURVEILLANCE AND EPIDEMIOLOGY

Population (thousands)[a]	28 816	
TB burden, 2005 estimates (with 2.5 and 97.5 centiles)[b]		
Incidence (all cases/100 000 pop/yr)	369	295–452
Trend in incidence rate (%/yr, 2004–2005)[c]	**-3.2**	
Incidence (ss+/100 000 pop/yr)	158	124–198
Prevalence (all cases/100 000 pop)[c]	**559**	408–742
Mortality (deaths/100 000 pop/yr)c	**91**	70–113
Of new adult TB cases (15–49yrs), % HIV+[d]	30	23–36
New TB cases multidrug-resistant, 1997 (%)[e]	0.5	0.1–1.9
Previously treated TB cases multidrug-resistant, 1997 (%)[e]	4.4	0.5–15
Surveillance and DOTS implementation, 2005		
Notification rate (new and relapse/100 000 pop/yr)	142	
Notification rate (new ss+/100 000 pop/yr)	71	
DOTS case detection rate (new ss+, %)	**45**	36–58
DOTS treatment success (new ss+ cases, 2004 cohort, %)	**70**	
Of new pulmonary cases notified under DOTS, % smear-positive	58	
Of new cases notified under DOTS, % extrapulmonary	10	
Of new smear-positive cases notified under DOTS, % in women	42	
Of sub-national reports expected, % received at next reporting level[f]	100	
Laboratory services, 2005[g]		
Number of laboratories performing smear microscopy	465	
Number of laboratories performing culture	2	
Number of laboratories performing DST	2	
Of laboratories performing smear microscopy, % covered by EQA	44	
Management of MDR-TB, 2005		
Of new cases notified, % receiving DST at start of treatment	–	
Of new cases receiving DST at start of treatment, % MDR-TB	–	
Of re-treatment cases notified, % receiving DST	–	
Of re-treatment cases receiving DST, % MDR-TB	–	
Collaborative TB/HIV activities, 2005		
National policy of counselling and testing TB patients for HIV?	Yes	
National surveillance system for HIV-infection in TB patients?	Yes	
Of TB patients (new and re-treatment) notified, % tested for HIV	7.9	
Of TB patients tested for HIV, % HIV+	51	
Of HIV+ TB patients detected, % receiving CPT	–	
Of HIV+ TB patients detected, % receiving ART	–	
Budget and finance, 2007		
Government contribution to NTP budget (including loans, %)	18	
Government contribution to total cost of TB control (including loans, %)	23	
Government health spending used for TB control (%)	6.8	
NTP budget funded (%)	92	

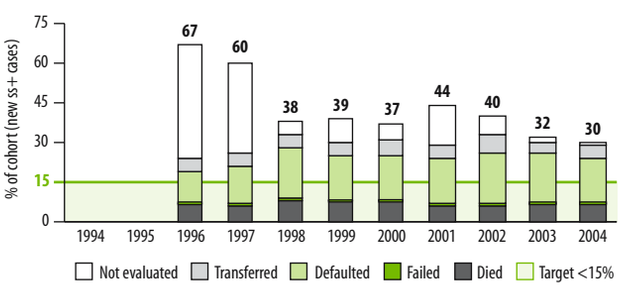
WHO African Region (AFR)
Rank based on estimated number of incident cases (all forms) in 2005



Case notifications
Notifications generally increasing in late 1990s, steady or declining since 2002; proportion of cases smear-positive declining slightly



Unfavourable treatment outcomes, DOTS
Evaluation of treatment outcomes improving, but default still major barrier to treatment success



DOTS expansion and enhancement	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
DOTS coverage (%)	–	0.0	100	100	100	100	100	100	100	100	100
DOTS notification rate (new & relapse/100 000 pop)	–	–	128	128	134	125	147	157	156	157	142
DOTS notification rate (new ss+/100 000 pop)	–	–	78	80	78	71	69	74	76	75	71
DOTS case detection rate (all new cases, %)	–	0.0	38	37	44	35	39	39	38	40	37
DOTS case detection rate (new ss+, %)	–	–	58	58	57	49	45	45	45	46	45
Case detection rate within DOTS areas (new ss+, %)[h]	–	–	58	58	57	49	45	45	45	46	45
DOTS treatment success (new ss+, %)	–	33	40	62	61	63	56	60	68	70	–
DOTS re-treatment success (ss+, %)	–	32	58	60	48	64	63	55	60	68	–

IMPLEMENTING THE STOP TB STRATEGY[1]

Pursue high-quality DOTS expansion and enhancement

Budget (2006): US$ 4.5 million Gap (2006): US$ 1.7 million
Budget (2007): US$ 3.7 million Gap (2007): US$ 0.2 million

Achievements

- Received approval for GFATM round 6 proposal for TB control activities
- Initiated EQA for smear microscopy in 5 of 9 TB zones
- Engaged 3 NGOs to support TB control (HR, transportation, monitoring) in 7 districts and to support EQA (HR, transportation) in 1 district, funded through Uganda Stop TB Partnership and ISAC
- Provided refresher training by the NRL on microscopy for 70 laboratory staff in Kampala
- Obtained emergency supplies of first-line anti-TB drugs through WHO country office and GDF after suspension of round 2 GFATM grant
- Followed-up carefully Sub-national reports followed up carefully, resulting in complete and consistent national data, with treatment outcomes provided for more than 99% of new smear-positive patients registered in 2004
- Produced 3rd annual report of NTP activities

Planned activities

- Continue expansion of EQA in remaining 4 TB zones
- Sign GFATM round 6 grant agreement and prepare for implementation of activities, including procurement of first-line anti-TB drugs through the GDF

Challenges

- Addressing shortage and disproportionate distribution of staff
- Developing a comprehensive strategic HRD plan for TB control
- Including NTP-recommended TB control strategies in the basic training curricula for doctors and nurses
- Solving major shortage of funding, which became more severe following limited suspension of round 2 GFATM grant, contributing to first-line anti-TB drug stock-outs, lack of transportation for laboratory supervision, shortages of staff and insufficient functional microscopes
- Continuing the momentum of the Uganda Stop TB Partnership and its successes to address the HR crisis given the serious lack of funds
- Improving supervisory capacity at sub-district level, and including supervision in the district budget

Address TB/HIV, MDR-TB and other challenges

Budget (2006): US$ 0.6 million Gap (2006): US$ 0.4 million
Budget (2007): US$ 0.8 million Gap (2007): US$ 0.2 million

Achievements

- Developed guidelines, training manuals and communication strategy for collaborative TB/HIV activities
- Held quarterly meetings of a national TB/HIV coordinating committee
- Scaled up collaborative TB/HIV activities to 12 out of 56 districts
- Applied to the GLC for assistance for an MDR-TB pilot project in Kampala submitted by Makerere University in collaboration with the University of Medicine and Dentistry of New Jersey
- Collaborated with NGOs that provide health services to refugees and internally displaced persons in the north of the country to ensure access to TB services

Planned activities

- Establish sentinel surveillance on HIV prevalence among TB patients, and strengthen routine monitoring system to improve the capture of TB/HIV indicators
- Build capacity to scale up collaborative TB/HIV activities to more districts

Challenges

- Overcoming shortage of training funds, poor access to HIV testing and counselling and shortage of HIV test kits and co-trimoxazole
- Developing policy for management of MDR-TB patients
- Resolving absence of funding for second-line anti-TB drugs

Contribute to health system strengthening

Budget (2006): US$ 0.01 million Gap (2006): US$ 0
Budget (2007): US$ 0.03 million Gap (2007): US$ 0.02 million

Achievements

- Increased general laboratory services by training general, rather than TB-specific, microscopists, and provided high-quality binocular microscopes
- Improved supply chain management through training on drug logistics
- Established a national working group, developed a national PAL guideline and initiated a feasibility study on PAL
- Successfully piloted Performance Improvement Approach (PIA) activities in 2 districts in collaboration with the Regional Centre for Quality of Health Care

Planned activities

- Develop PAL training materials
- Finalize the feasibility study on PAL and develop a national plan for PAL implementation

Challenges

- Diminishing the potential threat to district TB/Leprosy supervisor post due to restructuring
- Mobilizing resources to carry out the PAL implementation plan

[1] Unless otherwise specified, achievements are for financial year 2005; planned activities are for financial year 2006. Budgets and gaps are for financial years.

IMPLEMENTING THE STOP TB STRATEGY

Engage all care providers

Budget (2006): US$ 0.02 million
Budget (2007): US$ 0.05 million
Gap (2006): US$ 0
Gap (2007): US$ 0.03 million

Achievements

- Collaborated with army (under Ministry of Defence), and police and prison (under Ministry of Internal Affairs) health systems to provide TB services according to the NTP
- Trained some private health-care providers on DOTS and provided generic NTP guidelines
- Strengthened Uganda Stop TB Partnership (now 27 members); formed 3 working groups to facilitate its operations

Planned activities

- Perform PPM situational analysis
- Disseminate the International Standards for Tuberculosis Care through planned regional workshops, quarterly review meetings at zonal and national levels and via the Uganda Stop TB Partnership
- Mobilize resources to strengthen further partnerships under Uganda Stop TB Partnership

Challenges

- Improving case-finding and case-holding in armed forces and prisons and by private health providers
- Developing a plan and identifying resources to expand and strengthen PPM

Empower people with TB, and communities

Budget (2006): US$ 2.1 million
Budget (2007): US$ 2.1 million
Gap (2006): US$ 2.1 million
Gap (2007): US$ 0.1 million

Achievements

- Included community-based TB care (in place in all districts) in the essential package of health services proposed by the National Health Policy and the Health Sector Strategic Plan II (2006–2010) of the MoH
- Involved women through a FIDELIS funded project (Safe Motherhood Initiative), to mobilize communities in selected districts for TB services

Planned activities

- Standardize community-based DOTS services to improve the quality of services, with a focus on outlier districts, and increase enrolment
- Develop and disseminate IEC materials based on the comprehensive TB/HIV communication strategy

Challenges

- Preparing an ACSM package that addresses the magnitude of TB, the constraints faced by the health services to meet global TB targets, the barriers to equitable access to services, and the potential community contribution to effective TB care and prevention
- Addressing lack of ACSM capacity among staff, and staff shortages to perform ACSM activities
- Strengthening monitoring and evaluation system for ACSM

Enable and promote research

Budget (2006): US$ 0.4 million
Budget (2007): US$ 1.0 million
Gap (2006): US$ 0.02 million
Gap (2007): US$ 0.2 million

Achievements

- Included operational research as part of the NTP strategic plan for 2006–2010
- Assigned NTP staff to oversee 2 projects on TB/HIV linked with Makerere University
- Conducted operational research on highly active antiretroviral therapy (HAART), and on drug resistance among new patients in Mulago

Planned activities

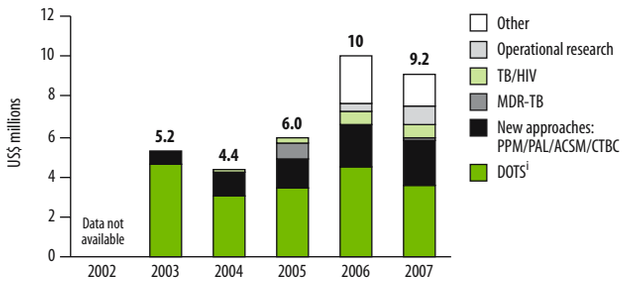
- Conduct national population-based prevalence of disease survey (with ability to provide sub-national estimates) in 2007, and repeat in 2011
- Continue operational research on HAART and commence study on barriers to integrating HIV care into district TB units

Challenges

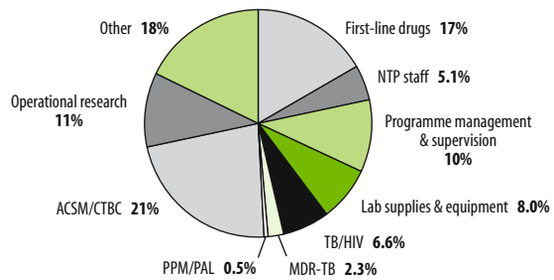
- Mobilizing funding for operational research
- Coordinating operational research and disseminating findings

FINANCING THE STOP TB STRATEGY

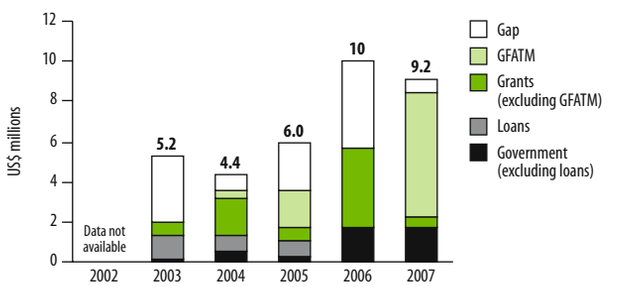
NTP budget by line item
Budget for operational research includes disease prevalence survey and DRS; Other includes international technical assistance



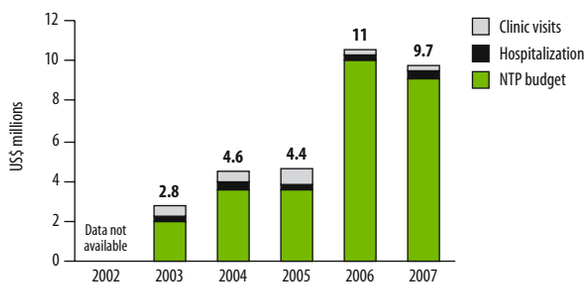
NTP budget by line item, 2007
DOTS, ACSM/CTBC and operational research account for 72% of the budget



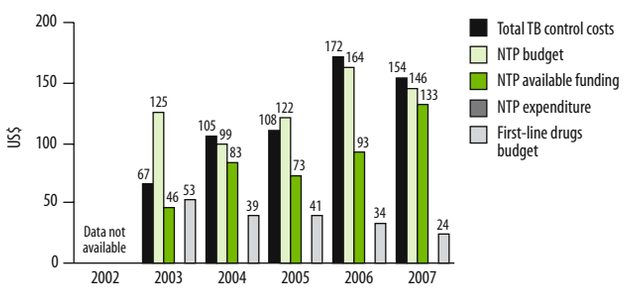
NTP budget by source of funding
Big increase in available funding in 2006–2007, mostly due to GDF support for first-line drugs in 2006 and GFATM in 2007, although funding gaps persist



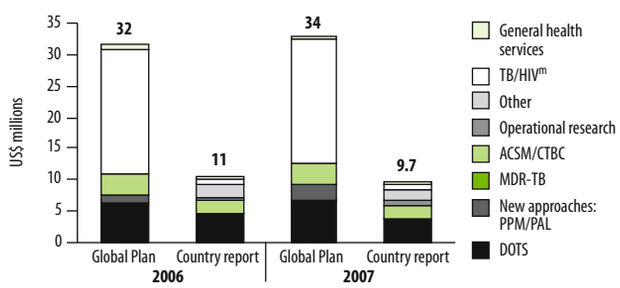
Total TB control costs by line item[j]
Use of general health services is limited because of important role of community volunteers in providing DOT



Per patient costs, budgets and expenditures[k]
To date, NTP has not been able to report expenditure data



Comparison of country report and Global Plan:[l] total TB control costs, 2006–2007
Global Plan includes much higher cost for TB/HIV, as in all other African HBCs



SOURCES, METHODS AND ABBREVIATIONS

[a] *World population prospects – the 2004 revision*. New York, United Nations Population Division, 2005.
[b] Incidence, prevalence and mortality estimates include patients infected with HIV. Incidence estimate originally based on assumption of 65% ss+ case detection rate in 1997. Trend in incidence estimated from 3-year moving average of notification rate (new and relapse).
[c] MDG and STB Partnership indicators shown in bold. Targets are 70% case detection of smear-positive cases under DOTS, 85% treatment success, to ensure that the incidence rate is falling by 2015, and to reduce incidence rates and halve 1990 prevalence and mortality rates by 2015. Estimates for 1990 are prevalence 291/100 000 pop and mortality 56/100 000 pop/yr.
[d] Estimate of HIV prevalence in incident TB cases (15–49 yo) derived from UNAIDS estimate of HIV prevalence in the general population, using assumed incidence rate ratio of 6.
[e] MDR-TB figures shown in regular type are survey data from the database of the WHO/IUATLD Global Project on Anti-Tuberculosis Drug Resistance Surveillance. Figures in italics are estimates from the following source: Zignol M et al. Global incidence of multidrug-resistant tuberculosis. *Journal of Infectious Diseases*, 2006, 194:479–485.
[f] Completeness of reporting assessed at lowest level in reporting hierarchy for which information is available.
[g] For routine diagnosis, there should be at least one laboratory providing smear microscopy per 100 000 population. To provide culture for diagnosis of paediatric, extrapulmonary and ss-/HIV+ TB, as well as DST for re-treatment and failure cases, most countries will need one culture facility per 5 million population and one DST facility per 10 million population.
[h] Case detection within DOTS areas calculated by dividing national case detection rate (new ss+) by DOTS coverage.
[i] DOTS includes the following components shown in the pie chart at right: first-line drugs, NTP staff, programme management and supervision, and laboratory supplies and equipment.
[j] Total TB control costs for 2003–2005 are based on available funding, whereas those for 2006–2007 are based on budgets. Estimates of the costs of clinic visits and hospitalization are WHO estimates based on data provided by the NTP and from other sources. See Methods for further details.
[k] NTP available funding for 2003–2007 is based on prospectively reported budget data, and estimated as the total budget minus any reported funding gap.
[l] Estimates in the Global Plan were presented for regions rather than countries. See Methods for explanation of calculation of individual country estimates from regional estimates.
[m] Global Plan estimates cover the full costs of collaborative TB/HIV activities, but these costs may be budgeted for by either the NTP or the National AIDS Programme. In this graph, country reports include only the NTP budget. This may explain the apparent discrepancy between the Global Plan and country reports.

– indicates not available; pop, population; ss+, sputum smear-positive; ss-, sputum smear-negative pulmonary; unk, pulmonary – sputum smear not done or result unknown; yr, year.

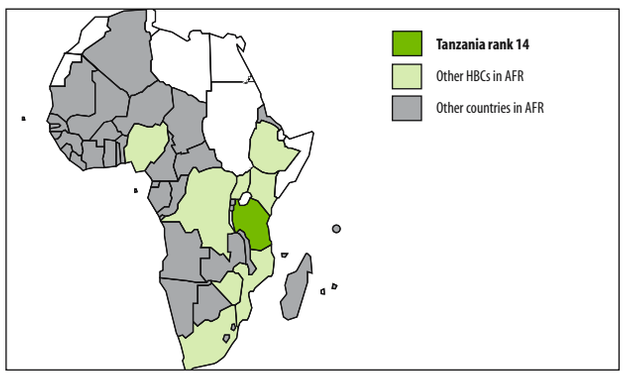
United Republic of Tanzania

The recently approved GFATM proposal for TB control will provide desperately needed resources to hire and train staff, especially laboratory technicians, to improve case-finding. New initiatives to involve all care providers, especially in the private sector, will also help to increase case detection, which is estimated to be well below the global target of 70%. There are plans to scale up collaborative TB/HIV activities and introduce ART in TB clinics. This initiative will lead to improvements in case holding and favourable treatment outcomes, which remain just below the global target.

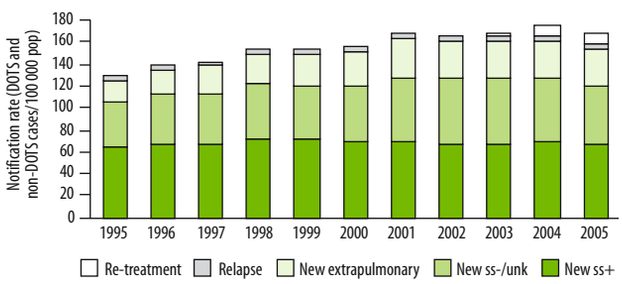
SURVEILLANCE AND EPIDEMIOLOGY

Population (thousands)[a]	38 329	
TB burden, 2005 estimates (with 2.5 and 97.5 centiles)[b]		
Incidence (all cases/100 000 pop/yr)	342	269–416
Trend in incidence rate (%/yr, 2004–2005)[c]	**-1.5**	
Incidence (ss+/100 000 pop/yr)	147	113–183
Prevalence (all cases/100 000 pop)[c]	**496**	354–657
Mortality (deaths/100 000 pop/yr)[c]	**75**	57–94
Of new adult TB cases (15–49yrs), % HIV+[d]	29	22–35
New TB cases multidrug-resistant, 2004 (%)[e]	*1.8*	*0.3–9.6*
Previously teated TB cases multidrug-resistant, 2004 (%)[e]	*7.6*	*1.1–39*
Surveillance and DOTS implementation, 2005		
Notification rate (new and relapse/100 000 pop/yr)	159	
Notification rate (new ss+/100 000 pop/yr)	66	
DOTS case detection rate (new ss+, %)	**45**	36–58
DOTS treatment success (new ss+ cases, 2004 cohort, %)	**81**	
Of new pulmonary cases notified under DOTS, % smear-positive	55	
Of new cases notified under DOTS, % extrapulmonary	22	
Of new smear-positive cases notified under DOTS, % in women	37	
Of sub-national reports expected, % received at next reporting level[f]	98	
Laboratory services, 2005[g]		
Number of laboratories performing smear microscopy	690	
Number of laboratories performing culture	3	
Number of laboratories performing DST	1	
Of laboratories performing smear microscopy, % covered by EQA	100	
Management of MDR-TB, 2005		
Of new cases notified, % receiving DST at start of treatment	0.5	
Of new cases receiving DST at start of treatment, % MDR-TB	0	
Of re-treatment cases notified, % receiving DST	8.0	
Of re-treatment cases receiving DST, % MDR-TB	2.2	
Collaborative TB/HIV activities, 2005		
National policy of counselling and testing TB patients for HIV?	No	
National surveillance system for HIV-infection in TB patients?	–	
Of TB patients (new and re-treatment) notified, % tested for HIV	3.9	
Of TB patients tested for HIV, % HIV+	51	
Of HIV+ TB patients detected, % receiving CPT	40	
Of HIV+ TB patients detected, % receiving ART	28	
Budget and finance, 2006		
Government contribution to NTP budget (including loans, %)	25	
Government contribution to total cost of TB control (including loans, %)	59	
Government health spending used for TB control (%)	1.7	
NTP budget funded (%)	95	

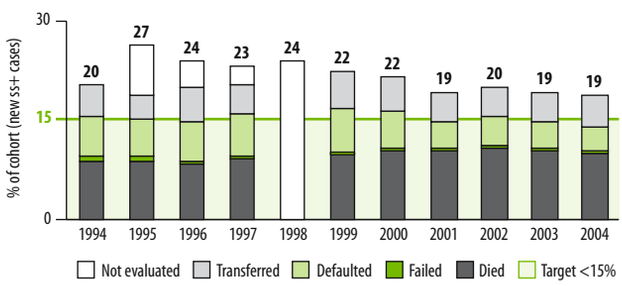
WHO African Region (AFR)
Rank based on estimated number of incident cases (all forms) in 2005



Case notifications
Notification rates for new and relapse cases declining for 2nd consecutive year, possibly reflecting a decline in incidence



Unfavourable treatment outcomes, DOTS
Treatment success rate approaching target: deaths are main barrier to reaching treatment success target, along with defaulting and patients whose outcome is not reported following transfer



DOTS expansion and enhancement	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
DOTS coverage (%)	98	100	100	100	100	100	100	100	100	100	100
DOTS notification rate (new & relapse/100 000 pop)	129	140	143	154	154	157	174	167	167	166	159
DOTS notification rate (new ss+/100 000 pop)	65	68	68	71	71	69	70	67	67	69	66
DOTS case detection rate (all new cases, %)	46	47	45	47	45	44	46	45	46	46	45
DOTS case detection rate (new ss+, %)	56	55	52	53	51	47	46	43	45	46	45
Case detection rate within DOTS areas (new ss+, %)[h]	57	55	52	53	51	47	46	43	45	46	45
DOTS treatment success (new ss+, %)	73	76	77	76	78	78	81	80	81	81	–
DOTS re-treatment success (ss+, %)	76	75	75	73	74	73	76	77	75	76	–

IMPLEMENTING THE STOP TB STRATEGY[1]

Pursue high-quality DOTS expansion and enhancement

Budget[2] (2006): US$ 5.4 million Gap (2006): US$ 0.3 million

Achievements

- Received approval for GFATM round 6 proposal for TB control activities
- Trained a total of 2276 medical officers, clinical officers, nurses and laboratory technicians in clinical management of TB in 2006
- Received 4 FDC anti-TB drugs to include in intensive treatment phase from January 2006
- Revised the NTP manual to incorporate the use of 4 FDC anti-TB drugs
- Produced 10th annual report of NTP activities

Planned activities

- Train additional 1500 health care providers in TB clinical management
- Finalize the inclusion of TB control into the curricula for medical doctors and nurses; currently only the curriculum for clinical officers includes TB control following NTP guidelines
- Introduce 4 FDC anti-TB drugs to all 126 districts in the country
- Revise and scale up the electronic TB register to all districts

Challenges

- Revising the current 2004–2009 NTP strategic plan to incorporate new elements of Stop TB Strategy and ensure it is in line with the Global Plan
- Developing a comprehensive HRD plan for TB (TB control is integrated into general health services)
- Finding adequately qualified laboratory technicians willing to do smear microscopy, and providing enablers and incentives for qualified laboratory staff
- Ensuring compliance of current EQA programme with international recommendations
- Finding a permanent structure for the NRL, which has been housed in temporary accommodation because of building rehabilitation
- Closing the funding gap for first-line anti-TB drugs

Address TB/HIV, MDR-TB and other challenges

Budget (2006): US$ 0.9 million Gap (2006): US$ 0.03 million

Achievements

- Introduced provider-initiated testing and counselling for HIV to all TB patients in 3 districts
- Conducted initial TB/HIV coordination meeting with relevant stakeholders
- Completed training on collaborative TB/HIV activities for NTP staff
- Revised the NTP manual to incorporate collaborative TB/HIV activities
- Collaborating with UNHCR to provide food for HIV-infected TB patients in one district
- Included a plan for DOTS expansion to prisons and refugee camps in the NTP strategic plan

Planned activities

- Scale up collaborative TB/HIV activities to all 126 districts in the next 5 years (45 districts with round 3 GFATM funding, 50 districts with PEPFAR funding and 31 districts with round 6 GFATM funding)
- Introduce ART in TB clinics and establish TB/HIV coordinating mechanisms in those districts that are already implementing collaborative TB/HIV activities

Challenges

- Coordinating activities of various organizations working on collaborative TB/HIV activities throughout the country
- Developing a national TB/HIV policy, and increasing funds to recruit TB/HIV staff
- Strengthening technical expertise and number of staff who are qualified to treat MDR-TB patients in order to implement MDR-TB activities

Contribute to health system strengthening

Budget (2006): US$ 0 Gap (2006): US$ 0

Achievements

- Participated in the annual health sector review and revised essential health package accordingly
- Renovated a number of general health facilities to include DOTS centres and trained general health staff in TB clinical management and laboratory skills
- Integrated TB drug procurement, distribution and stock management systems fully with the general medical stores department

PLANNED ACTIVITIES

- Initiate PAL activities in 2008

Challenges

- Ensuring that TB is appropriately prioritized in the federal donor basket-fund mechanism

[1] Unless otherwise specified, achievements are for financial year 2005; planned activities are for financial year 2006. Budgets and gaps are for financial years.

[2] The planning and budget cycle in UR Tanzania means that data are not yet available for the 2007 fiscal year, which starts in July 2007.

IMPLEMENTING THE STOP TB STRATEGY

Engage all care providers

Budget (2006): US$ 0 Gap (2006): US$ 0

Achievements

- Trained private health care providers in TB clinical management and smear microscopy
- Provided anti-TB drugs and laboratory reagents and equipment to private practitioners for diagnosis and treatment of TB patients
- Rehabilitated private sector TB laboratories under the FIDELIS project
- Involved all major private facilities in TB control in Dar es Salaam, where 15% of all TB cases are notified by the private sector, including the start of collaborative TB/HIV activities in private hospitals

Planned activities

- Conduct situational analysis of PPM activities throughout the country
- Introduce the International Standards for Tuberculosis Care into public and private medical school curricula and among professional organizations

Challenges

- Establishing a clear policy for private sector involvement and developing a memorandum of understanding between the NTP and the private sector

Empower people with TB, and communities

Budget (2006): US$ 0.6 million Gap (2006): US$ 0.1 million

Achievements

- Continued involving communities in TB case detection, treatment adherence and defaulter tracing on a small scale
- Revised the NTP manual to incorporate activities to empower communities and people with TB

Planned activities

- Scale up community involvement to additional 31 districts with round 6 GFATM funding over the next 5 years
- Develop a national ACSM strategy
- Incorporate the Patients' Charter for Tuberculosis Care into basic curricula for medical and nursing schools

Challenges

- Accelerating scale-up of community involvement
- Crafting TB-related media messages in the country, and encouraging establishment of TB-support organizations with cured TB patients to engage in TB control activities

Enable and promote research

Budget (2006): US$ 1.2 million Gap (2006): US$ 0.05 million

Achievements

- Included operational research as part of the NTP strategic plan, with links to the National Medical Research Institute
- Started national drug resistance survey in 2006
- Held training in operational research methodology for relevant stakeholders

Planned activities

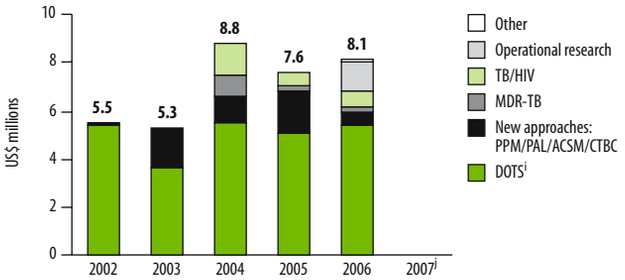
- Conduct a national infection survey in 2006–2007, for comparison with results of surveys done between 1983 and 2004
- Linking the NTP with the National Bureau of Statistics and the Adult Morbidity and Mortality Projects I and II

Challenges

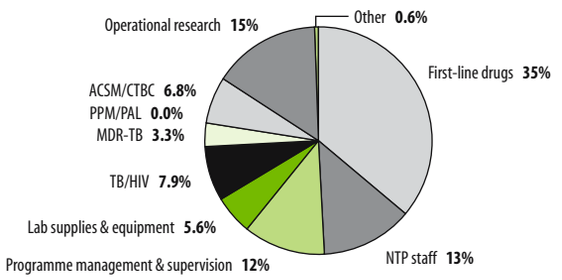
- Increasing availability of NTP to conduct operational research

FINANCING THE STOP TB STRATEGY

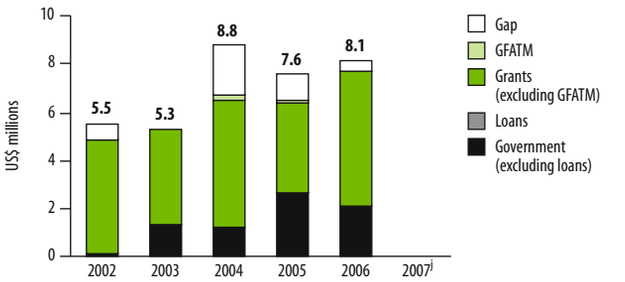
NTP budget by line item
Increased budget for operational research, which includes ARI survey and population-based study of TB mortality; budget for new approaches to DOTS reduced in 2006 compared with 2005



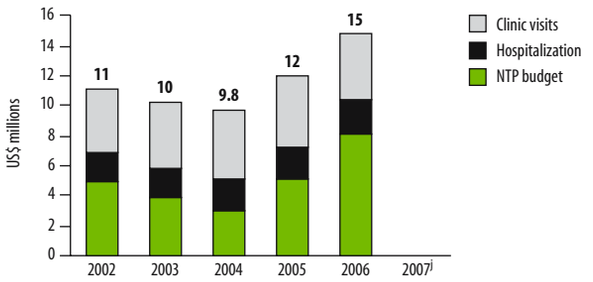
NTP budget by line item, 2006[j]
Relatively large share of the budget is for first-line drugs compared with most other HBCs



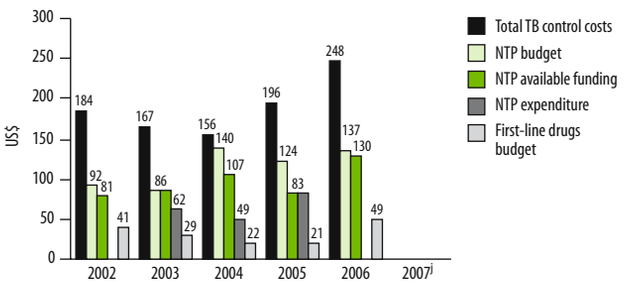
NTP budget by source of funding
Generally stable budget and funding since 2004; unlike many other HBCs, limited funding from GFATM



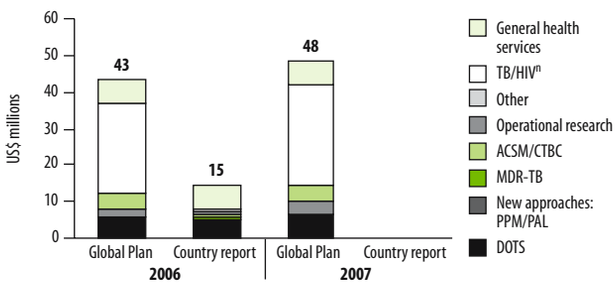
Total TB control costs by line item[k]
Cost of clinic visits based on 62 visits per TB patient; hospitalization costs are for 1900 dedicated TB beds



Per patient costs, budgets and expenditures[l]
Increased NTP budget and total cost per patient reflects increase in budget combined with fall in projected number of patients to be treated



Comparison of country report and Global Plan:[m] total TB control costs, 2006–2007
Global Plan includes much higher costs for TB/HIV, as in all other African HBCs; cost for ACSM is also higher in Global Plan



SOURCES, METHODS AND ABBREVIATIONS

[a] *World population prospects – the 2004 revision*. New York, United Nations Population Division, 2005.
[b] Incidence, prevalence and mortality estimates include patients infected with HIV. Incidence estimate originally based on assumption of 55% ss+ case detection rate in 1997 (DOTS and non-DOTS). Trend in incidence estimated from 3-year moving average of notification rate (new and relapse, DOTS and non-DOTS).
[c] MDG and STB Partnership indicators shown in bold. Targets are 70% case detection of smear-positive cases under DOTS, 85% treatment success, to ensure that the incidence rate is falling by 2015, and to reduce incidence rates and halve 1990 prevalence and mortality rates by 2015. Estimates for 1990 are prevalence 267/100 000 pop and mortality 37/100 000 pop/yr.
[d] Estimate of HIV prevalence in incident TB cases (15–49 yo) derived from UNAIDS estimate of HIV prevalence in the general population, using assumed incidence rate ratio of 6.
[e] MDR-TB figures shown in regular type are survey data from the database of the WHO/IUATLD Global Project on Anti-Tuberculosis Drug Resistance Surveillance. Figures in italics are estimates from the following source: Zignol M et al. Global incidence of multidrug-resistant tuberculosis. *Journal of Infectious Diseases*, 2006, 194:479–485.
[f] Completeness of reporting assessed at lowest level in reporting hierarchy for which information is available.
[g] For routine diagnosis, there should be at least one laboratory providing smear microscopy per 100 000 population. To provide culture for diagnosis of paediatric, extrapulmonary and ss-/HIV+ TB, as well as DST for re-treatment and failure cases, most countries will need one culture facility per 5 million population and one DST facility per 10 million population.
[h] Case detection within DOTS areas calculated by dividing national case detection rate (new ss+) by DOTS coverage.
[i] DOTS includes the following components shown in the pie chart at right: first-line drugs, NTP staff, programme management and supervision, and laboratory supplies and equipment.
[j] Budget data for 2007 are not yet available since the fiscal year starts in July.
[k] Total TB control costs for 2002 are based on available funding, whereas those for 2003–2005 are based on expenditure and those for 2006 are based on budgets. Estimates of the costs of clinic visits and hospitalization are WHO estimates based on data provided by the NTP and from other sources. See Methods for further details.
[l] NTP available funding for 2004–2005 is based on the amount of funding actually received, using retrospective data; available funding for 2002–2003 and 2006 is based on prospectively reported budget data, and estimated as the total budget minus any reported funding gap.
[m] Estimates in the Global Plan were presented for regions rather than countries. See Methods for explanation of calculation of individual country estimates from regional estimates.
[n] Global Plan estimates cover the full costs of collaborative TB/HIV activities, but these costs may be budgeted for by either the NTP or the National AIDS Programme. In this graph, country reports include only the NTP budget. This may explain the apparent discrepancy between the Global Plan and country reports.

– indicates not available; pop, population; ss+, sputum smear-positive; ss-, sputum smear-negative pulmonary; unk, pulmonary – sputum smear not done or result unknown; yr, year.

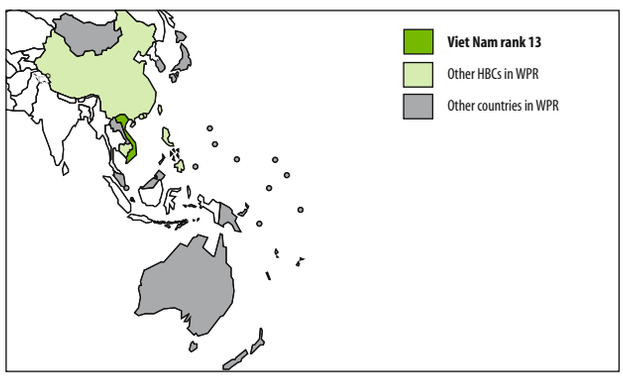
Viet Nam

Viet Nam has exceeded WHO targets for 9 consecutive years, and yet the overall case notification rate has remained stable. The success of the programme in treating patients and cutting transmission is threatened by the spread of HIV infection, insufficient access to high-quality TB care for poor and vulnerable populations, poor TB management practices in the growing private sector, and funding gaps for first-line drugs and for the management of MDR-TB. Some combination of these factors is responsible for the apparent increase in incidence among young adults, especially men. The 2006–2010 strategic plan addresses these risks, but will require urgent action to move forward without loss of momentum.

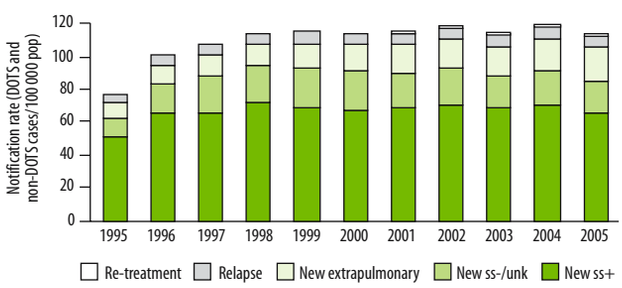
SURVEILLANCE AND EPIDEMIOLOGY

Population (thousands)[a]	84 238	
TB burden, 2005 estimates (with 2.5 and 97.5 centiles)[b]		
Incidence (all cases/100 000 pop/yr)	175	102–253
Trend in incidence rate (%/yr, 2004–2005)[c]	**-0.9**	
Incidence (ss+/100 000 pop/yr)	79	45–115
Prevalence (all cases/100 000 pop)[c]	**235**	130–356
Mortality (deaths/100 000 pop/yr)[c]	**23**	12–36
Of new adult TB cases (15–49yrs), % HIV+[d]	3.0	1.7–4.6
New TB cases multidrug-resistant, 1997 (%)[e]	2.3	1.3–3.8
Previously treated TB cases multidrug-resistant, 2004 (%)[e]	*14*	*2.1–56*
Surveillance and DOTS implementation, 2005		
Notification rate (new and relapse/100 000 pop/yr)	113	
Notification rate (new ss+/100 000 pop/yr)	66	
DOTS case detection rate (new ss+, %)	**84**	57–147
DOTS treatment success (new ss+ cases, 2004 cohort, %)	**93**	
Of new pulmonary cases notified under DOTS, % smear-positive	77	
Of new cases notified under DOTS, % extrapulmonary	19	
Of new smear-positive cases notified under DOTS, % in women	27	
Of sub-national reports expected, % received at next reporting level[f]	100	
Laboratory services, 2005[g]		
Number of laboratories performing smear microscopy	740	
Number of laboratories performing culture	30	
Number of laboratories performing DST	2	
Of laboratories performing smear microscopy, % covered by EQA	100	
Management of MDR-TB, 2005		
Of new cases notified, % receiving DST at start of treatment	0.0	
Of new cases receiving DST at start of treatment, % MDR-TB	–	
Of re-treatment cases notified, % receiving DST	0.0	
Of re-treatment cases receiving DST, % MDR-TB	–	
Collaborative TB/HIV activities, 2005		
National policy of counselling and testing TB patients for HIV?	No	
National surveillance system for HIV-infection in TB patients?	No	
Of TB patients (new and re-treatment) notified, % tested for HIV	–	
Of TB patients tested for HIV, % HIV+	–	
Of HIV+ TB patients detected, % receiving CPT	–	
Of HIV+ TB patients detected, % receiving ART	–	
Budget and finance, 2007		
Government contribution to NTP budget (including loans, %)	48	
Government contribution to total cost of TB control (including loans, %)	65	
Government health spending used for TB control (%)	3.5	
NTP budget funded (%)	75	

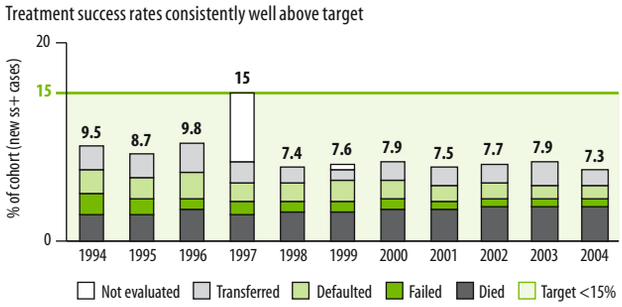
WHO Western Pacific Region (WPR)
Rank based on estimated number of incident cases (all forms) in 2005



Case notifications
Notification rates fairly stable since late 1990s, despite consistently high case detection and treatment success rates



Unfavourable treatment outcomes, DOTS
Treatment success rates consistently well above target



DOTS expansion and enhancement	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
DOTS coverage (%)	50	95	93	96	98.5	99.8	99.8	99.9	100	100	100
DOTS notification rate (new & relapse/100 000 pop)	38	68	103	111	114	114	114	118	113	118	113
DOTS notification rate (new ss+/100 000 pop)	26	51	66	69	69	68	68	70	68	70	66
DOTS case detection rate (all new cases, %)	19	33	51	56	58	58	59	61	60	62	60
DOTS case detection rate (new ss+, %)	30	59	78	83	83	82	83	87	85	89	84
Case detection rate within DOTS areas (new ss+, %)[h]	59	62	84	86	84	82	83	87	85	89	84
DOTS treatment success (new ss+, %)	91	90	85	93	92	92	93	92	92	93	–
DOTS re-treatment success (ss+, %)	81	84	80	84	87	79	85	85	85	84	–

IMPLEMENTING THE STOP TB STRATEGY[1]

Pursue high-quality DOTS expansion and enhancement

Budget (2006): US$ 8.5 million
Budget (2007): US$ 12 million
Gap (2006): US$ 0
Gap (2007): US$ 2.9 million

Achievements

- Demonstrated high and enduring political commitment to TB control at national, provincial and district levels, yet full programme funding for 2006–2010 not secure
- Received approval for GFATM round 6 proposal for TB control activities
- Implemented "lot quality assurance" sampling EQA in pilot provinces
- Strengthened supervision and monitoring through training for national and provincial staff; targeted follow-up of poorly performing provinces; established national supervision team; and involved provincial staff in supervision
- Provided computers in all provinces
- Final evaluation of NTP performance 2001–2005 carried out in 2006 by international team
- Developed comprehensive strategic HRD plan for TB control for 2006–2010 that includes training and staffing needs for DOTS, MDR-TB, TB/HIV and PPM
- Received 100% of district reports at national level in 2005, with feedback to districts in the form of meetings and reports two times per year
- Conducted detailed assessment of routinely collected data, in collaboration with KNCV and the Union, providing a better understanding of the impact of DOTS on TB, and the reasons why no decline in incidence has been observed
- Produced 20th annual report of NTP activities

Planned activities

- Introduce FDC anti-TB drugs
- Build physical and technical capacity for quality assured culture and DST in 4 laboratories

Challenges

- Understanding and overcoming failure of TB control to reduce incidence of TB, particularly in young adults, despite having met 2005 global targets
- Strengthening laboratory network, and ensuring sufficient qualified staff in intermediate-level laboratories in all areas of the country
- Securing funding for quality assured anti-TB drugs after 2006

Address TB/HIV, MDR-TB and other challenges

Budget (2006): US$ 0.1 million
Budget (2007): US$ 0.8 million
Gap (2006): US$ 0
Gap (2007): US$ 0.5 million

Achievements

- Trained staff in NTP and NAP on collaborative TB/HIV activities in 29 districts of 3 provinces; started cross-referrals of cases between the NTP and the NAP
- Established 63 VCT centres within the NTP
- Conducted sentinel survey of HIV in TB patients in 40 provinces
- Performed special surveys for TB control in prison populations, orphaned/homeless and ethnic minorities; established TB units in prisons and TB control projects for the homeless in some cities

Planned activities

- Establish TB/HIV technical advisory group at the central level and coordinating bodies at provincial and district levels
- Strengthen the monitoring and evaluation system to have a focus on TB/HIV activities
- Develop the physical, technical and HR capacities to treat MDR-TB patients in 5 provinces, including securing adequate stock of second-line anti-TB drugs (goal to enrol 1500 MDR-TB patients on second-line treatment by 2010)
- Develop and adopt a joint strategic approach to TB control in penitentiary and social re-education institutions

Challenges

- Determining the impact of the rise in HIV prevalence on the incidence of TB incidence
- Improving collaboration between NTP and NAP
- Developing guidelines for the management of MDR-TB patients, and securing funding to implement an MDR-TB treatment programme
- Investigating barriers to access to detection and treatment among ethnic communities, internal migrants, people living in remote areas, the homeless and the poor

[1] Unless otherwise specified, achievements are for financial year 2005; planned activities are for financial year 2006. Budgets and gaps are for financial years.

IMPLEMENTING THE STOP TB STRATEGY

Contribute to health system strengthening

Budget (2006): US$ 0 Gap (2006): US$ 0
Budget (2007): US$ 0 Gap (2007): US$ 0

Achievements

- Aligned NTP strategic plan with the national health development plan, Poverty Reduction Strategy Paper and Medium-term Expenditure Framework
- Integrated TB control with other government and non-government health and non-health organizations
- Partly integrated chronic obstructive pulmonary disease, asthma and acute respiratory infection programmes into the NTP

Planned activities

- Implement PAL strategy to improve TB case-finding and develop new strategies for diagnosis (funding for 2007 requested from GFATM)

Challenges

- Implementing the Hanoi core statement on aid effectiveness to reach Viet Nam's development goals by 2010 and the MDGs by 2015
- Maintaining local commitment for TB control as health sector reform decentralizes TB control funding
- Retaining influence of NTP on practices in district hospitals and the private sector, as organizational separation of the new district prevention centre (responsible for TB control) from district hospitals and district health bureaus occurs
- Ensuring TB control is considered in the new Infectious Disease Law

Engage all care providers

Budget (2006): US$ 0 Gap (2006): US$ 0
Budget (2007): US$ 0.02 million Gap (2007): US$ 0

Achievements

- Hired a PPM focal point in the central team
- Completed PPM situational analysis and piloting in 2 provinces, and developed scale-up plan for 23 provinces (GFATM supported)
- Translated the International Standards for Tuberculosis Care into Vietnamese

Planned activities

- Develop guidelines and regulations for implementing PPM DOTS, and initiate training of health care workers outside the NTP on DOTS
- Establish focal groups and coordinating committees for PPM in 7 provinces in 2006, 23 provinces in 2007 and remaining provinces by 2010
- Evaluate ongoing PPM initiatives and adjust scale-up plans
- Distribute the International Standards for Tuberculosis Care to all provinces

Challenges

- Improving technical and managerial capacity for PPM at central, provincial and district levels

Empower people with TB, and communities

Budget (2006): US$ 0.2 million Gap (2006): US$ 0
Budget (2007): US$ 0.3 million Gap (2007): US$ 0

Achievements

- Involved communities in developing IEC, in TB case-finding, and in treatment support for TB patients (80% of population covered)

Planned activities

- Increase the scope of community involvement through implementation of sputum collection-referring system, and collaborate with village health workers, mass organizations (women's and farmer's unions) and the private sector for referrals in remote and mountainous communes

Challenges

- Updating and making comprehensive the ACSM strategy
- Implementing a robust monitoring and evaluation system for ACSM

Enable and promote research

Budget (2006): US$ 0.5 million Gap (2006): US$ 0
Budget (2007): US$ 0.7 million Gap (2007): US$ 0

Achievements

- Included operational research as part of the NTP strategic plan 2006–2010
- Conducted a national drug resistance survey, a study on TB/HIV and a risk of infection study in 5 provinces

Planned activities

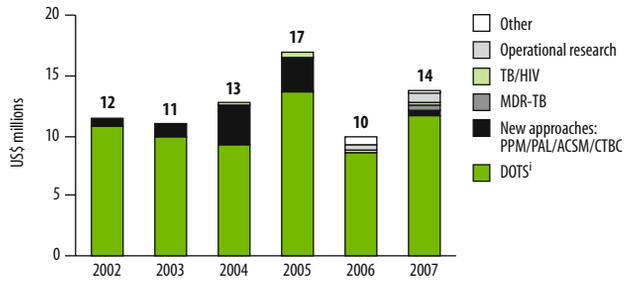
- Conduct a national population-based prevalence of disease survey in 2007

Challenges

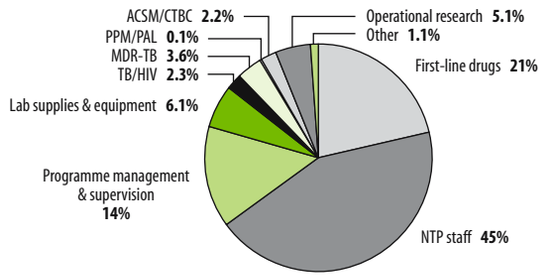
- Increasing staff capacity in operational research, especially on data analysis and epidemiology

FINANCING THE STOP TB STRATEGY

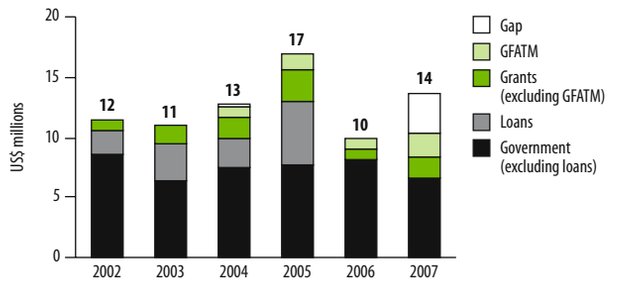
NTP budget by line item
Budget for DOTS in 2005 higher than in other years; budget for other components of Stop TB Strategy limited in both 2006 and 2007



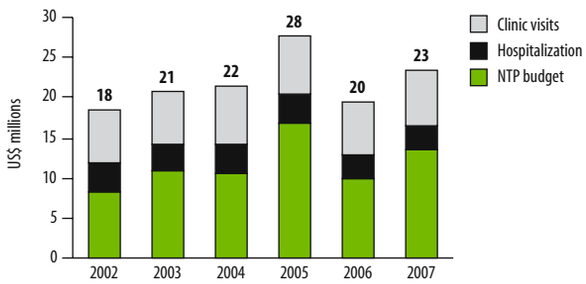
NTP budget by line item, 2007
86% of the budget is for component 1 of Stop TB Strategy (Pursue high-quality DOTS expansion and enhancement), with relatively small share for other components of the strategy



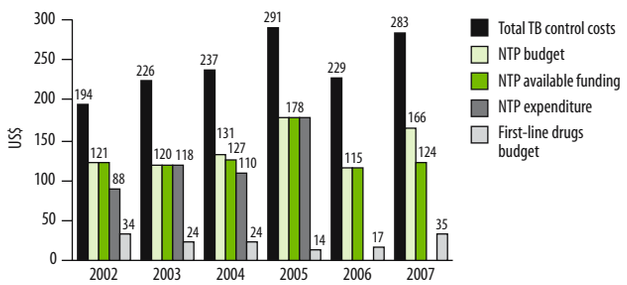
NTP budget by source of funding
Budget for 2006 and 2007 lower than in 2005; funding gap in 2007 is mostly for first-line drugs



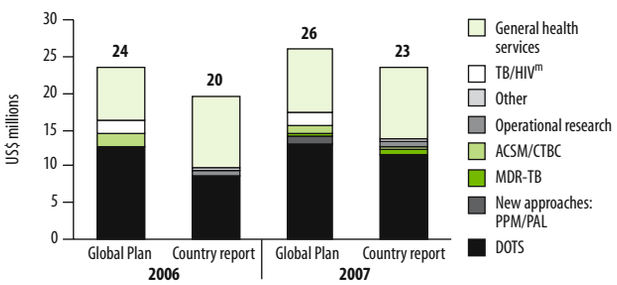
Total TB control costs by line item[j]
Cost of clinic visits based on 66 visits for new TB patients; hospitalization cost based on estimate that 60% of TB patients are admitted for an average of 30 days



Per patient costs, budgets and expenditures[k]
Decreasing NTP budget per patient, expenditures similar to received funding



Comparison of country report and Global Plan:[l] total TB control costs, 2006–2007
Global Plan and country report similar in 2007; main difference is that Global Plan includes higher budgets for PPM, PAL, ACSM and CTBC



SOURCES, METHODS AND ABBREVIATIONS

[a] *World population prospects – the 2004 revision*. New York, United Nations Population Division, 2005.
[b] Incidence, prevalence and mortality estimates include patients infected with HIV. Incidence estimate based on assumption of ARI of 1.7% in 1997, and assumed to be declining at 1% per year as in other countries in WPR.
[c] MDG and STB Partnership indicators shown in bold. Targets are 70% case detection of smear-positive cases under DOTS, 85% treatment success, to ensure that the incidence rate is falling by 2015, and to reduce incidence rates and halve 1990 prevalence and mortality rates by 2015. Estimates for 1990 are prevalence 470/100 000 pop and mortality 41/100 000 pop/yr.
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[j] Total TB control costs for 2002–2005 are based on expenditure, whereas those for 2006–2007 are based on budgets. Estimates of the costs of clinic visits and hospitalization are WHO estimates based on data provided by the NTP and from other sources. See Methods for further details.
[k] NTP available funding for 2004–2005 is based on the amount of funding actually received, using retrospective data; available funding for 2002–2003 and 2006–2007 is based on prospectively reported budget data, and estimated as the total budget minus any reported funding gap.
[l] Estimates in the Global Plan were presented for regions rather than countries. See Methods for explanation of calculation of individual country estimates from regional estimates.
[m] Global Plan estimates cover the full costs of collaborative TB/HIV activities, but these costs may be budgeted for by either the NTP or the National AIDS Programme. In this graph, country reports include only the NTP budget. This may explain the apparent discrepancy between the Global Plan and country reports.

– indicates not available; pop, population; ss+, sputum smear-positive; ss-, sputum smear-negative pulmonary; unk, pulmonary – sputum smear not done or result unknown; yr, year.

Zimbabwe

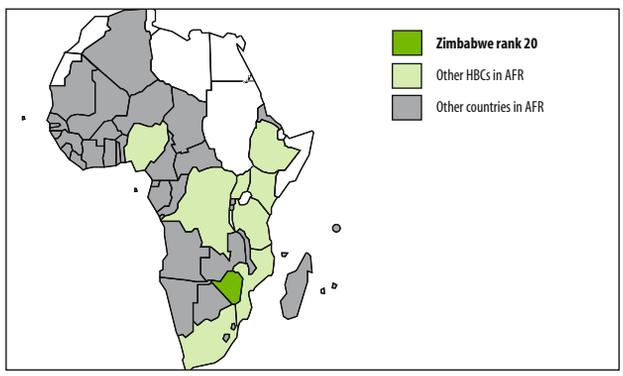
Activities to improve the management of HIV-infected TB patients have increased in Zimbabwe, and FDC anti-TB drugs will soon be introduced throughout the country. Community involvement in TB control has started, with plans to expand in the forthcoming year. Activities to strengthen management and diagnostic and treatment services have been limited by the fact that funds from the GFATM have not yet been disbursed. Unless the GFATM grant is signed, the budget for 2007 will also remain mostly unfunded, and the quality of the programme will be seriously threatened.

SURVEILLANCE AND EPIDEMIOLOGY

Population (thousands)[a]	13 010	
TB burden, 2005 estimates (with 2.5 and 97.5 centiles)[b]		
Incidence (all cases/100 000 pop/yr)	601	491–729
Trend in incidence rate (%/yr, 2004–2005)[c]	**-6.3**	
Incidence (ss+/100 000 pop/yr)	245	194–307
Prevalence (all cases/100 000 pop)[c]	**631**	428–887
Mortality (deaths/100 000 pop/yr)[c]	**130**	101–167
Of new adult TB cases (15–49yrs), % HIV+[d]	60	48–69
New TB cases multidrug-resistant, 1995 (%)[e]	1.9	1.0–3.3
Previously treated TB cases multidrug-resistant, 1995 (%)[e]	8.3	1.8–22
Surveillance and DOTS implementation, 2005		
Notification rate (new and relapse/100 000 pop/yr)	388	
Notification rate (new ss+/100 000 pop/yr)	101	
DOTS case detection rate (new ss+, %)	**41**	33–52
DOTS treatment success (new ss+ cases, 2004 cohort, %)	**54**	
Of new pulmonary cases notified under DOTS, % smear-positive	31	
Of new cases notified under DOTS, % extrapulmonary	14	
Of new smear-positive cases notified under DOTS, % in women	48	
Of sub-national reports expected, % received at next reporting level[f]	85	
Laboratory services, 2005[g]		
Number of laboratories performing smear microscopy	166	
Number of laboratories performing culture	1	
Number of laboratories performing DST	1	
Of laboratories performing smear microscopy, % covered by EQA	6.0	
Management of MDR-TB, 2005		
Of new cases notified, % receiving DST at start of treatment	–	
Of new cases receiving DST at start of treatment, % MDR-TB	–	
Of re-treatment cases notified, % receiving DST	–	
Of re-treatment cases receiving DST, % MDR-TB	–	
Collaborative TB/HIV activities, 2005		
National policy of counselling and testing TB patients for HIV?	–	
National surveillance system for HIV-infection in TB patients?	–	
Of TB patients (new and re-treatment) notified, % tested for HIV	–	
Of TB patients tested for HIV, % HIV+	–	
Of HIV+ TB patients detected, % receiving CPT	–	
Of HIV+ TB patients detected, % receiving ART	–	
Budget and finance, 2006		
Government contribution to NTP budget (including loans, %)	18	
Government contribution to total cost of TB control (including loans, %)	39	
Government health spending used for TB control (%)	9.8	
NTP budget funded (%)	80	

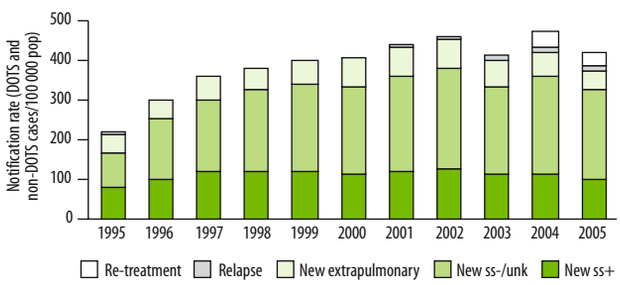
WHO African Region (AFR)

Rank based on estimated number of incident cases (all forms) in 2005



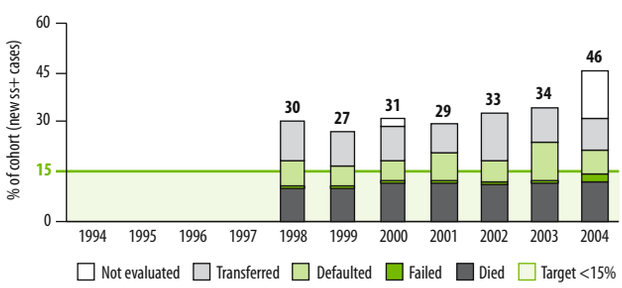
Case notifications

Notification rates seem to have peaked around 2002 and are now falling; low rate in 2005 attributed in part at least to missing reports



Unfavourable treatment outcomes, DOTS

Treatment success consistently low, even compared with other countries where HIV prevalence is high; large number of patients in 2004 cohort not evaluated because of missing reports



DOTS expansion and enhancement	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
DOTS coverage (%)	–	0.0	0.0	100	12	100	100	100	100	100	100
DOTS notification rate (new & relapse/100 000 pop)	–	–	–	382	402	404	443	463	413	434	388
DOTS notification rate (new ss+/100 000 pop)	–	–	–	117	116	114	121	125	113	113	101
DOTS case detection rate (all new cases, %)	–	0.0	0.0	65	65	62	64	67	59	65	63
DOTS case detection rate (new ss+, %)	–	–	–	50	47	44	44	45	41	43	41
Case detection rate within DOTS areas (new ss+, %)[h]	–	–	–	50	404	44	44	45	41	43	41
DOTS treatment success (new ss+, %)	–	–	–	70	73	69	71	67	66	54	–
DOTS re-treatment success (ss+, %)	–	–	–	–	66	65	61	63	62	53	–

IMPLEMENTING THE STOP TB STRATEGY[1]

Pursue high-quality DOTS expansion and enhancement

Budget (2006): US$ 8.4 million
Budget (2007): data not available

Gap (2006): US$ 1.9 million
Gap (2007): data not available

Achievements

- Reviewed the NTP manual and started a training-of-trainers programme to prepare to introduce FDC anti-TB drugs
- Secured a substantial increase in funding for the NTP through a successful round 5 application to the GFATM, although no funds had yet been disbursed in 2006
- Produced annual report of NTP activities

Planned activities

- Introduce FDC anti-TB drugs nationwide to improve treatment adherence and completion rates

Challenges

- Aligning the current NTP strategic plan for 2006–2010 with the Global Plan
- Overcoming severe shortage of staff at all levels, especially at the central level, partly resulting from the movement of experienced NTP staff to the private sector and to other countries
- Closing the funding gap (more than US$1 million) for routine programme management and supervision activities
- Carrying out the plan for laboratory supervision, including quality assurance, with limited numbers of staff
- Ensuring adequate ordering and distribution of anti-TB drugs to prevent future stock-outs
- Improving routine recording and reporting; only 85% of expected sub-national reports were received at national level in 2005, contributing to a lower case notification rate than in 2004 and to the high proportion of cases registered for treatment without reported outcomes

Address TB/HIV, MDR-TB and other challenges

Budget (2006): US$ 2.2 million
Budget (2007): data not available

Gap (2006): US$ 0.4 million
Gap (2007): data not available

Achievements

- Revised recording and reporting forms to include collaborative TB/HIV activities
- Introduced routine voluntary counselling and testing for HIV among TB patients
- Included CPT as part of collaborative TB/HIV activities
- Piloted the use of IPT for HIV-infected patients
- Developed national guidelines on the programmatic management of MDR-TB

Planned activities

- Establish TB/HIV coordinating body with TB and HIV/AIDS expert committees
- Strengthen the TB/HIV data collection system

Challenges

- Obtaining adequate funding for TB/HIV training, development of TB/HIV IEC materials and other ACSM activities for TB/HIV control
- Improving human resources to coordinate collaborative TB/HIV activities
- Mobilizing funding for the management of patients with MDR-TB

Contribute to health system strengthening

Budget (2006): US$ 0
Budget (2007): data not available

Gap (2006): US$ 0
Gap (2007): data not available

Achievements

- Included NTP training and staffing needs for DOTS, TB/HIV, MDR-TB and PPM in the implementation plan for all health workers
- Formed a health services board to manage terms of employment of health workers, with the aim of improving conditions for, and consequently retention of, qualified local staff

Planned activities

- Integrate service delivery and training for TB/HIV, MDR-TB and PPM under general HRD efforts

Challenges

- Preventing the loss of experienced managers at all levels in the public health sector that has reduced managerial capacity and contributed to a breakdown in the referral system, with increasing use of referral hospitals as primary care providers

[1] Unless otherwise specified, achievements are for financial year 2005; planned activities are for financial year 2006. Budgets and gaps are for financial years.

IMPLEMENTING THE STOP TB STRATEGY

Engage all care providers

Budget (2006): US$ 0 Gap (2006): US$ 0
Budget (2007): data not available Gap (2007): data not available

Achievements

- Collaborated with non-NTP laboratories (private, NGO, university, military, prison) in reporting, quality assurance and provision of reagents and equipment; more than 30 private laboratories participate in the NTP laboratory network but are not covered by the NRL EQA system
- Conducted TB-specific training for non-NTP health-care providers, and provided NTP guidelines to private practitioners

Planned activities

- None described

Challenges

- Quantifying the extent of involvement of private practitioners in diagnosing TB and treating patients

Empower people with TB, and communities

Budget (2006): US$ 0 Gap (2006): US$ 0
Budget (2007): data not available Gap (2007): data not available

Achievements

- Piloted community-based treatment support in one district
- Received support from NGOs (Red Cross, CARE) within their programmes to involve the community, but financing is limited

Planned activities

- Expand community-based treatment support to other districts, and provide training to communities on TB control and management
- Carry out a national IEC campaign to increase community awareness of the importance of anti-TB treatment, the links with HIV, the availability of FDC anti-TB drugs and access to ART
- Use the Patients' Charter for Tuberculosis Care to empower patients with information on TB control, prevention and management

Challenges

- Encouraging the development of patient-centred organizations with cured TB patients to engage in TB control activities
- Obtaining funding to extend the community-based treatment pilot to other districts
- Developing a national ACSM plan and mobilizing resources for ACSM

Enable and promote research

Budget (2006): US$ 0 Gap (2006): US$ 0
Budget (2007): data not available Gap (2007): data not available

Achievements

- Started drafting a protocol for the next national drug resistance survey
- Collaborated with the London School of Hygiene and Tropical Medicine and South Africa in research in TB in mines and factories in Harare

Planned activities

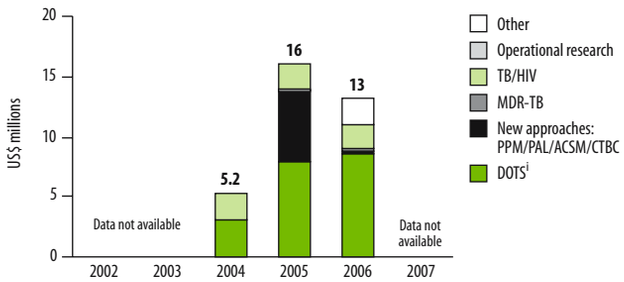
- Continue research in collaboration with the Union to investigate sputum smear diagnosis (2 versus 3 smears) of TB

Challenges

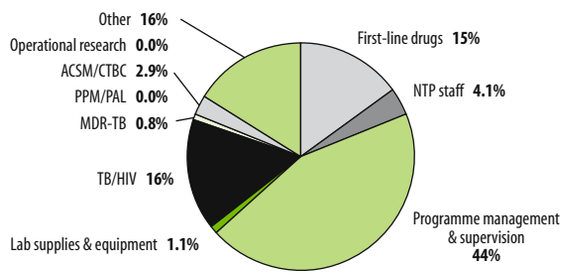
- Assessing the burden of TB and the impact of control, given incomplete reporting and an absence of any planned population-based surveys
- Pursuing research, given the competing priorities of the Stop TB Strategy and lack of funding for basic TB control activities

FINANCING THE STOP TB STRATEGY

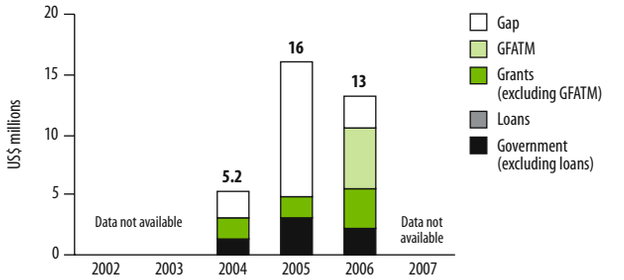
NTP budget by line item
Reduced budget for new approaches to improve DOTS in 2006 compared with 2005; stable budget for collaborative TB/HIV activities



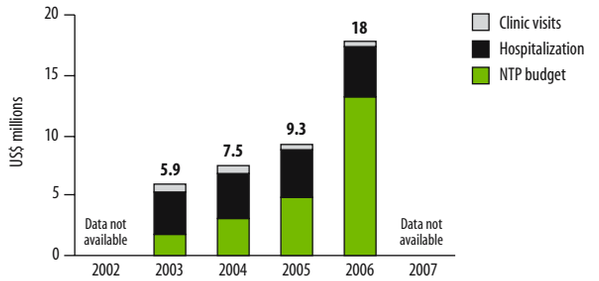
NTP budget by line item, 2006
Largest share of budget is for programme management and supervision



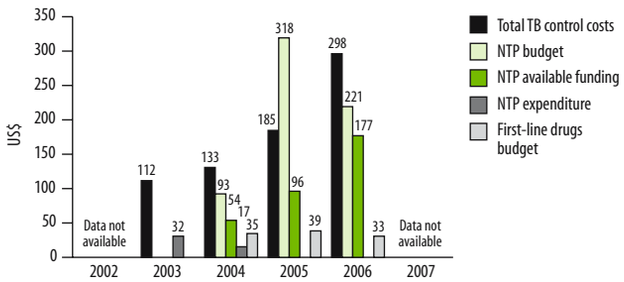
NTP budget by source of funding
Increased funding from GFATM for 2006, though funding gap persists; NTP was not able to compile data for 2007



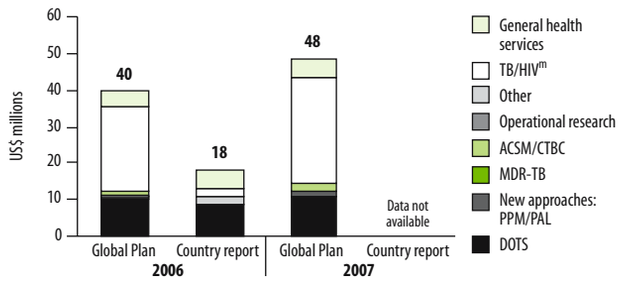
Total TB control costs by line item[j]
Hospitalization estimates based on the number of TB beds available in the country (1660)



Per patient costs, budgets and expenditures[k]
Budget per patient increased substantially in 2005 but has subsequently fallen



Comparison of country report and Global Plan:[l] total TB control costs, 2006–2007
As for other African HBCs, main difference between Global Plan and country report is the budget for TB/HIV



SOURCES, METHODS AND ABBREVIATIONS

[a] *World population prospects – the 2004 revision*. New York, United Nations Population Division, 2005.
[b] Incidence, prevalence and mortality estimates include patients infected with HIV. Incidence estimate originally based on assumption of 60% ss+ case detection rate in 1997 (DOTS and non-DOTS). Trend in incidence estimated from 3-year moving average of notification rate (new and relapse, DOTS and non-DOTS).
[c] MDG and STB Partnership indicators shown in bold. Targets are 70% case detection of smear-positive cases under DOTS, 85% treatment success, to ensure that the incidence rate is falling by 2015, and to reduce incidence rates and halve 1990 prevalence and mortality rates by 2015. Estimates for 1990 are prevalence 256/100 000 pop and mortality 44/100 000 pop/yr.
[d] Estimate of HIV prevalence in incident TB cases (15–49 yo) derived from UNAIDS estimate of HIV prevalence in the general population, using assumed incidence rate ratio of 6.
[e] MDR-TB figures shown in regular type are survey data from the database of the WHO/IUATLD Global Project on Anti-Tuberculosis Drug Resistance Surveillance. Figures in italics are estimates from the following source: Zignol M et al. Global incidence of multidrug-resistant tuberculosis. *Journal of Infectious Diseases*, 2006, 194:479–485.
[f] Completeness of reporting assessed at lowest level in reporting hierarchy for which information is available.
[g] For routine diagnosis, there should be at least one laboratory providing smear microscopy per 100 000 population. To provide culture for diagnosis of paediatric, extrapulmonary and ss-/HIV+ TB, as well as DST for re-treatment and failure cases, most countries will need one culture facility per 5 million population and one DST facility per 10 million population.
[h] Case detection within DOTS areas calculated by dividing national case detection rate (new ss+) by DOTS coverage.
[i] DOTS includes the following components shown in the pie chart at right: first-line drugs, NTP staff, programme management and supervision, and laboratory supplies and equipment.
[j] Total TB control costs for 2003 are based on expenditure, whereas those for 2004–2005 are based on available funding and those for 2006 are based on budgets. Estimates of the costs of clinic visits and hospitalization are WHO estimates based on data provided by the NTP and from other sources. See Methods for further details.
[k] NTP available funding for 2004–2006 is based on prospectively reported budget data, and estimated as the total budget minus any reported funding gap.
[l] Estimates in the Global Plan were presented for regions rather than countries. See Methods for explanation of calculation of individual country estimates from regional estimates.
[m] Global Plan estimates cover the full costs of collaborative TB/HIV activities, but these costs may be budgeted for by either the NTP or the National AIDS Programme. In this graph, country reports include only the NTP budget. This may explain the apparent discrepancy between the Global Plan and country reports.

– indicates not available; pop, population; ss+, sputum smear-positive; ss-, sputum smear-negative pulmonary; unk, pulmonary – sputum smear not done or result unknown; yr, year.

ANNEX 2

The Stop TB Strategy, case reports, treatment outcomes and estimates of TB burden

Explanatory notes

Summary by WHO region

Africa

The Americas

Eastern Mediterranean

Europe

South-East Asia

Western Pacific

Explanatory notes for Annex 2

Regional summaries and country data grouped by WHO region are presented in the following tables. The WHO Global TB Database, which includes detailed data for previous years, is available at www.who.int/tb/country/global_tb_database.

All rates are per 100 000 population (total population of country or region, with the exception of notifications by age and sex, where the estimated population for each age and sex category is used).

NTP manager (or equivalent); person filling out data collection form (if different)

The people named on the data collection form sent to WHO in 2006 (this list serves to acknowledge the contribution of NTP managers and others; the people named are not necessarily the current NTP managers).

Summary of TB control policies

Implementation of the Stop TB Strategy, 2005–2006. Shown is the proportion of each country's population which lives in areas implementing the strategy (*DOTS coverage*), and the extent to which components and sub-components were implemented in those areas.

- *NTP manual*: squares indicates that there is a manual; triangles that there is not.
- *Smear microscopy for diagnosis; Standardized chemotherapy; DOT (directly observed treatment)* and *Monitoring outcomes*: squares indicate that these core components of DOTS are implemented in all DOTS units in 2005; circles, in some units; triangles, in none.
- *Cases notified by type; age & sex*: squares indicate that, for 2005, cases were notified by type and by age and sex; circles indicate notification by type only; triangles, no notification.
- *2004 cohort outcomes, reported: new; retreatment*: squares indicate that, for cases registered in 2004, outcomes were provided for new and re-treatment cases; circles indicate for new cases only; triangles, no outcomes.
- *Smear microscopy free-of-charge* and *Drugs free-of-charge*: squares indicate that these policies were implemented in all DOTS units in 2005; circles, in some units; triangles, in none.
- *Uninterrupted drug supply*: squares indicate that in 2005 there were no stock-outs of anti-TB drugs at central or peripheral level; circles, that stock-outs occurred at either central or peripheral level; triangles, that they occurred at both levels.
- *EQA for smear microscopy*: squares indicate that there was a system of external quality assurance for smear microscopy in 2005; triangles indicate that there was no such system. See Table A2.4 for numbers of laboratories included in EQA.
- *Strategic HRD plan*: squares indicate that the NTP has a comprehensive strategic human resource development plan; triangles indicate there was no such plan.
- *TB control in curricula of doctors and nurses*: squares indicate that TB control (following NTP guidelines) is included in the curricula for basic training of both doctors and nurses; circles that it is included in either the curricula for doctors or for nurses; triangles indicate that neither included TB control.
- *Up-to-date job descriptions*: squares indicate that job descriptions for staff involved in TB control are up-to-date; triangles indicate that this is not the case.
- *Guidelines for private practitioners*: squares indicate that the NTP had guidelines on TB management for medical practitioners working outside public health clinics in 2005; triangles indicate that this is not the case.
- *Public providers notified/referred* and *Private providers notified/referred*: for each column, squares indicate that, in 2005, all providers notified TB cases, directly or indirectly, to the NTP; circles indicate that some groups of providers did so; triangles, that none did.
- In the following 6 columns, triangles indicate that the *International Standards for Tuberculosis Care (ISTC)* was promoted by the NTP in 2006; that *Health system strengthening* was explicitly mentioned in the national TB control plan; that the *Practical Approach to Lung Health (PAL)* was part of the plan; that *community-based TB care* was implemented in 2005; and that at least one operational research project was intiated in collaboration with the NTP in 2005. In each column, triangles indicate the opposite.
- *MDR-TB mgmt; in line with WHO guidelines*: squares indicate that the management of MDR-TB patients was part of the activities of the NTP in 2005, and that the management followed WHO guidelines; circles indicate that MDR-TB was managed by the NTP but not following WHO guidelines; triangles indicate that MDR-TB was not managed by the NTP.
- *HIV counselling and testing*: squares indicate that, in 2005, there was a national policy to offer HIV counselling and testing to TB patients (even if only in specific groups); triangles indicate that this was not the case.
- *Surveillance of HIV prev in TB pts*: squares indicate that, in 2005, there was a national surveillance system to measure the prevalence of HIV in TB patients

(from routine testing, sentinel sites or other sources); triangles indicate that this was not the case.

Table A2.1 Estimated burden of TB, 1990 and 2005

Estimates of incidence, prevalence and mortality for 1990 (baseline year for MDGs) and 2005 (the latest year covered by this report). See Methods for details of calculations. All estimates include TB in people with HIV.

Table A2.2 Whole country case notifications and case detection rates, 2005

Case notifications by history (new or re-treatment), by site (pulmonary or extrapulmonary) and by smear status (smear-positive, negative or unknown). Proportions of case types and estimated case detection rate for whole country (DOTS and non-DOTS combined).

- *Population, source: World population prospects – the 2004 revision*. New York, United Nations Population Division, 2005.
- *Country total*: the total number of TB cases according to the country's own reporting convention (in many countries this matches the WHO total – new and relapse – other countries include re-treatment cases and/or cases with unknown treatment history).
- *WHO total*: new and relapse cases (for the WHO European region only, cases with treatment history unknown also included).
- *Other new*: new cases for which the site of disease is not recorded.
- *Other re-treat.*: re-treatment cases for which the outcome of previous treatment is not known.
- *Other*: cases for which neither treatment history nor site of disease is recorded.
- *New pulm. lab. confirmed*: new pulmonary cases in which diagnosis has been confirmed by smear and/or culture examination.
- *Detection rate, all cases*: notified (new and relapse) cases divided by estimated incident cases (expressed as percentage).
- *Detection rate, new ss+*: notified new smear-positive cases divided by estimated incident smear-positive cases (expressed as percentage).
- *SS+ (% of pulm.)*: the percentage of all new pulmonary cases that are smear-positive.
- *SS+ (% of new+relapse)*: the percentage of new and relapse case that are new smear-positive.
- *Extrapulm. (% of new+relapse)*: the percentage of all new and relapse cases that are extrapulmonary.
- *Re-treat. (% of new+re-treat.)*: notified re-treatment cases as a percentage of all notified cases.

Table A2.3 DOTS coverage, case notifications and case detection rates, 2005

As for Table A2.2, but for DOTS notifications.

- *DOTS coverage*: the percentage of the national population living in areas where health services have adopted DOTS.

Table A2.4 Laboratory services, collaborative TB/HIV activities and management of MDR-TB, 2004–2005

Laboratory services

- *Numbers of laboratories*: Shown are the numbers of laboratories working with the NTP that perform smear microscopy, culture or DST, and the number of laboratories performing smear microscopy that are included in external quality assurance (EQA).

Collaborative TB/HIV activities, 2004 and 2005

- *TB pts tested for HIV*: the number of TB patients tested for HIV.
- *TB pts HIV-positive*: the number of TB patients found to be HIV-positive.
- *HIV+ TB pts CPT*: the number of HIV-positive TB patients given co-trimoxazole preventive therapy.
- *HIV+ TB pts ART*: the number of HIV-positive TB patients given antiretroviral therapy during their TB treatment.

Multidrug-resistant (MDR) TB, 2005

- *Lab-confirmed MDR*: number of laboratory-confirmed cases of MDR-TB identified among TB patients (new and re-treatment) diagnosed in 2005.
- *DST in new cases*: number of new TB cases in 2005 for whom drug sensitivity testing (DST) was performed at start of treatment.
- *MDR in new cases*: number of new cases which were identified as MDR-TB based on DST at start of treatment.
- *Re-treatment DST*: number re-treatment cases registered in 2005 for whom DST was performed at start of treatment.
- *Re-treatment MDR*: number of re-treatment cases identified as MDR-TB based on DST at start of treatment.

Table A2.5 Treatment outcomes, 2004 cohort

Treatment outcomes of new smear-positive cases treated under DOTS, non-DOTS and re-treatment cases under DOTS (all re-treatment cases combined).

Table A2.6 Re-treatment outcomes, 2004 cohort

Re-treatment outcomes of smear-positive cases treated under DOTS after relapse, treatment failure or default.

Table A2.7 DOTS treatment success and case detection rates, 1994–2005

Treatment success rates (the proportion of registered cases cured or completed treatment) for new smear-positive cases treated under DOTS from 1994 to 2004 and smear-positive case detection rates under DOTS from 1995 to 2005.

Table A2.8 New smear-positive case notification by age and sex, absolute numbers, DOTS and non-DOTS, 2005

Breakdown by age and sex of new smear-positive cases notified from whole country (DOTS and non-DOTS). Some countries cannot provide the breakdown for all new smear-positive notified cases, others provide the breakdown for all new cases, or all notified cases (see country notes).

Table A2.9 New smear-positive case notification rates by age and sex, DOTS and non-DOTS, 2005

Notification rates of new smear-positive cases by age and sex (DOTS + non-DOTS). Rates are missing where breakdown of smear-positive notified cases is not provided, or where age- and sex-specific population data are not available. In the regional summary table, rates are excluding those countries for which breakdown of notified cases or population by age and sex is missing.

Table A2.10 Number of TB cases notified, 1980–2005

Table A2.11 Case notification rates, 1980–2005

Table A2.12 New smear-positive cases notified, numbers and rates, 1993–2005

Country notes

These notes include data provided to WHO in non-standard formats, additional information reported by countries, and other observations.

Summary by WHO region …
Africa …
The Americas …
Eastern Mediterranean…
Europe …
South-East Asia …
Western Pacific …

Table A2.1 **Estimated burden of TB, 1990 and 2005**

	Incidence, 1990				Prevalence, 1990		TB mortality, 1990		Incidence, 2005								Prevalence, 2005				TB mortality, 2005				HIV prevalence
	All forms*		Smear-positive*		All forms*		All forms*		All forms*		All forms HIV+		Smear-positive*		Smear-positive HIV+		All forms*		All forms HIV+		All forms*		All forms HIV+		in adult incident
	number	rate	number	rate	number	rate	number	rate	number	rate	number	rate	number	rate	number	rate	number	rate	number	rate	number	rate	number	rate	TB cases (%)
AFR	758 550	149	329 832	65	1 576 126	310	196 767	39	2 528 915	343	500 913	68	1 087 920	147	175 320	24	3 772 508	511	250 457	34	543 551	74	158 892	22	28
AMR	482 843	66	215 578	30	719 030	99	70 871	10	351 703	39	16 815	2	156 585	18	5 885	≤ 1	447 815	50	8 408	≤ 1	49 313	6	4 157	≤ 1	7.9
EMR	430 010	112	193 142	50	906 423	236	103 474	27	564 551	104	7 319	1	253 316	47	2 562	≤ 1	881 476	163	3 659	≤ 1	111 753	21	3 195	≤ 1	2.1
EUR	322 577	38	144 987	17	459 206	54	48 446	6	445 025	50	13 572	2	198 904	23	4 750	≤ 1	525 043	60	6 786	≤ 1	65 734	7	2 845	≤ 1	4.6
SEAR	2 569 237	199	1 153 169	89	6 898 413	535	663 378	51	2 993 252	181	78 784	5	1 339 085	81	27 574	2	4 809 232	290	39 392	2	512 322	31	22 580	1	3.9
WPR	1 895 900	125	852 713	56	4 909 113	323	391 995	26	1 927 359	110	11 213	≤ 1	866 190	49	3 925	≤ 1	3 616 138	206	5 607	≤ 1	294 597	17	3 156	≤ 1	1.0
Global	**6 459 118**	**122**	**2 889 421**	**55**	**15 468 312**	**293**	**1 474 930**	**28**	**8 810 805**	**136**	**628 615**	**10**	**3 902 001**	**60**	**220 015**	**3**	**14 052 212**	**217**	**314 308**	**5**	**1 577 270**	**24**	**194 825**	**3**	**11**

* Incidence, prevalence and mortality estimates include patients with HIV. Estimates labelled "HIV+" are estimates of TB in HIV-positive adults (aged 15-49 years). Estimates for all years are re-calculated as new information becomes available and techniques are refined, so they may differ from those published previously. See Explanatory notes on page 163 for further details. Data can be downloaded from www.who.int/tb

Table A2.2 **Whole country case notifications and case detection rates, 2005**

		TB cases notified from whole country (DOTS + non-DOTS)														**Estimated incidence and case detection rate**				**Proportions**			
		Country	New and relapse		New pulmonary			New extra-	Other	Re-treatment cases					New pulm.	Estimated incidence		Case detection rate		ss+	ss+	Extrapulm.	Re-treat.
	Population	total	(WHO total)		ss+		ss-/unk.	pulmonary	new	Relapse	After failure	After default	Other re-treat.	Other	lab. confirm.	all forms	ss+	all new	new ss+	(% of	(% of	(% of	(% of
	thousands	number	number	rate	number	rate	number	number	number	number	number	number	number	number	number	number	number	%	%	pulm.)	new+relapse)	new+relapse)	new+re-treat.)
AFR	738 083	1 254 751	1 186 800	161	550 001	75	364 789	208 979	2 940	60 091	7 477	15 720	42 686	2 649	566 664	2 528 915	1 087 920	45	51	60	46	18	10
AMR	890 757	238 239	227 616	26	124 788	14	55 740	33 298	3 685	10 105	1 951	4 086	6 405	2 106	137 783	351 703	156 585	62	80	69	55	15	9
EMR	541 704	259 802	282 945	52	112 804	21	99 392	64 282	12	6 455	2 284	1 360	1 608	0	113 527	564 551	253 316	49	45	53	40	23	4
EUR	882 395	424 060	365 346	41	96 101	11	157 334	49 831	0	22 472	3 868	5 079	51 772	413	124 402	445 028	198 903	68	48	38	26	14	22
SEAR	1 656 529	1 950 603	1 789 186	108	857 371	52	594 185	242 332	1 439	89 413	19 670	74 643	68 348	202	857 944	2 993 252	1 339 085	57	64	59	48	14	13
WPR	1 752 283	1 382 960	1 274 266	73	671 719	38	447 749	87 584	118	67 096	4 849	6 958	87 246	10 125	682 969	1 927 359	866 190	63	78	60	53	7	12
Global	**6 461 751**	**5 510 415**	**5 126 159**	**79**	**2 412 784**	**37**	**1 719 189**	**686 306**	**8 194**	**255 632**	**40 099**	**107 846**	**258 065**	**15 495**	**2 483 289**	**8 810 805**	**3 902 001**	**55**	**62**	**58**	**48**	**14**	**12**

ss+ indicates sputum smear-positive; ss-, sputum smear-negative; unk., sputum smear result unknown; re-treat., re-treatment; pulm. lab. confirmed, pulmonary case confirmed by positive smear or culture. See Explanatory notes on page 163 for further details. Data can be downloaded from www.who.int/tb

Table A2.3 **DOTS coverage, case notifications and case detection rates, 2005**

		TB cases reported from DOTS services													**Estimated incidence and case detection rate**				**Proportions**			
	DOTS	New and relapse		New pulmonary			New extra-	Other	Re-treatment cases					New pulm.	Estimated incidence		Case detection rate		ss+	ss+	Extrapulm.	Re-treat.
	coverage	(WHO total)		ss+		ss-/unk.	pulmonary	new	Relapse	After failure	After default	Other re-treat.	Other	lab. confirm.	all forms	ss+	all new	new ss+	(% of	(% of	(% of	(% of
	%	number	rate	number	rate	number	number	number	number	number	number	number	number	number	number	number	%	%	pulm.)	new+relapse)	new+relapse)	new+re-treat.)
AFR	89	1 168 502	158	538 816	73	359 987	207 438	2 940	59 321	7 200	15 385	42 220	2 649	555 449	2 528 915	1 087 920	44	50	60	46	18	10
AMR	88	187 380	21	101 786	11	45 154	28 083	3 679	8 678	1 842	3 226	3 657	1 640	113 730	351 703	156 585	51	65	69	54	15	9
EMR	97	279 707	52	112 617	21	97 664	62 974	12	6 440	2 284	1 360	1 608	0	113 322	564 551	253 316	48	44	54	40	23	4
EUR	60	270 290	31	70 299	8	111 802	29 792	0	18 789	3 826	4 853	25 256	194	93 346	445 028	198 903	48	35	39	26	11	20
SEAR	93	1 779 496	107	855 306	52	587 502	241 438	1 439	89 365	19 670	74 604	68 299	189	855 879	2 993 252	1 339 085	56	64	59	48	14	13
WPR	98	1 238 180	71	661 390	38	431 865	80 958	118	63 849	4 616	6 730	84 396	6 511	668 468	1 927 359	866 190	61	76	60	53	7	12
Global	**89**	**4 923 555**	**76**	**2 340 214**	**36**	**1 633 974**	**650 683**	**8 188**	**246 442**	**39 438**	**106 158**	**225 436**	**11 183**	**2 400 194**	**8 810 805**	**3 902 001**	**53**	**60**	**59**	**48**	**13**	**12**

ss+ indicates sputum smear-positive; ss-, sputum smear-negative; unk., sputum smear result unknown; re-treat., re-treatment; pulm. lab. confirmed, pulmonary case confirmed by positive smear or culture. See Explanatory notes on page 163 for further details. Data can be downloaded from www.who.int/tb

Table A2.4 **Laboratory services, collaborative TB-HIV activities and management of MDR-TB, 2004–2005**

	Laboratory services, 2005				Collaborative TB/HIV activities								Management of MDR-TB, 2005				
					2004				2005								
	number of labs working with NTP			number of labs included in EQA	TB pts tested for HIV	TB pts HIV-positive	HIV+ TB pts CPT	HIV+ TB pts ART	TB pts tested for HIV	TB pts HIV-positive	HIV+ TB pts CPT	HIV+ TB pts ART	Lab-confirmed MDR	DST in new cases	MDR in new cases	Re-treatment DST	Re-treatment MDR
	smear	culture	DST														
AFR	6 783	78	59	5 541	26 092	17 359	15 148	3 901	128 779	65 254	53 245	19 153	2 457	1 826	277	3 922	2 073
AMR	13 440	3 260	442	6 723	54 565	8 443	4 938	5 840	63 851	11 094	4 525	5 766	4 386	17 747	310	11 268	3 082
EMR	3 311	152	27	1 143	2 137	127	25	15	2 807	325	48	40	345	1 317	35	83	41
EUR	6 871	1 263	515	524	46 983	1 027	16	21	138 559	1 064	26	36	10 828	32 136	1 299	6 682	1 681
SEAR	17 789	99	42	16 425	250	1	1	0	31 976	7 028	305	190	67	661	9	420	25
WPR	7 093	436	219	4 763	7 570	1 717	88	46	7 090	443	2	6	339	20 805	34	1 861	139
Global	**55 287**	**5 288**	**1 304**	**35 119**	**137 597**	**28 674**	**20 216**	**9 823**	**373 062**	**85 208**	**58 151**	**25 191**	**18 422**	**74 492**	**1 964**	**24 236**	**7 041**

ART indicates antiretroviral therapy; CPT, co-trimoxazole preventive therapy; DST, drug susceptibility testing; EQA, external quality assurance; HIV+, HIV-positive; pts, patients. See Explanatory notes on pages 163 for further details. Some countries provided the number of TB patients found to be HIV-positive, but did not provide the number of TB patients tested. The regional and global totals of TB patients tested are therefore lower than the numbers of patients actually tested, and cannot be used to calculated regional or global estimates of HIV prevalence in TB patients. Data can be downloaded from www.who.int/tb

Table A2.5 **Treatment outcomes, 2004 cohort**

	New smear-positive cases, DOTS											New smear-positive cases, non-DOTS											Smear-positive re-treatment cases, DOTS								
	Number of cases		% of notif	% of cohort							%	Number of cases		% of notif	% of cohort							%	Number	% of cohort							%
	Notified	Regist'd	regist'd	Cured	Compl-eted	Died	Failed	Default	Trans-ferred	Not eval.	Success	Notified	Regist'd	regist'd	Cured	Compl-eted	Died	Failed	Default	Trans-ferred	Not eval.	Success	Regist'd	Cured	Compl-eted	Died	Failed	Default	Trans-ferred	Not eval.	Success
AFR	537 591	538 641	100	62	12	7	1	9	5	3	74	13 440	12 912	96	35	34	6	2	11	3	8	69	96 827	36	24	11	3	13	6	8	60
AMR	99 991	96 613	97	60	19	5	1	6	3	5	80	30 655	28 798	94	39	32	5	1	10	9	4	71	11 640	41	18	6	3	14	6	12	59
EMR	96 769	98 426	102	72	11	3	1	8	3	3	83	195	262	134	34	42	1	0	16	6	0	76	10 654	58	16	4	3	10	4	4	74
EUR	52 286	48 471	93	59	14	7	7	7	3	3	74	40 799	35 116	86	45	24	2	1	3	1	24	69	25 159	33	20	10	11	12	4	10	52
SEAR	755 479	755 489	100	83	4	4	2	6	1	0	87	24 051	24 051	100	5	1	0	0	2	0	92	6	226 364	52	22	7	5	14	1	0	73
WPR	564 871	566 238	100	87	4	2	1	2	1	3	91	20 289	9 557	47	72	9	3	2	2	2	10	82	126 075	80	6	3	3	2	2	5	86
Global	**2 106 987**	**2 103 878**	**100**	**77**	**7**	**4**	**2**	**6**	**2**	**2**	**84**	**129 429**	**110 696**	**86**	**36**	**21**	**3**	**1**	**6**	**3**	**30**	**57**	**496 719**	**55**	**18**	**7**	**4**	**10**	**2**	**4**	**73**

Not eval. indicates not evaluated (percentage of registered cases for which outcomes were not recorded); success, sum of cured and completed; cases regist'd, the denominator for calculating treatment outcomes. The number of cases registered for treatment in 2004 is used as the denominator for calculating treatment outcomes unless it is less than the sum of outcomes, in which case the sum of outcomes is used. If the number of cases registered is not reported, then the number of cases notified in 2004 is used, or the sum of outcomes if the latter is greater. Data can be downloaded from www.who.int/tb

Table A2.6 **Re-treatment outcomes, 2004 cohort**

	Relapse, DOTS									After failure, DOTS									After default, DOTS								
	Number regist'd	% of cohort							% Success	Number regist'd	% of cohort							% Success	Number regist'd	% of cohort							% Success
		Cured	Compl-eted	Died	Failed	Default	Trans-ferred	Not eval.			Cured	Compl-eted	Died	Failed	Default	Trans-ferred	Not eval.			Cured	Compl-eted	Died	Failed	Default	Trans-ferred	Not eval.	
AFR	47961	49	13	11	3	11	6	7	62	4 349	39	10	10	7	12	6	16	49	8283	38	14	9	3	24	5	7	52
AMR	6 271	51	18	7	3	9	5	8	68	745	25	17	4	9	9	6	30	42	3 384	28	17	7	2	25	9	12	45
EMR	4 518	69	10	5	3	9	3	1	79	268	60	10	10	7	9	4	0	70	136	47	16	14	4	17	2	0	63
EUR	9 916	46	7	11	13	9	4	9	53	2 675	27	5	11	16	11	4	27	32	1 228	21	16	9	10	28	10	7	37
SEAR	75 847	69	6	7	5	12	1	1	75	19 732	55	8	8	13	15	1	0	63	70 547	63	7	7	4	18	1	0	70
WPR	65 549	78	6	3	3	2	2	6	84	1 007	57	7	7	17	6	4	1	64	1 086	44	5	5	3	12	8	23	49
Global	**210 062**	**66**	**8**	**7**	**4**	**8**	**3**	**4**	**74**	**28 776**	**49**	**8**	**8**	**12**	**13**	**3**	**6**	**57**	**84 664**	**58**	**8**	**7**	**4**	**19**	**2**	**2**	**66**

Not eval. indicates not evaluated (percentage of registered cases for which outcomes were not recorded); success, sum of cured and completed; cases regist'd, the denominator for calculating treatment outcomes. The number of cases registered for treatment in 2004 is used as the denominator for calculating treatment outcomes unless it is missing or is less than the sum of outcomes, in which case the sum of outcomes is used. Data can be downloaded from www.who.int/tb

Table A2.7 **DOTS treatment success and case detection rates, 1994–2005**

	DOTS new smear-positive treatment success (%)											DOTS new smear-positive case detection rate (%)										
	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
AFR	59	62	57	63	70	69	72	71	73	73	74	22	24	28	33	36	37	39	45	49	51	50
AMR	77	77	83	82	81	83	81	82	83	83	80	27	28	30	34	37	45	44	47	51	60	65
EMR	82	87	86	79	77	83	83	83	83	82	83	11	10	11	18	20	24	26	30	32	39	44
EUR	68	69	72	72	76	77	77	75	76	75	74	3	3	4	11	10	11	14	21	22	25	35
SEAR	80	74	77	72	72	73	83	84	85	85	87	1	4	6	8	14	19	27	34	45	57	64
WPR	90	91	93	93	95	94	92	93	90	91	91	15	28	31	33	31	37	38	39	50	65	76
Global	**77**	**79**	**77**	**79**	**81**	**80**	**82**	**82**	**82**	**83**	**84**	**11**	**16**	**18**	**22**	**25**	**28**	**33**	**38**	**45**	**54**	**60**

Treatment success indicates sum of cured and completed; DOTS new smear-positive case detection rate, notified cases divided by estimated incident cases. The table includes updated information; data shown here may differ from those published in previous reports. Data can be downloaded from www.who.int/tb

Table A2.8 **New smear-positive case notification by age and sex, absolute numbers, DOTS and non-DOTS, 2005**

	Male							Female							All							Male/female ratio
	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+	
AFR	7 635	54 066	94 388	71 072	40 974	18 931	12 143	10 023	57 115	75 056	43 213	22 855	11 047	7 163	17 658	111 181	169 444	114 285	63 829	29 978	19 306	1.3
AMR	1 520	16 410	16 671	14 369	12 340	7 801	7 951	1 718	12 405	11 563	7 891	5 933	3 788	4 751	3 238	28 815	28 234	22 260	18 273	11 589	12 702	1.6
EMR	1 523	13 432	14 489	10 690	8 614	6 487	5 492	2 764	13 364	11 942	8 283	6 170	4 325	3 393	4 287	26 796	26 431	18 973	14 784	10 812	8 885	1.2
EUR	297	6 173	9 145	9 146	8 702	4 443	4 077	423	4 664	5 096	3 162	2 241	1 333	3 166	779	14 840	22 130	20 300	18 903	8 580	9 141	2.1
SEAR	5 064	94 638	120 560	122 256	107 228	74 084	45 533	8 591	71 923	76 779	54 000	37 709	24 289	12 975	13 655	166 561	197 339	176 256	144 937	98 373	58 508	2.0
WPR	2 350	57 514	74 341	84 885	83 262	72 993	91 555	2 658	40 061	39 936	36 853	31 047	27 180	34 260	5 008	97 575	114 277	121 738	114 309	100 173	125 815	2.2
Global	**18 389**	**242 233**	**329 594**	**312 418**	**261 120**	**184 739**	**166 751**	**26 177**	**199 532**	**220 372**	**153 402**	**105 955**	**71 962**	**65 708**	**44 625**	**445 768**	**557 855**	**473 812**	**375 035**	**259 505**	**234 357**	**1.8**

For some countries, breakdown of notified cases by age and sex is missing, or is provided for a subset of cases. See Explanatory notes on page 164 for further details. Data can be downloaded from www.who.int/tb

Table A2.9 **New smear-positive case notification rates by age and sex, DOTS and non-DOTS, 2005**

	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+
AFR	5	70	184	218	186	137	118	6	75	148	131	97	71	55	6	72	166	174	140	102	83
AMR	1	21	25	24	25	24	25	1	17	17	13	11	11	11	1	19	21	18	18	17	17
EMR	2	23	34	34	40	54	55	3	24	30	29	30	35	31	2	23	32	32	35	45	43
EUR	0	5	8	9	9	7	5	0	4	5	3	2	2	3	0	7	10	10	9	6	5
SEAR	2	58	90	111	134	151	113	3	47	60	52	49	48	28	3	53	75	82	93	99	67
WPR	1	38	51	58	76	102	140	1	29	29	26	30	39	43	1	34	40	42	53	71	87
Global	**2**	**38**	**60**	**64**	**68**	**75**	**69**	**3**	**33**	**41**	**32**	**28**	**28**	**21**	**2**	**36**	**52**	**49**	**49**	**51**	**42**

Rates are per 100 000 population of each age/sex group. Rates are calculated excluding those countries for which breakdown of notified cases or population by age and sex is missing. Data can be downloaded from www.who.int/tb

Table A2.10 **Number of TB cases notified, 1980–2005**

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
AFR	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	598 821	689 253	750 086	783 930	861 423	1 004 557	1 079 333	1 179 378	1 186 800
AMR	227 697	248 122	237 274	238 465	226 812	227 186	227 206	233 192	241 834	239 594	231 186	252 215	253 255	166 459	241 854	258 187	256 656	254 980	262 886	240 619	238 579	230 404	233 678	228 450	235 524	227 616
EMR	522 110	514 791	433 271	234 482	171 652	186 344	230 427	288 805	280 126	261 441	234 620	315 483	109 087	201 620	119 374	121 745	145 373	136 232	233 878	171 734	141 748	165 904	191 154	206 806	243 178	282 945
EUR	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	290 031	322 080	353 361	349 795	373 765	373 081	368 433	373 670	358 978	354 954	365 346
SEAR	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	1 401 096	1 470 352	1 308 981	1 279 041	1 464 312	1 414 228	1 414 141	1 488 126	1 551 516	1 686 681	1 789 186
WPR	356 481	355 345	461 557	462 195	541 002	615 181	651 854	655 020	716 447	741 912	894 074	760 870	754 469	718 784	724 290	824 952	873 424	870 918	834 600	820 469	786 286	805 105	811 482	980 890	1 160 130	1 274 266
Global	**2 512 912**	**2 604 416**	**2 773 156**	**2 758 023**	**2 788 094**	**2 947 780**	**3 127 190**	**3 321 909**	**3 556 448**	**3 611 471**	**3 740 204**	**3 719 885**	**3 121 036**	**3 035 459**	**3 178 151**	**3 400 320**	**3 653 658**	**3 523 293**	**3 649 453**	**3 820 985**	**3 737 852**	**3 845 410**	**4 102 667**	**4 405 973**	**4 859 845**	**5 126 159**
Number reporting	196	194	194	196	193	198	197	199	201	197	196	192	187	179	178	190	196	193	199	196	196	195	206	204	202	199
% reporting	93	92	92	93	91	94	93	94	95	93	93	91	89	85	84	90	93	91	94	93	93	92	98	97	96	94

From 1995 on, number shown is all notified new and relapse cases (DOTS and non-DOTS). The table includes updated information; data shown here may differ from those published in previous reports. Data can be downloaded from www.who.int/tb

Table A2.11 **Case notification rates, 1980–2005**

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
AFR	58	58	60	63	62	68	67	72	78	74	82	79	80	76	97	86	98	98	110	116	119	128	146	153	163	161
AMR	37	40	37	37	34	34	33	34	34	34	32	34	34	22	31	33	32	32	32	29	29	27	27	26	27	26
EMR	183	175	143	75	53	56	67	82	77	70	61	80	27	49	28	28	33	30	50	36	29	33	38	40	46	52
EUR	44	43	40	39	38	36	36	35	33	32	29	27	29	28	28	34	37	41	40	43	43	42	43	41	40	41
SEAR	80	85	98	111	112	113	119	125	134	137	133	133	99	94	93	99	102	89	86	97	92	91	94	96	103	108
WPR	27	27	34	34	39	44	46	45	49	50	59	49	48	46	45	51	54	53	50	49	47	47	47	57	67	73
Global	**57**	**58**	**60**	**59**	**59**	**61**	**63**	**66**	**70**	**70**	**71**	**69**	**57**	**55**	**57**	**60**	**63**	**60**	**62**	**64**	**61**	**62**	**66**	**70**	**76**	**79**

Rates are per 100 000 population. The table includes updated information; data shown here may differ from those published in previous reports. Data can be downloaded from www.who.int/tb

Table A2.12 **New smear-positive cases notified, numbers and rates, 1993–2005**

	Number of cases													Rate (per 100 000 population)												
	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
AFR	107 012	121 005	212 910	264 659	277 591	326 831	349 142	362 527	402 431	459 983	513 029	551 031	550 001	19	21	36	44	45	52	54	55	60	67	73	76	75
AMR	98 264	137 645	138 932	136 987	142 556	139 253	135 153	131 295	129 945	127 574	125 813	126 319	124 788	13	18	18	17	18	17	16	16	15	15	14	14	14
EMR	20 260	20 428	46 851	58 720	57 947	74 923	69 140	60 959	69 101	76 010	80 974	96 964	112 804	5	5	11	13	13	16	15	13	14	15	16	18	21
EUR	45 771	83 568	104 444	110 614	106 700	111 772	89 199	94 275	86 239	83 455	101 657	92 233	96 101	5	10	12	13	12	13	10	11	10	10	12	10	11
SEAR	317 355	313 430	357 882	372 867	369 583	382 171	481 332	510 053	561 939	606 730	673 171	779 530	857 371	23	23	25	26	25	26	32	33	36	38	42	48	52
WPR	222 809	241 672	314 269	388 141	416 952	379 699	383 613	376 109	371 806	372 528	453 812	579 566	671 719	14	15	20	24	25	23	23	22	22	22	26	33	38
Global	**811 471**	**917 748**	**1 175 288**	**1 331 988**	**1 371 329**	**1 414 649**	**1 507 579**	**1 535 218**	**1 621 461**	**1 726 280**	**1 948 456**	**2 225 643**	**2 412 784**	**15**	**16**	**21**	**23**	**23**	**24**	**25**	**25**	**26**	**28**	**31**	**35**	**37**

Rates are per 100 000 population. The table includes updated information; data shown here may differ from those published in previous reports. Data can be downloaded from www.who.int/tb

Summary by WHO region …
Africa …
The Americas …
Eastern Mediterranean…
Europe …
South-East Asia …
Western Pacific …

Africa

NTP MANAGER (OR EQUIVALENT); PERSON FILLING OUT DATA COLLECTION FORM (IF DIFFERENT)

Algeria	Sofiane Alihalassa
Angola	Maria da Conceição Palma; Arlindo Tomás do Amaral
Benin	Martin Gninafon; Germain Monteiro Pio
Botswana	Grace Kangwagye Nkubito
Burkina Faso	Sary Mathurin Dembele; Michel Sawadogo
Burundi	Donatien Nkurunziza
Cameroon	Wang Hubert; Adolphe Nkou Bikoe
Cape Verde	Maria da Luz Lima
Central African Republic	Modeste Hoza; Pierre Kanda
Chad	Mahamat Ali Acyl
Comoros	Aboubacar Mze Mbaba
Congo	Joseph Miboussa; Antoine Ngoulou
Côte d'Ivoire	Jacquemin Kouakou; Amoin Angennes Akaki
Congo	André Ndongosieme; Marie-Léopoldine Mbulula
Equatorial Guinea	
Eritrea	Mineab Sebhatu
Ethiopia	Getachew Wenimagene; Worku Negusu
Gabon	Toung Mve Médard; Géneviève Angue Nguema
Gambia	Adama Jallow; Kejaw Saidykhan
Ghana	Frank Adae Bonsu
Guinea	Namory Keita; Fodé Cissé
Guinea-Bissau	Miguel Camará; Laia Jamanca
Kenya	Joseph Kimagut Sitienei; John Mansoer
Lesotho	Job Ndile; Moseliwliawe Letsie
Liberia	C. Lawuo Gwesa
Madagascar	Rarivoson Benjamin; Sylvestre Ranaivohajaina
Malawi	Felix Salaniponi; Maxwell Gondwe
Mali	Diallo Alimata Naco
Mauritania	Sidina Ould Mohamed Ahmed; Mohamed Ould Salem
Mauritius	F. Rujeedawa
Mozambique	Paula Samogudo; Angélica Salomão
Namibia	Rosalia Indongo; Amos Kutwa
Niger	Marofa Boulacar; Hamadou Hamidou
Nigeria	J. Kabir; Amos Omoniyi
Rwanda	Michel Gasana; Evariste Gasana
Sao Tome & Principe	Aleixo Rodrigues de Sousa Pires
Senegal	Henriette Cécile Diop; Awa Héléne Diop
Seychelles	Justin Freminot
Sierra Leone	Foday Dafae; Saffa Kamara
South Africa	Lindiwe Mvusi; Carina Idema; Letta Seshoka
Swaziland	Themba Dlamini
Togo	Sadzo-Hetsu Kwami Dzrevo; Kwami Dzrevo Sadzo-Hetsu
Uganda	Francis Adatu-Engwau; Joseph Imoko
UR Tanzania	Saidi Egwaga; Emmanuel Nkiligi
Zambia	Nathan Kapata
Zimbabwe	Charles Sandy; Nicholas Siziba

This list shows the people named on the data collection form sent to WHO in 2006, not necessarily the current NTP manager. It is intended as an acknowledgement rather than a directory.

AFRICA: SUMMARY OF TB CONTROL POLICIES

	DOTS COVERAGE, %	NTP MANUAL	SMEAR MICROSCOPY FOR DIAGNOSIS	STANDARDIZED CHEMOTHERAPY	DOT	MONITORING OUTCOMES	CASES NOTIFIED BY TYPE; AGE & SEX	2004 COHORT OUTCOMES REPORTED: NEW; RETREATMENT	SMEAR MICROSCOPY FREE-OF-CHARGE	DRUGS FREE-OF-CHARGE	UNINTERRUPTED DRUG SUPPLY	EQA FOR SMEAR MICROSCOPY	STRATEGIC HRD PLAN	TB CONTROL IN CURRICULA OF DOCTORS AND NURSES	UP-TO-DATE JOB DESCRIPTIONS	GUIDELINES FOR PRIVATE PRACTITIONERS	PUBLIC PROVIDERS NOTIFIED/REFERRED	PRIVATE PROVIDERS NOTIFIED/REFERRED	ISTC PROMOTED IN 2006	HEALTH SYSTEM STRENGTHENING IN PLAN	PAL IN PLAN	COMMUNITY-BASED TB CARE	PATIENTS' CHARTER PROMOTED IN 2006	OPERATIONAL RESEARCH	MDR-TB MGMT; IN LINE WITH WHO GUIDELINES	HIV COUNSELLING & TESTING	SURVEILLANCE OF HIV PREV. IN TB PTS
ALGERIA	100	■■	■■	■■	■■	■■	■■	■■	■■	■■	▲▲	■■	■■	■■	■■	▲▲	■■	●●	■■	■■	■■	■■		■■	■■	▲▲	▲▲
ANGOLA	60	■■	■■	■■	■■	●●	■■	●●	■■	■■	■■	■■	▲▲	■■	■■	■■	●●	●●	■■	■■	▲▲	▲▲	▲▲	▲▲	▲▲	▲▲	▲▲
BENIN	100	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	▲▲		▲▲	■■	●●	●●	■■	■■	■■	▲▲	■■	■■	■■	■■	■■
BOTSWANA	100	■■	■■	■■	■■	■■	■■	●●	▲▲	■■	■■	■■	▲▲	▲▲	■■	▲▲	■■	●●	■■	■■	▲▲	■■	■■	■■	■■	■■	■■
BURKINA FASO	100	■■	■■	■■	■■	■■	■■	■■	■■	■■	●●	■■		▲▲	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■
BURUNDI	100	■■	■■	■■	■■	■■	■■	●●	■■	■■	●●	▲▲	■■	■■	■■	■■	●●	●●	■■	▲▲	▲▲	▲▲	▲▲	■■	■■	■■	▲▲
CAMEROON	100	■■			●●		■■	■■									●●									■■	■■
CAPE VERDE	80	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	▲▲	▲▲	▲▲	■■	■■	●●	▲▲	■■	■■	▲▲	▲▲	▲▲	▲▲	▲▲	■■	■■
CENTRAL AFRICAN REPUBLIC	17	■■	■■	■■	■■	●●	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	●●	●●	■■	▲▲	▲▲	■■	▲▲	▲▲	▲▲	▲▲	▲▲
CHAD	100	■■	■■		■■		■■	■■	▲▲	■■	■■	■■	▲▲	▲▲	■■	■■	●●	●●	■■	■■	■■	▲▲	▲▲		▲▲		▲▲
COMOROS	100	■■	■■	▲▲	■■	■■	■■	●●	■■	■■	■■	■■	▲▲	▲▲	■■	▲▲	●●	●●						▲▲	▲▲	▲▲	■■
CONGO	60	▲▲	■■	■■	■■	●●	●●	■■	▲▲	■■	●●	▲▲	▲▲	●●								▲▲	▲▲	▲▲	▲▲	▲▲	▲▲
CÔTE D'IVOIRE	74		■■	■■	●●	■■	■■	■■	■■	■■	■■	■■	■■	▲▲	■■	▲▲	●●	●●	■■	■■	■■	■■	■■	■■	■■	■■	■■
DR CONGO	100	■■	■■	■■	■■	■■	■■	■■	■■	■■	●●	■■	■■	■■	■■	■■	●●	●●	■■	■■	■■	■■	▲▲	■■	■■	■■	▲▲
EQUATORIAL GUINEA	0																										
ERITREA	86	▲▲	■■	■■	■■	■■	■■	●●	■■	■■	■■	▲▲	▲▲	■■	▲▲	▲▲	▲▲	■■	■■	■■	■■	■■	▲▲	■■	▲▲		■■
ETHIOPIA	90	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	▲▲	■■	▲▲	●●	●●	▲▲	▲▲	▲▲	▲▲	▲▲	■■	▲▲	■■	▲▲
GABON	24	■■	■■	■■	●●	●●	■■	■■	▲▲	▲▲	▲▲	▲▲	■■	▲▲	▲▲	▲▲	●●	●●	■■	■■	▲▲	▲▲	■■	▲▲	▲▲	▲▲	▲▲
GAMBIA	100	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	▲▲	■■	▲▲	■■	■■	●●	●●	▲▲	▲▲	▲▲	■■	■■	■■	▲▲	■■	▲▲
GHANA	100	■■	■■	■■	■■	■■	■■	■■	■■	■■	▲▲	■■	▲▲	■■	▲▲	■■	■■	●●	■■	▲▲	▲▲	■■	■■	▲▲	▲▲	■■	▲▲
GUINEA	100	■■	■■	■■	■■	■■	■■	■■	●●	■■	■■	■■	■■	▲▲	▲▲		●●	●●	■■	■■	▲▲	▲▲	▲▲	▲▲	■■	■■	▲▲
GUINEA-BISSAU	85	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	▲▲	▲▲	■■	▲▲	▲▲	■■	■■	▲▲	■■	▲▲	▲▲	▲▲	▲▲	▲▲	▲▲	▲▲
KENYA	100	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	▲▲	■■	■■	■■	●●	●●	■■	■■	▲▲	■■	■■	▲▲	▲▲	■■	■■
LESOTHO	100	■■	■■	■■	■■	■■	■■	●●	■■	■■	●●	■■	■■	■■	■■	■■	●●	●●	■■	■■	▲▲	■■	▲▲	■■	■■	■■	▲▲
LIBERIA	40	■■	■■	■■	■■	■■	■■	■■	■■	■■	▲▲	▲▲	■■	▲▲	■■	▲▲	●●		■■	■■	■■	▲▲	▲▲	▲▲	▲▲	▲▲	▲▲
MADAGASCAR	100	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	▲▲	●●	●●	■■	■■	■■	▲▲	▲▲	■■	▲▲	▲▲	■■
MALAWI	100	■■	■■	■■	■■	■■	■■	■■			●●	▲▲	■■	▲▲	■■	▲▲	●●	●●	■■	▲▲	▲▲	■■		■■	▲▲	■■	■■
MALI	100	■■	■■	■■	●●	●●	■■	■■	■■	■■	■■	■■	■■	▲▲	■■	▲▲	■■	■■	■■	■■	▲▲	▲▲	■■	■■	●●	■■	▲▲
MAURITANIA	82	■■	■■	▲▲	■■	■■	●●	■■	▲▲	■■	■■	■■	▲▲	■■	▲▲		●●	●●	■■	■■	▲▲		▲▲	■■	▲▲	■■	▲▲
MAURITIUS	100	▲▲	■■	■■	■■	■■	■■	■■	■■	■■	■■	▲▲	■■	■■	■■	▲▲	■■	■■	■■	■■	■■	■■	■■	▲▲	■■	■■	■■
MOZAMBIQUE	100	■■	■■	■■	■■	■■	●●	●●	■■	■■	▲▲	■■	▲▲	■■	■■	▲▲	■■	■■	■■	■■	▲▲	■■	▲▲	▲▲	■■	▲▲	▲▲
NAMIBIA	100	■■	■■	■■	●●	■■	■■	■■	■■	■■	■■	■■	▲▲	▲▲	▲▲	▲▲	●●	●●	■■	■■	▲▲	▲▲	▲▲	■■	▲▲	■■	■■
NIGER	50	■■	■■	●●	■■	■■	■■	●●	■■	■■	■■	■■	■■	▲▲	■■	■■	■■	●●	■■	■■	▲▲	▲▲	■■	■■	▲▲		▲▲
NIGERIA	65	■■	■■	■■	■■	■■	■■	■■	●●	■■	■■	■■	■■	▲▲	■■	▲▲	●●	●●	■■	■■	▲▲	▲▲	■■	■■	▲▲	■■	▲▲
RWANDA	100	■■	■■	■■	■■	■■	■■	●●	■■	■■	■■	■■	■■	■■	■■	■■	■■	●●	■■	■■	■■	■■	▲▲	■■	■■	■■	■■
SAO TOME & PRINCIPE	0	▲▲	■■	▲▲	▲▲	▲▲	■■	■■	■■	■■		▲▲	▲▲	▲▲	■■	▲▲	●●	▲▲	▲▲		▲▲	▲▲	▲▲	▲▲	▲▲	▲▲	▲▲
SENEGAL	100	■■	■■	■■	●●	●●	■■	■■	■■	■■	●●	■■	▲▲	▲▲	▲▲	▲▲	●●	●●	■■	■■	■■	■■	▲▲	■■	▲▲	▲▲	▲▲
SEYCHELLES	100	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	▲▲	▲▲	■■	▲▲	▲▲	■■	■■	■■	▲▲	▲▲	■■	▲▲		■■	■■	■■
SIERRA LEONE	100	■■	■■	■■	■■	■■	■■	■■	■■	■■	▲▲	▲▲	▲▲	■■	■■	▲▲	●●	●●	■■	■■	▲▲	▲▲	■■	▲▲	▲▲	▲▲	▲▲
SOUTH AFRICA	94	■■	●●	■■	●●	■■	■■	■■	■■	■■	■■	▲▲	■■	▲▲	■■	▲▲	●●	●●	▲▲	▲▲	■■	■■	▲▲	▲▲	■■	■■	▲▲
SWAZILAND	100	▲▲	●●		■■	●●	■■	■■	■■	■■	▲▲	■■	■■	▲▲	▲▲	■■	●●	●●		■■	▲▲	■■	▲▲	▲▲	■■	■■	▲▲
TOGO	100	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	▲▲	■■	▲▲		●●		■■	■■	■■	■■	■■	■■	▲▲	▲▲	▲▲
UGANDA	100	■■	●●	■■	●●	■■	■■	■■	●●	■■	▲▲	■■	▲▲	■■	■■	▲▲	●●	●●	■■	▲▲	■■	■■	▲▲	■■	▲▲	■■	■■
UR TANZANIA	100	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	▲▲	▲▲	■■	■■	■■	●●	■■	■■	▲▲	■■	▲▲	■■	▲▲	▲▲	
ZAMBIA	100	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	▲▲	■■	■■	■■	●●	■■	■■	■■	■■	■■	■■	▲▲	■■	▲▲
ZIMBABWE	100		■■	■■	●●	■■	■■	■■	●●	■■	▲▲	■■	▲▲	■■	■■	■■	■■	■■	■■	■■	■■		■■	■■			
AFR	**89**	**83**	**89**	**83**	**76**	**76**	**91**	**78**	**74**	**91**	**35**	**65**	**46**	**43**	**67**	**39**	**30**	**17**	**78**	**70**	**37**	**50**	**37**	**52**	**33**	**54**	**16**

DOT indicates directly observed treatment; EQA, external quality assurance; HRD, human resources development; ISTC, International Standards for Tuberculosis Care; PAL, Practical Approach to Lung Health; prev., prevalence.
First number in final row shows regional coverage; remaining numbers show the proportion of countries for which the answer is "yes" or "all" (i.e. those shown in dark green in the table).

■■ Yes/all ●● Some/partially ▲▲ No/none Answer not provided **NA** Not applicable. See explanatory notes on page 163 for details of colour-coding.

Table A2.1 **Estimated burden of TB, Africa, 1990 and 2005**

	Incidence, 1990				Prevalence, 1990		TB mortality, 1990		Incidence, 2005								Prevalence, 2005				TB mortality, 2005				HIV prevalence in adult incident TB cases (%)
	All forms*		Smear-positive*		All forms*		All forms*		All forms*		All forms HIV+		Smear-positive*		Smear-positive HIV+		All forms*		All forms HIV+		All forms*		All forms HIV+		
	number	rate	number	rate	number	rate	number	rate	number	rate	number	rate	number	rate	number	rate	number	rate	number	rate	number	rate	number	rate	
Algeria	9 278	37	4 175	17	11 013	44	539	2	18 181	55	63	≤ 1	8 175	25	22	≤ 1	18 150	55	32	≤ 1	660	2	3	≤ 1	0.5
Angola	22 102	210	9 690	92	55 666	529	6 406	61	42 849	269	5 164	32	18 766	118	1 807	11	53 055	333	2 582	16	5 709	36	1 358	9	19
Benin	4 068	79	1 801	35	7 562	146	803	16	7 416	88	473	6	3 290	39	165	2	12 121	144	236	3	1 404	17	197	2	9.9
Botswana	3 374	236	1 369	96	4 252	298	534	37	11 551	654	5 726	324	4 626	262	2 004	114	9 812	556	2 863	162	1 547	88	852	48	70
Burkina Faso	13 454	158	5 941	70	32 026	375	3 865	45	29 538	223	2 297	17	13 062	99	804	6	60 925	461	1 148	9	7 741	59	1 149	9	11
Burundi	7 064	125	3 072	54	14 032	247	2 032	36	25 188	334	3 004	40	11 034	146	1 051	14	45 411	602	1 502	20	6 271	83	1 341	18	17
Cameroon	7 582	65	3 294	28	19 178	165	2 228	19	28 451	174	5 170	32	12 286	75	1 810	11	33 695	206	2 585	16	3 739	23	1 316	8	26
Cape Verde	557	157	251	71	1 425	401	158	44	884	174	–	–	398	78	–	–	1 659	327	–	–	189	37	–	–	–
Central African Republic	3 514	117	1 477	49	8 199	273	1 140	38	12 670	314	3 766	93	5 325	132	1 318	33	19 520	483	1 883	47	3 666	91	1 730	43	42
Chad	6 140	101	2 731	45	13 400	221	1 506	25	26 482	272	3 369	35	11 580	119	1 179	12	48 273	495	1 685	17	6 786	70	1 512	16	18
Comoros	456	87	205	39	996	189	78	15	359	45	≤ 1	≤ 1	162	20	≤ 1	≤ 1	708	89	≤ 1	≤ 1	54	7	≤ 1	≤ 1	0.2
Congo	3 399	137	1 455	59	5 279	213	845	34	14 659	367	2 604	65	6 336	158	911	23	17 958	449	1 302	33	2 747	69	726	18	25
Côte d'Ivoire	18 069	143	7 885	62	36 777	291	4 304	34	69 417	382	11 881	65	30 050	166	4 158	23	119 718	659	5 941	33	17 977	99	5 405	30	24
DR Congo	50 215	133	22 004	58	84 887	225	12 063	32	204 977	356	24 259	42	89 814	156	8 491	15	311 074	541	12 129	21	42 294	73	9 534	17	17
Equatorial Guinea	307	87	134	38	543	154	62	18	1 172	233	138	27	513	102	48	10	1 788	355	69	14	238	47	56	11	17
Eritrea	6 687	220	2 949	97	17 574	578	1 853	61	12 409	282	1 017	23	5 482	125	356	8	22 689	515	508	12	3 018	69	424	10	13
Ethiopia	65 529	128	28 943	57	133 259	261	15 920	31	266 288	344	20 079	26	117 822	152	7 028	9	422 529	546	10 039	13	56 490	73	7 110	9	11
Gabon	1 504	157	658	69	3 805	397	440	46	4 256	308	1 024	74	1 813	131	358	26	5 321	385	512	37	903	65	331	24	34
Gambia	1 771	189	793	85	3 333	356	365	39	3 677	242	310	20	1 624	107	109	7	5 344	352	155	10	699	46	110	7	13
Ghana	34 511	223	15 300	99	81 731	528	9 332	60	45 328	205	3 586	16	20 039	91	1 255	6	83 982	380	1 793	8	10 721	48	1 621	7	12
Guinea	8 053	130	3 601	58	16 958	273	1 902	31	22 175	236	1 212	13	9 858	105	424	5	40 533	431	606	6	4 857	52	549	6	8.5
Guinea-Bissau	1 635	161	727	72	4 216	415	411	41	3 272	206	404	25	1 432	90	141	9	4 650	293	202	13	640	40	149	9	19
Kenya	25 337	108	10 753	46	38 674	165	5 128	22	219 582	641	43 626	127	94 449	276	15 269	45	320 616	936	21 813	64	47 880	140	15 238	44	28
Lesotho	2 856	179	1 190	75	3 984	250	486	31	12 489	696	5 713	318	5 049	281	2 000	111	10 556	588	2 857	159	1 926	107	1 087	61	64
Liberia	2 403	113	1 051	49	5 831	273	744	35	9 894	301	1 211	37	4 331	132	424	13	16 644	507	606	18	2 292	70	519	16	17
Madagascar	21 907	182	9 850	82	45 551	378	4 813	40	43 515	234	845	5	19 497	105	296	2	73 667	396	423	2	8 361	45	344	2	3.0
Malawi	24 327	257	10 109	107	40 438	427	5 908	62	52 751	409	18 558	144	21 882	170	6 495	50	66 771	518	9 279	72	12 665	98	6 295	49	50
Mali	27 167	305	12 022	135	63 332	712	7 565	85	37 558	278	2 323	17	16 669	123	813	6	78 097	578	1 162	9	9 608	71	1 164	9	10
Mauritania	4 724	233	2 116	104	11 999	591	1 354	67	9 146	298	233	8	4 092	133	82	3	18 098	590	117	4	2 115	69	107	3	4.0
Mauritius	728	69	327	31	1 690	160	144	14	776	62	16	1	347	28	6	≤ 1	1 645	132	8	≤ 1	141	11	6	≤ 1	3.2
Mozambique	22 426	167	9 742	73	39 724	296	4 532	34	88 533	447	31 674	160	36 673	185	11 086	56	118 139	597	15 837	80	24 498	124	13 035	66	50
Namibia	3 638	260	1 544	110	7 970	570	950	68	14 164	697	5 644	278	5 809	286	1 976	97	11 730	577	2 822	139	1 561	77	710	35	56
Niger	10 819	128	4 834	57	27 534	325	3 092	36	22 829	164	924	7	10 180	73	323	2	41 062	294	462	3	4 884	35	397	3	6.3
Nigeria	95 523	105	42 317	47	216 170	239	24 461	27	371 642	283	51 163	39	162 123	123	17 907	14	704 388	536	25 581	19	99 938	76	24 606	19	19
Rwanda	9 564	135	4 062	57	17 169	242	3 050	43	32 627	361	3 696	41	14 313	158	1 293	14	60 824	673	1 848	20	8 266	91	1 716	19	16
Sao Tome & Principe	157	134	71	61	402	344	44	38	165	105	–	–	74	47	–	–	403	258	–	–	42	27	–	–	–
Senegal	15 866	199	7 112	89	31 379	393	3 464	43	29 699	255	1 004	9	13 264	114	351	3	54 382	466	502	4	6 350	54	440	4	5.2
Seychelles	31	43	14	19	81	112	6	9	27	34	–	–	12	15	–	–	45	56	–	–	4	5	–	–	–
Sierra Leone	8 955	220	3 961	97	20 305	498	2 336	57	26 266	475	1 472	27	11 673	211	515	9	49 978	905	736	13	6 107	111	673	12	8.7
South Africa	82 585	224	35 566	96	213 524	579	23 682	64	284 538	600	117 299	247	116 312	245	41 055	87	242 401	511	58 650	124	33 654	71	19 358	41	58
Swaziland	2 276	263	956	111	5 612	648	690	80	13 029	1 262	6 935	672	5 169	501	2 427	235	12 506	1 211	3 467	336	3 137	304	2 032	197	75
Togo	13 320	336	5 907	149	31 932	806	3 609	91	22 910	373	2 475	40	10 062	164	866	14	46 284	753	1 238	20	6 203	101	1 247	20	17
Uganda	28 612	161	12 008	68	51 719	291	9 859	56	106 285	369	22 607	78	45 567	158	7 912	27	161 059	559	11 303	39	26 094	91	9 142	32	30
UR Tanzania	46 931	179	19 968	76	70 105	267	9 815	37	131 078	342	27 229	71	56 262	147	9 530	25	190 168	496	13 614	36	28 772	75	9 594	25	29
Zambia	24 859	297	10 191	122	48 005	573	9 526	114	70 026	600	27 348	234	28 777	247	9 572	82	72 083	618	13 674	117	13 740	118	6 694	57	55
Zimbabwe	14 272	135	5 706	54	26 883	254	4 722	45	78 187	601	33 371	257	31 847	245	11 680	90	82 049	631	16 685	128	16 967	130	9 016	69	60
AFR	**758 550**	**149**	**329 832**	**65**	**1 576 126**	**310**	**196 767**	**39**	**2 528 915**	**343**	**500 913**	**68**	**1 087 920**	**147**	**175 320**	**24**	**3 772 508**	**511**	**250 457**	**34**	**543 551**	**74**	**158 892**	**22**	**28**

– Indicates no estimate.

* Incidence, prevalence and mortality estimates include patients with HIV. Estimates labelled "HIV+" are estimates of TB in HIV-positive adults (aged 15-49 years). Estimates for all years are re-calculated as new information becomes available and techniques are refined, so they may differ from those published previously. See Explanatory notes on page 163 for further details. Data can be downloaded from www.who.int/tb

Table A2.2 **Whole country case notifications and case detection rates, Africa, 2005**

		TB cases notified from whole country (DOTS + non-DOTS)														Incidence and case detection rates				Proportions			
		Country	New and relapse		New pulmonary			New extra-	Other	Re-treatment cases					New pulm.	Estimated incidence		Case detection rate		ss+	ss+	Extrapulm.	Re-treat.
	Population	total	(WHO total)		ss+		ss- / unk.	pulmonary	new	Relapse	After failure	After default	Other re-treat.	Other	lab. confirm.	all forms	ss+	all new	new ss+	(% of	(% of	(% of	(% of
	thousands	number	number	rate	number	rate	number	number	number	number	number	number	number	number	number	number	number	%	%	pulm.)	new+relapse)	new+relapse)	new+re-treat.)
Algeria	32 854	21 336	21 336	65	8 654	26	1 651	10 216	267	548	46	119			8 921	18 181	8 175	114	106	84	41	48	3
Angola	15 941	38 317	37 175	233	20 410	128	12 467	2 569		1 729	496	646			20 410	42 849	18 766	83	109	62	55	7	7
Benin	8 439	3 457	3 270	39	2 739	32	96	285		150	86	101			2 739	7 416	3 290	42	83	97	84	9	10
Botswana	1 765	10 228	10 058	570	3 170	180	5 166	1 220		502	46				3 170	11 551	4 626	83	69	38	32	12	5
Burkina Faso	13 228	3 659	3 484	26	2 294	17	371	571	89	159	127	48	0	0	2 294	29 538	13 062	11	18	86	66	16	9
Burundi	7 548	6 627	6 585	87	3 262	43	1 160	2 089	0	74	21	21	0	0	3 262	25 188	11 034	26	30	74	50	32	2
Cameroon	16 322	22 073	21 499	132	13 001	80	5 021	2 461	0	1 016	93	481	0	0	13 001	28 451	12 286	72	106	72	60	11	7
Cape Verde	507	305	292	58	135	27	93	43	0	21	3	10	0	0	135	884	398	31	34	59	46	15	11
Central African Republic	4 038	3 411	3 210	79	2 153	53	608	286	0	163	39	89	0	0	2 153	12 670	5 325	24	40	78	67	9	9
Chad	9 749	6 505	6 311	65	2 516	26	2 419	1 055		321	75	119			2 516	26 482	11 580	23	22	51	40	17	8
Comoros	798	112	111	14	79	10	14	16	0	2	0	1	0	0	112	359	162	30	49	85	71	14	3
Congo	3 999	9 959	9 853	246	3 640	91	3 249	2 665		299	38	70			3 640	14 659	6 336	65	57	53	37	27	4
Côte d'Ivoire	18 154	20 026	19 681	108	12 496	69	2 315	4 235	0	635	235	110	0	0	12 496	69 417	30 050	27	42	84	63	22	5
DR Congo	57 549	99 558	97 075	169	65 040	113	9 959	18 494		3 582	944	965		574	65 040	204 977	89 814	46	72	87	67	19	6
Equatorial Guinea	504															1 172	513						
Eritrea	4 401	3 612	3 549	81	687	16	1 764	1 001		97	22	5		36	687	12 409	5 482	28	13	28	19	28	3
Ethiopia	77 431	125 135	124 262	160	38 525	50	39 816	43 675		2 246	313	560			38 525	266 288	117 822	46	33	49	31	35	2
Gabon	1 384	2 611	2 512	182	1 042	75	1 071	241		158	18	81			1 042	4 256	1 813	55	57	49	41	10	10
Gambia	1 517	2 120	2 031	134	1 127	74	749	78	0	77	27	62	0	0	1 127	3 677	1 624	53	69	60	55	4	8
Ghana	22 113	12 124	12 124	55	7 505	34	3 068	1 019		532					8 037	45 328	20 039	26	37	71	62	8	4
Guinea	9 402	7 090	6 863	73	5 479	58	524	629		231	101	126			5 479	22 175	9 858	30	56	91	80	9	6
Guinea-Bissau	1 586	1 816	1 774	112	1 132	71	522	24	0	96	4	38		0	1 132	3 272	1 432	51	79	68	64	1	8
Kenya	34 256	108 401	102 680	300	40 389	118	43 772	15 265		3 254	81	1 278	4 362		40 389	219 582	94 449	45	43	48	39	15	8
Lesotho	1 795	10 802	10 802	602	4 280	238	4 063	2 020		439	66	118	418		4 280	12 489	5 049	83	85	51	40	19	9
Liberia	3 283	3 456	3 432	105	2 167	66	575	657		33	10	14			2 167	9 894	4 331	34	50	79	63	19	2
Madagascar	18 606	19 475	18 993	102	13 056	70	1 287	3 634	0	1 016	186	296	0	0	14 554	43 515	19 497	41	67	91	69	19	8
Malawi	12 884	27 610	25 491	198	8 443	66	10 132	5 823		1 093			2 119			52 751	21 882	46	39	45	33	23	12
Mali	13 518	4 877	4 697	35	3 523	26	482	492		200	95	85	0	0	3 523	37 558	16 669	12	21	88	75	10	8
Mauritania	3 069	2 218	2 162	70	1 155	38	454	403	0	150	19	37	0	0	1 361	9 146	4 092	22	28	72	53	19	9
Mauritius	1 245	127	125	10	110	9	4	8		3		2			110	776	347	16	32	96	88	6	4
Mozambique	19 792	33 718	33 231	168	17 877	90	9 184	4 771		1 399	183	304			17 877	88 533	36 673	36	49	66	54	14	6
Namibia	2 031	15 894	14 920	735	5 222	257	4 455	1 907	2 487	849			974		5 222	14 164	5 809	99	90	54	35	13	11
Niger	13 957	8 224	7 873	56	5 050	36	1 193	1 227		403	91	260	0	0	5 050	22 829	10 180	33	50	81	64	16	9
Nigeria	131 530	66 848	62 598	48	35 048	27	22 705	2 836	0	2 009	1 056	1 802	0	1 392	35 048	371 642	162 123	16	22	61	56	5	7
Rwanda	9 038	7 680	7 220	80	4 166	46	859	1 727	97	371	98	66	296		4 166	32 627	14 313	21	29	83	58	24	11
Sao Tome & Principe	157	142	136	87	49	31	75	1	0	11	7	9	0		49	165	74	76	66	40	36	1	18
Senegal	11 658	10 120	9 765	84	6 722	58	1 557	921		565	103	252			6 722	29 699	13 264	31	51	81	69	9	9
Seychelles	81	14	14	17	8	10	3	1	0	2	0	0	0		13	27	12	44	65	73	57	7	14
Sierra Leone	5 525	6 930	6 737	122	4 370	79	1 679	551		137	58	135			4 370	26 266	11 673	25	37	72	65	8	5
South Africa	47 432	302 467	270 178	570	125 460	265	76 680	39 739	0	28 299	2 212	7 030	23 047	0	125 460	284 538	116 312	85	108	62	46	15	20
Swaziland	1 032	8 864	8 062	781	2 187	212	4 106	1 458		311	97	62		643	2 187	13 029	5 169	59	42	35	27	18	6
Togo	6 145	2 636	2 537	41	1 798	29	170	484		85	31	63	0	4	1 798	22 910	10 062	11	18	91	71	19	7
Uganda	28 816	41 809	41 040	142	20 559	71	15 040	3 780	0	1 661			769		20 559	106 285	45 567	37	45	58	50	9	6
UR Tanzania	38 329	64 200	61 022	159	25 264	66	20 810	13 094		1 854	135	255	2 788		46 074	131 078	56 262	45	45	55	41	21	8
Zambia	11 668	53 267	49 576	425	14 857	127	24 327	8 587		1 805	215		3 476		14 857	70 026	28 777	68	52	38	30	17	10
Zimbabwe	13 010	54 891	50 454	388	13 155	101	29 074	6 721	0	1 504	0	0	4 437		14 910	78 187	31 847	63	41	31	26	13	11
AFR	**738 083**	**1 254 751**	**1 186 800**	**161**	**550 001**	**75**	**364 789**	**208979**	**2940**	**60 091**	**7 477**	**15 720**	**42 686**	**2 649**	**566 664**	**2 528 915**	**1 087 920**	**45**	**51**	**60**	**46**	**18**	**10**

ss+ indicates sputum smear-positive; ss-, sputum smear-negative; unk., sputum smear result unknown; re-treat., re-treatment; pulm.lab. confirmed, pulmonary case confirmed by positive smear or culture. See Explanatory notes on page 163 for further details. Data can be downloaded from www.who.int/tb

Table A2.3 **DOTS coverage, case notifications and case detection rates, Africa, 2005**

		TB cases reported from DOTS services													Estimated incidence and case detection rate				Proportions			
	DOTS	New and relapse		New pulmonary			New extra-	Other	Re-treatment cases					New pulm.	Estimated incidence		Case detection rate		ss+	ss+	Extrapulm.	Re-treat.
	coverage	(WHO total)		ss+		ss- / unk.	pulmonary	new	Relapse	After failure	After default	Other re-treat.	Other	lab. confirm.	all forms	ss+	all new	new ss+	(% of	(% of	(% of	(% of
	%	number	rate	number	rate	number	number	number	number	number	number	number	number	number	number	number	%	%	pulm.)	new+relapse)	new+relapse)	new+re-treat.)
Algeria	100	21 336	65	8 654	26	1 651	10 216	267	548	46	119			8 921	18 181	8 175	114	106	84	41	48	3
Angola	60	30 673	192	16 024	101	11 023	2 234		1 392	344	498			16 024	42 849	18 766	68	85	59	52	7	7
Benin	100	3 270	39	2 739	32	96	285		150	86	101			2 739	7 416	3 290	42	83	97	84	9	10
Botswana	100	10 058	570	3 170	180	5 166	1 220		502	46				3 170	11 551	4 626	83	69	38	32	12	5
Burkina Faso	100	3 484	26	2 294	17	371	571	89	159	127	48	0	0	2 294	29 538	13 062	11	18	86	66	16	9
Burundi	100	6 585	87	3 262	43	1 160	2 089	0	74	21	21	0	0	3 262	25 188	11 034	26	30	74	50	32	2
Cameroon	100	21 499	132	13 001	80	5 021	2 461	0	1 016	93	481	0	0	13 001	28 451	12 286	72	106	72	60	11	7
Cape Verde	80	292	58	135	27	93	43	0	21	3	10	0	0	135	884	398	31	34	59	46	15	11
Central African Republic	17	3 210	79	2 153	53	608	286	0	163	39	89	0	0	2 153	12 670	5 325	24	40	78	67	9	9
Chad	100	6 311	65	2 516	26	2 419	1 055		321	75	119			2 516	26 482	11 580	23	22	51	40	17	8
Comoros	100	111	14	79	10	14	16	0	2	0	1	0	0	82	359	162	30	49	85	71	14	3
Congo	60	9 853	246	3 640	91	3 249	2 665		299	38	70			3 640	14 659	6 336	65	57	53	37	27	4
Côte d'Ivoire	74	18 037	99	11 300	62	2 161	3 983	0	593	222	91	0	0	11 300	69 417	30 050	25	38	84	63	22	5
DR Congo	100	97 075	169	65 040	113	9 959	18 494		3 582	944	965		574	65 040	204 977	89 814	46	72	87	67	19	6
Equatorial Guinea															1 172	513						
Eritrea	86	3 549	81	687	16	1 764	1 001		97	22	5		36	687	12 409	5 482	28	13	28	19	28	3
Ethiopia	90	124 262	160	38 525	50	39 816	43 675		2 246	313	560			38 525	266 288	117 822	46	33	49	31	35	2
Gabon	24	2 512	182	1 042	75	1 071	241		158	18	81			1 042	4 256	1 813	55	57	49	41	10	10
Gambia	100	2 031	134	1 127	74	749	78	0	77	27	62	0	0	1 127	3 677	1 624	53	69	60	55	4	8
Ghana	100	12 124	55	7 505	34	3 068	1 019		532					8 037	45 328	20 039	26	37	71	62	8	4
Guinea	100	6 863	73	5 479	58	524	629		231	101	126			5 479	22 175	9 858	30	56	91	80	9	6
Guinea-Bissau	85	1 774	112	1 132	71	522	24	0	96	4	38		0	1 132	3 272	1 432	51	79	68	64	1	8
Kenya	100	102 680	300	40 389	118	43 772	15 265		3 254	81	1 278	4 362		40 389	219 582	94 449	45	43	48	39	15	8
Lesotho	100	10 802	602	4 280	238	4 063	2 020		439	66	118	418		4 280	12 489	5 049	83	85	51	40	19	9
Liberia	40	3 432	105	2 167	66	575	657		33	10	14			2 167	9 894	4 331	34	50	79	63	19	2
Madagascar	100	18 993	102	13 056	70	1 287	3 634	0	1 016	186	296	0	0	14 554	43 515	19 497	41	67	91	69	19	8
Malawi	100	25 491	198	8 443	66	10 132	5 823		1 093			2 119			52 751	21 882	46	39	45	33	23	12
Mali	100	4 697	35	3 523	26	482	492		200	95	85	0	0	3 523	37 558	16 669	12	21	88	75	10	8
Mauritania	82	2 162	70	1 155	38	454	403	0	150	19	37	0	0	1 361	9 146	4 092	22	28	72	53	19	9
Mauritius	100	125	10	110	9	4	8		3		2			110	776	347	16	32	96	88	6	4
Mozambique	100	33 231	168	17 877	90	9 184	4 771		1 399	183	304			17 877	88 533	36 673	36	49	66	54	14	6
Namibia	100	14 920	735	5 222	257	4 455	1 907	2 487	849			974		5 222	14 164	5 809	99	90	54	35	13	11
Niger	50	7 873	56	5 050	36	1 193	1 227		403	91	260	0	0	5 050	22 829	10 180	33	50	81	64	16	9
Nigeria	65	62 598	48	35 048	27	22 705	2 836	0	2 009	1 056	1 802	0	1 392	35 048	371 642	162 123	16	22	61	56	5	7
Rwanda	100	7 220	80	4 166	46	859	1 727	97	371	98	66	296		4 166	32 627	14 313	21	29	83	58	24	11
Sao Tome & Principe	0														165	74						
Senegal	100	9 765	84	6 722	58	1 557	921		565	103	252			6 722	29 699	13 264	31	51	81	69	9	9
Seychelles	100	14	17	8	10	3	1	0	2	0	0	0		13	27	12	44	65	73	57	7	14
Sierra Leone	100	6 737	122	4 370	79	1 679	551		137	58	135			4 370	26 266	11 673	25	37	72	65	8	5
South Africa	94	260 162	548	119 906	253	73 551	38 786	0	27 919	2 107	6 871	22 581	0	119 906	284 538	116 312	82	103	62	46	15	20
Swaziland	100	8 062	781	2 187	212	4 106	1 458		311	97	62		643	2 187	13 029	5 169	59	42	35	27	18	6
Togo	100	2 537	41	1 798	29	170	484		85	31	63	0	4	1 798	22 910	10 062	11	18	91	71	19	7
Uganda	100	41 040	142	20 559	71	15 040	3 780	0	1 661			769		20 559	106 285	45 567	37	45	58	50	9	6
UR Tanzania	100	61 022	159	25 264	66	20 810	13 094		1 854	135	255	2 788		46 074	131 078	56 262	45	45	55	41	21	8
Zambia	100	49 576	425	14 857	127	24 327	8 587		1 805	215		3 476		14 857	70 026	28 777	68	52	38	30	17	10
Zimbabwe	100	50 454	388	13 155	101	29 074	6 721	0	1 504	0	0	4 437		14 910	78 187	31 847	63	41	31	26	13	11
AFR	**89**	**1 168 502**	**158**	**538 816**	**73**	**359 987**	**207 438**	**2 940**	**59 321**	**7 200**	**15 385**	**42 220**	**2 649**	**555 449**	**2 528 915**	**1 087 920**	**44**	**50**	**60**	**46**	**18**	**10**

ss+ indicates sputum smear-positive; ss-, sputum smear-negative; unk., sputum smear result unknown; re-treat., re-treatment; pulm.lab. confirmed, pulmonary case confirmed by positive smear or culture. See Explanatory notes on page 163 for further details. Data can be downloaded from www.who.int/tb

Table A2.4 **Laboratory services, collaborative TB/HIV activities and management of MDR-TB, Africa, 2004–2005**

	Laboratory services, 2005				Collaborative TB/HIV activities								Management of MDR-TB, 2005				
					2004				2005								
	number of labs working with NTP			number of labs included in EQA	TB pts tested for HIV	TB pts HIV-positive	HIV+ TB pts CPT	HIV+ TB pts ART	TB pts tested for HIV	TB pts HIV-positive	HIV+ TB pts CPT	HIV+ TB pts ART	Lab-confirmed MDR	DST in new cases	MDR in new cases	Re-treatment DST	Re-treatment MDR
	smear	culture	DST														
Algeria	200	15	3	100									74	809	14	164	60
Angola	127	1	1	127													
Benin	50	1	1	50									28	31	3	107	25
Botswana	51	2	1	34	62	47			1 266	1 008			12				
Burkina Faso	96	1	1	96	175	145	145		56	93	16		3			126	3
Burundi	98	0	0														
Cameroon							0										
Cape Verde	17	0	0	0													
Central African Republic	5	1	1	5													
Chad	47	0	0	10													
Comoros	3	0	0	1	91	0	0	0	112	1	1	0	0	0	0	0	0
Congo	24	0	0														
Côte d'Ivoire	68	1	1	64	194	80	45	0	4 079	1 551	590	216	47	0		0	
DR Congo	1 041	1	1	1 063					1 885	386	284	3					
Equatorial Guinea																	
Eritrea	57	0	0	0													
Ethiopia	607	1	1	1 778					3 211	1 321	1 166	388					
Gabon	14	0	0										0	0	0	0	0
Gambia	12	1	1	0													
Ghana	200	3	2	100	343	120	120	0	844	340	340	125	1	50	0	2	1
Guinea	56	1	1	56									20	215	5	34	15
Guinea-Bissau	42	0	0	0					200				0	0			
Kenya	619	3	3	72					15 494	8 899	7 119	1 779	44	0	0	1 829	44
Lesotho	17	2	2	1					156	127	100						
Liberia	16	0	0		0				114	14	0		0	0	0	0	0
Madagascar	196	1	1	7					1 759	16							
Malawi	90	1	1		6 681	4 804	4 649		12 243	8 447	7 747	4 156	9			917	9
Mali	62	0	0										2	0	0	0	0
Mauritania	55	1	1	55					10	0	0	0	11	161	4	30	7
Mauritius	1	1	1	0	117	2	2	2	115	2	2	1	0	114	0	3	0
Mozambique	252	1	1	209									115	113	18	305	97
Namibia	34	1	1	34	1 599	1 152			2 547	1 465							
Niger	51	0	0	51						152	65	52					
Nigeria	598	3	3	300	1 781	321			7 013	1 230						0	
Rwanda	165	1	0	165					2 778	1 337			35	57	35	0	0
Sao Tome & Principe	1	0	0	0													
Senegal	74	3	2	58													
Seychelles	1	1	1	0		2	2	2		2	2	2					
Sierra Leone	53	1	0														
South Africa	143	18	18	0	14 289	10 185	10 185	3 620	67 988	35 299	35 299	11 654	2 000		197		1 803
Swaziland	12	1	1	6													
Togo	50	1	1	40					0	0	0		0	0	0	0	0
Uganda	465	2	2	203					3 306	1 676			46				
UR Tanzania	690	3	1	690	0	0			2 521	1 274	514	359	10	276	1	405	9
Zambia	156	3	3	156	760	501		277	1 082	614		418					
Zimbabwe	167	1	1	10													
AFR	**6 783**	**78**	**59**	**5 541**	**26 092**	**17 359**	**15 148**	**3 901**	**128 779**	**65 254**	**53 245**	**19 153**	**2 457**	**1 826**	**277**	**3 922**	**2 073**

ART indicates antiretroviral therapy; CPT, co-trimoxazole preventive therapy; DST, drug susceptibility testing; EQA, external quality assurance; HIV+, HIV-positive; pts, patients. See Explanatory notes on pages 163 for further details. Some countries provided the number of TB patients found to be HIV-positive, but did not provide the number of TB patients tested. The regional total of TB patients tested is therefore lower than the number of patients actually tested, and cannot be used to calculated a regional estimate of HIV prevalence in TB patients. Data can be downloaded from www.who.int/tb

Table A2.5 **Treatment outcomes, Africa, 2004 cohort**

	New smear-positive cases, DOTS											New smear-positive cases, non-DOTS											Smear-positive re-treatment cases, DOTS								
	Number of cases		% of notif	% of cohort							%	Number of cases		% of notif	% of cohort							%	Number	% of cohort							%
	Notified	Regist'd	regist'd	Cured	Compl-eted	Died	Failed	Default	Trans-ferred	Not eval.	Success	Notified	Regist'd	regist'd	Cured	Compl-eted	Died	Failed	Default	Trans-ferred	Not eval.	Success	Regist'd	Cured	Compl-eted	Died	Failed	Default	Trans-ferred	Not eval.	Success
Algeria	8 285	8 405	101	74	17	2	1	2	4	0	91												689	67	15	3	3	8	4	0	82
Angola	16 489	19 477	118	43	24	4	2	25	2	0	68	3 812	3 001	79	49	33	4	4	8	2	0	82									
Benin	2 582	2 582	100	68	15	9	3	4	1	0	83												314	62	16	10	6	5	0	0	78
Botswana	3 127	3 202	102	27	37	6	1	6	10	13	65																				
Burkina Faso	1 926	1 939	101	61	7	14	6	10	3	0	67												274	58	5	8	7	13	4	6	62
Burundi	3 277	3 294	101	45	33	3	0	18	1	0	78																				
Cameroon	11 218	11 506	103	62	8	6	1	17	2	3	71												1 317	41	8	6	3	25	2	15	49
Cape Verde	0	169		51	20	6	1	12	3	7	71	169											24	54	17	0	4	4	4	17	71
Central African Republic	220	220	100	63	29	8	0	0	0	0	91	2 703	2 703	100	16	74	2	0	6	2	0	89	110	80	15	5	0	0	0	0	95
Chad	1 816	1 816	100	48	21	5	2	19	6	0	69	454	454	100	41	37	9	10	3	0	0	77	170	24	45	6	8	15	3	0	69
Comoros	63	68	108	94	0	3	3	0	0	0	94																				
Congo	4 121	1 890	46	54	8	1	2	29	6	0	63												108	52	8	2	1	14	23	0	60
Côte d'Ivoire	11 467	11 554	101	60	11	6	2	12	6	3	71	783	783	100	34	12	8	1	34	3	8	46	603	44	5	10	9	18	7	7	49
DR Congo	62 192	62 192	100	79	6	6	1	5	3	1	85												5 463	67	4	9	5	5	5	6	71
Equatorial Guinea	406																														
Eritrea	720	720	100	79	6	7	0	5	3	1	85																				
Ethiopia	41 430	41 430	100	64	15	6	1	5	5	4	79												3 197	38	16	9	2	5	3	27	54
Gabon	1 323	1 323	100	34	6	2	1	39		18	40												230	9	20	5	3	31	0	32	29
Gambia	1 011	1 022	101	76	10	6	2	4	2	0	86												120	66	8	13	1	2	11	0	74
Ghana	7 259	7 259	100	64	7	8	2	13	5	0	72												542	34	14	8	1	4	4	35	47
Guinea	5 015	5 015	100	64	8	7	1	9	12	0	72												424	45	11	16	6	13	8	0	56
Guinea-Bissau	1 008	1 149	114	56	19	7	1	12	4	0	75	178											118	46	25	10	0	11	8	0	70
Kenya	41 167	41 167	100	69	11	5	0	7	5	2	80												3 646	66	10	11	1	7	5	0	76
Lesotho	4 272	4 272	100	46	23	10	1	3	14	3	69																				
Liberia	2 490	2 490	100	65	5	2	7	17	4	0	70												87	74	3	6	10	5	2	0	77
Madagascar	13 526	13 090	97	63	8	6	2	16	5	0	71												1 359	64	5	7	2	17	6	0	68
Malawi	8 566	8 566	100	70	1	16	1	3	2	6	71												1 168	71	2	21	1	4	1	0	73
Mali	3 069	3 084	100	62	9	12	2	12	4	0	71												341	56	8	11	6	13	6	0	65
Mauritania	1 662	1 751	105	18	4	1	0	11	4	62	22												192	2	2	0	1	3	1	92	4
Mauritius	117	117	100	89		3		3	4	0	89												6	83	0	0	0	17	0	0	83
Mozambique	17 058	17 058	100	75	1	13	1	7	2	0	77																				
Namibia	5 155	5 155	100	49	20	8	2	13	7	2	68												1 114	29	25	16	4	20	7	0	53
Niger	4 311	4 311	100	45	16	5	2	9	4	20	61																				
Nigeria	33 755	33 755	100	62	12	6	2	12	2	4	73												3 421	62	11	9	5	12	2	0	73
Rwanda	4 179	4 284	103	70	7	6	1	4	9	3	77																				
Sao Tome & Principe												50	50	100	52	20	8	2	18	0	0	72									
Senegal	6 437	6 437	100	68	7	4	2	11	7	2	74												980	52	5	4	4	10	7	19	57
Seychelles	13	13	100	69	23	0	0	0	8	0	92												18	33	33	0	0	33	0	0	67
Sierra Leone	3 735	3 735	100	74	8	6	2	9	2	0	82												276	64	9	10	4	11	1	0	73
South Africa	120 977	120 977	100	54	15	7	2	11	6	4	70	5 291	5 921	112	36	20	9	2	12	5	17	55	53 511	27	29	12	2	17	7	6	56
Swaziland	1 902	1 902	100	20	30	8	2	6	22	11	50												1 146	1	14	11	1	4	9	60	15
Togo	1 608	1 608	100	64	3	10	2	13	2	5	67												135	59	1	13	2	17	2	4	61
Uganda	20 986	20 986	100	31	39	7	0	17	5	0	70												1 592	30	38	8	1	12	5	7	68
UR Tanzania	25 823	25 823	100	78	3	10	0	4	5	0	81												4 953	36	40	14	0	4	5	1	76
Zambia	17 247	17 247	100	76	7	8	1	2	6	0	83												2 248	71	7	13	2	3	4	0	78
Zimbabwe	14 581	14 581	100	50	5	12	2	8	9	15	54												6 931	28	25	11	4	6	5	22	53
AFR	**537 591**	**538 641**	**100**	**62**	**12**	**7**	**1**	**9**	**5**	**3**	**74**	**13 440**	**12 912**	**96**	**35**	**34**	**6**	**2**	**11**	**3**	**8**	**69**	**96 827**	**36**	**24**	**11**	**3**	**13**	**6**	**8**	**60**

Not eval. indicates not evaluated (percentage of registered cases for which outcomes were not recorded); success, sum of cured and completed; cases regist'd, the denominator for calculating treatment outcomes. The number of cases registered for treatment in 2004 is used as the denominator for calculating treatment outcomes unless it is less than the sum of outcomes, in which case the sum of outcomes is used. If the number of cases registered is not reported, then the number of cases notified in 2004 is used, or the sum of outcomes if the latter is greater. Data can be downloaded from www.who.int/tb

Table A2.6 **Re-treatment outcomes, Africa, 2004 cohort**

	Relapse, DOTS									After failure, DOTS									After default, DOTS								
		% of cohort							%		% of cohort							%		% of cohort							%
	Number regist'd	Cured	Compl-eted	Died	Failed	Default	Trans-ferred	Not eval.	Success	Number regist'd	Cured	Compl-eted	Died	Failed	Default	Trans-ferred	Not eval.	Success	Number regist'd	Cured	Compl-eted	Died	Failed	Default	Trans-ferred	Not eval.	Success
Algeria	552	69	15	4	3	6	4	0	84	46	57	11	4	7	11	11	0	67	91	59	19	1	2	16	2	0	78
Angola																											
Benin																											
Botswana																											
Burkina Faso	119	63	4	12	7	9	5	0	67	99	63	3	5	11	11	1	6	66	56	38	9	5	0		5	43	46
Burundi																											
Cameroon	735	46	9	7	3	23	2	10	55	103	28	6	6	6	34	0	20	34	479	35	8	4	3	27	1	23	43
Cape Verde																											
Central African Republic	80	78	20	3	0	0	0	0	98	10	80	0		0	0	0	20	80	20	90	0		0	0	0	10	90
Chad	96	21	56	1	10	11	0	0	77	24	50	8	17	4	8	13	0	58	50	18	40	10	4	24	4	0	58
Comoros																											
Congo	85	53	5	2	1	18	21	0	58	7	57	0	0	0	0		43	57	16	44	31	0	0	0		25	75
Côte d'Ivoire	603	44	5	10	9	18	7	7	49																		
DR Congo	3 556	72	4	9	3	4	4	4	76	925	48	3	9	11	7	6	15	51	982	64	7	8	4	10	5	2	71
Equatorial Guinea																											
Eritrea																											
Ethiopia																											
Gabon	116	9	26	9	1	47		9	34	37	3	11	3	5	3		76	14	77	13	16		4	22		45	29
Gambia	62	61	10	6	2	0	21	0	71	14	64	0		0	0	0	36	64	44	73	9	14	0		0	5	82
Ghana	542	34	14	8	1	4	4	35	47																		
Guinea	237	51	8	17	5	12	7	0	59	59	29	15	22	10	14	10	0	44	128	41	16	13	6	16	9	0	57
Guinea-Bissau	93	51	22	11	0	9	9	0	72										25	28	36	8	0		8	20	64
Kenya	3 646	66	10	11	1	7	5	0	76																		
Lesotho																											
Liberia	27	89	7	0	0	0	4	0	96	21	33		24	38		5	0	33	39	85	3		3	10		0	87
Madagascar																											
Malawi	1 168	71	2	21	1	4	1	0	73																		
Mali	202	60	10	10	5	9	6	0	70	56	50	5	9	14	16	5	0	55	83	52	6	12	5	20	5	0	58
Mauritania	192	2	2	0	1	3	1	92	4																		
Mauritius	4	75				25		0	75										2	100						0	100
Mozambique																											
Namibia	1 114	29	25	16	4	20	7	0	53																		
Niger																											
Nigeria																											
Rwanda																											
Sao Tome & Principe																											
Senegal																											
Seychelles	0	0	0	0	0	0	0		0	6	100	0	0	0	0	0	0	100	0	0	0	0	0	0	0		0
Sierra Leone	123	69	8	9	6	7	1	0	77	54	69	9	11	4	7	0	0	78	99	56	10	10	3	18	3	0	66
South Africa	26 318	44	16	11	2	15	6	6	60	2 624	34	13	10	6	14	7	16	48	5 660	32	16	10	3	28	6	5	49
Swaziland	656	2	6	4	1	1	5	80	8	75	0		5	3	5	3	84	0	119	2	4	0		2	1	92	6
Togo	42	64	0	17	0	10	0	10	64	28	68	0		4	7	0	21	68	60	55	3	10	3	25	3	0	58
Uganda	1 592	30	38	8	1	12	5	7	68																		
UR Tanzania	1 778	74	3	14	1	4	4	0	77	161	60	2	16	4	3	7	7	62	253	53	17	9	0	15	5	0	70
Zambia	2 248	71	7	13	2	3	4	0	78																		
Zimbabwe	1 975	34	4	11	12	3	5	30	38																		
AFR	**47 961**	**49**	**13**	**11**	**3**	**11**	**6**	**7**	**62**	**4 349**	**39**	**10**	**10**	**7**	**12**	**6**	**16**	**49**	**8 283**	**38**	**14**	**9**	**3**	**24**	**5**	**7**	**52**

Not eval. indicates not evaluated (percentage of registered cases for which outcomes were not recorded); success, sum of cured and completed; cases regist'd, the denominator for calculating treatment outcomes. The number of cases registered for treatment in 2004 is used as the denominator for calculating treatment outcomes unless it is missing or is less than the sum of outcomes, in which case the sum of outcomes is used. Data can be downloaded from www.who.int/tb

Table A2.7 **DOTS treatment success and case detection rates, Africa, 1994–2005**

	DOTS new smear-positive treatment success (%)											DOTS new smear-positive case detection rate (%)										
	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Algeria			86			87	87	84	89	90	91			133			126	115	115	114	106	106
Angola				15	68		68	66	74	68	68			62	39	51		76	106	106	92	85
Benin	76	73	72	73	77	77		79	80	81	83	82	80	81	80	85	85		83	80	82	83
Botswana	72	67	70	70	47	71	77	78	71	77	65	71	83	83	84	69	72	68	73	65	67	69
Burkina Faso		25	29	61	59	61	60	65	64	66	67	11	18	16	17	16	17	17	16	17	17	18
Burundi	44	45		67	74		80	80	79	79	78	19	24	29	18	37		34	29	30	31	30
Cameroon				80	75	75	77	62	70		71		5		11	22	35	44	65	90	93	106
Cape Verde											71							40				34
Central African Republic		37					57	61		59	91		61					9	53	6	4	40
Chad	63	47			64				72	78	69	36	14			36			33	8	16	22
Comoros	94	90		85		93	93	92	96		94	54	57		54		49	53	42	29	38	49
Congo	69					61	69	66	71	69	63	67			50		87	82	89	58	67	57
Côte d'Ivoire	17	68	56	61	62	63		73	67	72	71	51	50	47	46	44	34	9	37	38	39	38
DR Congo	71	80	48	64	70	69	78	77	78	83	85	41	47	44	55	54	52	56	55	63	71	72
Equatorial Guinea	89	89	77	82						51		82	71	70	81						81	
Eritrea				83	73	44	76	80	82	85	85			3	4	14	14	16	14	18	14	13
Ethiopia	74	61	73	72	74	76	80	76	76	70	79	15	20	22	24	25	33	33	34	35	36	33
Gabon								49	47	34	40							76	65	77	77	57
Gambia	74	76	80	70				71	74	75	86	76	69	72	76				73	70	65	69
Ghana		54	51	48	59	55	50	56	60	66	72	15	14	32	32	31	38	41	40	40	37	37
Guinea	78	78	75	74	73	74	68	74	72	75	72	43	50	49	52	52	54	53	53	52	54	56
Guinea-Bissau						35		51	48	80	75						46		43	55	74	79
Kenya	73	75	77	65	77	78	80	80	79	80	80	55	57	53	56	55	46	49	48	48	47	43
Lesotho	56	47	71	63		69		71	52	70	69	60	71	83	75		74		68	75	86	85
Liberia		79		75		74	80	76	76	73	70		31		42		28	24	48	31	58	50
Madagascar	51	55		64			70	69	74	71	71	52	65		68			68	67	72	72	67
Malawi	22	71	68	71	69	71	73	70	72	73	71	38	40	43	47	42	40	41	37	36	40	39
Mali	68	59	65	62	70	68		50	50	65	71	14	16	18	17	16	15		18	19	19	21
Mauritania										58	22										43	28
Mauritius	96				91	87	93	93	92	87	89	34			32	36	33	25	25	29	34	32
Mozambique	67	39	54	67		71	75	78	78	76	77	52	47	46	47	46	44	44	45	46	47	49
Namibia			66	58	61	51	56	63	66	63	68	22	81	83	86	83	83	88	86	96	90	90
Niger			57	66		60	65	64	58	70	61			29	31	35	38	42	40	49	45	50
Nigeria	65	49	32	73	73	75	79	79	79	78	73	11	11	11	12	13	13	14	13	18	21	22
Rwanda			61	68	72	67	61		58	67	77	34	33	39	52	44	33	26	30	33	30	29
Sao Tome & Principe																						
Senegal	38	44	44	55	48	58	52	53	66	70	74	61	65	57	55	48	54	54	49	54	51	51
Seychelles		89	100	100		90	82	67	45	100	92		83	99	69		87	95	72	40	105	65
Sierra Leone	75	69	74	79		75	77	80	81	83	82	28	41	39	36		34	33	33	32	35	37
South Africa			69	73	74	60	66	65	68	67	70			5	18	57	62	67	88	101	104	103
Swaziland								36	47	42	50								33	34	39	42
Togo	45	60	65	66	69	76		55	68	63	67	13	13		12	11	12		5	14	17	18
Uganda			33	40	62	61	63	56	60	68	70			58	58	57	49	45	45	45	46	45
UR Tanzania	80	73	76	77	76	78	78	81	80	81	81	56	55	52	53	51	47	46	43	45	46	45
Zambia								75	83	75	83								40	62	58	52
Zimbabwe					70	73	69	71	67	66	54				50	47	44	44	45	41	43	41
AFR	**59**	**62**	**57**	**63**	**70**	**69**	**72**	**71**	**73**	**73**	**74**	**22**	**24**	**28**	**33**	**36**	**37**	**39**	**45**	**49**	**51**	**50**

Treatment success, sum of cured and completed; DOTS new smear-positive case detection rate, notified (new and relapse) cases divided by estimated incident cases. The table includes updated information; data shown here may differ from those published in previous reports. Data can be downloaded from www.who.int/tb

Table A2.8 **New smear-positive case notification by age and sex, absolute numbers, DOTS and non-DOTS, Africa, 2005**

	Male							Female							All							Male/female
	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+	ratio
Algeria	53	1 309	1 841	919	473	314	426	102	1 044	820	389	270	229	465	155	2 353	2 661	1 308	743	543	891	1.6
Angola	520	2 549	2 797	1 918	1 255	665	461	704	2 926	2 682	1 797	1 138	581	417	1 224	5 475	5 479	3 715	2 393	1 246	878	1.0
Benin	21	306	595	396	270	135	87	25	249	331	145	89	51	39	46	555	926	541	359	186	126	1.9
Botswana	27	260	563	506	272	135	97	45	321	491	253	97	55	48	72	581	1 054	759	369	190	145	1.4
Burkina Faso	18	181	430	370	273	144	113	15	125	248	174	109	54	40	33	306	678	544	382	198	153	2.0
Burundi	34	352	591	525	372	111	55	46	298	399	288	122	36	33	80	650	990	813	494	147	88	1.7
Cameroon	134	1 472	2 482	1 766	1 035	463	289	226	1 467	1 788	1 028	503	205	143	360	2 939	4 270	2 794	1 538	668	432	1.4
Cape Verde	0	22	23	26	9	2	8	2	9	16	4	5	3	6	2	31	39	30	14	5	14	2.0
Central African Republic	29	40	1 136	160	26	35	15	30	32	420	145	30	40	15	59	72	1 556	305	56	75	30	2.0
Chad	25	194	535	409	229	123	82	28	148	298	211	148	59	27	53	342	833	620	377	182	109	1.7
Comoros	0	12	9	6	4	2	4	2	10	7	4	8	3	8	2	22	16	10	12	5	12	0.9
Congo																						
Côte d'Ivoire	128	1 346	2 449	1 606	888	422	385	193	1 280	1 756	989	528	232	201	321	2 626	4 205	2 595	1 416	654	586	1.4
DR Congo	1 321	6 675	9 808	7 577	5 022	2 637	1 499	1 695	7 570	8 501	5 832	3 898	2 054	951	3 016	14 245	18 309	13 409	8 920	4 691	2 450	1.1
Equatorial Guinea																						
Eritrea	9	68	73	50	45	51	39	8	67	127	72	39	21	18	17	135	200	122	84	72	57	1.0
Ethiopia	1 109	6 726	6 181	3 454	1 985	1 027	475	1 326	5 885	5 663	2 730	1 296	513	155	2 435	12 611	11 844	6 184	3 281	1 540	630	1.2
Gabon	13	123	199	140	70	38	25	19	128	123	88	29	29	18	32	251	322	228	99	67	43	1.4
Gambia	13	133	292	206	62	53	44	2	84	87	64	38	22	27	15	217	379	270	100	75	71	2.5
Ghana	49	592	1 201	1 311	944	462	414	68	450	693	527	366	207	221	117	1 042	1 894	1 838	1 310	669	635	2.0
Guinea	51	749	1 165	778	463	195	130	65	594	583	354	203	94	55	116	1 343	1 748	1 132	666	289	185	1.8
Guinea-Bissau	14	116	167	153	130	72	42	13	78	110	92	82	44	19	27	194	277	245	212	116	61	1.6
Kenya	359	4 790	8 832	5 069	2 521	1 031	590	577	5 144	6 521	2 781	1 266	593	315	936	9 934	15 353	7 850	3 787	1 624	905	1.3
Lesotho	32	395	695	397	148	82	37	19	226	721	616	494	297	121	51	621	1 416	1 013	642	379	158	0.7
Liberia	26	240	352	333	155	74	65	37	232	297	171	108	52	25	63	472	649	504	263	126	90	1.4
Madagascar	98	1 159	1 867	1 732	1 349	582	333	150	1 012	1 451	1 047	614	248	129	248	2 171	3 318	2 779	1 963	830	462	1.5
Malawi	58	622	1 653	1 031	549	279	157	84	913	1 598	859	386	180	74	142	1 535	3 251	1 890	935	459	231	1.1
Mali	26	350	628	539	365	263	193	33	208	348	245	152	101	72	59	558	976	784	517	364	265	2.0
Mauritania																						
Mauritius		10	15	21	20	10	6		4	5	5	11	2	1		14	20	26	31	12	7	2.9
Mozambique																						
Namibia	98	355	1 027	874	365	146	120	105	399	809	525	213	95	91	203	754	1 836	1 399	578	241	211	1.3
Niger	35	557	1 204	819	497	350	198	34	214	388	330	223	131	70	69	771	1 592	1 149	720	481	268	2.6
Nigeria	325	3 824	6 758	4 544	2 863	1 464	950	482	3 996	4 884	2 448	1 350	745	415	807	7 820	11 642	6 992	4 213	2 209	1 365	1.4
Rwanda	45	494	713	592	408	142	71	73	483	442	262	157	60	29	118	977	1 155	854	565	202	100	1.6
Sao Tome & Principe	2	5	7	6	4	5	2	1	4	5	3	2	3	0	3	9	12	9	6	8	2	1.7
Senegal	71	1 050	1 561	904	533	274	236	83	709	568	351	185	116	81	154	1 759	2 129	1 255	718	390	317	2.2
Seychelles	0	2	1	2	1	0	0	0	0	1	1	0	0	0	0	2	2	3	1	0	0	3.0
Sierra Leone	45	490	792	651	397	226	124	54	393	518	312	207	114	47	99	883	1 310	963	604	340	171	1.7
South Africa	2 035	10 422	20 576	19 465	11 143	4 124	1 705	2 561	13 632	19 343	11 338	5 416	2 352	1 348	4 596	24 054	39 919	30 803	16 559	6 476	3 053	1.2
Swaziland	9	162	406	285	139	57	27	14	318	453	207	73	21	8	23	480	859	492	212	78	35	1.0
Togo	11	177	320	283	125	79	69	23	157	236	146	67	41	32	34	334	556	429	192	120	101	1.5
Uganda	257	1 598	4 075	3 209	1 576	725	539	371	1 811	3 099	1 800	818	389	257	628	3 409	7 174	5 009	2 394	1 114	796	1.4
UR Tanzania	190	2 062	4 939	4 025	2 310	1 279	1 054	271	1 852	3 521	1 892	968	547	354	461	3 914	8 460	5 917	3 278	1 826	1 408	1.7
Zambia	135	1 240	3 166	2 160	917	358	321	168	1 507	2 463	1 433	569	235	185	303	2 747	5 629	3 593	1 486	593	506	1.3
Zimbabwe	210	837	2 264	1 855	762	295	656	269	1 136	2 242	1 255	578	193	603	479	1 973	4 506	3 110	1 340	488	1 259	1.1
AFR	**7 635**	**54 066**	**94 388**	**71 072**	**40 974**	**18 931**	**12 143**	**10 023**	**57 115**	**75 056**	**43 213**	**22 855**	**11 047**	**7 163**	**17 658**	**111 181**	**169 444**	**114 285**	**63 829**	**29 978**	**19 306**	**1.3**

For some countries, breakdown of notified cases by age and sex is missing, or is provided for a subset of cases. See Explanatory notes on page 164 for further details. Data can be downloaded from www.who.int/tb

Table A2.9 **New smear-positive case notification rates by age and sex, Africa, DOTS and non-DOTS, 2005**

	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	35	63	43	35	45	63	2	29	29	19	20	30	57	2	32	46	31	27	37	60
Angola	14	160	268	286	290	265	268	19	181	251	256	239	203	190	17	170	260	271	264	232	225
Benin	1	35	103	102	100	93	91	1	29	60	39	33	29	29	1	32	82	71	66	58	55
Botswana	8	120	442	674	474	408	427	14	150	392	305	142	131	133	11	135	417	481	294	253	247
Burkina Faso	1	13	46	73	102	62	70	0	9	27	34	33	25	20	1	11	37	54	64	44	42
Burundi	2	42	127	189	177	106	70	3	35	83	94	49	24	26	2	38	104	139	108	58	43
Cameroon	4	84	214	244	212	138	106	7	84	155	139	96	55	43	5	84	185	191	152	94	72
Cape Verde	0	38	67	98	78	41	105	2	16	44	14	27	35	43	1	27	55	55	46	37	64
Central African Republic	3	10	430	102	22	45	22	3	7	156	87	22	41	16	3	8	292	94	22	43	18
Chad	1	20	86	105	87	74	62	1	15	47	53	52	31	16	1	18	67	79	69	51	37
Comoros	0	14	15	15	17	14	42	1	12	12	10	33	19	67	1	13	14	13	25	17	56
Congo																					
Côte d'Ivoire	3	68	195	199	140	97	126	5	64	146	138	95	63	70	4	66	171	170	119	81	99
DR Congo	10	116	259	330	339	276	228	12	132	224	252	246	185	108	11	124	241	291	291	227	159
Equatorial Guinea																					
Eritrea	1	15	22	29	44	71	99	1	15	38	40	28	22	29	1	15	30	34	35	43	56
Ethiopia	6	86	119	101	88	70	46	8	75	108	78	54	32	13	7	81	114	90	70	50	28
Gabon	5	86	208	209	147	130	93	7	90	123	130	60	99	54	6	88	165	170	103	114	71
Gambia	4	93	278	258	113	145	168	1	58	81	77	66	56	89	2	76	178	166	89	99	125
Ghana	1	25	73	120	127	92	108	2	19	43	49	48	40	52	1	22	58	85	87	65	78
Guinea	2	81	180	170	158	88	84	3	68	96	82	72	41	31	3	75	140	127	116	65	56
Guinea-Bissau	4	78	166	237	302	255	194	3	52	107	136	175	140	71	4	65	136	185	236	194	126
Kenya	5	122	353	354	267	201	132	8	131	270	199	126	104	61	6	127	312	277	194	150	94
Lesotho	9	174	716	906	343	227	93	6	96	573	817	674	574	222	7	135	635	850	551	431	168
Liberia	3	72	161	243	174	143	201	5	70	139	123	113	91	62	4	71	150	183	143	116	123
Madagascar	2	64	147	198	228	173	125	4	56	114	118	101	68	41	3	60	130	158	164	118	79
Malawi	2	49	196	217	171	121	87	3	71	190	169	106	70	36	2	60	193	192	136	94	60
Mali	1	25	71	109	126	132	123	1	15	39	46	44	40	35	1	20	55	76	82	81	73
Mauritania																					
Mauritius		10	14	21	25	23	18		4	5	5	13	4	2		7	10	13	19	13	9
Mozambique																					
Namibia	23	165	735	917	599	377	382	25	188	589	522	301	211	230	24	176	662	714	439	288	297
Niger	1	40	130	137	130	176	162	1	16	45	58	59	58	47	1	29	89	99	95	113	98
Nigeria	1	27	76	80	72	60	53	2	30	57	44	33	28	19	1	29	67	62	52	43	34
Rwanda	2	47	126	173	182	102	74	4	44	70	66	60	36	23	3	45	96	115	116	66	45
Sao Tome & Principe	6	27	57	92	111	233	65	3	22	41	42	43	110	0	5	24	49	66	73	164	30
Senegal	3	84	196	177	174	139	146	3	57	69	62	50	44	40	3	70	131	116	106	85	87
Seychelles																					
Sierra Leone	4	94	220	243	214	180	152	5	75	142	112	103	80	46	4	84	180	176	156	127	93
South Africa	26	215	554	694	535	327	217	33	285	525	378	236	158	110	30	250	540	531	378	236	152
Swaziland	4	120	689	952	533	288	168	7	233	690	492	205	88	39	5	177	690	683	343	179	96
Togo	1	28	76	106	69	70	82	2	25	55	52	34	32	30	1	26	66	79	51	50	53
Uganda	4	54	216	340	269	175	168	5	62	167	198	128	83	67	4	58	192	270	196	126	113
UR Tanzania	2	50	182	246	209	171	197	3	45	133	117	82	63	50	3	48	158	182	143	113	114
Zambia	5	96	390	512	324	181	206	6	118	317	369	190	104	95	6	107	354	444	255	140	144
Zimbabwe	8	51	241	393	217	130	305	10	69	248	259	142	74	233	9	60	244	325	177	100	266
AFR	**5**	**70**	**184**	**218**	**186**	**137**	**118**	**6**	**75**	**148**	**131**	**97**	**71**	**55**	**6**	**72**	**166**	**174**	**140**	**102**	**83**

Rates are per 100 000 population of each age/sex group. Rates are calculated excluding those countries for which breakdown of notified cases or population by age and sex is missing. Data can be downloaded from www.who.int/tb

Table A2.10 **Number of TB cases notified, Africa, 1980–2005**

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
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	19 730	19 809	21 336
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	14 235	16 062	21 713	29 996	36 079	35 437	37 175
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	2 932	3 116	3 270
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	9 862	10 131	10 058
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	2 620	2 878	3 484
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	6 871	7 164	6 585
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	15 964	17 655	21 499
Cape Verde	516	344	393	230	285	259		285	276	210	221					303	179	196	205			291	195	316	294	292
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	3 932	3 908	3 210
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	4 679	4 946	6 311
Comoros									212	139	140	119	108	129	115	123	138	134	132	153	120	138	111	73	89	111
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	9 888	7 782	9 729	9 853
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	16 071	17 739	20 084	19 681
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	84 687	93 336	97 075
Equatorial Guinea					181	17	1	11	20	157	260	331	262	309	356	306	319	366	416						536	
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	4 708	4 239	3 549
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	117 600	123 127	124 262
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		2 504	2 086	2 208	2 588	2 512
Gambia	239	58														1 023	1 242	1 357	1 558	1 514			1 859	1 945	2 142	2 031
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	11 891	11 827	12 124
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	6 570	7 423	6 863
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	1 647	1 835	1 774
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	91 522	100 573	102 680
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	12 007	11 404	10 802
Liberia	774	1 002	835	885		425	232	384	894				1 948	1 766	1 764	1 393	840		1 753		1 500	1 751	3 419	2 511	4 337	3 432
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	16 718	19 309	20 001	18 993
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	25 841	27 030	25 491
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	4 496	4 525	4 697
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				3 326	2 162
Mauritius	132	157	121	152	118	111	119	117	114	129	119	134	130	159	149	131	116	121	120	154	160	123	139	137	137	125
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	20 574	21 158	22 098	25 544	28 602	31 150	33 231
Namibia						4 840	4 427	3 640	2 815	3 703	2 671	2 500	1 756	5 500		1 540	9 625	9 947	11 147	10 035	10 799	13 064	13 282	14 490	15 026	14 920
Niger	717	2 871	754	673	665	698	570	556	631	608	5 200			626	3 784	1 980		4 021	5 046	3 900	4 701	5 115	5 185	7 078	6 822	7 873
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	44 184	57 246	62 598
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	6 812	6 487	7 220
Sao Tome & Principe	131	37	40	59	49	40	8	55	13		17	120		97	41				106	96	97	97	94	457	121	136
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	8 322	8 475	7 488	8 508	8 554	8 366	9 380	9 098	9 765
Seychelles	16	0	16	16	10	10	24	14	10	6	41			5		8	15	18	11	21	20	19	29	10	18	14
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	5 289	5 710	6 737
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	227 320	267 290	270 178
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	7 749	8 071	8 062
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	1 815	2 212	2 537
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	41 795	43 721	41 040
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	61 579	62 512	61 022
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	53 932	54 106	49 576
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	53 183	56 162	50 454
AFR	**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**	**598 821**	**689 253**	**750 086**	**783 930**	**861 423**	**1 004 557**	**1 079 333**	**1 179 378**	**1 186 800**
Number reporting	40	41	39	41	37	41	41	43	44	41	43	40	37	41	38	45	44	42	45	41	38	37	44	44	46	45
% reporting	87	89	85	89	80	89	89	93	96	89	93	87	80	89	83	98	96	91	98	89	83	80	96	96	100	98

From 1995 on, number shown is all notified new and relapse cases (DOTS and non-DOTS). The table includes updated information; data shown here may differ from those published in previous reports. Data can be downloaded from www.who.int/tb

Table A2.11 **Case notification rates, Africa, 1980–2005**

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Algeria	14		69	66	61	63	57	48	47	45	46	44	43	49	48	48	53	57	52	55	61	59	60	62	61	65
Angola	129	93	94	76	113	93	98	87	82	94	98	103	101	71	60	42	122	117	108	105	116	153	205	240	229	233
Benin	49	49	45	44	45	46	48	41	42	39	40	40	43	40	35	38	36	34	34	37	38		37	37	38	39
Botswana	254	240	241	249	259	219	206	242	203	182	206	223	278	302	301	351	402	433	465	498	530	545	576	557	573	570
Burkina Faso	39	36	33	44	12	62	13	18	12	20	18	17		16	9	26	18	16	19	21	20	21	20	21	22	26
Burundi	19	15	22	23	40	47	51	53	70	83	81	84	76	78	63	54	61	85	104	100		98	93	98	98	87
Cameroon	28	25	41	36	34	34	21	36	45	49	51	57	55	56	56	25	22	28	35	53	35	75	72	101	110	132
Cape Verde	178	117	131	75	91	81		86	81	60	62					76	44	47	48			63	41	65	59	58
Central African Republic	28	32	60	66	18	19	28	18	28	2	71	66				98	104	125	134	135		66	124	100	98	79
Chad	5	6	3	40	28	28	24	20	52	44	43	47	42	43	48	45	27	29	36	59			58	51	52	65
Comoros									43	27	27	22	19	22	19	20	22	21	20	22	17	19	15	10	11	14
Congo	41	65	193	210	136	125	143	154	167	181	24	24	45	72	106	124	148	110	120	151	269	274	270	206	251	246
Côte d'Ivoire	50	50	54	62	60	55	56	56	56	57	62	61	67	69	98	81	86	89	93	92	77	97	93	101	112	108
DR Congo	18	11	33	43	65	81	83	79	86	86	56	86	93	87	88	95	100	95	123	122	121	130	134	156	167	169
Equatorial Guinea					61	5	0	3	6	45	74	92	71	82	92	77	78	88	97						109	
Eritrea											122		143	381	505	693	166	258	235	176	187	74	72	116	100	81
Ethiopia	108	112	134	140	155	165	180	186	200	164	174	114	110		171	43	68	93	107	108	133	135	153	159	163	160
Gabon	124	111	103	98	83	105	92	100	80	98	96	92	91	92	95	100	83	121	114	128		193	158	165	190	182
Gambia	37	9														92	108	114	126	119			133	135	145	134
Ghana	46	35	36	21	15	24	28	41	36	40	41	45	43	51	98	49	58	58	60	53	55	59	56	56	55	55
Guinea		38	29	16	23	24	20	21	30	31	32	35	44	45	45	47	56	56	59	63	65	68	70	73	81	73
Guinea-Bissau	81	57	25	44	42	59	144	80	81	138	115	119	98	139	143	136	137	115	65	88	93		108	110	119	112
Kenya	68	59		66		53	49	50	50	56	50	51	58	79	87	103	125	139	167	191	209	233	250	280	301	300
Lesotho	316	289	362	246	203	199	1	15	151	157	159	186	204	205	259	306	327	372	444	482	545		562	667	634	602
Liberia	41	52	42	43		20	11	18	41				94	86	85	65	37		65		49	55	107	78	134	105
Madagascar	100	80	37	36	85	31	35	36	39	46	52	49	64	75	79	155	88		96			99	98	110	110	102
Malawi	77	79	68	70	63	74	82	93	97	104	131	152	145	173	196	189	200	195	208	218	205	221	204	209	214	198
Mali	12	13	3	7	24	21	23	31	30	19	33	29	33	33	31	30	35	47	38	39	36		36	35	34	35
Mauritania	471	572	138	135	225	243	122	196	203	204	260	147	203	183		167	162	156	145	142	116				112	70
Mauritius	14	16	12	15	12	11	12	11	11	12	11	13	12	15	13	12	10	11	10	13	13	10	11	11	11	10
Mozambique	62	57	46	46	40	43	62	83	105	120	118	121	106	112	112	113	113	113	115	117	118	121	137	150	160	168
Namibia						433	380	298	220	276	191	172	117	354		93	565	567	617	542	570	677	678	730	748	735
Niger	12	45	11	10	9	10	8	7	8	7	61			7	39	20		38	46	34	40	42	41	54	51	56
Nigeria	14	15	15	14	15	19	17	24	30	15	22	21	15	12	8	13	14	15	18	21	22	38	31	35	44	48
Rwanda	29	26		24	24	22	39	49	60	67	90	47				56	62	76	89	86	76	65	70	78	73	80
Sao Tome & Principe	139	38	41	59	48	39	8	51	12		15	101		79	33				79	70	69	68	64	306	79	87
Senegal	34	42	26	37		16	13	84	75	77	62	83	88	79	78	83	91	87	86	74	82	81	77	84	80	84
Seychelles	25	0	24	24	15	15	35	20	14	8	57			7		11	20	24	14	27	26	24	37	13	23	17
Sierra Leone	23	26	26	9	23	24	10	3	3		15	36	40	65	62	47	78	75	76		83	100	98	103	107	122
South Africa	189	200	208	198	194	179	162	166	174	189	218	205	213	225	221	176	256	289	321	329	332	321	462	484	566	570
Swaziland		23	469	291				141	167	166		172		158		215	244	307	365	411	574	594	653	749	780	781
Togo	7	4	7	6	11	22	17	33	29	24	33	31	29	24	26	34	35	34	25	24	26		29	31	37	41
Uganda	8	9	4	15			9	9	19	6	83	103	109	110	133	121	126	128	128	134	125	147	157	156	157	142
UR Tanzania	61	62	58	56	56	62	67	71	74	76	85	93	101	108	116	129	140	143	154	154	157	174	167	167	166	159
Zambia	88	98	101	103	105	115	118	131	163	175	201	271	287	335	378	376	413			431	465	424	488	478	471	425
Zimbabwe	55	53	58	47	67	54	57	61	61	67	86	108	146	177	206	261	297	359	382	402	404	443	463	413	434	388
AFR	**58**	**58**	**60**	**63**	**62**	**68**	**67**	**72**	**78**	**74**	**82**	**79**	**80**	**76**	**97**	**86**	**98**	**98**	**110**	**116**	**119**	**128**	**146**	**153**	**163**	**161**

Rates are per 100 000 population. The table includes updated information; data shown here may differ from those published in previous reports. Data can be downloaded from www.who.int/tb

Table A2.12 **New smear-positive cases notified, numbers and rates, Africa, 1993–2005**

	Number of cases													Rate (per 100 000 population)												
	1993	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**
Algeria		6 793	5 735	6 556	7 740	7 462	7 845	8 328	7 953	8 246	8 549	8 285	8 654		24	20	23	27	25	26	27	26	26	27	26	26
Angola	4 874	4 337	3 804	8 016	8 246	7 333	7 379	9 053	11 923	18 087	18 971	20 301	20 410	42	36	31	64	64	56	55	65	84	124	126	131	128
Benin	1 653	1 618	1 839	1 868	1 939	1 988	2 192	2 286		2 415	2 438	2 582	2 739	29	27	30	29	29	29	31	32		31	31	32	32
Botswana	1 508	1 668	1 903	2 530	2 824	3 112	2 746	3 091	3 057	3 334	3 050	3 127	3 170	98	106	118	153	168	182	158	176	173	188	172	177	180
Burkina Faso		561	1 028	1 381	1 126	1 331	1 411	1 560	1 522	1 544	1 703	1 926	2 294		6	10	14	11	12	13	14	13	13	14	15	17
Burundi	1 861	1 527	1 121	1 533	2 022	2 782	2 924		3 040	2 791	3 087	3 277	3 262	31	25	18	25	32	44	46		46	41	44	45	43
Cameroon	2 316	1 883	2 896	2 312	3 548	4 374	5 832	3 960	4 695	7 921	10 692	11 218	13 001	18	15	22	17	25	31	40	27	31	51	68	70	80
Cape Verde			111	117	103	104			140	111	165	169	135			28	28	25	24			30	23	34	34	27
Central African Republic			1 794	1 992	2 267	2 637	2 725		1 382	2 758	2 818	2 923	2 153			53	57	63	72	73		36	71	72	73	53
Chad			2 002	870			2 920			3 519	3 599	2 270	2 516			28	12			37			40	39	24	26
Comoros			103	107	100	99	112	87	92	72	48	63	79			17	17	16	15	16	12	13	10	6	8	10
Congo		1 691	2 013	2 505	1 984	2 044	2 222	4 218	4 319	5 019	3 477	4 121	3 640		60	69	83	64	63	67	123	122	137	92	106	91
Côte d'Ivoire	7 012		8 254	8 927	9 093	9 850	10 047	8 497	10 920	11 026	11 430	12 250	12 496	50		56	59	58	62	61	51	64	64	65	69	69
DR Congo	14 924		20 914	24 125	24 609	33 442	34 923	36 123	42 054	44 518	53 578	62 192	65 040	35		46	52	52	70	71	72	82	84	99	111	113
Equatorial Guinea			219	209	226	284						406				55	51	54	66						82	
Eritrea					120	135	527	590	702	646	887	720	687					4	4	15	17	19	17	22	17	16
Ethiopia		5 752	9 040	13 160	15 957	18 864	21 597	30 510	33 028	36 541	39 698	41 430	38 525		10	15	21	25	29	32	45	47	51	54	55	50
Gabon		395	486	263	577	889	916		1 137	1 033	1 233	1 323	1 042		36	43	23	49	73	74		88	78	92	97	75
Gambia			778	743	820	900	861			1 035	1 040	1 011	1 127			70	64	69	73	68			74	72	68	74
Ghana		5 778	2 638	6 474	7 254	7 757	6 877	7 316	7 712	7 732	7 714	7 259	7 505		33	15	36	39	41	35	37	38	37	36	34	34
Guinea	2 082	2 158	2 263	2 844	2 981	3 362	3 563	3 920	4 092	4 300	4 495	5 015	5 479	30	30	30	37	38	42	43	46	47	49	50	55	58
Guinea-Bissau			956	922	855	541	704	526		899	963	1 186	1 132			80	75	68	42	53	39		62	64	77	71
Kenya	10 149	11 324	13 934	16 978	19 040	24 029	27 197	28 773	31 307	34 337	38 158	41 167	40 389	39	43	51	61	66	82	91	94	100	107	117	123	118
Lesotho	1 405	1 330	1 361	1 788	2 398	2 476	2 729	3 041		3 167	3 652	4 272	4 280	85	80	80	104	138	141	154	170		176	203	238	238
Liberia	1 547		1 154	668		1 190		1 021	934	1 974	1 319	2 490	2 167	76		54	29		44		33	30	62	41	77	66
Madagascar	6 881	7 366	8 026	8 456		9 639			11 092	11 387	12 881	13 526	13 056	52	54	58	59		63			67	66	73	75	70
Malawi	5 692	5 988	6 285	6 703	7 587	8 765	8 132	8 260	8 309	7 703	7 716	8 566	8 443	58	60	62	65	72	80	73	72	70	64	63	68	66
Mali		1 740	1 866	2 173	3 178	2 558	2 690	2 527		2 757	3 015	3 069	3 523		18	18	21	30	23	24	22		22	24	23	26
Mauritania			2 074		2 519	1 172	2 051	1 583				1 662	1 155			90		104	47	80	60				56	38
Mauritius			113	99	112	109	122	115	85	86	99	117	110			10	9	10	9	10	10	7	7	8	9	9
Mozambique	9 526	9 677	10 566	10 478	11 116	12 116	12 825	13 257	13 967	15 236	16 138	17 058	17 877	64	63	67	64	66	71	73	74	76	82	85	88	90
Namibia			697	2 849	3 220	3 598	3 760	4 012	4 535	4 689	5 487	5 155	5 222			42	167	183	199	203	212	235	239	276	257	257
Niger	463	1 865	1 492		3 452	3 195	2 631	3 045	3 476	3 495	4 505	4 311	5 050	5	19	15		32	29	23	26	29	28	35	32	36
Nigeria	1 723		9 476	10 662	11 235	13 161	15 903	17 423	23 410	21 936	28 173	33 755	35 048	2		9	10	10	12	14	15	19	18	22	26	27
Rwanda			1 840	2 034	2 820	4 417	4 298	3 681	3 252	3 956	4 627	4 179	4 166			34	36	46	65	57	46	39	46	53	47	46
Sao Tome & Principe							30	30	41	42	33	50	49							22	21	29	29	22	33	31
Senegal		4 599	5 421	5 949	5 430	5 454	5 011	5 823	6 094	5 796	6 587	6 437	6 722		52	59	64	57	55	50	56	58	53	59	57	58
Seychelles	2		6	11	13	9	10	11	12	9	5	13	8	3		8	15	17	12	13	14	15	11	6	16	10
Sierra Leone		1 408	1 454	2 234	2 296	2 262		2 472	2 692	2 938	3 113	3 735	4 370		34	35	54	55	53		55	57	60	61	70	79
South Africa			23 112	42 163	54 073	66 047	72 098	75 967	83 808	98 799	116 364	126 268	125 460			55	99	124	149	160	167	182	212	248	267	265
Swaziland			660	2 226			1 781	1 823	1 279	1 410	1 585	1 902	2 187			69	230			176	178	124	136	153	184	212
Togo	545		887	913	935	904	904	984		1 203	1 306	1 608	1 798	13		20	20	19	18	17	18		21	22	27	29
Uganda	11 949	14 763	13 631	15 312	17 254	18 222	18 463	17 246	17 291	19 088	20 310	20 986	20 559	61	73	65	71	78	80	78	71	69	74	76	75	71
UR Tanzania	15 569	17 164	19 955	21 472	22 010	23 726	24 125	24 049	24 685	24 136	24 899	25 823	25 264	54	57	65	68	68	71	71	69	70	67	67	69	66
Zambia		9 620	10 038	12 072			11 645	12 927	13 024	16 351	18 934	17 247	14 857		103	105	123			111	121	119	147	168	150	127
Zimbabwe	5 331		8 965	11 965	14 512	14 492	14 414	14 392	15 370	15 941	14 488	14 581	13 155	47		76	100	119	117	116	114	121	125	113	113	101
AFR	**107 012**	**121 005**	**212 910**	**264 659**	**277 591**	**326 831**	**349 142**	**362 527**	**402 431**	**459 983**	**513 029**	**551 031**	**550 001**	**19**	**21**	**36**	**44**	**45**	**52**	**54**	**55**	**60**	**67**	**73**	**76**	**75**

Rates are per 100 000 population. The table includes updated information; data shown here may differ from those published in previous reports. Data can be downloaded from www.who.int/tb

Notes

Gambia

TB/HIV collaboration began in August 2005. From October 2005 to August 2006, a total of 370 TB patients were registered in various institutions throughout the country (57 were found to be HIV-positive).

Ghana

First-line TB drug stock-outs occurred in a small number of peripheral health units (9 out of 110 units), where staff at regional level postponed the collection of drugs from central level.

Madagascar

A cross-sectional national seroprevalence survey of HIV infection was carried out among TB patients for a period of 6 months from January 2005. Patients were from a randomly selected sample of 61 of 205 clinics. 1759 TB patients were tested; 16 were found to be HIV-positive.

Malawi

The 4156 patients who started ART in 2005 are not a subset of the number of TB cases who were tested and found positive in 2005; they began ART because they had active TB or a past history of TB.

Mozambique

While DOTS is available in all administrative areas, it is estimated that only 45–50% of the population lives within 10 km of the nearest DOTS unit, reflecting the low coverage of public health services.

Breakdown of notified cases by sex was not available. Of new smear-positive cases notified in 2005 (17 877), 266 were patients aged under 15 years, and 16 508 were patients aged 15 years or more.

Namibia

In 2005, only 16% of the patients started on treatment for TB were tested for HIV, and 58% of these patients were HIV-positive. In 2006, 24% of TB patients were tested for HIV; preliminary data available in January 2007 suggest that 70% were HIV-positive.

Summary by WHO region …
Africa …
The Americas …
Eastern Mediterranean…
Europe …
South-East Asia …
Western Pacific …

The Americas

NTP MANAGER (OR EQUIVALENT); PERSON FILLING OUT DATA COLLECTION FORM (IF DIFFERENT)

Anguilla	
Antigua & Barbuda	James Knight; Janet Samuel
Argentina	Elsa Zerbini
Bahamas	
Barbados	
Belize	Ines Mendez-Moguel; Paul Edwards
Bermuda	
Bolivia	Mirtha Camacho
Brazil	Joseney Raimundo Pires dos Santos; Stefano Barbosa Codenotti
British Virgin Islands	Ronald Georges
Canada	Edward Ellis; Derek Scholten; Victor Galant
Cayman Islands	
Chile	Manuel Zuñiga Gajardo; Zulema Torres Gaete
Colombia	Lenis Enrique Urquijo Velasquez; Ernesto Moreno Naranjo
Costa Rica	Zeidy Mata
Cuba	María Josefa Llanes Cordero
Dominica	
Dominican Republic	Juan José Cordero; Belkys Marcelino
Ecuador	Elizabeth Romero Ayala; Rocío Morales
El Salvador	Julio Garay Ramos; Mario Rafael Soto Villalta; Marta De Abrego
Grenada	
Guatemala	Edwin Antonio Quiñonez Villatoro
Guyana	Jeetendra Mohanlall
Haiti	Richard D'Meza
Honduras	Jacobo I. Argüello; Anna Reyes
Jamaica	Eva-Lewis-Fuller; Sydney Erwin
Mexico	Elizabeth Ferreira Guerrero
Montserrat	Violet Brown
Netherlands Antilles	
Nicaragua	Alejandro A. Tardencilla Gutiérrez
Panama	Cecilia Lyons de Arango; C. Torres; J. Bravo ; A. Marrero
Paraguay	Juan Carlos Jara Rodríguez; Mirian Alvarez
Peru	Cesar Antonio Bonilla Asalde; Rula Aylas Salcedo; Claudia Pacheco Rivera
Puerto Rico	Ada S. Martinez; María del Carmen Bermúdez
Saint Kitts & Nevis	Dianne Francis-Delaney; William Turner
Saint Lucia	Alina Montane Jaime; Leona Casimir Gauland
St Vincent & Grenadines	Roger Duncan; Anneke Wilson
Suriname	Roel Mahabier
Trinidad & Tobago	Dottin Ramoutar; Leilawat Mohammed
Turks & Caicos Islands	
Uruguay	Jorge Rodriguez de Marco
US Virgin Islands	
USA	Kenneth Castro; Sandy Althomsons
Venezuela	Mercedes España Cedeño; Andrea Maldonado Saavedra

This list shows the people named on the data collection form sent to WHO in 2006, not necessarily the current NTP manager. It is intended as an acknowledgement rather than a directory.

THE AMERICAS: SUMMARY OF TB CONTROL POLICIES

	DOTS COVERAGE, %	NTP MANUAL	SMEAR MICROSCOPY FOR DIAGNOSIS	STANDARDIZED CHEMOTHERAPY	DOT	MONITORING OUTCOMES	CASES NOTIFIED BY TYPE; AGE & SEX	2004 COHORT OUTCOMES REPORTED: NEW; RETREATMENT	SMEAR MICROSCOPY FREE-OF-CHARGE	DRUGS FREE-OF-CHARGE	UNINTERRUPTED DRUG SUPPLY	EQA FOR SMEAR MICROSCOPY	STRATEGIC HRD PLAN	TB CONTROL IN CURRICULA OF DOCTORS AND NURSES	UP-TO-DATE JOB DESCRIPTIONS	GUIDELINES FOR PRIVATE PRACTITIONERS	PUBLIC PROVIDERS NOTIFIED/REFERRED	PRIVATE PROVIDERS NOTIFIED/REFERRED	ISTC PROMOTED IN 2006	HEALTH SYSTEM STRENGTHENING IN PLAN	PAL IN PLAN	COMMUNITY-BASED TB CARE	PATIENTS' CHARTER PROMOTED IN 2006	OPERATIONAL RESEARCH	MDR-TB MGMT; IN LINE WITH WHO GUIDELINES	HIV COUNSELLING & TESTING	SURVEILLANCE OF HIV PREV. IN TB PTS
ANGUILLA	0																										
ANTIGUA & BARBUDA	100	▲▲	■■	■■	■■	■■	■■	●●	■■	■■	■■	▲▲	▲▲	●●	▲▲	▲▲	■■	■■		▲▲	▲▲	▲▲	▲▲	▲▲	▲▲	■■	■■
ARGENTINA	100	■■	■■	■■	●●	●●	■■	■■	■■	■■	●●	■■	■■	■■	▲▲	■■	●●	●●	■■	▲▲	▲▲	▲▲	■■	■■	■■	▲▲	■■
BAHAMAS	0																										
BARBADOS	0																										
BELIZE	100	■■	■■	■■	■■	■■	■■	■■	■■	■■	▲▲	■■	▲▲	●●	■■	■■	●●	●●	■■	■■	▲▲	■■		▲▲	■■	■■	■■
BERMUDA	0																										
BOLIVIA	47	■■	■■	■■	●●	●●	■■	■■	■■	■■	▲▲	■■	■■	■■	■■	■■	●●	●●	■■	■■	■■	■■	▲▲	■■	■■	▲▲	▲▲
BRAZIL	68	■■	■■	■■	■■	■■	■■	■■	■■	■■	●●	■■	■■	■■	■■	■■	■■	■■	■■	■■	▲▲	■■	▲▲	■■	■■	■■	■■
BRITISH VIRGIN ISLANDS	100	▲▲	■■	■■	▲▲	■■	●●	●●	■■	▲▲	■■	▲▲	▲▲	▲▲	▲▲	▲▲	■■	■■	▲▲	▲▲	▲▲	▲▲	▲▲	▲▲	■■		■■
CANADA	100	■■	■■	■■	●●	■■	■■	■■	■■	■■	■■	▲▲	▲▲	▲▲	■■	■■	■■	■■	■■	▲▲	▲▲	▲▲	■■	■■	●●	▲▲	■■
CAYMAN ISLANDS	0																										
CHILE	100	■■	■■	■■	■■	■■	■■	●●	■■	■■	●●	■■	■■	▲▲	■■	■■	●●	■■		■■	■■	▲▲	■■	■■	■■		
COLOMBIA	50	■■	■■	■■	■■	■■	■■	●●	■■	■■	●●	■■	■■	■■	■■	■■	■■	●●	■■	■■	■■	▲▲	■■	■■	■■	■■	▲▲
COSTA RICA	100	■■	■■	■■	■■	■■	■■	▲▲	■■	■■	●●	■■	■■	●●	▲▲	■■	●●	●●	■■	■■	▲▲	■■		■■	■■		
CUBA	100	■■	■■	■■	■■	■■	■■	■■	■■	■■	●●	■■	▲▲	■■	■■		■■	NA	■■	■■	■■	■■	■■	■■	■■	■■	■■
DOMINICA	0																										
DOMINICAN REPUBLIC	80	■■	■■	■■	■■	■■	■■	■■	■■	■■	●●	■■	■■	▲▲	▲▲	■■	●●	●●	■■	■■	▲▲	▲▲	▲▲	■■	■■	■■	■■
ECUADOR	70	■■	■■	■■	■■	■■	■■	■■	■■	■■	●●	■■		▲▲	■■	▲▲	●●	▲▲	▲▲	▲▲	▲▲	▲▲	▲▲	■■	■■		▲▲
EL SALVADOR	100	■■	■■	■■	■■	■■	■■	■■	■■	■■	●●		■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■
GRENADA	0																										
GUATEMALA	100	■■	■■	▲▲	■■	■■	■■	●●	■■	■■	●●	■■	■■	■■	▲▲	■■	●●	●●	■■	■■	▲▲	■■	▲▲	■■	▲▲	■■	■■
GUYANA	50	■■	●●	■■	●●	●●	■■	■■	■■	■■	▲▲	■■	■■	■■	▲▲	■■	●●	●●				▲▲	■■		▲▲	■■	■■
HAITI	55	■■	■■	■■	■■	■■	■■	■■	■■	■■	●●	■■	■■	▲▲	▲▲	▲▲	●●	●●	■■	■■	▲▲	■■	▲▲		■■	■■	▲▲
HONDURAS	100	■■	■■	■■	■■	■■	■■	■■	■■	■■	▲▲	■■	■■	■■	■■	■■	■■	●●	■■	■■	▲▲	■■	▲▲	▲▲	■■	▲▲	■■
JAMAICA	100	▲▲	■■	■■	■■	■■	■■	■■	■■	▲▲	▲▲	■■					●●	●●							■■	■■	■■
MEXICO	100	■■	■■	■■	■■	■■	■■	■■	■■	■■	●●	■■	■■	■■	■■	■■	●●	●●	■■	■■	▲▲	■■	■■	■■	■■		
MONTSERRAT	100	■■	■■	■■	■■	■■	■■	▲▲		■■	■■	■■	▲▲	■■	▲▲	▲▲	●●	■■	▲▲	■■	▲▲		▲▲	▲▲	■■	■■	■■
NETHERLANDS ANTILLES	0																										
NICARAGUA	70	■■	■■	■■	■■	■■	■■	■■	■■	■■	●●	■■	▲▲	■■	▲▲	■■	■■	■■	■■	■■	▲▲	■■	■■	■■	■■	■■	▲▲
PANAMA	100	■■	■■	■■	■■	■■	■■	■■	■■	■■	●●	■■	■■	■■	■■	■■	●●	●●	■■	■■	▲▲	■■	■■	■■	■■	■■	
PARAGUAY	54	■■	■■	■■	■■	■■	■■	●●	■■	■■	●●	■■	■■	■■	■■	■■	●●	●●	■■	■■	■■		▲▲	■■	■■	▲▲	▲▲
PERU	100	■■	■■	■■	■■	■■	■■	■■	■■	■■	●●	■■	■■	■■	■■	■■	■■	●●	■■	■■	■■	■■	■■	■■	■■	■■	▲▲
PUERTO RICO	100	■■	■■	■■	■■	■■	■■	●●	■■	■■	●●	▲▲	▲▲	■■	■■	■■	■■	■■	■■	■■	▲▲	▲▲	▲▲	▲▲	■■	▲▲	■■
SAINT KITTS & NEVIS	100	■■	■■	■■	■■	■■	●●	●●	■■	■■	■■	■■	▲▲	▲▲	▲▲	▲▲	■■	■■		▲▲	▲▲	▲▲	▲▲	▲▲	▲▲	▲▲	▲▲
SAINT LUCIA	100	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	▲▲	■■	■■	■■	●●	●●	■■	■■	■■	▲▲	▲▲	▲▲	■■	■■	
ST VINCENT & GRENADINES	100	■■	■■	■■	■■	■■	■■	●●	▲▲	▲▲	■■	■■	▲▲	■■	▲▲	■■	■■	▲▲	■■	■■	■■	■■	■■	▲▲	■■	■■	■■
SURINAME	0	▲▲					■■	■■			▲▲	■■	▲▲	■■	▲▲	▲▲	●●	●●	■■	■■	■■	■■	▲▲	▲▲	■■	■■	■■
TRINIDAD & TOBAGO	0	■■	■■	■■	▲▲	■■	■■	■■	■■	■■	▲▲	■■	■■	■■	■■	■■	●●	●●	■■	■■	■■	▲▲	■■	▲▲	■■	■■	■■
TURKS & CAICOS ISLANDS	0																										
URUGUAY	100	■■	■■	■■	■■	■■	■■	▲▲	■■	■■	●●	▲▲	■■	■■	■■	■■	■■	■■	■■	■■	▲▲	■■	▲▲	■■	■■	■■	■■
US VIRGIN ISLANDS	0																										
USA	100	■■	■■	■■	■■	●●	■■	●●	■■	■■	■■	■■	■■	▲▲	■■	■■	■■	■■	■■	■■	▲▲	▲▲	■■	▲▲	■■	■■	■■
VENEZUELA	100	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	▲▲	■■	■■	●●	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■
AMR	**88**	**68**	**73**	**73**	**61**	**66**	**73**	**48**	**70**	**68**	**57**	**64**	**45**	**48**	**45**	**57**	**34**	**30**	**59**	**59**	**27**	**39**	**34**	**43**	**66**	**43**	**21**

DOT indicates directly observed treatment; EQA, external quality assurance; HRD, human resources development; ISTC, International Standards for Tuberculosis Care; PAL, Practical Approach to Lung Health; prev., prevalence.
First number in final row shows regional coverage; remaining numbers show the proportion of countries for which the answer is "yes" or "all" (i.e. those shown in dark green in the table).
■■ Yes/all ●● Some/partially ▲▲ No/none Answer not provided **NA** Not applicable. See explanatory notes on page 163 for details of colour-coding.

Table A2.1 **Estimated burden of TB, the Americas, 1990 and 2005**

	Incidence, 1990				Prevalence, 1990		TB mortality, 1990		Incidence, 2005								Prevalence, 2005				TB mortality, 2005				HIV prevalence in adult incident TB cases (%)
	All forms*		Smear-positive*		All forms*		All forms*		All forms*		All forms HIV+		Smear-positive*		Smear-positive HIV+		All forms*		All forms HIV+		All forms*		All forms HIV+		
	number	rate	number	rate	number	rate	number	rate	number	rate	number	rate	number	rate	number	rate	number	rate	number	rate	number	rate	number	rate	
Anguilla	3	31	1	14	4	49	≤ 1	5	3	25	–	–	1	11	–	–	5	39	–	–	≤ 1	4	–	–	–
Antigua & Barbuda	5	8	2	4	9	13	≤ 1	1	5	7	–	–	2	3	–	–	7	9	–	–	≤ 1	≤ 1	–	–	–
Argentina	23 674	73	10 575	32	38 872	119	3 226	10	15 869	41	720	2	7 069	18	252	≤ 1	19 762	51	360	≤ 1	2 130	5	168	≤ 1	7.4
Bahamas	150	59	66	26	228	89	31	12	124	38	13	4	54	17	4	1	158	49	6	2	20	6	4	1	17
Barbados	45	18	20	8	60	23	8	3	31	11	2	≤ 1	14	5	≤ 1	≤ 1	33	12	≤ 1	≤ 1	4	1	≤ 1	≤ 1	8.6
Belize	90	49	40	22	145	78	18	10	131	49	11	4	58	21	4	1	148	55	5	2	14	5	2	≤ 1	13
Bermuda	3	5	1	2	5	9	≤ 1	≤ 1	3	4	–	–	1	2	–	–	4	7	–	–	≤ 1	≤ 1	–	–	–
Bolivia	19 837	297	8 921	134	30 558	458	3 432	51	19 329	211	95	1	8 688	95	33	≤ 1	25 753	280	47	≤ 1	2 880	31	28	≤ 1	0.8
Brazil	137 055	92	60 738	41	212 567	142	18 863	13	111 050	60	9 529	5	49 019	26	3 335	2	142 282	76	4 765	3	15 189	8	2 281	1	14
British Virgin Islands	3	18	1	8	5	30	≤ 1	3	3	15	–	–	1	7	–	–	5	24	–	–	≤ 1	3	–	–	–
Canada	2 423	9	1 086	4	1 885	7	242	≤ 1	1 522	5	59	≤ 1	679	2	21	≤ 1	1 168	4	29	≤ 1	152	≤ 1	6	≤ 1	8.3
Cayman Islands	1	5	≤ 1	2	2	9	≤ 1	≤ 1	2	4	–	–	≤ 1	2	–	–	3	6	–	–	≤ 1	≤ 1	–	–	–
Chile	6 960	53	3 116	24	8 287	63	752	6	2 377	15	115	≤ 1	1 058	6	40	≤ 1	2 588	16	58	≤ 1	209	1	17	≤ 1	7.9
Colombia	22 666	65	10 182	29	37 641	108	3 717	11	20 496	45	445	≤ 1	9 179	20	156	≤ 1	30 302	66	223	≤ 1	3 190	7	137	≤ 1	3.5
Costa Rica	681	22	306	10	1 111	36	111	4	622	14	6	≤ 1	279	6	2	≤ 1	729	17	3	≤ 1	60	1	1	≤ 1	1.7
Cuba	3 227	31	1 452	14	4 122	39	361	3	1 057	9	3	≤ 1	475	4	≤ 1	≤ 1	1 232	11	1	≤ 1	91	≤ 1	≤ 1	≤ 1	0.4
Dominica	14	19	6	9	23	31	2	3	12	16	–	–	6	7	–	–	19	24	–	–	2	3	–	–	–
Dominican Republic	9 885	139	4 398	62	16 579	234	2 074	29	8 053	91	313	4	3 593	40	110	1	10 331	116	156	2	1 274	14	93	1	6.3
Ecuador	20 724	202	9 314	91	35 423	345	4 610	45	17 331	131	181	1	7 781	59	63	≤ 1	26 752	202	90	≤ 1	3 557	27	74	≤ 1	1.7
El Salvador	5 183	101	2 318	45	8 378	164	866	17	3 523	51	114	2	1 574	23	40	≤ 1	4 688	68	57	≤ 1	562	8	34	≤ 1	5.3
Grenada	6	6	3	3	10	10	1	1	5	5	–	–	2	2	–	–	8	8	–	–	≤ 1	≤ 1	–	–	–
Guatemala	8 205	92	3 682	41	12 713	143	1 381	16	9 797	78	311	2	4 377	35	109	≤ 1	13 828	110	155	1	1 623	13	99	≤ 1	5.2
Guyana	327	45	144	20	523	72	67	9	1 121	149	90	12	495	66	31	4	1 461	194	45	6	191	25	27	4	13
Haiti	32 305	470	14 219	207	52 761	768	7 665	112	26 051	305	1 855	22	11 537	135	649	8	34 560	405	927	11	4 982	58	628	7	12
Honduras	5 600	115	2 491	51	9 083	187	827	17	5 643	78	296	4	2 510	35	104	1	7 162	99	148	2	861	12	84	1	8.6
Jamaica	197	8	88	4	320	14	32	1	196	7	10	≤ 1	87	3	4	≤ 1	256	10	5	≤ 1	29	1	3	≤ 1	8.5
Mexico	53 534	64	24 055	29	88 714	105	8 808	10	24 255	23	250	≤ 1	10 890	10	88	≤ 1	28 828	27	125	≤ 1	2 293	2	53	≤ 1	1.7
Montserrat	1	11	≤ 1	5	2	18	≤ 1	2	≤ 1	9	–	–	≤ 1	4	–	–	≤ 1	12	–	–	≤ 1	1	–	–	–
Netherlands Antilles	21	11	10	5	44	23	4	2	17	9	–	–	7	4	–	–	33	18	–	–	3	2	–	–	–
Nicaragua	5 822	147	2 618	66	8 099	205	913	23	3 166	58	28	≤ 1	1 422	26	10	≤ 1	4 075	74	14	≤ 1	417	8	8	≤ 1	1.4
Panama	1 685	70	753	31	2 718	113	218	9	1 467	45	46	1	656	20	16	≤ 1	1 477	46	23	≤ 1	113	4	5	≤ 1	5.1
Paraguay	3 219	76	1 448	34	5 111	121	590	14	4 214	68	57	≤ 1	1 890	31	20	≤ 1	6 178	100	29	≤ 1	733	12	20	≤ 1	2.2
Peru	84 365	388	37 881	174	109 098	502	8 140	37	47 976	172	972	3	21 492	77	340	1	57 603	206	486	2	5 697	20	211	≤ 1	3.3
Puerto Rico	746	21	336	10	1 221	35	134	4	180	5	–	–	81	2	–	–	224	6	–	–	23	≤ 1	–	–	–
Saint Kitts & Nevis	5	13	2	6	9	22	≤ 1	2	5	11	–	–	2	5	–	–	7	17	–	–	≤ 1	2	–	–	–
Saint Lucia	28	20	13	9	46	34	5	4	27	17	–	–	12	7	–	–	35	22	–	–	3	2	–	–	–
St Vincent & Grenadines	39	35	17	16	64	58	7	6	34	29	–	–	15	13	–	–	51	42	–	–	5	5	–	–	–
Suriname	402	100	180	45	666	166	78	19	292	65	19	4	129	29	7	1	443	99	9	2	59	13	7	2	11
Trinidad & Tobago	167	14	74	6	263	22	29	2	117	9	10	≤ 1	51	4	3	≤ 1	165	13	5	≤ 1	18	1	3	≤ 1	14
Turks & Caicos Islands	3	24	1	11	5	40	≤ 1	4	5	20	–	–	2	9	–	–	8	31	–	–	≤ 1	3	–	–	–
Uruguay	1 049	34	472	15	1 379	44	118	4	957	28	17	≤ 1	429	12	6	≤ 1	1 159	33	9	≤ 1	104	3	3	≤ 1	3.0
US Virgin Islands	17	17	8	8	29	28	3	3	12	11	–	–	5	5	–	–	19	17	–	–	2	2	–	–	–
USA	23 976	9	10 717	4	18 656	7	2 399	≤ 1	13 499	5	963	≤ 1	5 978	2	337	≤ 1	10 236	3	482	≤ 1	1 347	≤ 1	93	≤ 1	15
Venezuela	8 493	43	3 817	19	11 593	59	1 135	6	11 126	42	285	1	4 978	19	100	≤ 1	14 028	52	143	≤ 1	1 471	5	67	≤ 1	4.2
AMR	**482 843**	**66**	**215 578**	**30**	**719 030**	**99**	**70 871**	**10**	**351 703**	**39**	**16 815**	**2**	**156 585**	**18**	**5 885**	**≤ 1**	**447 815**	**50**	**8 408**	**≤ 1**	**49 313**	**6**	**4 157**	**≤ 1**	**7.9**

– Indicates no estimate.

* Incidence, prevalence and mortality estimates include patients with HIV. Estimates labelled "HIV+" are estimates of TB in HIV-positive adults (aged 15-49 years). Estimates for all years are re-calculated as new information becomes available and techniques are refined, so they may differ from those published previously. See Explanatory notes on page 163 for further details. Data can be downloaded from www.who.int/tb

Table A2.2 **Whole country case notifications and case detection rates, the Americas, 2005**

		TB cases notified from whole country (DOTS + non-DOTS)														Incidence and case detection rates				Proportions			
		Country	New and relapse		New pulmonary			New extra-	Other	Re-treatment cases					New pulm.	Estimated incidence		Case detection rate		ss+	ss+	Extrapulm.	Re-treat.
	Population	total	(WHO total)		ss+		ss- / unk.	pulmonary	new	Relapse	After failure	After default	Other re-treat.	Other	lab. confirm.	all forms	ss+	all new	new ss+	(% of	(% of	(% of	(% of
	thousands	number	number	rate	number	rate	number	number	number	number	number	number	number	number	number	number	number	%	%	pulm.)	new+relapse)	new+relapse)	new+re-treat.)
Anguilla	12															3	1						
Antigua & Barbuda	81	6	6	7	6	7	0	0	0	0	0	0	0	0	6	5	2	111	246	100	100		
Argentina	38 747	11 242	9 770	25	4 709	12	3 357	1 561	0	143	381		285	806	5 171	15 869	7 069	61	67	58	48	16	8
Bahamas	323															124	54						
Barbados	270															31	14						
Belize	270	106	102	38	59	22	29	3	0	11	1	3	0	0	59	131	58	69	102	67	58	3	14
Bermuda	64															3	1						
Bolivia	9 182	9 973	9 748	106	6 278	68	1 250	1 673		547	35	190			6 844	19 329	8 688	48	72	83	64	17	8
Brazil	186 405	87 233	80 209	43	42 093	23	23 990	11 037		3 089	208	2 337	4 003	466	43 637	111 050	49 019	69	86	64	52	14	11
British Virgin Islands	22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	1	0	0				
Canada	32 268	1 616	1 484	5	433	1	446	562	4	39			64	68	735	1 522	679	95	64	49	29	38	7
Cayman Islands	45															2	1						
Chile	16 295	2 546	2 134	13	1 186	7	185	622		141	6	85			1 509	2 377	1 058	84	112	87	56	29	10
Colombia	45 600	10 360	10 360	23	6 870	15	1 429	1 618		443					6 870	20 496	9 179	48	75	83	66	16	4
Costa Rica	4 327	611	534	12	330	8	81	104		19	5	21			411	622	279	83	118	80	62	19	8
Cuba	11 269	732	770	7	467	4	160	103		40	5	4		2	530	1 057	475	69	98	74	61	13	6
Dominica	79															12	6						
Dominican Republic	8 895	5 312	5 003	56	2 949	33	1 032	602		420	40	269			2 949	8 053	3 593	57	82	74	59	12	14
Ecuador	13 228	4 808	4 416	33	3 048	23	635	330		403	110	220	62		3 647	17 331	7 781	23	39	83	69	7	17
El Salvador	6 881	1 794	1 794	26	1 059	15	402	255		78	9	27	0	0	1 059	3 523	1 574	49	67	72	59	14	6
Grenada	103															5	2						
Guatemala	12 599		3 365	27	2 420	19	588	256		101	13	45		438	2 420	9 797	4 377	33	55	80	72	8	5
Guyana	751	656	639	85	240	32	352	33	6	8	0	17	0	0	240	1 121	495	56	48	41	38	5	4
Haiti	8 528	14 311	14 311	168	7 340	86	5 292	1 484		195		33			7 340	26 051	11 537	54	64	58	51	10	2
Honduras	7 205	3 333	3 333	46	2 069	29	721	362		181					2 249	5 643	2 510	56	82	74	62	11	5
Jamaica	2 651	95	90	3	53	2	31	6	0	0	0	2	3	0	59	196	87	46	61	63	59	7	5
Mexico	107 029	19 932	18 524	17	11 997	11	421	2 657	2 831	618	361	73	974		15 249	24 255	10 890	74	110	97	65	14	10
Montserrat	4	1	1	22	1	22	0	0	0	0	0	0	0	0	1	0	0	246	546	100	100		
Netherlands Antilles	183															17	7						
Nicaragua	5 487	1 935	1 907	35	1 253	23	395	160		99	1	19	149	0	1 253	3 166	1 422	57	88	76	66	8	13
Panama	3 232	1 637	1 637	51	860	27	505	216		56	9	61	121		873	1 467	656	108	131	63	53	13	14
Paraguay	6 158	2 353	2 075	34	1 260	20	665	150					273		1 265	4 214	1 890	49	67	65	61	7	12
Peru	27 968	35 541	33 421	119	18 490	66	5 592	5 335	809	3 195	758	579	457	326	19 299	47 976	21 492	63	86	77	55	16	14
Puerto Rico	3 955	113	113	3	60	2	37	16	0	0	0	0	0	0	102	180	81	63	74	62	53	14	
Saint Kitts & Nevis	43	2	0	0	0	0	0	0	0	0	0	0	2		2	5	2	0	0				100
Saint Lucia	161	14	14	9	11	7	1	0	0	2	0	0	0		11	27	12	45	92	92	79		14
St Vincent & Grenadines	119	7	7	6	6	5	1	0	0	0	0	0	0	0	7	34	15	20	39	86	86		
Suriname	449	118	117	26	49	11	54	6	2	6	0	2	0	0	111	292	129	38	38	48	42	5	7
Trinidad & Tobago	1 305	179	166	13	95	7	50	12	0	9	1	12			96	117	51	135	185	66	57	7	12
Turks & Caicos Islands	26															5	2						
Uruguay	3 463	626	622	18	355	10	147	73	32	15	0	4	0		433	957	429	63	83	71	57	12	3
US Virgin Islands	112															12	5						
USA	298 213	14 097	14 097	5	5 089	2	6 039	2 968	1						9 578	13 499	5 978	104	85	46	36	21	
Venezuela	26 749	6 950	6 847	26	3 653	14	1 853	1 094		247	8	83	12		3 768	11 126	4 978	59	73	66	53	16	5
AMR	**890 757**	**238 239**	**227 616**	**26**	**124 788**	**14**	**55 740**	**33298**	**3685**	**10 105**	**1 951**	**4 086**	**6 405**	**2 106**	**137 783**	**351 703**	**156 585**	**62**	**80**	**69**	**55**	**15**	**9**

ss+ indicates sputum smear-positive; ss-, sputum smear-negative; unk., sputum smear result unknown; re-treat., re-treatment; pulm.lab. confirmed, pulmonary case confirmed by positive smear or culture. See Explanatory notes on page 163 for further details. Data can be downloaded from www.who.int/tb

Table A2.3 **DOTS coverage, case notifications and case detection rates, the Americas, 2005**

		TB cases reported from DOTS services													Estimated incidence and case detection rate				Proportions			
	DOTS	New and relapse		New pulmonary		New extra-	Other	Re-treatment cases					New pulm.	Estimated incidence		Case detection rate		ss+	ss+	Extrapulm.	Re-treat.
	coverage	(WHO total)		ss+		ss- / unk.	pulmonary	new	Relapse	After failure	After default	Other re-treat.	Other	lab. confirm.	all forms	ss+	all new	new ss+	(% of	(% of	(% of	(% of
	%	number	rate	number	rate	number	number	number	number	number	number	number	number	number	number	number	%	%	pulm.)	new+relapse)	new+relapse)	new+re-treat.)
Anguilla															3	1						
Antigua & Barbuda	100	6	7	6	7	0	0	0	0	0	0	0	0	6	5	2	111	246	100	100		
Argentina	100	9 770	25	4 709	12	3 357	1 561	0	143	381		285	806	5 171	15 869	7 069	61	67	58	48	16	8
Bahamas															124	54						
Barbados															31	14						
Belize	100	102	38	59	22	29	3	0	11	1	3	0	0	59	131	58	69	102	67	58	3	14
Bermuda															3	1						
Bolivia	47	9 748	106	6 278	68	1 250	1 673		547	35	190			6 844	19 329	8 688	48	72	83	64	17	8
Brazil	68	51 452	28	26 224	14	15 898	7 229		2 101	141	1 589	1 429	0	27 186	111 050	49 019	44	53	62	51	14	10
British Virgin Islands	100	0	0	0	0	0	0	0	0	0	0	0	0	0	3	1	0	0				
Canada	100	1 484	5	433	1	446	562	4	39			64	68	735	1 522	679	95	64	49	29	38	7
Cayman Islands															2	1						
Chile	100	2 134	13	1 186	7	185	622		141	6	85			1 509	2 377	1 058	84	112	87	56	29	10
Colombia	50	3 624	8	2 404	5	499	566		155					2 404	20 496	9 179	17	26	83	66	16	4
Costa Rica	100	534	12	330	8	81	104		19	5	21			411	622	279	83	118	80	62	19	8
Cuba	100	770	7	467	4	160	103		40	5	4		2	530	1 057	475	69	98	74	61	13	6
Dominica															12	6						
Dominican Republic	80	4 735	53	2 724	31	1 014	591		406	37	253			2 724	8 053	3 593	54	76	73	58	12	14
Ecuador	70	2 915	22	2 151	16	233	225		306	72	153	22		2 348	17 331	7 781	15	28	90	74	8	17
El Salvador	100	1 794	26	1 059	15	402	255		78	9	27	0	0	1 059	3 523	1 574	49	67	72	59	14	6
Grenada															5	2						
Guatemala	100	3 365	27	2 420	19	588	256		101	13	45		438	2 420	9 797	4 377	33	55	80	72	8	5
Guyana	50	482	64	196	26	252	27	2	5	0	11	0	0	196	1 121	495	43	40	44	41	6	3
Haiti	55	12 933	152	6 625	78	4 772	1 363		173		24			6 625	26 051	11 537	49	57	58	51	11	2
Honduras	100	3 333	46	2 069	29	721	362		181					2 249	5 643	2 510	56	82	74	62	11	5
Jamaica	100	90	3	53	2	31	6	0	0	0	2	3	0	59	196	87	46	61	63	59	7	5
Mexico	100	18 524	17	11 997	11	421	2 657	2 831	618	361	73	974		15 249	24 255	10 890	74	110	97	65	14	10
Montserrat	100	1	22	1	22	0	0	0	0	0	0	0	0	1	0	0	246	546	100	100		
Netherlands Antilles															17	7						
Nicaragua	70	1 907	35	1 253	23	395	160		99	1	19	149	0	1 253	3 166	1 422	57	88	76	66	8	13
Panama	100	1 637	51	860	27	505	216		56	9	61	121		873	1 467	656	108	131	63	53	13	14
Paraguay	54	919	15	618	10	245	56					139		619	4 214	1 890	22	33	72	67	6	13
Peru	100	33 421	119	18 490	66	5 592	5 335	809	3 195	758	579	457	326	19 299	47 976	21 492	63	86	77	55	16	14
Puerto Rico	100	113	3	60	2	37	16	0	0	0	0	0	0	102	180	81	63	74	62	53	14	
Saint Kitts & Nevis	100	0	0	0	0	0	0	0	0	0	0	2		2	5	2	0	0				100
Saint Lucia	100	14	9	11	7	1	0	0	2	0	0	0		11	27	12	45	92	92	79		14
St Vincent & Grenadines	100	7	6	6	5	1	0	0	0	0	0	0	0	7	34	15	20	39	86	86		
Suriname	0														292	129						
Trinidad & Tobago	0														117	51						
Turks & Caicos Islands															5	2						
Uruguay	100	622	18	355	10	147	73	32	15	0	4	0		433	957	429	63	83	71	57	12	3
US Virgin Islands															12	5						
USA	100	14 097	5	5 089	2	6 039	2 968	1						9 578	13 499	5 978	104	85	46	36	21	
Venezuela	100	6 847	26	3 653	14	1 853	1 094		247	8	83	12		3 768	11 126	4 978	59	73	66	53	16	5
AMR	**88**	**187 380**	**21**	**101 786**	**11**	**45 154**	**28 083**	**3 679**	**8 678**	**1 842**	**3 226**	**3 657**	**1 640**	**113 730**	**351 703**	**156 585**	**51**	**65**	**69**	**54**	**15**	**9**

ss+ indicates sputum smear-positive; ss-, sputum smear-negative; unk., sputum smear result unknown; re-treat., re-treatment; pulm.lab. confirmed, pulmonary case confirmed by positive smear or culture. See Explanatory notes on page 163 for further details. Data can be downloaded from www.who.int/tb

Table A2.4 **Laboratory services, collaborative TB/HIV activities and management of MDR-TB, the Americas, 2004–2005**

	Laboratory services, 2005				Collaborative TB/HIV activities								Management of MDR-TB, 2005				
					2004				2005								
	number of labs working with NTP			number of labs included in EQA	TB pts tested for HIV	TB pts HIV-positive	HIV+ TB pts CPT	HIV+ TB pts ART	TB pts tested for HIV	TB pts HIV-positive	HIV+ TB pts CPT	HIV+ TB pts ART	Lab-confirmed MDR	DST in new cases	MDR in new cases	Re-treatment DST	Re-treatment MDR
	smear	culture	DST														
Anguilla																	
Antigua & Barbuda	1				4	2	2	2	6	3	3	3	0	0	0	0	0
Argentina	724	101	19	365									276	2 369	66	1 290	210
Bahamas																	
Barbados																	
Belize	2	0	0	1	68	11	11	4	106	25	25	24	0	0	0	3	0
Bermuda																	
Bolivia	468	7	1	468	0	0	0	0	0	0	0	0	63				
Brazil	4 000	187	33	1 800	37 748	5 734	4 874	4 874	37 634	5 227	4 442	4 443	373			5 917	373
British Virgin Islands	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Canada	10	10	10		372	36			363	57			16	982	8	88	8
Cayman Islands																	
Chile	220	42	1	220									6	49	0	226	6
Colombia	2 044	688	3	33													
Costa Rica	102	26	1	1									3	2	2	1	1
Cuba	444	21	158	53	736	1	0	1					0	158	0	18	0
Dominica																	
Dominican Republic	168	5	1	126	65	3	0	0	78	3	0	0					
Ecuador	277	9	1	277					10	3	0		253	117	12	502	241
El Salvador	199	5	1		1 135	84		9	1 544	188		71	12	12	7	14	7
Grenada																	
Guatemala	156	2 007	192	9	1 170	712		781	1 210	772		1 160	20	20	20	40	20
Guyana	3	1	0	3	267	30			456	80							
Haiti	190	1	0	2					5 062	1 797				53			
Honduras	139	5	1	96					1 455	200	0	0	0	3	3	0	0
Jamaica	3	1	1	2	97	26	13	4	79	28	13	18	0	11	0	2	0
Mexico	640	32	4	31					1 382	217			394	314	63	74	63
Montserrat	1	1	0	1	1	1	1	1	1	0	0	0	1	0	0	0	0
Netherlands Antilles																	
Nicaragua	138	1	1	1	400	9			556	30			50	8	8	8	8
Panama	57	5	1	57	967	207		34	1 161	200		30	5	29	3	48	2
Paraguay	80	5	1	58									13				
Peru	1 334	67	6	1 406					1 066	668			2 748			2 336	2 102
Puerto Rico	1	1	1		103	35			91	28			0	94	0	0	0
Saint Kitts & Nevis	1	1	1	1									0	0	0	0	0
Saint Lucia	2	0	0	2	14				12	0			0	0	0	0	0
St Vincent & Grenadines	1	1	0	1	10	2		2	7	0	0	0	6	6	6	0	0
Suriname	4	1	0	1	67	17	5	0	87	18		2	1	49	1	0	0
Trinidad & Tobago	1	1	1	1	87	38	32	14	154	46	42	15	3	0	0	3	3
Turks & Caicos Islands																	
Uruguay	1	1	1	1	611	99	0		577	78	0						
US Virgin Islands																	
USA	1 705			1 705	8 280	1 064			8 076	1 034			122	13 308	98	683	23
Venezuela	323	26	1	1	2 363	332		114	2 678	392			21	163	13	15	15
AMR	**13 440**	**3 260**	**442**	**6 723**	**54 565**	**8 443**	**4 938**	**5 840**	**63 851**	**11 094**	**4 525**	**5 766**	**4 386**	**17 747**	**310**	**11 268**	**3 082**

ART indicates antiretroviral therapy; CPT, co-trimoxazole preventive therapy; DST, drug susceptibility testing; EQA, external quality assurance; HIV+, HIV-positive; pts, patients. See Explanatory notes on pages 163 for further details. Some countries provided the number of TB patients found to be HIV-positive, but did not provide the number of TB patients tested. The regional total of TB patients tested is therefore lower than the number of patients actually tested, and cannot be used to calculated a regional estimate of HIV prevalence in TB patients. Data can be downloaded from www.who.int/tb

Table A2.5 **Treatment outcomes, the Americas, 2004 cohort**

	New smear-positive cases, DOTS											New smear-positive cases, non-DOTS											Smear-positive re-treatment cases, DOTS								
	Number of cases		% of notif	% of cohort							%	Number of cases		% of notif	% of cohort							%	Number	% of cohort							%
	Notified	Regist'd	regist'd	Cured	Compl-eted	Died	Failed	Default	Trans-ferred	Not eval.	Success	Notified	Regist'd	regist'd	Cured	Compl-eted	Died	Failed	Default	Trans-ferred	Not eval.	Success	Regist'd	Cured	Compl-eted	Died	Failed	Default	Trans-ferred	Not eval.	Success
Anguilla												0																			
Antigua & Barbuda	0	4		100						0	100																				
Argentina	4 760	4 760	100	25	33	5	0	7	4	26	58												834	16	31	4	0	8	6	35	47
Bahamas	37																														
Barbados	19																														
Belize	34	25	74	60	0	16	0	24	0	0	60												11	73	9	0	0	18	0	0	82
Bermuda												0																			
Bolivia	6 213	6 214	100	78	2	4	1	5	4	6	80												754	62	4	4	2	5	4	20	65
Brazil	22 532	22 532	100	46	35	5	1	8	5	0	81	20 349	20 349	100	32	38	5	1	10	11	4	70	5 029	25	27	7	1	16	9	15	51
British Virgin Islands												2	2	100	100						0	100									
Canada	438	438	100	6	56	4	0	6	1	27	62												118	7	47	12	0	1	3	31	54
Cayman Islands	1																														
Chile	1 297	1 247	96	83		11	0	6	1	0	83																				
Colombia	1 663	1 969	118	75	10	4	2	6	3	0	85	5 977	5 671	95	64	14	6	2	8	6	0	78									
Costa Rica	419																														
Cuba	453	453	100	90	3	5	0	2		0	93												61	69	11	5	2	2	0	11	80
Dominica																															
Dominican Republic	2 521	2 521	100	74	6	2	2	9	2	5	80	199	199	100	41	24	9	1	13	5	8	65	561	43	7	6	7	16	3	18	50
Ecuador	3 259	1 969	60	81	4	3	2	6	2	2	85	1 081											499	49	10	6	8	18	4	5	59
El Salvador	926	926	100	89	1	5	1	4	0	0	90												135	71	1	5	5	13	0	4	73
Grenada												2																			
Guatemala	2 339	2 603	111	75	10	1	1	2	1	10	85																				
Guyana	123	123	100	53	19	2	0	18	8	0	72	41	41	100	24	7	2	2	12	0	51	32	1	100	0	0	0	0	0	0	100
Haiti	5 470	5 470	100	73	7	6	1	5	5	2	80	1 574	1 574	100	58	9	6	2	14	4	7	67	213	61	10	9	3	8	7	2	71
Honduras	2 011	1 952	97	74	11	5	1	4	5	0	85												195	55	11	10	4	14	6	0	66
Jamaica	69	69	100	6	41	14	1	32	6	0	46												7	0	43	14	0	43	0	0	43
Mexico	10 754	11 597	108	76	6	6	1	7	4	0	82	460											989	56	5	6	6	17	9	0	61
Montserrat	0	1							100	0																					
Netherlands Antilles												8																			
Nicaragua	1 327	1 327	100	73	14	4	1	6	2	0	87												169	75	5	4	2	12	2	0	79
Panama	861	861	100	65	14	8	1	10	2	0	78	23	23	100	43	4	4		48		0	48	290	21	37	8	3	29	1	0	58
Paraguay	368	368	100	45	38	6	0	6	2	3	83	831	831	100	10	50	5	0	14	3	18	61									
Peru	18 289	15 807	86	86	4	2	3	4	1	0	90												1 472	75	4	5	5	10	1	0	79
Puerto Rico	65	65	100	71	0	15	0	3	0	11	71																				
Saint Kitts & Nevis																							1	0	0	0	0	100	0	0	0
Saint Lucia	11	11	100	36	27	36	0	0	0	0	64												2	0	50	50	0	0	0	0	50
St Vincent & Grenadines	5	7	140	86		14	0	0	0	0	86																				
Suriname												37	37	100	62	11	14	0	8	0	5	73									
Trinidad & Tobago												71	71	100	68	10	7	1	14		0	77									
Turks & Caicos Islands																															
Uruguay	373																														
US Virgin Islands																															
[1] USA	9 578	9 578	100		61	9		3	2	25	61																				
Venezuela	3 776	3 716	98	81		4	0	10	4	0	81												299	80	0	5	1	9	2	3	80
AMR	**99 991**	**96 613**	**97**	**60**	**19**	**5**	**1**	**6**	**3**	**5**	**80**	**30 655**	**28 798**	**94**	**39**	**32**	**5**	**1**	**10**	**9**	**4**	**71**	**11 640**	**41**	**18**	**6**	**3**	**14**	**6**	**12**	**59**

[1] Indicates that the outcomes belong to the lab-confimred cases, i.e. smear and or culture-positive

Not eval. indicates not evaluated (percentage of registered cases for which outcomes were not recorded); success, sum of cured and completed; cases regist'd, the denominator for calculating treatment outcomes. The number of cases registered for treatment in 2004 is used as the denominator for calculating treatment outcomes unless it is less than the sum of outcomes, in which case the sum of outcomes is used. If the number of cases registered is not reported, then the number of cases notified in 2004 is used, or the sum of outcomes if the latter is greater. Data can be downloaded from www.who.int/tb

Table A2.6 **Re-treatment outcomes, the Americas, 2004 cohort**

	Relapse, DOTS									After failure, DOTS									After default, DOTS								
		% of cohort							%		% of cohort							%		% of cohort							%
	Number regist'd	Cured	Compl-eted	Died	Failed	Default	Trans-ferred	Not eval.	Success	Number regist'd	Cured	Compl-eted	Died	Failed	Default	Trans-ferred	Not eval.	Success	Number regist'd	Cured	Compl-eted	Died	Failed	Default	Trans-ferred	Not eval.	Success
Anguilla																											
Antigua & Barbuda																											
Argentina	168	23	45	8	1	11	2	10	68	420	18	24	2	0		7	49	42									
Bahamas																											
Barbados																											
Belize	11	73	9			18		0	82																		
Bermuda																											
Bolivia																											
Brazil	2 730	30	31	7	1	10	8	14	60	104	22	19	0		9	3	47	41	2 195	19	22	8	1	24	11	15	41
British Virgin Islands																											
Canada	49	10	43	12	0	0	2	33	53																		
Cayman Islands																											
Chile																											
Colombia																											
Costa Rica																											
Cuba	47	74	15	6				4	89	7	43			14	14		29	43	7	57						43	57
Dominica																											
Dominican Republic	325	54	6	5	7	10	3	16	60	35	23	9	9	37	17	6	0	31	201	29	8	8	2	25	2	25	37
Ecuador	261	61	9	4	7	13	3	4	70	56	43	4	9	30	7	2	5	46	159	36	10	8	3	31	6	6	47
El Salvador	75	80	3	3	5	8	0	1	83	21	62	0		14	10	0	14	62	39	59	0		0		0	41	59
Grenada																											
Guatemala																											
Guyana																			1	100						0	100
Haiti	186	61	9	10	3	6	8	2	70										27	56	19	4	4	15	4	0	74
Honduras	195	55	11	10	4	14	6	0	66																		
Jamaica	1	0	100	0	0	0	0	0	100	1	0	0	0	0		0	100	0	1	0	0	0	0		0	100	0
Mexico	534	66	5	7	5	10	7	0	71	69	41	1	9	30	7	12	0	42	386	45	6	6	4	30	10	0	51
Montserrat																											
Netherlands Antilles																											
Nicaragua	99	81	5	6	1	7	0	0	86	12	75	8	8	0	0		8	83	58	64	3	0		22	5	5	67
Panama	54	57	17	9	2	15		0	74	10	40		10	20	30		0	40	83	33	20	4	4	40		0	53
Paraguay																											
Peru	1 245	77	4	5	5	8	2	0	81										227	64	4	6	4	20	1	0	68
Puerto Rico																											
Saint Kitts & Nevis																											
Saint Lucia	2	0	50	50	0	0	0	0	50	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0		0
St Vincent & Grenadines																											
Suriname																											
Trinidad & Tobago																											
Turks & Caicos Islands																											
Uruguay																											
US Virgin Islands																											
USA																											
Venezuela	289	82		5	1	10	2	0	82	10	20						80	20									
AMR	**6 271**	**51**	**18**	**7**	**3**	**9**	**5**	**8**	**68**	**745**	**25**	**17**	**4**	**9**	**9**	**6**	**30**	**42**	**3 384**	**28**	**17**	**7**	**2**	**25**	**9**	**12**	**45**

Not eval. indicates not evaluated (percentage of registered cases for which outcomes were not recorded); success, sum of cured and completed; cases regist'd, the denominator for calculating treatment outcomes. The number of cases registered for treatment in 2004 is used as the denominator for calculating treatment outcomes unless it is missing or is less than the sum of outcomes, in which case the sum of outcomes is used. Data can be downloaded from www.who.int/tb

Table A2.7 **DOTS treatment success and case detection rates, the Americas, 1994–2005**

	DOTS new smear-positive treatment success (%)											DOTS new smear-positive case detection rate (%)										
	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Anguilla																						
Antigua & Barbuda					50	50	100	100	100		100					41	123	41	82	41		246
Argentina					55	59	54	64	58	66	58			4	7	20	31	39	71	66	65	67
Bahamas					72	66		64	59	62						62	95		56	52	67	
Barbados										100								39	34		135	
Belize						88	78	66	85	89	60		96	65			84	99	130	111	60	102
Bermuda																						
Bolivia	66	62	71	77	62	74	79	82	84	81	80	39	78	73	76	75	73	76	78	72	71	72
Brazil					91	89	73	67	75	83	81				4	4	7	8	9	18	45	53
British Virgin Islands																						
Canada				40	39	36	35	42	36	45	62	44	45	52	50	55	63	61	57	47	63	64
Cayman Islands								100										116			112	
Chile	83	79	80	77	83	83	82	83	86	85	83	70	76	82	88	90	84	95	106	104	114	112
Colombia					74	82	80	85	84	83	85					29	87		9	8	18	26
Costa Rica						81	76	72	85	94						31	119	87	75	116	148	118
Cuba	86	90	92	90	94	91	93	93	92	93	93	83	89	88	92	96	97	87	90	91	88	98
Dominica			100					100						84	51				35			
Dominican Republic						81	79	85	78	81	80					9	6	9	41	65	69	76
Ecuador								82	84	84	85							5	30	37	41	28
El Salvador					77	78	79	88	88	88	90			45	52	55	56	57	57	52	57	67
Grenada																						
Guatemala	62	61	81	73	79	81	86	85	84	91	85	43	56	56	56	56	50	40	44	42	54	55
Guyana						91	91	90	85	57	72						10	20	11	32	27	40
Haiti				73	79	70	73	75	78	78	80			2	12	23	22	29	39	45	47	57
Honduras					93	88	89	86	87	87	85				2	15	101	118	121	85	80	82
Jamaica		67	72	79	89	74	45	78	49	53	46		91	95	90	102	102	85	68	92	79	61
Mexico			75	65	78	80	76	83	84	83	82			15	31	43	77	107	86	103	93	110
Montserrat																				625		546
Netherlands Antilles																						
Nicaragua	81	80	79	81	82	81	82	83	82	84	87	72	83	84	86	85	84	90	82	91	89	88
Panama				51	51	80	67	65	73	74	78				12	8	35	78	92	88	130	131
Paraguay	46	51					77	86	92	85	83	14	55				4	9	8	18	20	33
Peru	81	83	89	90	92	93	90	90	92	89	90	101	88	94	98	90	86	86	85	79	82	86
Puerto Rico		68	69	69	72	70	64	76	60	66	71		57	72	67	74	62	62	72	63	73	74
Saint Kitts & Nevis					25	50									185	94			48			
Saint Lucia				67	82	89	100	50	25	89	64			111	80	72	57	49	65	66	91	92
St Vincent & Grenadines				86		100	100	80			86				18		56	19		38	32	39
Suriname																						
Trinidad & Tobago																						
Turks & Caicos Islands					71											112						
Uruguay	83	68	80	77	84	83	85	85	82	86		76	94	94	83	88	79	77	70	86	86	83
US Virgin Islands		50											73									
USA		76	79	79	81	82	83	83	83	83	61	84	82	83	84	85	84	85	84	86	86	85
Venezuela	68	74	80	72	81	82	76	80	82	82	81	72	74	74	77	81	77	67	64	79	77	73
AMR	**77**	**77**	**83**	**82**	**81**	**83**	**81**	**82**	**83**	**83**	**80**	**27**	**28**	**30**	**34**	**37**	**45**	**44**	**47**	**51**	**60**	**65**

Treatment success, sum of cured and completed; DOTS new smear-positive case detection rate, notified (new and relapse) cases divided by estimated incident cases. The table includes updated information; data shown here may differ from those published in previous reports. Data can be downloaded from www.who.int/tb

Table A2.8 **New smear-positive case notification by age and sex, absolute numbers, DOTS and non-DOTS, the Americas, 2005**

	Male							Female							All							Male/female
	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+	ratio
Anguilla																						
Antigua & Barbuda				1	1				2	2						2	2	1	1			0.5
Argentina	64	621	530	358	384	340	348	90	530	474	290	198	169	240	154	1 151	1 004	648	582	509	588	1.3
Bahamas																						
Barbados																						
Belize	0	8	8	6	8	5	3	0	4	4	4	3	2	4	0	12	12	10	11	7	7	1.8
Bermuda																						
Bolivia	157	1 320	725	439	391	346	415	160	846	533	276	226	182	262	317	2 166	1 258	715	617	528	677	1.5
Brazil	317	5 074	6 119	6 128	5 259	2 803	2 140	355	3 496	3 663	2 626	1 897	1 112	1 104	672	8 570	9 782	8 754	7 156	3 915	3 244	2.0
British Virgin Islands																						
Canada	3	37	45	44	40	20	68	6	28	40	27	24	13	37	9	65	85	71	64	33	105	1.5
Cayman Islands																						
Chile	3	74	128	179	162	115	133	4	55	78	60	56	36	93	7	129	206	239	218	151	226	2.1
Colombia	178	623	685	666	687	510	695	179	581	533	457	389	292	395	357	1 204	1 218	1 123	1 076	802	1 090	1.4
Costa Rica	1	43	38	53	34	20	34	1	21	31	18	16	6	14	2	64	69	71	50	26	48	2.1
Cuba	2	20	73	90	50	58	51	2	14	17	26	13	22	29	4	34	90	116	63	80	80	2.8
Dominica																						
Dominican Republic	43	399	483	386	228	123	105	57	339	332	209	119	72	54	100	738	815	595	347	195	159	1.5
Ecuador	48	446	468	308	237	150	159	48	329	305	199	139	85	127	96	775	773	507	376	235	286	1.5
El Salvador	5	97	140	128	104	74	117	6	85	82	59	50	42	70	11	182	222	187	154	116	187	1.7
Grenada																						
Guatemala	39	251	258	185	187	127	115	38	339	245	277	176	88	95	77	590	503	462	363	215	210	0.9
Guyana	12	48	130	116	81	41	20	14	41	62	41	30	11	9	26	89	192	157	111	52	29	2.2
Haiti	69	1 045	1 035	701	451	222	156	116	1 097	1 099	633	414	170	132	185	2 142	2 134	1 334	865	392	288	1.0
Honduras	13	238	280	215	152	134	152	27	219	222	125	107	81	104	40	457	502	340	259	215	256	1.3
Jamaica	0	4	6	6	10	6	7	0	1	5	4	0	1	3	0	5	11	10	10	7	10	2.8
Mexico	100	1 095	1 376	1 314	1 238	1 042	1 288	125	771	733	710	784	637	784	225	1 866	2 109	2 024	2 022	1 679	2 072	1.6
Montserrat					1														1			
Netherlands Antilles																						
Nicaragua	17	163	159	116	106	61	79	23	135	122	103	61	54	47	40	298	281	219	167	115	126	1.3
Panama	5	76	129	129	84	57	49	11	73	81	62	33	30	41	16	149	210	191	117	87	90	1.6
Paraguay	23	168	185	136	117	87	99	31	89	98	69	52	29	71	54	257	283	205	169	116	170	1.9
Peru	371	3 802	2 670	1 513	1 075	641	708	375	2 674	2 111	1 046	699	333	472	746	6 476	4 781	2 559	1 774	974	1 180	1.4
Puerto Rico	0	4	4	7	9	7	7	0	3	2	5	4	1	7	0	7	6	12	13	8	14	1.7
Saint Kitts & Nevis																						
Saint Lucia	0	0	0	0	2	1	2	1	1	0	1	1	0	2	1	1	0	1	3	1	4	0.8
St Vincent & Grenadines	0	0	0	2	1	0	2	0	0	1	0	1	0	0	0	0	1	2	2	0	2	2.5
Suriname	0	7	8	12	6	3	4	0	3	2	1	2	1	2	0	10	10	13	8	4	6	3.6
Trinidad & Tobago	0	10	11	13	21	10	3	0	4	9	3	5	4	3	0	14	20	16	26	14	6	2.4
Turks & Caicos Islands																						
Uruguay	1	42	48	39	45	34	36	1	33	30	17	9	8	12	2	75	78	56	54	42	48	2.2
US Virgin Islands																						
USA	14	383	535	666	767	499	624	11	241	348	276	242	161	322	25	624	883	942	1 009	660	946	2.2
Venezuela	35	312	395	413	402	265	332	37	351	299	267	183	146	216	72	663	694	680	585	411	548	1.4
AMR	**1 520**	**16 410**	**16 671**	**14 369**	**12 340**	**7 801**	**7 951**	**1 718**	**12 405**	**11 563**	**7 891**	**5 933**	**3 788**	**4 751**	**3 238**	**28 815**	**28 234**	**22 260**	**18 273**	**11 589**	**12 702**	**1.6**

For some countries, breakdown of notified cases by age and sex is missing, or is provided for a subset of cases. See Explanatory notes on page 164 for further details. Data can be downloaded from www.who.int/tb

Table A2.9 **New smear-positive case notification rates by age and sex, DOTS and non-DOTS, the Americas, 2005**

	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	19	18	15	19	23	22	2	16	16	12	9	10	10	2	17	17	14	14	16	15
Bahamas																					
Barbados																					
Belize	0	28	37	41	82	91	52	0	14	19	27	32	38	69	0	21	28	34	58	65	61
Bermuda																					
Bolivia	9	147	108	92	116	159	224	9	96	78	55	62	75	114	9	122	93	73	88	115	163
Brazil	1	28	41	49	57	50	43	1	20	24	20	19	18	17	1	24	32	34	37	33	28
British Virgin Islands																					
Canada	0	2	2	2	2	1	4	0	1	2	1	1	1	2	0	1	2	1	1	1	2
Cayman Islands																					
Chile	0	5	11	14	17	19	24	0	4	7	5	6	5	12	0	5	9	10	11	12	17
Colombia	2	15	19	22	32	41	68	3	14	15	14	16	21	30	3	14	17	18	24	30	47
Costa Rica	0	10	11	17	15	16	29	0	5	9	6	7	5	10	0	7	10	11	11	10	19
Cuba	0	2	8	8	8	11	9	0	2	2	2	2	4	4	0	2	5	5	5	7	7
Dominica																					
Dominican Republic	3	43	67	67	61	56	58	4	38	47	36	32	33	29	3	40	57	51	46	44	43
Ecuador	2	34	45	38	40	42	44	2	26	30	25	23	23	31	2	30	37	31	32	32	37
El Salvador	0	15	23	37	43	44	73	1	13	13	14	18	22	33	0	14	18	25	30	33	51
Grenada																					
Guatemala	1	20	33	38	52	49	45	1	26	27	47	43	31	33	1	23	30	43	47	40	39
Guyana	11	66	189	249	266	233	123	13	57	88	77	80	49	40	12	61	138	157	164	130	75
Haiti	4	103	164	187	186	132	103	7	110	170	155	137	81	70	6	107	167	170	159	103	84
Honduras	1	31	51	58	64	98	119	2	29	41	34	44	56	69	1	30	46	46	54	77	92
Jamaica	0	2	3	4	8	8	8	0	0	3	2	0	1	3	0	1	3	3	4	5	5
Mexico	1	11	15	20	28	37	50	1	8	8	10	16	20	25	1	9	11	15	21	28	36
Montserrat																					
Netherlands Antilles																					
Nicaragua	2	26	37	44	61	64	98	2	22	29	37	33	52	47	2	25	33	40	46	58	70
Panama	1	26	49	58	55	57	53	2	26	31	28	21	30	41	2	26	40	43	38	43	46
Paraguay	2	26	41	39	45	68	100	3	14	22	20	20	22	54	2	20	32	30	33	45	74
Peru	8	139	116	86	87	83	104	8	100	94	60	57	42	60	8	120	105	73	72	62	80
Puerto Rico	0	1	1	3	4	4	3	0	1	1	2	2	0	3	0	1	1	2	3	2	3
Saint Kitts & Nevis																					
Saint Lucia	0	0	0	0	27	22	39	4	6	0	9	13	0	31	2	3	0	5	20	11	35
St Vincent & Grenadines	0	0	0	25	23	0	60	0	0	10	0	24	0	0	0	0	5	13	24	0	26
Suriname	0	16	24	37	30	25	31	0	7	6	3	9	7	13	0	11	15	20	19	16	21
Trinidad & Tobago	0	7	10	14	28	20	7	0	3	8	3	6	8	6	0	5	9	9	17	14	6
Turks & Caicos Islands																					
Uruguay	0	16	18	18	24	24	20	0	13	12	8	5	5	4	0	14	15	13	14	14	10
US Virgin Islands																					
USA	0	2	3	3	4	3	4	0	1	2	1	1	1	2	0	1	2	2	2	2	3
Venezuela	1	12	19	23	32	33	53	1	14	14	15	14	18	30	1	13	17	19	23	26	41
AMR	**1**	**21**	**25**	**24**	**25**	**24**	**25**	**1**	**17**	**17**	**13**	**11**	**11**	**11**	**1**	**19**	**21**	**18**	**18**	**17**	**17**

Rates are per 100 000 population of each age/sex group. Rates are calculated excluding those countries for which breakdown of notified cases or population by age and sex is missing. Data can be downloaded from www.who.int/tb

Table A2.10 **Number of TB cases notified, the Americas, 1980–2005**

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Anguilla	0	0	4	0	0	1	0	0	0	0	0	0	0			2		0				0	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	1		6
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	11 548	10 728	10 619	9 770
Bahamas	70	67	54	58	53	63	52	43	51	52	46	53	63	60	78	57	59	88	75	76	82		44	38	53	
Barbados	64	3	30	17	14	12	7	3	4	5	5	5	6			3	3	5	7	2	3	6	5		19	
Belize	21	33	44	140	35	25	23	41	28	30	57	89	65	80	59	95	99	107	123	104	106	136	135	99	83	102
Bermuda	1	2	5	10	3	3	6	2	1	2	0	3	4			4	0	4	0	0	0	0	0		6	
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	9 836	9 801	9 748
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	80 114	86 881	80 209
British Virgin Islands																		3			1	1	1	1	2	0
Canada	2 762	2 526	2 473	2 355	2 356	2 144	2 145	1 972	1 947	2 035	1 968	2 012	2 107	2 011	2 066	1 921	1 849	1 969	1 773	1 791	1 667	1 657	1 602	1 574	1 533	1 484
Cayman Islands	0	2	0	1	1	4	1	0	0	2	2	3	3	2		2	0	0	3	2	5	1	0	0	1	
Chile	8 523	7 337	6 941	6 989	6 561	6 644	6 854	6 280	6 324	6 728	6 151	5 498	5 304	4 598	4 138	4 150	4 178	3 880	3 652	3 429	3 021	3 006	2 448	2 226	2 664	2 134
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	11 640	11 242	10 360
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	527	712	534
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	1 183	926	898	840	784	770
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	4 696	4 549	5 003
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	6 442	6 122	4 416
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	1 383	1 406	1 794
Grenada	17	1	1	6	4	2	1	2	0	4	0	1	3	0	3	4	0	2	2	5	0		1	2	2	
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	2 642	3 313	3 365
Guyana	124	117	135	149	165	215	190	117	150	120	168	134	182	91	266	296	314	407	318	407	422	422	590	631	603	639
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	14 004	14 533	14 311
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	6 406	5 048	4 485	3 858	3 594	3 333
Jamaica	176	178	153	157	160	130	88	133	65	86	123	121	111	115	109	109	121	118	121	115	127	121	106	120	116	90
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	17 078	15 101	18 524
Montserrat	1	0	0	1	7	9	5	13	6	5	1	1	0		0				1	2	0	0	0	1	0	1
Netherlands Antilles																	5	14	7	4	5	9	15	9	11	
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	2 283	2 220	1 907
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	1 169	1 711	1 575	1 620	1 701	1 637
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	2 175	2 298	2 075
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	31 273	33 082	33 421
Puerto Rico	686	521	473	452	418	338	363	303	275	314	159	241		256	274	262	222	257	201	200	174	121	129	115	123	113
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	1	2	0
Saint Lucia	41	39	37	48	55	21	34	25	32	28	13	25	26		24	11	35	22	20	16	9	15	17	14	15	14
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	14	8	7
Suriname	78	81	56	78	76	50	60	77	77	70	82	47	58	45	53		53	76	85	95	89	75	97	95	97	117
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	147	178	166
Turks & Caicos Islands	2	0	2	5	0	4	2	12			0	0	0	0						17		3	3	6		
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	643	727	622
US Virgin Islands	0	1	1	2	3	1	1	2	6	4	4	4			10	4	8									
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	25 108	24 205	22 727	21 210	19 751	18 287	17 501	16 309	15 946	15 056	14 840	14 515	14 097
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	6 734	6 808	6 847
AMR	**227 697**	**248 122**	**237 274**	**238 465**	**226 812**	**227 186**	**227 206**	**233 192**	**241 834**	**239 594**	**231 186**	**252 215**	**253 255**	**166 459**	**241 854**	**258 187**	**256 656**	**254 980**	**262 886**	**240 619**	**238 579**	**230 404**	**233 678**	**228 450**	**235 524**	**227 616**
Number reporting	42	42	42	42	42	42	42	42	41	41	41	42	39	33	35	39	40	41	40	40	40	40	43	40	40	34
% reporting	95	95	95	95	95	95	95	95	93	93	93	95	89	75	80	89	91	93	91	91	91	91	98	91	91	77

From 1995 on, number shown is all notified new and relapse cases (DOTS and non-DOTS). The table includes updated information; data shown here may differ from those published in previous reports. Data can be downloaded from www.who.int/tb

Table A2.11 **Case notification rates, the Americas, 1980–2005**

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Anguilla	0	0	57	0	0	14	0	0	0	0	0	0	0			19		0				0	0	0	0	
Antigua & Barbuda	13	5	0	2	5	3	11	0	5	5	2	0	9			0	4	6	5	4	5	1	5	1		7
Argentina	58	59	60	59	55	53	48	43	42	39	38	37	38	41	40	39	38	35	34	33	32	31	31	28	28	25
Bahamas	33	31	25	26	23	27	22	18	21	21	18	20	24	22	28	20	21	31	26	26	27		14	12	17	
Barbados	26	1	12	7	6	5	3	1	2	2	2	2	2			1	1	2	3	1	1	2	2		7	
Belize	15	22	29	91	22	15	14	24	16	17	31	47	33	40	28	44	45	47	53	44	44	55	53	38	31	38
Bermuda	2	4	9	18	5	5	10	3	2	3	0	5	7			7	0	6	0	0	0	0	0		9	
Bolivia	82	93	85	91	71	129	112	144	167	193	167	164	136	120	129	193	133	126	127	121	122	124	118	111	109	106
Brazil	60	69	69	66	66	62	60	58	57	55	50	56	56		48	56	53	50	56	46	45	42	46	44	47	43
British Virgin Islands																		16			5	5	5	5	9	0
Canada	11	10	10	9	9	8	8	7	7	7	7	7	7	7	7	7	6	7	6	6	5	5	5	5	5	5
Cayman Islands	0	11	0	5	5	19	5	0	0	8	8	11	10	7		6	0	0	8	5	13	2	0	0	2	
Chile	76	65	60	60	55	55	56	50	50	52	47	41	39	33	29	29	29	26	24	23	20	19	16	14	17	13
Colombia	41	39	41	45	41	38	36	35	34	33	36	34	31	30	24	26	25	20	22	27	28	27	26	26	25	23
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	13	17	12
Cuba	12	9	8	8	7	7	6	6	6	6	5	5	4	7	16	14	13	12	11	10	11	8	8	7	7	7
Dominica	27	35	24	22	7	11	48	37	10	18	8	19	18	10	16	11	13	8	6				3			
Dominican Republic	38	30	41	48	49	36	40	37	45	45	37	25	48	54	57	53	81	68	64	71	64	57	47	54	52	56
Ecuador	50	48	46	46	49	53	61	61	56	55	80	65	68	64	87	69	72	80	60	47	56	48	46	50	47	33
El Salvador	49	45	46	44	33	31	34	34	48	12	46	44	47	62	70	43	29	28	28	26	24	23	24	21	21	26
Grenada	19	1	1	7	4	2	1	2	0	4	0	1	3	0	3	4	0	2	2	5	0		1	2	2	
Guatemala	80	92	99	80	85	83	59	69	68	56	43	29	27	26	26	31	32	28	26	26	26	21	25	22	27	27
Guyana	16	15	18	20	22	29	25	16	20	16	23	18	25	12	36	40	43	55	43	55	57	57	79	84	80	85
Haiti	152	117	58	117	97	81	137	132	122	120		147				84	88	133	127	117	131	127	148	169	173	168
Honduras	47	46	45	49	52	81	98	95	86	85	75	91	80	70	78	89	72	68	81	73	100	77	67	56	51	46
Jamaica	8	8	7	7	7	6	4	6	3	4	5	5	5	5	4	4	5	5	5	4	5	5	4	5	4	3
Mexico	46	47	35	31	20	20	17	18	19	19	17	18	16	17	18	12	22	25	22	20	18	19	17	16	14	17
Montserrat	8	0	0	9	61	80	45	118	55	46	9	9	0		0				16	41	0	0	0	26	0	22
Netherlands Antilles																	3	8	4	2	3	5	8	5	6	
Nicaragua	42	118	95	83	79	74	72	81	72	80	74	69	69	66	63	63	66	60	55	53	48	48	41	43	41	35
Panama	33	29	28	21	19	28	32	34	33	28	35	35	30	45	32	49	48	53	50	48	40	57	51	52	54	51
Paraguay	43	43	43	53	49	54	44	39	36	55	51	53	43	44	39	36	42	38	35	40	36	37	37	37	38	34
Peru	92	123	119	122	120	125	124	150	177	167	174	183	233	225	208	190	172	170	174	158	149	141	135	115	120	119
Puerto Rico	21	16	14	14	12	10	11	9	8	9	5	7		7	7	7	6	7	5	5	5	3	3	3	3	3
Saint Kitts & Nevis	16	9	14	5	7	0	0	0	0	0	0	2	10	15	5	12	7	30	12	7	0	5	7	2	5	0
Saint Lucia	35	33	30	39	44	17	26	19	24	21	9	18	18		16	7	23	15	13	10	6	10	11	9	9	9
St Vincent & Grenadines	78	11	14	4	22	13	9	3	6	3	2	1	4	12	0	12	5	5	7	8	14	9	9	12	7	6
Suriname	22	23	15	21	20	13	15	20	19	18	20	12	14	11	13		13	18	20	22	21	17	22	21	22	26
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	11	14	13
Turks & Caicos Islands	27	0	24	58	0	42	20	117			0	0	0	0						93		14	14	25		
Uruguay	64	58	49	46	46	40	36	34	31	32	29	24	22	22	21	19	22	22	20	19	19	20	16	19	21	18
US Virgin Islands	0	1	1	2	3	1	1	2	6	4	4	4			9	4	7									
USA	12	12	11	10	9	9	9	9	9	9	10	10	10	10	9	8	8	7	7	6	6	6	5	5	5	5
Venezuela	28	26	26	26	28	28	28	27	24	24	28	26	26	24	23	25	25	26	27	28	26	25	24	26	26	26
AMR	**37**	**40**	**37**	**37**	**34**	**34**	**33**	**34**	**34**	**34**	**32**	**34**	**34**	**22**	**31**	**33**	**32**	**32**	**32**	**29**	**29**	**27**	**27**	**26**	**27**	**26**

Rates are per 100 000 population. The table includes updated information; data shown here may differ from those published in previous reports. Data can be downloaded from www.who.int/tb

Table A2.12 **New smear-positive cases notified, numbers and rates, the Americas, 1993–2005**

	Number of cases													Rate (per 100 000 population)												
	1993	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**
Anguilla			0		0				0	0		0				0		0				0	0		0	
Antigua & Barbuda				2			1	3	1	2	1		6				3			1	4	1	3	1		7
Argentina	5 937	5 696	5 698	5 787	5 307	5 186	4 830	4 749	5 595	5 498	4 961	4 760	4 709	17	17	16	16	15	14	13	13	15	15	13	12	12
Bahamas	41	41	38	25	57	30	37	56		32	29	37		15	15	14	9	20	10	12	19		10	9	12	
Barbados			3	3	5	4	2	3	6	5		19				1	1	2	2	1	1	2	2		7	
Belize	50	36	36	46	32	52	48	44	53	71	62	34	59	25	17	17	21	14	23	20	18	21	28	24	13	22
Bermuda			2	0		0	0	0	0	0		0				3	0		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	6 344	6 213	6 278	96	94	94	91	83	85	82	78	79	79	72	69	68
Brazil		39 167	45 650	44 503	43 490	43 554	41 619	41 186	38 478	41 371	39 938	42 881	42 093		25	28	27	26	26	24	24	22	23	22	23	23
British Virgin Islands					0			1	0	1	0	2	0					0			5	0	5	0	9	0
Canada	488	483	436	430	473	438	455	492	458	408	332	438	433	2	2	1	1	2	1	1	2	1	1	1	1	1
Cayman Islands	2		0	0	0	2	2	5	1	0	0	1		7		0	0	0	5	5	13	2	0	0	2	
Chile	2 629	1 951	1 561	1 562	1 582	1 576	1 497	1 290	1 355	1 412	1 276	1 297	1 186	19	14	11	11	11	10	10	8	9	9	8	8	7
Colombia	6 987	6 532	7 530	7 572	6 090	6 969	8 329	8 358	8 022	7 787	7 972	7 640	6 870	19	17	20	19	15	17	20	20	19	18	18	17	15
Costa Rica		230	245	302	320	353	458	349	385	328	346	419	330		7	7	8	9	9	12	9	10	8	8	10	8
Cuba	565	914	834	835	765	746	720	675	559	540	507	453	467	5	8	8	8	7	7	6	6	5	5	5	4	4
Dominica	6	8	5	7	5	5				2				8	11	7	9	7	6				3			
Dominican Republic	2 297	3 177	2 787	3 733	3 162	2 669	3 278	2 907	2 622	2 179	2 806	2 720	2 949	31	42	36	48	40	33	40	35	31	26	32	31	33
Ecuador	5 325	6 674	5 890	6 426	7 214	4 900	4 300	5 064	4 439	4 223	4 488	4 340	3 048	49	60	52	55	61	41	35	41	36	33	35	33	23
El Salvador	2 471	2 144		965	882	1 071	1 023	1 008	1 003	980	870	926	1 059	46	39		17	15	18	17	16	16	15	13	14	15
Grenada	0	3	2	0	1	2	3	0		0	2	2		0	3	2	0	1	2	3	0		0	2	2	
Guatemala	2 128	1 994	2 368	2 224	2 218	2 255	2 264	2 052	1 669	1 865	1 795	2 339	2 420	22	20	24	22	21	21	21	18	15	16	15	19	19
Guyana	51	61	85	71	105	85	178	119	174	138	244	164	240	7	8	12	10	14	12	24	16	23	18	33	22	32
Haiti				3 524	5 497	6 442	6 828	5 887	5 607	6 188	7 015	7 044	7 340				47	72	84	87	74	70	76	85	84	86
Honduras	2 016	2 385	2 306	1 808	1 928	2 311	2 415	3 404	3 141	3 080	2 139	2 011	2 069	38	44	41	31	32	38	39	53	48	46	31	29	29
Jamaica	83	61	93	81	84	90	90	90	75	60	81	69	53	3	2	4	3	3	4	4	3	3	2	3	3	2
Mexico	8 164	9 726	9 220	8 495	15 440	11 473	11 968	11 676	15 103	11 555	12 933	11 214	11 997	9	11	10	9	16	12	12	12	15	11	12	11	11
Montserrat		0				1	2	0	0	0	1	0	1		0				16	41	0	0	0	26	0	22
Netherlands Antilles				3	5	6	2	2	7	9	4	8					2	3	3	1	1	4	5	2	4	
Nicaragua	1 714	1 615	1 568	1 722	1 670	1 648	1 564	1 471	1 510	1 320	1 404	1 327	1 253	40	37	35	38	36	35	32	30	30	26	27	25	23
Panama	1 046	748	1 066	904	592	1 393	432	460	671	773	778	884	860	41	29	40	33	21	49	15	16	22	25	25	28	27
Paraguay	985	873	748	894	859	850	1 041	900	915	1 004	1 166	1 199	1 260	21	19	15	18	17	16	20	16	16	17	20	20	20
Peru	35 646	33 925	32 096	26 800	27 498	27 707	24 511	22 580	21 685	20 533	18 504	18 289	18 490	155	145	135	110	111	110	96	87	82	77	68	66	66
Puerto Rico	122	139	128	110	126	106	106	81	74	78	62	65	60	3	4	3	3	3	3	3	2	2	2	2	2	2
Saint Kitts & Nevis	2	2	4	2		4	2	0	0	1		0	0	5	5	10	5		10	5	0	0	2		0	0
Saint Lucia		17	11	22	14	10	9	7	6	8	8	11	11		12	7	15	9	7	6	5	4	5	5	7	7
St Vincent & Grenadines	11	0	5	3	2	3	4	9	3	0	6	5	6	10	0	4	3	2	3	3	8	3	0	5	4	5
Suriname				39	31	32	36	37	36	42	35	37	49				9	7	8	8	9	8	10	8	8	11
Trinidad & Tobago		55	7	58	52	82	87	115	152	60	77	71	95		4	1	5	4	6	7	9	12	5	6	5	7
Turks & Caicos Islands							2		1	2	6									11		5	9	25		
Uruguay	388	381	349	426	423	374	392	348	340	308	373	373	355	12	12	11	13	13	11	12	10	10	9	11	11	10
US Virgin Islands			2	5												2	5									
USA	9 428	8 964	8 093	7 454	6 935	6 624	6 275	5 884	5 651	5 438	5 366	5 251	5 089	4	3	3	3	3	2	2	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	3 882	3 776	3 653	13	13	14	14	14	15	15	14	14	14	15	14	14
AMR	**98 264**	**137 645**	**138 932**	**136 987**	**142 556**	**139 253**	**135 153**	**131 295**	**129 945**	**127 574**	**125 813**	**126 319**	**124 788**	**13**	**18**	**18**	**17**	**18**	**17**	**16**	**16**	**15**	**15**	**14**	**14**	**14**

Rates are per 100 000 population. The table includes updated information; data shown here may differ from those published in previous reports. Data can be downloaded from www.who.int/tb

Notes

Argentina

A national survey of MDR-TB among a sample of notified TB cases, including the assessment of HIV status, was carried out in 2005. 50–60% of TB patients were tested for HIV and 6.7% of those tested were found to be HIV-positive.

Belize

Streptomycin was unavailable for 1 month (November 2005).

Dominican Republic

A cross-sectional study of HIV seroprevalence was carried out. 549 TB patients, aged between 15 and 55 years, diagnosed between August 2004 and August 2005 in 24 health centres in 10 provinces, were tested for HIV; 8.6% were HIV-positive.

Guyana

Breakdown of notified cases by age and sex is for all notified TB cases rather than for new smear-positive cases only.

Jamaica

There were temporary shortages of ethambutol and isoniazid because the central purchasing agency was unable to obtain drugs from the usual suppliers.

Puerto Rico

All notified cases are reported as "new", as the surveillance system uses definitions which do not match those used by WHO. Furthermore, treatment outcomes do not match the definitions used by WHO.

St Vincent & Grenadines

Breakdown of notified cases by age and sex is for all pulmonary cases rather than for new smear-positive cases only.

USA

In addition to the 51 reporting areas, the United States includes 8 territories (American Samoa, Federated States of Micronesia, Guam, Northern Mariana Islands, Marshall Islands, Puerto Rico, Republic of Palau, US Virgin Islands) that report separately to WHO. The data for these 8 territories are not included in the data for the USA.

The surveillance system does not compile data to match exactly WHO definitions of pulmonary TB relapse, treatment after failure, treatment after default, and other re-treatment cases, i.e. the system does not capture failure and relapse as separate events. Furthermore, treatment outcomes do not match the definitions used by WHO. Only 50 of 51 reporting units provide data on HIV testing (the missing area represents approximately 20% of TB cases in 2005 and 12% of the population of the USA).

Summary by WHO region …
Africa …
The Americas …
Eastern Mediterranean…
Europe …
South-East Asia …
Western Pacific …

Eastern Mediterranean

NTP MANAGER (OR EQUIVALENT); PERSON FILLING OUT DATA COLLECTION FORM (IF DIFFERENT)

Afghanistan	Hayat Ahmadzai
Bahrain	Saeed Alsaffar
Djibouti	Chakib Omar
Egypt	Essam El-Moghazy; Ismail Abu Shamaa
Iran (Islamic Republic of)	Mahshid Nasehi; Shahnaz Ahmadi
Iraq	Dhafer Hashim
Jordan	Khaled Abu Rumman; Nadia Abu Sabra
Kuwait	Rashed Al-Owaish; Mohamed Gaafar
Lebanon	Mtanios Saade
Libyan Arab Jamahiriya	Ahmed Balluz
Morocco	Naima Ben Cheikh
Oman	Hassan Al-Tuhami
Pakistan	Hassan Sadiq; Ali Akbar
Qatar	Abdul Latif Al-Khal
Saudi Arabia	Riyad Al-Khlaif; Mohammad Abouzeid
Somalia	Aiyed Munim
Sudan	Ali Abdrahman; Sindani Sebit
Syrian Arab Republic	Fadia Maamari
Tunisia	Ridha Djebeniani
United Arab Emirates	Juma Bilol Fairouz; Kifah Ibrahim
West Bank and Gaza Strip[1]	Samih Shaheen
Yemen	Amin Al-Absi; Abdul-Bari Al-Hammadi

This list shows the people named on the data collection form sent to WHO in 2006, not necessarily the current NTP manager. It is intended as an acknowledgement rather than a directory.

[1] Refers to a territory.

EASTERN MEDITERRANEAN: SUMMARY OF TB CONTROL POLICIES

	DOTS COVERAGE, %	NTP MANUAL	SMEAR MICROSCOPY FOR DIAGNOSIS	STANDARDIZED CHEMOTHERAPY	DOT	MONITORING OUTCOMES	CASES NOTIFIED BY TYPE; AGE & SEX	2004 COHORT OUTCOMES REPORTED: NEW; RETREATMENT	SMEAR MICROSCOPY FREE-OF-CHARGE	DRUGS FREE-OF-CHARGE	UNINTERRUPTED DRUG SUPPLY	EQA FOR SMEAR MICROSCOPY	STRATEGIC HRD PLAN	TB CONTROL IN CURRICULA OF DOCTORS AND NURSES	UP-TO-DATE JOB DESCRIPTIONS	GUIDELINES FOR PRIVATE PRACTITIONERS	PUBLIC PROVIDERS NOTIFIED/REFERRED	PRIVATE PROVIDERS NOTIFIED/REFERRED	ISTC PROMOTED IN 2006	HEALTH SYSTEM STRENGTHENING IN PLAN	PAL IN PLAN	COMMUNITY-BASED TB CARE	PATIENTS' CHARTER PROMOTED IN 2006	OPERATIONAL RESEARCH	MDR-TB MGMT; IN LINE WITH WHO GUIDELINES	HIV COUNSELLING & TESTING	SURVEILLANCE OF HIV PREV. IN TB PTS
AFGHANISTAN	81	■■	●●	■■	■■	■■	■■	●●	■■	■■	■■	▲▲	■■	■■	■■	▲▲	●●	●●	■■	■■	■■	■■	■■	▲▲	▲▲		
BAHRAIN	100	■■	■■	■■	■■	■■	■■	●●	■■	■■	■■	■■	■■	■■	▲▲	■■	■■	■■		■■	■■	▲▲	■■	▲▲	■■	■■	■■
DJIBOUTI	100	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	▲▲	▲▲	■■	■■	■■	■■	●●	■■	■■	■■	▲▲	▲▲	▲▲	●●	■■	■■
EGYPT	100	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	●●	●●	■■	■■	■■	■■	■■	■■	■■	▲▲	■■
IRAN (ISLAMIC REPUBLIC OF)	100	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	●●	●●	■■	■■	■■	■■	■■	■■	■■	▲▲	▲▲
IRAQ	87	■■	●●	■■	■■	■■	■■	■■	■■	■■	■■	▲▲	■■	■■	■■	■■	●●	●●	■■	▲▲	▲▲	▲▲	▲▲	■■	▲▲	▲▲	▲▲
JORDAN	100	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	▲▲	■■	▲▲	■■	■■	■■
KUWAIT	100	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	▲▲	■■	■■	■■	■■	■■	■■	■■
LEBANON	100	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	▲▲	■■	■■	■■	■■	●●	■■	■■	▲▲	▲▲	▲▲	▲▲	■■	■■	▲▲	▲▲
LIBYAN ARAB JAMAHIRIYA	100	■■	■■	■■	■■	●●	■■	●●	■■	■■	■■	■■	■■	■■	▲▲	▲▲	●●	●●	■■	■■	■■	■■	■■	■■	■■	▲▲	
MOROCCO	100	■■	■■	■■	■■	■■	■■	●●	■■	■■	■■	■■	■■	■■	■■	■■	●●	■■	■■	■■	■■	▲▲	▲▲	▲▲	■■	▲▲	■■
OMAN	100	■■	■■	■■	■■	■■	■■	●●	■■	■■	■■	■■	■■	■■	■■	■■	●●	●●							■■	■■	■■
PAKISTAN	100	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■		●●	●●	■■	▲▲	■■	■■	■■	■■	▲▲	▲▲	▲▲
QATAR	100	▲▲	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	▲▲	■■	■■	■■	■■	■■	■■	■■	■■	■■		■■
SAUDI ARABIA	100	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	▲▲	■■	■■	■■	▲▲	●●	●●	■■	■■	▲▲	▲▲	■■	▲▲	●●	■■	▲▲
SOMALIA	100	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	▲▲	■■	■■	■■	▲▲	●●	●●	■■	■■	▲▲	■■	■■	■■	▲▲	▲▲	■■
SUDAN	91	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	▲▲	●●	●●	■■	■■	▲▲	■■	■■	■■	▲▲	▲▲	■■
SYRIAN ARAB REPUBLIC	100	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	●●	●●	■■	■■	■■	▲▲	■■	■■	■■	▲▲	■■
TUNISIA	100	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	▲▲	■■	■■	■■	●●	■■	■■	▲▲	■■	▲▲	▲▲	▲▲	■■	▲▲	■■
UNITED ARAB EMIRATES	20	■■	■■	■■	■■	■■	●●	●●	■■	■■	●●	■■	■■	●●	▲▲	▲▲	■■	●●	■■	■■	▲▲	▲▲	■■	▲▲	■■		
WEST BANK AND GAZA STRIP	100	▲▲	■■	■■	■■	■■	■■	■■	■■	■■	●●	▲▲	▲▲	▲▲	▲▲	▲▲	■■	■■	■■	■■	■■	■■	■■	▲▲	■■	■■	■■
YEMEN	93	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	▲▲	●●	●●	■■	■■	▲▲	■■	▲▲	■■	▲▲	▲▲	▲▲
EMR	**97**	**91**	**91**	**100**	**100**	**95**	**95**	**73**	**100**	**100**	**9**	**68**	**86**	**91**	**82**	**55**	**32**	**36**	**91**	**73**	**64**	**50**	**68**	**59**	**64**	**23**	**13**

DOT indicates directly observed treatment; EQA, external quality assurance; HRD, human resources development; ISTC, International Standards for Tuberculosis Care; PAL, Practical Approach to Lung Health; prev., prevalence.
First number in final row shows regional coverage; remaining numbers show the proportion of countries for which the answer is "yes" or "all" (i.e. those shown in dark green in the table).

■■ Yes/all ●● Some/partially ▲▲ No/none Answer not provided **NA** Not applicable. See explanatory notes on page 163 for details of colour-coding.

Table A2.1 **Estimated burden of TB, Eastern Mediterranean,1990 and 2005**

	Incidence, 1990				Prevalence, 1990		TB mortality, 1990		Incidence, 2005								Prevalence, 2005				TB mortality, 2005				HIV prevalence
	All forms*		Smear-positive*		All forms*		All forms*		All forms*		All forms HIV+		Smear-positive*		Smear-positive HIV+		All forms*		All forms HIV+		All forms*		All forms HIV+		in adult incident
	number	rate	number	rate	number	rate	number	rate	number	rate	number	rate	number	rate	number	rate	number	rate	number	rate	number	rate	number	rate	TB cases (%)
Afghanistan	35 568	244	16 005	110	88 626	607	10 104	69	50 249	168	8	≤ 1	22 611	76	3	≤ 1	85 875	288	4	≤ 1	10 427	35	3	≤ 1	≤ 0.05
Bahrain	288	58	130	26	454	92	33	7	293	40	3	≤ 1	132	18	≤ 1	≤ 1	314	43	1	≤ 1	29	4	≤ 1	≤ 1	1.5
Djibouti	3 321	595	1 477	265	8 567	1 535	709	127	6 045	762	630	79	2 657	335	221	28	9 210	1 161	315	40	1 012	128	174	22	16
Egypt	20 110	36	9 050	16	26 460	48	2 333	4	18 479	25	9	≤ 1	8 314	11	3	≤ 1	23 420	32	4	≤ 1	2 144	3	2	≤ 1	0.1
Iran (Islamic Republic of)	20 368	36	9 166	16	28 232	50	2 363	4	16 322	23	93	≤ 1	7 336	11	32	≤ 1	20 963	30	46	≤ 1	1 903	3	21	≤ 1	0.9
Iraq	10 371	56	4 667	25	16 326	88	2 218	12	16 137	56	4	≤ 1	7 261	25	1	≤ 1	21 823	76	2	≤ 1	3 054	11	1	≤ 1	≤ 0.05
Jordan	380	12	171	5	380	12	28	≤ 1	305	5	≤ 1	≤ 1	137	2	≤ 1	≤ 1	337	6	≤ 1	≤ 1	30	≤ 1	≤ 1	≤ 1	0.1
Kuwait	731	34	329	15	1 461	68	85	4	633	24	–	–	285	11	–	–	749	28	–	–	66	2	–	–	–
Lebanon	1 001	37	450	16	1 147	42	100	4	392	11	2	≤ 1	176	5	≤ 1	≤ 1	422	12	1	≤ 1	39	1	≤ 1	≤ 1	0.8
Libyan Arab Jamahiriya	1 156	27	520	12	1 760	41	194	4	1 079	18	13	≤ 1	484	8	5	≤ 1	1 072	18	7	≤ 1	79	1	1	≤ 1	2.0
Morocco	30 624	124	13 775	56	26 713	108	2 762	11	28 088	89	104	≤ 1	12 629	40	36	≤ 1	22 879	73	52	≤ 1	2 157	7	13	≤ 1	0.6
Oman	486	26	218	12	751	41	44	2	270	11	≤ 1	≤ 1	121	5	≤ 1	≤ 1	288	11	≤ 1	≤ 1	22	≤ 1	≤ 1	≤ 1	0.6
Pakistan	202 477	181	91 109	82	479 203	429	54 902	49	286 291	181	1 066	≤ 1	128 724	82	373	≤ 1	468 460	297	533	≤ 1	59 202	37	383	≤ 1	0.6
Qatar	282	60	127	27	331	71	28	6	450	55	–	–	202	25	–	–	531	65	–	–	47	6	–	–	–
Saudi Arabia	7 150	44	3 217	20	11 279	69	829	5	10 176	41	–	–	4 579	19	–	–	14 284	58	–	–	1 180	5	–	–	–
Somalia	22 095	331	9 893	148	53 034	795	7 678	115	18 442	224	591	7	8 240	100	207	3	23 491	286	295	4	3 300	40	206	2	5.0
Sudan	46 444	178	20 616	79	113 212	434	15 758	60	82 694	228	4 713	13	36 741	101	1 650	5	145 021	400	2 357	7	23 608	65	2 370	7	8.8
Syrian Arab Republic	9 162	71	4 123	32	14 201	111	987	8	7 067	37	–	–	3 180	17	–	–	8 798	46	–	–	761	4	–	–	–
Tunisia	2 583	31	1 162	14	4 030	49	246	3	2 465	24	–	–	1 109	11	–	–	2 810	28	–	–	274	3	–	–	–
United Arab Emirates	426	23	191	10	671	36	49	3	708	16	–	–	318	7	–	–	1 065	24	–	–	82	2	–	–	–
West Bank and Gaza Strip	664	31	299	14	1 047	49	119	6	788	21	–	–	355	10	–	–	1 230	33	–	–	139	4	–	–	–
Yemen	14 325	119	6 446	53	28 538	236	1 907	16	17 179	82	83	≤ 1	7 722	37	29	≤ 1	28 435	136	42	≤ 1	2 196	10	20	≤ 1	0.8
EMR	**430 010**	**112**	**193 142**	**50**	**906 423**	**236**	**103 474**	**27**	**564 551**	**104**	**7 319**	**1**	**253 316**	**47**	**2 562**	**≤ 1**	**881 476**	**163**	**3 659**	**≤ 1**	**111 753**	**21**	**3 195**	**≤ 1**	**2.1**

– Indicates no estimate.

* Incidence, prevalence and mortality estimates include patients with HIV. Estimates labelled "HIV+" are estimates of TB in HIV-positive adults (aged 15-49 years). Estimates for all years are re-calculated as new information becomes available and techniques are refined, so they may differ from those published previously. See Explanatory notes on page 163 for further details. Data can be downloaded from www.who.int/tb

Table A2.2 **Whole country case notifications and case detection rates, Eastern Mediterranean, 2005**

		TB cases notified from whole country (DOTS + non-DOTS)														Incidence and case detection rates				Proportions			
		Country	New and relapse		New pulmonary			New extra-	Other	Re-treatment cases					New pulm.	Estimated incidence		Case detection rate		ss+	ss+	Extrapulm.	Re-treat.
	Population	total	(WHO total)		ss+		ss- / unk.	pulmonary	new	Relapse	After failure	After default	Other re-treat.	Other	lab. confirm.	all forms	ss+	all new	new ss+	(% of	(% of	(% of	(% of
	thousands	number	number	rate	number	rate	number	number	number	number	number	number	number	number	number	number	number	%	%	pulm.)	new+relapse)	new+re-treat.)	new+re-treat.)
Afghanistan	29 863	21 844	21 844	73	9 949	33	6 085	4 954		856					9 949	50 249	22 611	42	44	62	46	23	4
Bahrain	727		280	39	101	14	72	107	0	0	0	0	0	0	101	293	132	96	77	58	36	38	
Djibouti	793	3 170	3 109	392	1 120	141	739	1 058	0	192	19	42	0	0	1 120	6 045	2 657	48	42	60	36	34	8
Egypt	74 033	11 735	11 446	15	5 217	7	2 617	3 163	0	449	198	91	0	0	5 217	18 479	8 314	60	63	67	46	28	6
Iran (Islamic Republic of)	69 515	9 608	9 422	14	4 686	7	1 870	2 578		288	128	58			4 686	16 322	7 336	56	64	71	50	27	5
Iraq	28 807	9 454	9 454	33	3 096	11	2 887	2 703		768					3 096	16 137	7 261	54	43	52	33	29	8
Jordan	5 703	371	367	6	86	2	76	187	12	6	2	0	2	0	101	305	137	118	63	53	23	51	3
Kuwait	2 687	517	517	19	187	7	95	234	0	1	0	0	0	0	187	633	285	82	66	66	36	45	0
Lebanon	3 577	391	391	11	131	4	75	181	0	4	0	0	0	0	131	392	176	99	74	64	34	46	1
Libyan Arab Jamahiriya	5 853	1 622	2 098	36	860	15	474	762		2	3	266			860	1 079	484	194	178	64	41	36	11
Morocco	31 478		26 269	83	12 757	41	2 142	11 370	0						12 891	28 088	12 629	94	101	86	49	43	
Oman	2 567	257	261	10	131	5	37	89		4					131	270	121	95	108	78	50	34	2
Pakistan	157 935	140 214	137 574	87	47 154	30	65 392	22 411	0	2 617	1 813	827	0		47 154	286 291	128 724	47	37	42	34	16	4
Qatar	813	325	325	40	96	12	73	156		0	0	0			140	450	202	72	47	57	30	48	
Saudi Arabia	24 573	3 539	3 539	14	1 722	7	545	1 067	0	205					1 722	10 176	4 579	33	38	76	49	30	6
Somalia	8 228	13 006	12 904	157	7 068	86	3 168	2 258	0	410	60	22	20	0	7 580	18 442	8 240	68	86	69	55	17	4
Sudan	36 233	29 178	27 562	76	12 730	35	9 212	5 434	0	186	31	33	1 552		12 730	82 694	36 741	33	35	58	46	20	6
Syrian Arab Republic	19 043	4 393	4 310	23	1 350	7	796	2 103	0	61	28	21	34		1 350	7 067	3 180	60	42	63	31	49	3
Tunisia	10 102	2 087	2 079	21	915	9	239	874		51					915	2 465	1 109	82	82	79	44	42	2
United Arab Emirates	4 496		103	2	62	1	12	25	0	4	2	0	0	0	62	708	318	14	19	84	60	24	6
West Bank and Gaza Strip	3 702	28	28	1	7	0	6	15							7	788	355	4	2	54	25	54	
Yemen	20 975	8 063	9 063	43	3 379	16	2 780	2 553		351					3 397	17 179	7 722	51	44	55	37	28	4
EMR	**541 704**	**259 802**	**282 945**	**52**	**112 804**	**21**	**99 392**	**64282**	**12**	**6 455**	**2 284**	**1 360**	**1 608**		**113 527**	**564 551**	**253 316**	**49**	**45**	**53**	**40**	**23**	**4**

ss+ indicates sputum smear-positive; ss-, sputum smear-negative; unk., sputum smear result unknown; re-treat., re-treatment; pulm.lab. confirmed, pulmonary case confirmed by positive smear or culture. See Explanatory notes on page 163 for further details. Data can be downloaded from www.who.int/tb

Table A2.3 **DOTS coverage, case notifications and case detection rates, Eastern Mediterranean, 2005**

		TB cases reported from DOTS services													Estimated incidence and case detection rate				Proportions			
	DOTS	New and relapse		New pulmonary			New extra-	Other	Re-treatment cases					New pulm.	Estimated incidence		Case detection rate		ss+	ss+	Extrapulm.	Re-treat.
	coverage	(WHO total)		ss+		ss- / unk.	pulmonary	new	Relapse	After failure	After default	Other re-treat.	Other	lab. confirm.	all forms	ss+	all new	new ss+	(% of	(% of	(% of	(% of
	%	number	rate	number	rate	number	number	number	number	number	number	number	number	number	number	number	%	%	pulm.)	new+relapse)	new+relapse)	new+re-treat.)
Afghanistan	81	21 844	73	9 949	33	6 085	4 954		856					9 949	50 249	22 611	42	44	62	46	23	4
Bahrain	100	280	39	101	14	72	107	0	0	0	0	0	0	101	293	132	96	77	58	36	38	
Djibouti	100	3 109	392	1 120	141	739	1 058	0	192	19	42	0	0	1 120	6 045	2 657	48	42	60	36	34	8
Egypt	100	11 446	15	5 217	7	2 617	3 163	0	449	198	91	0	0	5 217	18 479	8 314	60	63	67	46	28	6
Iran (Islamic Republic of)	100	9 422	14	4 686	7	1 870	2 578		288	128	58			4 686	16 322	7 336	56	64	71	50	27	5
Iraq	87	9 454	33	3 096	11	2 887	2 703		768					3 096	16 137	7 261	54	43	52	33	29	8
Jordan	100	367	6	86	2	76	187	12	6	2	0	2	0	101	305	137	118	63	53	23	51	3
Kuwait	100	517	19	187	7	95	234	0	1	0	0	0	0	187	633	285	82	66	66	36	45	0
Lebanon	100	391	11	131	4	75	181	0	4	0	0	0	0	131	392	176	99	74	64	34	46	1
Libyan Arab Jamahiriya	100	2 098	36	860	15	474	762		2	3	266			860	1 079	484	194	178	64	41	36	11
Morocco	100	26 269	83	12 757	41	2 142	11 370	0						12 891	28 088	12 629	94	101	86	49	43	
Oman	100	261	10	131	5	37	89		4					131	270	121	95	108	78	50	34	2
Pakistan	100	137 574	87	47 154	30	65 392	22 411	0	2 617	1 813	827	0		47 154	286 291	128 724	47	37	42	34	16	4
Qatar	100	325	40	96	12	73	156		0	0	0			140	450	202	72	47	57	30	48	
Saudi Arabia	100	3 539	14	1 722	7	545	1 067	0	205					1 722	10 176	4 579	33	38	76	49	30	6
Somalia	100	12 904	157	7 068	86	3 168	2 258	0	410	60	22	20	0	7 580	18 442	8 240	68	86	69	55	17	4
Sudan	91	27 562	76	12 730	35	9 212	5 434	0	186	31	33	1 552		12 730	82 694	36 741	33	35	58	46	20	6
Syrian Arab Republic	100	4 310	23	1 350	7	796	2 103	0	61	28	21	34		1 350	7 067	3 180	60	42	63	31	49	3
Tunisia	100	2 079	21	915	9	239	874		51					915	2 465	1 109	82	82	79	44	42	2
United Arab Emirates	20	103	2	62	1	12	25	0	4	2	0	0	0	62	708	318	14	19	84	60	24	6
West Bank and Gaza Strip	100	28	1	7	0	6	15							7	788	355	4	2	54	25	54	
Yemen	93	5 825	28	3 192	15	1 052	1 245		336					3 192	17 179	7 722	32	41	75	55	21	6
EMR	**97**	**279 707**	**52**	**112 617**	**21**	**97 664**	**62 974**	**12**	**6 440**	**2 284**	**1 360**	**1 608**	**0**	**113 322**	**564 551**	**253 316**	**48**	**44**	**54**	**40**	**23**	**4**

ss+ indicates sputum smear-positive; ss-, sputum smear-negative; unk., sputum smear result unknown; re-treat., re-treatment; pulm.lab. confirmed, pulmonary case confirmed by positive smear or culture. See Explanatory notes on page 163 for further details. Data can be downloaded from www.who.int/tb

Table A2.4 **Laboratory services, collaborative TB/HIV activities and management of MDR-TB, Eastern Mediterranean, 2004–2005**

	Laboratory services, 2005				Collaborative TB/HIV activities								Management of MDR-TB, 2005				
					2004				2005								
	number of labs working with NTP			number of labs included	TB pts tested for	TB pts	HIV+ TB pts	HIV+ TB pts	TB pts tested for	TB pts	HIV+ TB pts	HIV+ TB pts	Lab-confirmed	DST	MDR	Re-treatment	Re-treatment
	smear	culture	DST	in EQA	HIV	HIV-positive	CPT	ART	HIV	HIV-positive	CPT	ART	MDR	in new cases	in new cases	DST	MDR
Afghanistan	435	0	0	0													
Bahrain	8	2	1	1	150	5	0	0	129	4	0	0	1	2	2	0	2
Djibouti	10	0	0	0	149	92	13	13	224	135	20	20	39	0	0	0	0
Egypt	158	18	1	18													
Iran (Islamic Republic of)	375	29	1	376									27	205	7	41	15
Iraq	18	1	1	0													
Jordan	150	50	1	11	91	0	0	0	86	0	0	0	19	98	9	33	10
Kuwait	12	1	1	12	557	2	2	2	517	3	3	3	6	516	6	1	0
Lebanon	8	1	1	1	0				0				3	48	0	4	2
Libyan Arab Jamahiriya	24	2	1										8	4	4		4
Morocco	167	12	2	167									180	180			
Oman	139	10	1	2	230	8			212	10			5		5		
Pakistan	982	3	0	316	0	0	0	0	0	0	0	0	0	0	0	0	0
Qatar	1	1	1	2	272	1	0	0	597				2	264	2	0	0
Saudi Arabia	20	10	10														
Somalia	46	0	0	0	300	19	10	0	375	21	8	0					
Sudan	332	0	0	117					180	150	15	15	45			4	4
Syrian Arab Republic	143	1	1	50	200	0	0	0	345	0	0	0	7	0	0	0	0
Tunisia	66	7	3	66	164	0			129	2	2	2					
United Arab Emirates													2				4
West Bank and Gaza Strip	3	0	0		24	0	0	0	13	0	0	0					
Yemen	214	4	1	4									1				
EMR	**3 311**	**152**	**27**	**1 143**	**2 137**	**127**	**25**	**15**	**2 807**	**325**	**48**	**40**	**345**	**1 317**	**35**	**83**	**41**

ART indicates antiretroviral therapy; CPT, co-trimoxazole preventive therapy; DST, drug susceptibility testing; EQA, external quality assurance; HIV+, HIV-positive; pts, patients. See Explanatory notes on pages 163 for further details. Some countries provided the number of TB patients found to be HIV-positive, but did not provide the number of TB patients tested. The regional total of TB patients tested is therefore lower than the number of patients actually tested, and cannot be used to calculated a regional estimate of HIV prevalence in TB patients. Data can be downloaded from www.who.int/tb

Table A2.5 **Treatment outcomes, Eastern Mediterranean, 2004 cohort**

	New smear-positive cases, DOTS										
	Number of cases		% of notif	% of cohort							%
	Notified	Regist'd	regist'd	Cured	Compl-eted	Died	Failed	Default	Trans-ferred	Not eval.	Success
Afghanistan	8 273	9 976	121	79	10	3	2	3	3	0	89
Bahrain	69	11	16	82	0	18	0	0	0	0	82
Djibouti	1 086	1 086	100	72	8	1	1	16	2	0	80
Egypt	5 383	5 383	100	60	10	3	2	3	2	20	70
Iran (Islamic Republic of)	4 900	4 900	100	79	4	7	3	3	4	0	84
Iraq	3 381	3 381	100	78	7	3	3	7	2	0	85
Jordan	91	91	100	69	15	5	4	4	1	0	85
Kuwait	247	247	100	37	26	1	0	13	23	0	63
Lebanon	146	146	100	83	8	2	0	3	4	0	90
Libyan Arab Jamahiriya	872	872	100	41	23	2	0	31	3	0	64
Morocco	12 280	12 280	100	81	6	2	1	8	0	1	87
Oman	160	114	71	90	0	10				0	90
Pakistan	33 746	33 152	98	70	12	3	1	11	4	0	82
Qatar	73	73	100	70	8	0	0	0	22	0	78
Saudi Arabia	1 683	1 412	84	74	8	8	1	8	1	0	82
Somalia	6 479	6 479	100	89	2	3	1	5	1	0	91
Sudan	12 095	13 018	108	58	19	3	1	7	2	11	77
Syrian Arab Republic	1 561	1 561	100	74	12	3	2	7	2	0	86
Tunisia	944	944	100	81	9	4	1	2	3	0	90
United Arab Emirates	57	57	100	44	26	11	2	16	2	0	70
West Bank and Gaza Strip	4	4	100	50		25			25	0	50
Yemen	3 239	3 239	100	71	12	3	1	8	4	2	82
EMR	**96 769**	**98 426**	**102**	**72**	**11**	**3**	**1**	**8**	**3**	**3**	**83**

	New smear-positive cases, non-DOTS										
	Number of cases		% of notif	% of cohort							%
	Notified	Regist'd	regist'd	Cured	Compl-eted	Died	Failed	Default	Trans-ferred	Not eval.	Success
Afghanistan											
Bahrain											
Djibouti											
Egypt											
Iran (Islamic Republic of)											
Iraq											
Jordan											
Kuwait											
Lebanon											
Libyan Arab Jamahiriya											
Morocco											
Oman											
Pakistan											
Qatar											
Saudi Arabia											
Somalia											
Sudan											
Syrian Arab Republic											
Tunisia											
United Arab Emirates											
West Bank and Gaza Strip											
Yemen	195	262	134	34	42	1	0	16	6	0	76
EMR	**195**	**262**	**134**	**34**	**42**	**1**	**0**	**16**	**6**	**0**	**76**

	Smear-positive re-treatment cases, DOTS								
	Number	% of cohort							%
	Regist'd	Cured	Compl-eted	Died	Failed	Default	Trans-ferred	Not eval.	Success
Afghanistan									
Bahrain									
Djibouti	239	56	12	8	2	22	2	0	67
Egypt	905	36	9	5	9	6	3	31	45
Iran (Islamic Republic of)	538	61	13	8	5	7	6	0	74
Iraq	858	56	16	5	8	13	3	0	71
Jordan	10	30	20	10	10	30	0	0	50
Kuwait	3	67	33	0	0	0	0	0	100
Lebanon	7	14	43	0	0	0	43	0	57
Libyan Arab Jamahiriya									
Morocco									
Oman									
Pakistan	5 079	63	14	4	2	12	5	0	78
Qatar	1	100	0	0	0	0	0	0	100
Saudi Arabia	153	44	18	16	3	13	2	5	61
Somalia	470	85	5	4	1	4	1	0	90
Sudan	1 768	45	34	3	2	8	2	7	79
Syrian Arab Republic	203	53	13	6	7	15	6	0	66
Tunisia	44	75	5	5	7	9	0	0	80
United Arab Emirates									
West Bank and Gaza Strip	1	100	0	0	0	0	0	0	100
Yemen	375	64	5	7	2	10	3	9	69
EMR	**10 654**	**58**	**16**	**4**	**3**	**10**	**4**	**4**	**74**

Not eval. indicates not evaluated (percentage of registered cases for which outcomes were not recorded); success, sum of cured and completed; cases regist'd, the denominator for calculating treatment outcomes. The number of cases registered for treatment in 2004 is used as the denominator for calculating treatment outcomes unless it is less than the sum of outcomes, in which case the sum of outcomes is used. If the number of cases registered is not reported, then the number of cases notified in 2004 is used, or the sum of outcomes if the latter is greater. Data can be downloaded from www.who.int/tb

Table A2.6 **Re-treatment outcomes, Eastern Mediterranean, 2004 cohort**

	Relapse, DOTS									After failure, DOTS									After default, DOTS								
		% of cohort							%		% of cohort							%		% of cohort							%
	Number regist'd	Cured	Compl-eted	Died	Failed	Default	Trans-ferred	Not eval.	Success	Number regist'd	Cured	Compl-eted	Died	Failed	Default	Trans-ferred	Not eval.	Success	Number regist'd	Cured	Compl-eted	Died	Failed	Default	Trans-ferred	Not eval.	Success
Afghanistan																											
Bahrain																											
Djibouti	167	66	6	2	0	25	2	0	72	42	36	19	21	2	19	2	0	55	30	27	33	20	10	10	0	0	60
Egypt																											
Iran (Islamic Republic of)	313	73	4	7	5	4	5	0	77	140	62	10	6	8	8	6	0	72									
Iraq	857	56	16	5	8	13	3	0	71																		
Jordan	2	100	0	0	0	0	0	0	100	3	33	0		33	0	0	33	33									
Kuwait	3	67	33	0	0	0	0	0	100																		
Lebanon	7	14	43				43	0	57																		
Libyan Arab Jamahiriya																											
Morocco																											
Oman																											
Pakistan	2050	72	11	4	2	8	3	0	83																		
Qatar	1	100						0	100																		
Saudi Arabia	107	50	16	12	3	10	2	7	65										46	30	22	24	2	20	2	0	52
Somalia	441	85	5	3	1	4	2	0	90	19	74	5	11	5	5	0	0	79	10	70	10	10	10	0	0	0	80
Sudan	68	84	6	3	1	6	0	0	90	14	100	0	0	0	0	0	0	100	22	95	0	0	0		0	5	95
Syrian Arab Republic	83	48	16	5	10	14	7	0	64	50	58	10	10	10	8	4	0	68	27	48	4	4	0		7	37	52
Tunisia	44	75	5	5	7	9	0	0	80																		
United Arab Emirates																											
West Bank and Gaza Strip																			1	100						0	100
Yemen	375	64	5	7	2	10	3	9	69																		
EMR	**4 518**	**69**	**10**	**5**	**3**	**9**	**3**	**1**	**79**	**268**	**60**	**10**	**10**	**7**	**9**	**4**	**0**	**70**	**136**	**47**	**16**	**14**	**4**	**17**	**2**	**0**	**63**

Not eval. indicates not evaluated (percentage of registered cases for which outcomes were not recorded); success, sum of cured and completed; cases regist'd, the denominator for calculating treatment outcomes. The number of cases registered for treatment in 2004 is used as the denominator for calculating treatment outcomes unless it is missing or is less than the sum of outcomes, in which case the sum of outcomes is used. Data can be downloaded from www.who.int/tb

Table A2.7 **DOTS treatment success and case detection rates, Eastern Mediterranean, 1994–2005**

	DOTS new smear-positive treatment success (%)											DOTS new smear-positive case detection rate (%)										
	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Afghanistan				45	33	87	86	84	87	86	89			3	8	8	13	21	29	28	36	44
Bahrain					13	95	73	87	88	97	82					14	15	15	12	11	50	77
Djibouti		75	77	76	79	72	62	78	82	73	80		96	100	84	74	63	57	52	48	42	42
Egypt	52		81	82	87	87	87	82	88	80	70	44	1	11	17	31	45	49	54	58	62	63
Iran (Islamic Republic of)			87	84	83	82	85	85	85	84	84	42		12	35	54	58	61	61	62	62	64
Iraq					83	85	92	89	91	85	85				5	13	51	55	58	52	48	43
Jordan	90				92	88	90	86	89	87	85	102			74	74	67	75	73	88	70	63
Kuwait						66	69	73	55	62	63					60	61	58	69	68	85	66
Lebanon	89				73	96	92	91	91	92	90	45				83	72	71	70	70	79	74
Libyan Arab Jamahiriya					68	67			61	62	64					146	111		136	148	174	178
Morocco	86	90	88	89	88	88	89	87	89	86	87	92	93	92	90	91	88	88	91	93	93	101
Oman		84	87	91	86	95	93	90	92	90	90		121	120	120	90	122	111	116	85	127	108
Pakistan	74	70		67	66	70	74	77	77	75	82	1	2		4	2	3	5	13	17	27	37
Qatar	83	81	72	79	84	74	66	60	75	73	78	33	27	24	43	33	29	41	34	52	38	47
Saudi Arabia					57	66	73	77	76	79	82					21	35	37	38	37	37	38
Somalia		86	84	90	88	88	83	86	89	90	91		29	39	39	43	47	58	60	64	79	86
Sudan				70	65	81	79	80	78	82	77		2	1	27	28	32	30	31	32	34	35
Syrian Arab Republic			92	88	88	84	79	81	87	88	86			8	20	27	40	42	41	45	47	42
Tunisia					91	91	91	90	92	91	90					93	101	103	90	84	88	82
United Arab Emirates							74	62	79	64	70						26	23	18	24	18	19
West Bank and Gaza Strip									100	80	50						10	8		4	1	2
Yemen		66	78	81	80	79	75	80	80	82	82	2	8	30	37	51	54	52	47	45	41	41
EMR	**82**	**87**	**86**	**79**	**77**	**83**	**83**	**83**	**83**	**82**	**83**	**11**	**10**	**11**	**18**	**20**	**24**	**26**	**30**	**32**	**39**	**44**

Treatment success, sum of cured and completed; DOTS new smear-positive case detection rate, notified (new and relapse) cases divided by estimated incident cases. The table includes updated information; data shown here may differ from those published in previous reports. Data can be downloaded from www.who.int/tb

Table A2.8 **New smear-positive case notification by age and sex, absolute numbers, DOTS and non-DOTS, Eastern Mediterranean, 2005**

	Male							Female							All							Male/female
	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+	ratio
Afghanistan	151	606	560	472	453	470	419	320	1 651	1 959	1 302	869	471	246	471	2 257	2 519	1 774	1 322	941	665	0.5
Bahrain	0	0	0	2	3	0	4	1	1	0	3	1	0	0	1	1	0	5	4	0	4	1.5
Djibouti	18	220	252	119	62	47	29	23	123	117	66	23	13	8	41	343	369	185	85	60	37	2.0
Egypt	25	524	606	421	414	243	123	48	431	298	205	218	132	42	73	955	904	626	632	375	165	1.7
Iran (Islamic Republic of)	16	361	537	369	286	264	631	51	389	209	189	274	394	716	67	750	746	558	560	658	1347	1.1
Iraq	13	424	644	261	245	189	148	44	305	260	151	197	135	80	57	729	904	412	442	324	228	1.6
Jordan	0	8	17	9	4	6	5	1	6	6	6	5	8	5	1	14	23	15	9	14	10	1.3
Kuwait	0	12	45	29	26	8	3	0	13	31	11	3	1	5	0	25	76	40	29	9	8	1.9
Lebanon	0	12	19	15	10	12	8	1	25	14	8	3	3	1	1	37	33	23	13	15	9	1.4
Libyan Arab Jamahiriya	2	114	293	168	52	19	35	8	36	36	35	21	21	20	10	150	329	203	73	40	55	3.9
Morocco	79	2 222	2 515	1 583	1 057	580	591	167	1 330	943	546	403	343	398	246	3552	3458	2129	1460	923	989	2.1
Oman	1	21	11	24	15	19	5	2	13	5	3	4	5	3	3	34	16	27	19	24	8	2.7
Pakistan	598	5 143	4 633	4 124	3 714	3 234	2 349	1 439	6 303	5 451	3 881	2 777	1 990	1 317	2037	11446	10084	8005	6491	5224	3666	1.0
Qatar		19	15	17	19	5	1		5	10	2	1	2	0		24	25	19	20	7	1	3.8
Saudi Arabia	8	182	276	201	175	70	107	31	205	184	98	73	51	61	39	387	460	299	248	121	168	1.4
Somalia	125	1 343	1 114	725	458	330	319	169	752	636	436	292	212	157	294	2095	1750	1161	750	542	476	1.7
Sudan	425	1 358	1 990	1 541	1 151	724	493	381	1 102	1 203	978	729	411	244	806	2460	3193	2519	1880	1135	737	1.5
Syrian Arab Republic	9	266	237	111	112	62	63	27	182	108	59	59	32	23	36	448	345	170	171	94	86	1.8
Tunisia	5	103	172	133	115	53	81	7	66	61	39	36	16	28	12	169	233	172	151	69	109	2.6
United Arab Emirates																						
West Bank and Gaza Strip		1			1	3				1		1				1	1		2	3		2.5
Yemen	48	493	553	366	242	149	78	44	426	410	265	181	85	39	92	919	963	631	423	234	117	1.3
EMR	**1 523**	**13 432**	**14 489**	**10 690**	**8 614**	**6 487**	**5 492**	**2 764**	**13 364**	**11 942**	**8 283**	**6 170**	**4 325**	**3 393**	**4 287**	**26 796**	**26 431**	**18 973**	**14 784**	**10 812**	**8 885**	**1.2**

For some countries, breakdown of notified cases by age and sex is missing, or is provided for a subset of cases. See Explanatory notes on page 164 for further details. Data can be downloaded from www.who.int/tb

Table A2.9 **New smear-positive case notification rates by age and sex, DOTS and non-DOTS, Eastern Mediterranean, 2005**

	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	20	28	34	50	80	106	5	60	105	103	101	82	60	3	39	65	67	75	81	83
Bahrain	0	0	0	2	5	0	37	1	2	0	5	3	0	0	1	1	0	3	4	0	18
Djibouti	11	272	438	297	243	284	290	14	154	206	165	87	72	64	12	214	323	231	163	174	164
Egypt	0	7	11	10	12	12	8	0	6	5	5	6	6	2	0	6	8	8	9	9	5
Iran (Islamic Republic of)	0	4	9	9	10	18	40	1	5	4	5	9	23	46	0	4	6	7	9	20	43
Iraq	0	14	29	17	26	36	40	1	11	12	10	21	25	18	0	13	21	13	24	30	28
Jordan	0	1	3	2	2	5	5	0	1	1	2	3	7	5	0	1	2	2	3	6	5
Kuwait	0	5	10	8	15	14	11	0	7	13	6	4	3	24	0	6	11	7	11	10	17
Lebanon	0	4	7	7	6	11	7	0	8	5	3	2	2	1	0	6	6	5	4	7	3
Libyan Arab Jamahiriya	0	17	55	48	20	10	28	1	6	7	11	9	15	18	1	11	31	30	15	12	23
Morocco	2	68	93	82	76	82	91	3	42	35	27	28	42	46	3	55	64	54	51	61	65
Oman	0	8	4	11	13	37	15	0	5	3	3	6	13	9	0	6	3	8	10	26	12
Pakistan	2	30	41	48	59	90	79	5	39	51	49	48	57	42	3	34	46	49	54	73	60
Qatar		27	10	14	22	20	15		12	17	5	5	28	0		21	12	11	18	21	10
Saudi Arabia	0	8	12	10	17	15	29	1	9	10	7	11	13	18	0	9	11	9	14	14	23
Somalia	7	173	185	187	180	234	326	9	96	104	109	108	136	133	8	135	144	147	143	183	221
Sudan	6	37	72	82	92	89	82	5	31	44	52	57	47	35	6	34	58	67	75	67	56
Syrian Arab Republic	0	12	15	11	18	19	23	1	8	7	6	9	9	7	1	10	11	8	14	14	14
Tunisia	0	10	19	19	22	20	28	1	6	7	5	7	6	8	0	8	13	12	15	13	17
United Arab Emirates																					
West Bank and Gaza Strip		0			1	5				0		1				0	0		1	2	
Yemen	1	21	41	43	40	46	34	1	19	32	30	29	25	15	1	20	36	36	35	35	24
EMR	**2**	**23**	**34**	**34**	**40**	**54**	**55**	**3**	**24**	**30**	**29**	**30**	**35**	**31**	**2**	**23**	**32**	**32**	**35**	**45**	**43**

Rates are per 100 000 population of each age/sex group. Rates are calculated excluding those countries for which breakdown of notified cases or population by age and sex is missing. Data can be downloaded from www.who.int/tb

Table A2.10 **Number of TB cases notified, Eastern Mediterranean, 1980–2005**

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
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	13 808	18 404	21 844
Bahrain	219	262	156	232	208	194	156	120	142	122	117	142	140	114		43	49	45	83	145	207	188	191	261	244	280
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	3 231	2 940	3 109
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	11 490	11 620	11 446
Iran (Islamic Republic of)	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	11 783	11 464	10 900	10 171	9 422
Iraq	11 809	10 614	7 741	6 970	6 807	6 485	6 846	6 517	11 384	14 312	14 735	13 527	14 905	18 553	19 733	9 697	29 196	26 607	29 410	29 897	9 697	10 478	11 898	11 656	10 498	9 454
Jordan	298	646	860	856	672	769	592	537	553	484	439	390	504	427	443	498	468	397	380	373	306	342	312	310	324	367
Kuwait	847	819	880	855	812	717	611	540	480	468	277	330	282	217	237	336	400	528	564	515	513	496	585	566	557	517
Lebanon		67	75	284	410	1 943	2 257	2 478				884	884		940	983	836	701	640	679	571	516	437	380	393	391
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		1 824	1 917	1 653	2 098
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	26 789	25 909	26 269
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	255	292	261
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	69 916	101 562	137 574
Qatar	257	213	172	206	203	250	220	248	223	191	184	195		200		304	257	212	253	259	279	284	278	276	272	325
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	3 317	3 312	3 539
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	7 391	9 278	11 747	12 904
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	25 105	26 567	27 562
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	4 820	4 588	4 310
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	1 965	1 994	2 079
United Arab Emirates	522	638	597	507	534	568	464	818	339	308	285	234	227		426		507		773	66	115	74	90	117	92	103
West Bank and Gaza Strip	191	139	136	136	123	113	63	82	85	145	64	89	97			77	40		18		82	67		36	23	28
Yemen									3 446	4 913	4 650	6 844	10 113	11 076	11 510	14 428	14 364	12 013	12 383	13 085	13 651	13 029	11 677	10 413	10 016	9 063
EMR	**522 110**	**514 791**	**433 271**	**234 482**	**171 652**	**186 344**	**230 427**	**288 805**	**280 126**	**261 441**	**234 620**	**315 483**	**109 087**	**201 620**	**119 374**	**121 745**	**145 373**	**136 232**	**233 878**	**171 734**	**141 748**	**165 904**	**191 154**	**206 806**	**243 178**	**282 945**
Number reporting	18	20	19	19	20	21	21	21	21	21	20	21	18	15	16	18	20	17	22	21	22	21	21	22	22	22
% reporting	82	91	86	86	91	95	95	95	95	95	91	95	82	68	73	82	91	77	100	95	100	95	95	100	100	100

From 1995 on, number shown is all notified new and relapse cases (DOTS and non-DOTS). The table includes updated information; data shown here may differ from those published in previous reports. Data can be downloaded from www.who.int/tb

Table A2.11 **Case notification rates, Eastern Mediterranean, 1980–2005**

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Afghanistan	471	475	282	363	133	77	104	133	117	103	30	148						6	14	14	30	41	53	51	64	73
Bahrain	63	73	42	60	52	47	36	27	31	26	24	28	26	21		7	8	7	13	22	31	27	27	37	34	39
Djibouti		639	184		388	562	434	427	407	383	376	504	493	591	554		533	592	565	596	556	573	426	422	377	392
Egypt	4	3	4	4	3	3	2	42	3	3	4	6	15	6	7	18	20	22	20	18	16	15	16	16	16	15
Iran (Islamic Republic of)	109	29	22	19	23	18	16	19	19	22	16	25	24	34	21	26	22	20	18	18	18	18	17	16	15	14
Iraq	84	73	52	45	43	40	41	38	65	79	80	71	76	91	94	45	131	116	124	123	39	41	45	43	37	33
Jordan	13	28	36	34	26	28	21	19	19	16	13	11	14	11	11	12	11	9	8	8	6	7	6	6	6	6
Kuwait	62	57	59	55	50	42	33	28	23	22	13	16	14	12	14	20	23	29	29	25	23	21	24	22	21	19
Lebanon		2	3	10	15	70	81	90				32	31		30	31	26	21	19	20	17	15	13	11	11	11
Libyan Arab Jamahiriya	24	15	15	17	10	9	7	8	10	6	10	5	26			30	26		31	31	25		33	34	29	36
Morocco	127	143	137	128	103	121	121	117	108	111	112	110	99	106	114	110	116	108	103	104	99	95	99	88	84	83
Oman	158	74	68	58	58	56	79	37	28	27	26	23	19	14	14	13	13	13	12	10	13	12	12	10	12	10
Pakistan	399	396	384	134	100	118	152	177	185	157	140	169		61		10	3		66	15	8	23	35	46	66	87
Qatar	112	85	62	68	61	69	57	61	52	42	39	40		40		58	48	39	45	45	46	44	41	38	35	40
Saudi Arabia	114	81	79	66	59	31	27	21	16	16	15	13	12	13	14			16	16	17	16	15	15	14	14	14
Somalia				43	42	42	47	112	41	20					32	40	62	69	65	71	81	95	99	120	147	157
Sudan	165	230				6	10	3	3	3	1	62	71	134	81	49	67	68	71	83	75	71	72	72	75	76
Syrian Arab Republic	19	20	19	19	20	20	35	37	41	44	47	43	40		36	30	34	32	34	33	30	29	27	27	25	23
Tunisia	39	35	38	44	35	34	33	30	29	30	25	25	25	29	27	27	26		24	23	21	20	19	20	20	21
United Arab Emirates	51	58	51	40	40	40	31	52	20	17	15	12	11		18		20		27	2	4	2	2	3	2	2
West Bank and Gaza Strip	13	9	9	8	7	6	3	4	4	7	3	4	4			3	1		1		3	2		1	1	1
Yemen									31	42	38	54	76	79	79	95	91	74	73	75	76	70	61	53	49	43
EMR	**183**	**175**	**143**	**75**	**53**	**56**	**67**	**82**	**77**	**70**	**61**	**80**	**27**	**49**	**28**	**28**	**33**	**30**	**50**	**36**	**29**	**33**	**38**	**40**	**46**	**52**

Rates are per 100 000 population. The table includes updated information; data shown here may differ from those published in previous reports. Data can be downloaded from www.who.int/tb

Table A2.12 **New smear-positive cases notified, numbers and rates, Eastern Mediterranean, 1993–2005**

	Number of cases													Rate (per 100 000 population)												
	1993	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**
Afghanistan					618	1 833	1 669	2 892	4 639	6 509	6 510	8 273	9 949					3	8	7	12	19	25	24	29	33
Bahrain	82		17	31	22	25	21	23	23	17	16	69	101	15		3	5	4	4	3	3	3	2	2	10	14
Djibouti	1 668	1 743		1 744	1 904	1 690	1 564	1 391	1 312	1 253	1 202	1 086	1 120	282	292		279	294	252	226	195	179	167	157	139	141
Egypt		1 811	4 229	5 084	5 469	4 915	5 094	4 606	4 514	4 889	5 118	5 383	5 217		3	7	8	9	8	8	7	7	7	7	7	7
Iran (Islamic Republic of)		4 615	5 347	5 373	5 253	5 105	5 426	5 361	5 529	5 366	5 188	4 900	4 686		8	9	8	8	8	8	8	8	8	8	7	7
Iraq	5 240	5 781	3 194	10 320	8 164	8 933	9 908	3 194	3 559	3 895	3 577	3 381	3 096	26	28	15	46	36	38	41	13	14	15	13	12	11
Jordan	173	161	187	170	136	110	102	89	94	91	108	91	86	4	4	4	4	3	2	2	2	2	2	2	2	2
Kuwait	148	155	175	153	201	185	169	180	174	206	201	247	187	8	9	10	9	11	9	8	8	7	8	8	9	7
Lebanon		148	197	198	206	224	249	202	171	148	134	146	131		5	6	6	6	7	7	6	5	4	4	4	4
Libyan Arab Jamahiriya				515			803	607		722	764	872	860				11			15	11		13	14	15	15
Morocco			14 171	14 278	14 134	13 426	13 420	12 872	12 804	12 914	12 842	12 280	12 757			52	52	51	47	47	44	43	43	42	40	41
Oman	123	135	135	164	165	156	120	164	156	151	110	160	131	6	6	6	7	7	7	5	7	6	6	4	6	5
Pakistan	11 020		2 578	1 849		14 974	6 248	3 285	10 935	16 265	20 962	33 746	47 154	9		2	1		11	4	2	8	11	14	22	30
Qatar			60	46	39	69	58	53	77	64	95	73	96			11	9	7	12	10	9	12	9	13	9	12
Saudi Arabia	800				1 568	1 644	1 680	1 595	1 686	1 674	1 646	1 683	1 722	4				8	8	8	7	8	7	7	7	7
Somalia		1 168	1 572	2 894	3 093	3 121	3 461	3 776	4 640	4 818	5 190	6 479	7 068		18	25	46	48	47	51	54	64	65	67	81	86
Sudan		3 728	8 761	8 978	10 835	10 820	11 047	12 311	11 136	10 338	11 003	12 095	12 730		13	30	30	35	34	34	37	33	30	32	34	35
Syrian Arab Republic			1 295	1 523	1 423	1 593	1 577	1 584	1 507	1 447	1 545	1 561	1 350			9	10	9	10	10	9	9	8	9	8	7
Tunisia	1 006	983	1 243	1 005		1 196	1 066	1 099	1 077	927	878	944	915	12	11	14	11		13	11	11	11	9	9	9	9
United Arab Emirates							31	73	69	57	77	57	62							1	2	2	2	2	1	1
West Bank and Gaza Strip			9	24		8		37	31		15	4	7			0	1		0		1	1		0	0	0
Yemen	0	0	3 681	4 371	4 717	4 896	5 427	5 565	4 968	4 259	3 793	3 434	3 379	0	0	24	28	29	29	31	31	27	22	19	17	16
EMR	**20 260**	**20 428**	**46 851**	**58 720**	**57 947**	**74 923**	**69 140**	**60 959**	**69 101**	**76 010**	**80 974**	**96 964**	**112 804**	**5**	**5**	**11**	**13**	**13**	**16**	**15**	**13**	**14**	**15**	**16**	**18**	**21**

Rates are per 100 000 population. The table includes updated information; data shown here may differ from those published in previous reports. Data can be downloaded from www.who.int/tb

Notes

Bahrain

In 2004, 5 HIV-positive TB cases were identified (3 in non-nationals). In 2005, 4 HIV-positive TB cases were identified (3 in non-nationals).

Breakdown of notified cases by age and sex is provided for cases in nationals only.

Egypt

Health insurance organizations, prisons and universities notify cases to the NTP but do not provide breakdown by age and sex, treatment outcomes, or information on laboratory activities.

Jordan

Of 371 notified TB cases, 148 were in non-nationals treated for 2–4 months; the treatment outcomes for these patients are unknown.

Morocco

Treatment outcomes for patients who transfer are compiled at national level on the basis of aggregated data. Treatment outcomes for individual patients are neither recorded nor reported by the unit where treatment was initiated.

Oman

Of the 131 notified new-smear positive cases, 35 were in non-nationals. Of the remaining 130 notified cases, 10 were in non-nationals.

Saudi Arabia

TB patients who were notified in 2004 but were subsequently deported are not included in the numbers of patients registered for treatment (159 new smear-positive cases, 48 new smear-negative/unknown, 99 new extrapulmonary, 11 relapse and 7 cases who had previously defaulted).

Sudan

DOTS coverage is the weighted average of coverage in the northern (100% coverage) and southern (55% coverage) parts of the country. Outcome data for patients treated after failure and after default are from southern Sudan. The TB/HIV data are from southern Sudan.

West Bank and Gaza Strip

A first-line drug stock-out (isoniazid and ethambutol) occurred once at central level for 3 weeks during 2005.

Summary by WHO region …
Africa …
The Americas …
Eastern Mediterranean…
Europe …
South-East Asia …
Western Pacific …

Europe

NTP MANAGER (OR EQUIVALENT); PERSON FILLING OUT DATA COLLECTION FORM (IF DIFFERENT)

Albania	Hasan Hafizi
Andorra	Margarita Coll Armangué
Armenia	N. Mejluman
Austria	Jean-Paul Klein
Azerbaijan	Svetlana Mamedova
Belarus	Astrovko Andrei P.
Belgium	Maryse Wanlin; Greet Vankersschaever; Patrick De Smet
Bosnia & Herzegovina	Zehra Dizdarevic; Mladen Duronjic
Bulgaria	Tonka Varleva; Donka Stefanova
Croatia	Aleksandar Simunovic
Cyprus	Andreas Georgiou; Georgios Georgiades
Czech Republic	Ludek Trnka; Alena Ondrackova
Denmark	Peter Henrik Andersen
Estonia	Kai Kliiman; Vahur Hollo
Finland	Petri Ruutu
France	Marie Claire Paty; Antoine Delphine
Georgia	Archil Salakaia
Germany	Walter Haas; Bonita Brodhun
Greece	Georgia Spala; Dimitra Panagiotopoulou
Hungary	Imre Vadasz; Judit Mester
Iceland	Thorsteinn Blöndal
Ireland	Joan O'Donnell
Israel	Daniel Chemtob; Galia Pinsker
Italy	Maria Grazia Pompa; Stefania D'Amato
Kazakhstan	Galimzhan Borankulovich Rakishev; Clara Khasanovna Baimukhanova
Kyrgyzstan	Avtandil Shermamatovich Alisherov; Elmira Djusunbekovna Adrakhmanova
Latvia	Janis Leimans; Vija Riekstina
Lithuania	Edita Davidavičiene
Luxembourg	Pierrette Huberty-Krau; Norbert Charlé
Malta	Analita Pace Asciak
Monaco	
Montenegro	Olivera Bojovic
Netherlands	Vincent Kuyvenhoven; Connie Erkens
Norway	Brita Askeland Winje
Poland	Kazimierz Roszkowski; Ireneusz Szczuka; Maria Korzeniewska-Kosela
Portugal	António Fonseca Antunes
Republic of Moldova	Silviu Sofronie; Dumitru Sain
Romania	Ioan Paul Stoicescu; Elmira Ibraim
Russian Federation	Yekaterina Petrovna Kakorina; Mikhail Izrailievich Perelman; Elena Mikhailovna Bogorodskaya
San Marino	
Serbia	Gordana Radosavljevic Asic; Rukije Mehmeti; Radmila Curcic
Slovakia	Ivan Solovic
Slovenia	Jurij Sorli; Damjan Erzen
Spain	Odorina Tello Anchuela; Elena Rodríguez Valín
Sweden	Victoria Romanus
Switzerland	Peter Helbling
Tajikistan	Sadulo Makhmadalievich Saidaliev
TFYR Macedonia	Stefan Talevski; Maja Zakoska
Turkey	Feyzullah Gümüslu; Ülgen Gullu
Turkmenistan	Babakuli Dzhumaev
Ukraine	Olga Nedospasova; Olga Sakalskaya
United Kingdom	John Watson; Brian Smyth; Jim McMenamin; Roland Salmon; Jonathan Crofts; Fiona Johnston
Uzbekistan	Abdulla Abdurakhmanovich Yuldashev

This list shows the people named on the data collection form sent to WHO in 2006, not necessarily the current NTP manager. It is intended as an acknowledgement rather than a directory.

EUROPE: SUMMARY OF TB CONTROL POLICIES

	DOTS COVERAGE, %	NTP MANUAL	SMEAR MICROSCOPY FOR DIAGNOSIS	STANDARDIZED CHEMOTHERAPY	DOT	MONITORING OUTCOMES	CASES NOTIFIED BY TYPE; AGE & SEX	2004 COHORT OUTCOMES REPORTED: NEW; RETREATMENT	SMEAR MICROSCOPY FREE-OF-CHARGE	DRUGS FREE-OF-CHARGE	UNINTERRUPTED DRUG SUPPLY	EQA FOR SMEAR MICROSCOPY	STRATEGIC HRD PLAN	TB CONTROL IN CURRICULA OF DOCTORS AND NURSES	UP-TO-DATE JOB DESCRIPTIONS	GUIDELINES FOR PRIVATE PRACTITIONERS	PUBLIC PROVIDERS NOTIFIED/REFERRED	PRIVATE PROVIDERS NOTIFIED/REFERRED	ISTC PROMOTED IN 2006	HEALTH SYSTEM STRENGTHENING IN PLAN	PAL IN PLAN	COMMUNITY-BASED TB CARE	PATIENTS' CHARTER PROMOTED IN 2006	OPERATIONAL RESEARCH	MDR-TB MGMT; IN LINE WITH WHO GUIDELINES	HIV COUNSELLING & TESTING	SURVEILLANCE OF HIV PREV. IN TB PTS
ALBANIA	33						■■	■■																			
ANDORRA	100	■■	■■	■■	▲▲	■■	■■	●●	■■	■■		▲▲	▲▲	●●	■■	■■	■■	■■							●●		
ARMENIA	100	■■	▲▲	■■	■■	■■	■■	■■	■■	■■	■■	■■	▲▲	■■	▲▲	▲▲	●●	▲▲	■■	■■	▲▲	▲▲	▲▲	■■	▲▲	▲▲	▲▲
AUSTRIA	100						■■	■■																			
AZERBAIJAN	100	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	▲▲	■■	■■	■■	▲▲	■■	▲▲	■■	■■	■■			▲▲	▲▲	▲▲	▲▲
BELARUS	100	●●	■■	■■	■■	■■	■■	●●	■■	■■	■■	▲▲	■■	■■	■■	▲▲	■■	●●	■■	■■	■■	■■	■■	■■		■■	■■
BELGIUM	100	■■	■■	■■	▲▲	■■	■■	■■	▲▲	■■	■■	▲▲	▲▲	▲▲	▲▲	■■	■■	■■	▲▲	▲▲	▲▲	▲▲	▲▲		■■	▲▲	▲▲
BOSNIA & HERZEGOVINA	100	■■	■■	■■	■■	■■	■■	■■	■■	■■		■■	■■	■■	■■												
BULGARIA	100	▲▲	■■	■■	■■	■■	■■	■■	■■	▲▲	■■		■■	▲▲	■■	▲▲	●●	▲▲	■■	■■	■■	▲▲	▲▲	▲▲	■■	▲▲	▲▲
CROATIA	25	■■	■■	■■	■■	●●	■■	■■	■■	▲▲	■■	■■													■■		▲▲
CYPRUS	100	▲▲	■■	■■	■■	■■	■■	■■	■■	■■	■■	▲▲	▲▲			▲▲									■■	▲▲	▲▲
CZECH REPUBLIC	100	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	▲▲	▲▲	▲▲	▲▲	■■	▲▲	▲▲	▲▲
DENMARK	100		■■	■■	●●	■■	■■	■■	■■	■■	■■	▲▲	▲▲	■■		■■	●●	●●	▲▲	▲▲	▲▲	▲▲	▲▲		■■	■■	■■
ESTONIA	100	■■	■■	■■	■■	■■	■■	■■	■■	▲▲	■■	■■	▲▲	■■	■■	▲▲	■■	■■	■■	▲▲	■■	▲▲	▲▲	■■	■■	■■	■■
FINLAND	0	▲▲	■■	■■	▲▲	▲▲	■■	▲▲	■■	■■	■■		▲▲	▲▲	■■	▲▲	NA	■■	▲▲	■■	▲▲	▲▲	▲▲		■■	▲▲	▲▲
FRANCE	0	■■	■■	■■	●●	▲▲	■■	▲▲	■■	■■	■■		▲▲				■■	■■							▲▲		
GEORGIA	100	■■	■■	■■	■■	■■	■■	■■	■■	▲▲	■■	■■	■■	■■	■■	■■	●●	NA	■■	■■	▲▲	▲▲	▲▲	■■	■■	▲▲	▲▲
GERMANY	100	■■	■■	■■	▲▲	■■	■■	■■	▲▲	▲▲	■■	■■	▲▲	■■	■■	■■	■■	■■		■■	▲▲	■■	▲▲	▲▲	■■	▲▲	▲▲
GREECE	0						■■	▲▲																			
HUNGARY	100						■■	■■																			
ICELAND	100	▲▲		■■	▲▲	■■	■■	■■	■■	▲▲	■■	▲▲	▲▲	■■	■■	■■	■■	■■	■■	▲▲	▲▲	▲▲	■■	■■	■■	■■	■■
IRELAND	0	■■	■■	■■	●●	■■	■■	■■	■■	■■	●●	■■	▲▲	■■	■■	■■	●●	●●	■■	■■	▲▲	▲▲	■■	■■	■■	▲▲	▲▲
ISRAEL	100						■■	■■																		■■	■■
ITALY	65	■■	●●	●●	●●	▲▲	■■	▲▲	■■	■■	●●		■■		■■		●●	●●	■■	■■	▲▲	■■	▲▲				
KAZAKHSTAN	100						■■	■■					■■	■■		■■	●●		■■	■■					■■		
KYRGYZSTAN	100	▲▲	■■	■■	■■	■■	■■	■■	■■	■■	▲▲	■■	▲▲	■■	■■	▲▲	●●	▲▲	■■	■■	■■	■■	■■	▲▲			
LATVIA	100	■■	■■	■■	■■	■■	■■	■■	■■	▲▲	■■	■■	■■	■■	■■	■■	■■	●●	■■	■■	■■	▲▲	■■	■■	■■	■■	■■
LITHUANIA	96	■■	■■	■■	■■	■■	■■	■■	■■	■■	▲▲	■■	■■	■■	■■	■■	●●	●●	■■	■■	■■	▲▲	▲▲	▲▲	■■		
LUXEMBOURG	100	▲▲	■■				■■	▲▲				▲▲	▲▲	■■	■■	▲▲	●●	●●	▲▲	▲▲	▲▲	▲▲	▲▲		■■	■■	▲▲
MALTA	100	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■		▲▲	■■	■■	●●	●●		▲▲	▲▲				■■		
MONACO	0																										
MONTENEGRO	0	▲▲	●●	●●	■■	▲▲	■■	▲▲	■■	■■	■■	▲▲	■■	■■	■■	▲▲	●●	▲▲	■■	■■	■■	▲▲	■■	▲▲	▲▲		▲▲
NETHERLANDS	100	▲▲	■■	■■	■■	■■	■■	■■	■■	■■	■■	▲▲	▲▲	■■	■■	▲▲	■■	■■	■■	▲▲	▲▲	▲▲	▲▲	■■	■■	■■	▲▲
NORWAY	100	■■	●●	■■	■■	■■	■■	■■	■■	■■		■■	▲▲			■■	■■	■■	▲▲	■■	▲▲	▲▲	▲▲	▲▲	■■	■■	▲▲
POLAND	100	■■	■■	■■	■■	●●	■■	■■	■■	■■	■■	■■	▲▲	■■	■■	▲▲	■■	■■	■■	■■	▲▲	▲▲	▲▲	■■	■■	▲▲	▲▲
PORTUGAL	100	■■		■■	●●	■■	■■	■■	■■	■■	■■	▲▲	▲▲	▲▲	▲▲	▲▲	■■	■■		■■	▲▲	▲▲	▲▲	■■	■■	■■	■■
REPUBLIC OF MOLDOVA	100	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	●●		■■	■■		▲▲	■■	■■	■■		
ROMANIA	100	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	▲▲	■■	■■	■■
RUSSIAN FEDERATION	83	■■	■■	■■	●●	■■	●●	■■	■■	■■	■■		▲▲	■■	■■	▲▲	●●	■■	■■	■■	■■	■■	▲▲	▲▲	■■	■■	■■
SAN MARINO	0																										
SERBIA	98	■■	■■	■■	■■	■■	■■	■■	■■	■■	▲▲	▲▲	▲▲	■■	■■	▲▲	●●	●●	■■	■■	▲▲	▲▲	▲▲	■■	■■	▲▲	▲▲
SLOVAKIA	100	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	▲▲	■■	■■	■■	■■	■■	■■	■■	■■	▲▲	■■	■■	■■	■■	■■	■■
SLOVENIA	100	▲▲	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	▲▲	■■	■■	■■	●●	●●	■■	▲▲	▲▲	■■	■■	■■	■■	■■	■■
SPAIN	0						■■	▲▲																	▲▲	■■	▲▲
SWEDEN	100	■■	■■	■■		■■	■■	■■				■■													▲▲	▲▲	▲▲
SWITZERLAND	0	■■	▲▲	■■	●●	▲▲	■■	▲▲	▲▲	▲▲		■■	▲▲	▲▲	■■	■■	■■	■■	▲▲	▲▲	▲▲	▲▲	▲▲	■■	▲▲	■■	▲▲
TAJIKISTAN	61	■■	■■	■■	■■	■■	■■	■■	●●	■■	●●	■■	■■	■■	■■	▲▲	●●	▲▲	■■	■■	▲▲	■■	■■	■■	▲▲	▲▲	▲▲
TFYR MACEDONIA	100	■■	●●	■■	●●	■■	■■	■■	■■	■■	■■	▲▲	■■	■■	■■	▲▲	●●	●●	■■	▲▲	▲▲	▲▲	▲▲	▲▲	●●	▲▲	▲▲
TURKEY	3	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	▲▲	▲▲	■■	▲▲		■■	■■	▲▲	▲▲	▲▲	■■	▲▲	▲▲	■■	▲▲	▲▲
TURKMENISTAN	37	■■	■■	■■	■■	■■	■■	■■	■■		■■	■■	■■	■■	■■	■■	●●	▲▲	■■	■■	■■	▲▲	▲▲		▲▲		
UKRAINE	29						●●	▲▲																	●●		
UNITED KINGDOM	0	■■	■■	■■	▲▲	■■	■■	■■	■■	▲▲	■■	■■		■■		■■	■■	■■						■■	▲▲	▲▲	▲▲
UZBEKISTAN	100	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	▲▲	■■	NA	■■	■■	■■	■■	■■		■■	■■	▲▲
EUR	**60**	**62**	**66**	**75**	**51**	**66**	**92**	**75**	**70**	**58**	**11**	**43**	**34**	**60**	**60**	**38**	**36**	**34**	**51**	**47**	**25**	**19**	**23**	**34**	**53**	**26**	**11**

DOT indicates directly observed treatment; EQA, external quality assurance; HRD, human resources development; ISTC, International Standards for Tuberculosis Care; PAL, Practical Approach to Lung Health; prev., prevalence.
First number in final row shows regional coverage; remaining numbers show the proportion of countries for which the answer is "yes" or "all" (i.e. those shown in dark green in the table).

■■ Yes/all ●● Some/partially ▲▲ No/none Answer not provided **NA** Not applicable. See explanatory notes on page 163 for details of colour-coding.

Table A2.1 **Estimated burden of TB, Europe, 1990 and 2005**

	Incidence, 1990				Prevalence, 1990		TB mortality, 1990		Incidence, 2005								Prevalence, 2005				TB mortality, 2005				HIV prevalence in adult incident TB cases (%)
	All forms*		Smear-positive*		All forms*		All forms*		All forms*		All forms HIV+		Smear-positive*		Smear-positive HIV+		All forms*		All forms HIV+		All forms*		All forms HIV+		
	number	rate	number	rate	number	rate	number	rate	number	rate	number	rate	number	rate	number	rate	number	rate	number	rate	number	rate	number	rate	
Albania	815	25	367	11	1 372	42	140	4	619	20	–	–	279	9	–	–	888	28	–	–	109	3	–	–	–
Andorra	17	33	8	15	19	36	2	4	12	18	–	–	5	8	–	–	10	15	–	–	1	2	–	–	–
Armenia	1 160	33	522	15	1 877	53	206	6	2 140	71	13	≤ 1	962	32	5	≤ 1	2 371	79	7	≤ 1	301	10	2	≤ 1	0.9
Austria	1 648	21	739	10	1 283	17	165	2	942	11	35	≤ 1	420	5	12	≤ 1	723	9	18	≤ 1	94	1	3	≤ 1	8.0
Azerbaijan	2 518	35	1 133	16	4 156	58	380	5	6 364	76	30	≤ 1	2 861	34	10	≤ 1	7 140	85	15	≤ 1	851	10	5	≤ 1	0.7
Belarus	3 940	38	1 772	17	6 458	63	558	5	6 015	62	85	≤ 1	2 698	28	30	≤ 1	6 830	70	42	≤ 1	807	8	15	≤ 1	2.0
Belgium	2 013	20	904	9	1 602	16	205	2	1 330	13	47	≤ 1	594	6	16	≤ 1	1 066	10	23	≤ 1	139	1	5	≤ 1	7.5
Bosnia & Herzegovina	4 042	94	1 819	42	6 937	161	652	15	2 016	52	–	–	907	23	–	–	2 217	57	–	–	294	8	–	–	–
Bulgaria	2 343	27	1 054	12	3 832	44	329	4	3 012	39	–	–	1 355	18	–	–	3 150	41	–	–	402	5	–	–	–
Croatia	3 336	74	1 501	33	5 717	127	529	12	1 849	41	–	–	832	18	–	–	2 937	65	–	–	295	6	–	–	–
Cyprus	52	8	24	3	86	13	5	≤ 1	35	4	–	–	16	2	–	–	40	5	–	–	4	≤ 1	–	–	–
Czech Republic	2 150	21	967	9	2 247	22	243	2	1 060	10	4	≤ 1	476	5	2	≤ 1	1 105	11	2	≤ 1	120	1	≤ 1	≤ 1	0.9
Denmark	713	14	320	6	580	11	74	1	406	7	12	≤ 1	182	3	4	≤ 1	313	6	6	≤ 1	41	≤ 1	1	≤ 1	6.2
Estonia	497	31	223	14	842	53	68	4	568	43	30	2	253	19	10	≤ 1	614	46	15	1	84	6	6	≤ 1	7.4
Finland	874	18	393	8	680	14	87	2	327	6	4	≤ 1	147	3	1	≤ 1	253	5	2	≤ 1	33	≤ 1	≤ 1	≤ 1	2.3
France	13 556	24	6 071	11	11 014	19	1 408	2	7 793	13	407	≤ 1	3 466	6	143	≤ 1	6 205	10	204	≤ 1	815	1	48	≤ 1	11
Georgia	2 081	38	936	17	2 864	52	382	7	3 695	83	34	≤ 1	1 659	37	12	≤ 1	3 828	86	17	≤ 1	486	11	6	≤ 1	1.3
Germany	15 525	20	6 977	9	12 080	15	1 553	2	5 949	7	96	≤ 1	2 667	3	34	≤ 1	4 602	6	48	≤ 1	595	≤ 1	9	≤ 1	3.5
Greece	3 116	31	1 399	14	2 833	28	388	4	1 838	17	42	≤ 1	823	7	15	≤ 1	1 655	15	21	≤ 1	231	2	7	≤ 1	4.9
Hungary	4 258	41	1 916	18	7 026	68	576	6	2 187	22	4	≤ 1	984	10	1	≤ 1	2 514	25	2	≤ 1	292	3	≤ 1	≤ 1	0.4
Iceland	15	6	7	3	12	5	2	≤ 1	8	3	≤ 1	≤ 1	4	1	≤ 1	≤ 1	6	2	≤ 1	≤ 1	≤ 1	≤ 1	≤ 1	≤ 1	5.7
Ireland	860	24	386	11	669	19	86	2	503	12	15	≤ 1	225	5	5	≤ 1	404	10	8	≤ 1	52	1	2	≤ 1	6.5
Israel	641	14	289	6	499	11	64	1	515	8	–	–	232	3	–	–	401	6	–	–	52	≤ 1	–	–	–
Italy	7 198	13	3 221	6	5 803	10	814	1	3 975	7	242	≤ 1	1 764	3	85	≤ 1	3 130	5	121	≤ 1	449	≤ 1	27	≤ 1	13
Kazakhstan	9 697	59	4 363	26	15 858	96	1 362	8	21 347	144	230	2	9 583	65	81	≤ 1	23 032	155	115	≤ 1	2 860	19	41	≤ 1	1.5
Kyrgyzstan	2 412	55	1 085	25	3 972	90	369	8	6 346	121	38	≤ 1	2 852	54	13	≤ 1	7 013	133	19	≤ 1	927	18	7	≤ 1	0.8
Latvia	915	34	412	15	1 507	56	140	5	1 444	63	47	2	645	28	16	≤ 1	1 522	66	23	1	213	9	9	≤ 1	4.5
Lithuania	1 471	40	662	18	2 400	65	200	5	2 146	63	15	≤ 1	964	28	5	≤ 1	2 169	63	8	≤ 1	238	7	2	≤ 1	1.0
Luxembourg	79	21	36	9	65	17	8	2	53	11	1	≤ 1	24	5	≤ 1	≤ 1	42	9	≤ 1	≤ 1	5	1	≤ 1	≤ 1	5.7
Malta	37	10	17	5	33	9	4	1	22	6	≤ 1	≤ 1	10	2	≤ 1	≤ 1	18	4	≤ 1	≤ 1	3	≤ 1	≤ 1	≤ 1	3.8
Monaco	1	4	≤ 1	2	≤ 1	3	≤ 1	≤ 1	≤ 1	2	–	–	≤ 1	1	–	–	≤ 1	2	–	–	≤ 1	≤ 1	–	–	–
Montenegro	–	–	–	–	–	–	–	–	203	33	1	≤ 1	91	15	<1	≤ 1	260	42	<1	≤ 1	33	5	<1	≤ 1	1.1
Netherlands	1 936	13	869	6	1 507	10	194	1	1 138	7	33	≤ 1	509	3	12	≤ 1	876	5	16	≤ 1	114	≤ 1	3	≤ 1	6.2
Norway	410	10	184	4	333	8	43	1	241	5	4	≤ 1	108	2	1	≤ 1	186	4	2	≤ 1	24	≤ 1	≤ 1	≤ 1	3.2
Poland	19 897	52	8 951	23	33 652	88	2 897	8	10 072	26	38	≤ 1	4 528	12	13	≤ 1	11 291	29	19	≤ 1	1 367	4	7	≤ 1	0.7
Portugal	6 736	67	3 017	30	5 242	53	674	7	3 457	33	173	2	1 538	15	61	≤ 1	2 642	25	86	≤ 1	345	3	17	≤ 1	10.8
Republic of Moldova	2 785	64	1 252	29	4 553	104	391	9	5 817	138	248	6	2 593	62	87	2	6 252	149	124	3	787	19	44	1	6.0
Romania	17 057	73	7 676	33	28 193	121	2 406	10	29 143	134	–	–	13 114	60	–	–	31 680	146	–	–	3 981	18	–	–	–
Russian Federation	75 116	51	33 802	23	120 994	82	14 584	10	170 422	119	7 525	5	75 937	53	2 634	2	214 229	150	3 762	3	28 477	20	1 875	1	6.2
San Marino	3	11	1	5	2	8	≤ 1	1	2	6	–	–	≤ 1	3	–	–	1	5	–	–	≤ 1	≤ 1	–	–	–
Serbia	6 029	59	2 712	27	10 347	102	973	10	3 117	33	21	≤ 1	1 401	15	7	≤ 1	3 980	42	10	≤ 1	500	5	6	≤ 1	1.1
Slovakia	2 087	40	939	18	2 850	54	344	7	920	17	≤ 1	≤ 1	414	8	≤ 1	≤ 1	1 077	20	≤ 1	≤ 1	144	3	≤ 1	≤ 1	0.1
Slovenia	822	43	370	19	1 371	71	99	5	287	15	≤ 1	≤ 1	129	7	≤ 1	≤ 1	303	15	≤ 1	≤ 1	38	2	≤ 1	≤ 1	0.1
Spain	20 042	51	8 955	23	16 284	41	2 082	5	11 839	27	869	2	5 241	12	304	≤ 1	9 348	22	434	1	1 241	3	102	≤ 1	16
Sweden	594	7	267	3	462	5	59	≤ 1	535	6	13	≤ 1	239	3	5	≤ 1	412	5	7	≤ 1	53	≤ 1	1	≤ 1	5.4
Switzerland	1 232	18	552	8	959	14	123	2	528	7	26	≤ 1	235	3	9	≤ 1	403	6	13	≤ 1	53	≤ 1	3	≤ 1	11
Tajikistan	5 921	112	2 664	50	10 371	196	1 174	22	12 854	198	76	1	5 776	89	27	≤ 1	19 295	297	38	≤ 1	2 471	38	27	≤ 1	0.8
TFYR Macedonia	1 026	54	462	24	1 758	92	214	11	601	30	≤ 1	≤ 1	270	13	≤ 1	≤ 1	681	33	≤ 1	≤ 1	104	5	≤ 1	≤ 1	0.1
Turkey	28 301	49	12 735	22	47 653	83	4 879	9	21 089	29	–	–	9 490	13	–	–	32 348	44	–	–	3 416	5	–	–	–
Turkmenistan	2 356	64	1 060	29	3 879	106	360	10	3 393	70	1	≤ 1	1 527	32	≤ 1	≤ 1	4 373	90	≤ 1	≤ 1	495	10	≤ 1	≤ 1	0.1
Ukraine	21 520	41	9 675	19	35 743	69	3 160	6	46 183	99	2 578	6	20 525	44	902	2	55 686	120	1 289	3	6 302	14	481	1	7.9
United Kingdom	6 699	12	3 008	5	5 213	9	670	1	8 494	14	266	≤ 1	3 796	6	93	≤ 1	6 536	11	133	≤ 1	849	1	26	≤ 1	6.7
Uzbekistan	14 026	68	6 312	31	23 516	115	2 115	10	30 173	113	267	1	13 551	51	94	≤ 1	36 984	139	134	≤ 1	4 148	16	56	≤ 1	1.2
EUR	**322 577**	**38**	**144 987**	**17**	**459 206**	**54**	**48 446**	**6**	**445 025**	**50**	**13 572**	**2**	**198 904**	**23**	**4 750**	**≤ 1**	**525 043**	**60**	**6 786**	**≤ 1**	**65 734**	**7**	**2 845**	**≤ 1**	**4.6**

– Indicates no estimate.

* Incidence, prevalence and mortality estimates include patients with HIV. Estimates labelled "HIV+" are estimates of TB in HIV-positive adults (aged 15-49 years). Estimates for all years are re-calculated as new information becomes available and techniques are refined, so they may differ from those published previously. See Explanatory notes on page 163 for further details. Data can be downloaded from www.who.int/tb

Table A2.2 **Whole country case notifications and case detection rates, Europe, 2005**

		TB cases notified from whole country (DOTS + non-DOTS)															Incidence and case detection rates				Proportions			
		Country	New and relapse		New pulmonary			New extra-	Other	Re-treatment cases					New pulm.	Estimated incidence		Case detection rate		ss+	ss+	Extrapulm.	Re-treat.
	Population	total	(WHO total)		ss+		ss- / unk.	pulmonary	new	Relapse	After failure	After default	Other re-treat.	Other	lab. confirm.	all forms	ss+	all new	new ss+	(% of	(% of	(% of	(% of
	thousands	number	number	rate	number	rate	number	number	number	number	number	number	number	number	number	number	number	%	%	pulm.)	new+relapse)	new+relapse)	new+re-treat.)
Albania	3 130	540	506	16	196	6	134	167		9	1	3	30		215	619	279	80	70	59	39	33	8
Andorra	67	10	10	15	5	7	1	4		0			0		6	12	5	85	94	83	50	40	
Armenia	3 016	2 322	2 206	73	581	19	1 049	365		211	70	46			581	2 140	962	93	60	36	26	17	14
Austria	8 189	954	928	11	234	3	519	175		0			26		533	942	420	99	56	31	25	19	3
Azerbaijan	8 411	7 920	6 034	72	1 561	19	2 508	651		1 314		1 886			1 561	6 364	2 861	74	55	38	26	11	40
Belarus	9 755	6 357	5 308	54	1 235	13	3 710	363					1 049		2 249	6 015	2 698	88	46	25	23	7	17
Belgium	10 419	1 144	1 076	10	380	4	406	290					68		658	1 330	594	81	64	48	35	27	6
Bosnia & Herzegovina	3 907	2 160	2 111	54	640	16	1 106	258		107			49	0	1 036	2 016	907	99	71	37	30	12	7
Bulgaria	7 726	3 302	3 225	42	1 214	16	1 511	376		124			77		1 214	3 012	1 355	103	90	45	38	12	6
Croatia	4 551	1 144	1 050	23	372	8	575	103		0			94		563	1 849	832	57	45	39	35	10	8
Cyprus	835	37	34	4	9	1	13	12		0	0	0	3		19	35	16	96	57	41	26	35	8
Czech Republic	10 220	1 007	973	10	308	3	461	204		0	0	0	34		543	1 060	476	92	65	40	32	21	3
Denmark	5 431	424	395	7	129	2	145	121		0	0	0	29		220	406	182	97	71	47	33	31	7
Estonia	1 330	519	479	36	162	12	217	46		54	6	12	22		292	568	253	75	64	43	34	10	18
Finland	5 249	361	339	6	130	2	114	95		0	0	0	22	0	234	327	147	104	89	53	38	28	6
France	60 496	5 374	4 887	8	1 941	3	1 557	1 389		0	0	0	371	116	2 740	7 793	3 466	63	56	55	40	28	7
Georgia	4 474	6 448	4 501	101	1 509	34	1 524	1 261		207	175	501	1 269	2	1 512	3 695	1 659	116	91	50	34	28	33
Germany	82 689	6 045	5 539	7	1 379	2	2 801	1 211		148	12	39	294	161	3 165	5 949	2 667	91	52	33	25	22	8
Greece	11 120	767	626	6	197	2	322	107		0			74	67	293	1 838	823	34	24	38	31	17	11
Hungary	10 098	2 024	1 808	18	423	4	1 137	117		131			216		716	2 187	984	77	43	27	23	6	17
Iceland	295	11	10	3	2	1	3	5		0			1		5	8	4	119	53	40	20	50	9
Ireland	4 148	461	387	9	130	3	156	99		2			38	36	187	503	225	77	58	45	34	26	9
Israel	6 725	406	402	6	98	1	203	98		3			4		186	515	232	77	42	33	24	24	2
Italy	58 093	4 137	3 828	7	1 275	2	1 506	1 047		0			293	16	1 778	3 975	1 764	96	72	46	33	27	7
Kazakhstan	14 825	31 187	25 739	174	6 911	47	14 472	920		3 436	1 227	1 198	3 023		8 290	21 347	9 583	104	72	32	27	4	28
Kyrgyzstan	5 264	6 765	6 329	120	1 972	37	2 141	1 805		411			436	0	4 113	6 346	2 852	93	69	48	31	29	13
Latvia	2 307	1 443	1 409	61	536	23	554	148		171	3	31	0		843	1 444	645	86	83	49	38	11	14
Lithuania	3 431	2 574	2 114	62	964	28	793	357		0			460		1 266	2 146	964	99	100	55	46	17	18
Luxembourg	465	37	37	8	14	3	20	3		0			0		34	53	24	70	59	41	38	8	
Malta	402	23	21	5	5	1	10	6		0			1	1	8	22	10	94	50	33	24	29	5
Monaco	35															1	0						
Montenegro	623	170	156	25	64	10	66	13		13			14		93	203	91	70	70	49	41	8	16
Netherlands	16 299	1 157	1 127	7	237	1	491	385		14			30		543	1 138	509	98	47	33	21	34	4
Norway	4 620	290	269	6	48	1	119	102		0			14	7	128	241	108	112	44	29	18	38	5
Poland	38 530	9 280	8 203	21	2 823	7	4 591	789		0			1 077		4 514	10 072	4 528	81	62	38	34	10	12
Portugal	10 495	3 536	3 303	31	1 302	12	974	905		122	8	58	162	5	1 825	3 457	1 538	92	85	57	39	27	10
Republic of Moldova	4 206	6 278	5 141	122	1 696	40	2 237	568		640	369	280	488			5 817	2 593	77	65	43	33	11	28
Romania	21 711	29 347	26 104	120	10 801	50	8 038	3 568		3 697	1 600	536	1 105	2	12 716	29 143	13 114	77	82	57	41	14	24
Russian Federation	143 202	156 047	127 930	89	32 605	23	74 301	12 320		8 704			28 617		42 748	170 422	75 937	70	43	30	25	10	24
San Marino	28															2	1						
Serbia	9 546	3 468	3 208	34	1 105	12	1 584	479		40	6	16	238	0	1 470	3 120	1 400	102	79	41	34	15	9
- Serbia (without Kosovo)	7 441	2 366	2 106	28	873	12	988	245			6	16	238		1 238					47	41	12	11
- Kosovo	2 105	1 102	1 102	52	232	11	596	234		40					232					28	21	21	4
Slovakia	5 401	760	710	13	162	3	356	134		58	5	1	44		301	920	414	71	39	31	23	19	14
Slovenia	1 967	278	269	14	109	6	110	30		20	0	6	3		199	287	129	87	84	50	41	11	10
Spain	43 064	7 820	7 281	17	2 511	6	3 880	890		0			1 078		3 727	11 839	5 241	61	48	39	34	12	13
Sweden	9 041	569	539	6	134	1	208	197		0			30		279	535	239	101	56	39	25	37	5
Switzerland	7 252	567	508	7	108	1	249	151		0			118		293	528	235	96	46	30	21	30	19
Tajikistan	6 507	7 142	5 460	84	1 745	27	2 175	1 417		123	24	26	2 016		1 745	12 854	5 776	42	30	45	32	26	29
TFYR Macedonia	2 034	658	598	29	178	9	236	141		43			60		209	601	270	92	66	43	30	24	16
Turkey	73 193	20 535	19 744	27	7 450	10	5 944	5 359		991	46	227	1 286		8 485	21 089	9 490	89	79	56	38	27	12
Turkmenistan	4 833	3 291	3 191	66	995	21	1 498	656		42			100		995	3 393	1 527	93	65	40	31	21	4
Ukraine	46 481	39 608	39 608	85												46 183	20 525						
United Kingdom	59 668	8 465	8 173	14	1 821	3	2 752	3 600		0			460		3 377	8 494	3 796	96	48	40	22	44	5
Uzbekistan	26 593	28 891	21 513	81	5 695	21	7 857	6 324		1 637	316	213	6 849		5 695	30 173	13 551	66	42	42	26	29	31
EUR	**882 395**	**424 060**	**365 346**	**41**	**96 101**	**11**	**157 334**	**49831**	**0**	**22 472**	**3 868**	**5 079**	**51 772**	**413**	**124 402**	**445 028**	**198 903**	**68**	**48**	**38**	**26**	**14**	**22**

ss+ indicates sputum smear-positive; ss-, sputum smear-negative; unk., sputum smear result unknown; re-treat., re-treatment; pulm.lab. confirmed, pulmonary case confirmed by positive smear or culture. See Explanatory notes on page 163 for further details. Data can be downloaded from www.who.int/tb

Table A2.3 **DOTS coverage, case notifications and case detection rates, Europe, 2005**

		TB cases reported from DOTS services													Estimated incidence and case detection rate				Proportions			
	DOTS	New and relapse		New pulmonary			New extra-	Other	Re-treatment cases					New pulm.	Estimated incidence		Case detection rate		ss+	ss+	Extrapulm.	Re-treat.
	coverage	(WHO total)		ss+		ss- / unk.	pulmonary	new	Relapse	After failure	After default	Other re-treat.	Other	lab. confirm.	all forms	ss+	all new	new ss+	(% of	(% of	(% of	(% of
	%	number	rate	number	rate	number	number	number	number	number	number	number	number	number	number	number	%	%	pulm.)	new+relapse)	new+relapse)	new+re-treat.)
Albania	33	183	6	69	2	47	61		6			7		77	619	279	29	25	59	38	33	7
Andorra	100	10	15	5	7	1	4		0			0		6	12	5	85	94	83	50	40	
Armenia	100	2 206	73	581	19	1 049	365		211	70	46			581	2 140	962	93	60	36	26	17	14
Austria	100	928	11	234	3	519	175		0			26		533	942	420	99	56	31	25	19	3
Azerbaijan	100	6 034	72	1 561	19	2 508	651		1 314		1 886			1 561	6 364	2 861	74	55	38	26	11	40
Belarus	100	5 308	54	1 235	13	3 710	363					1 049		2 249	6 015	2 698	88	46	25	23	7	17
Belgium	100	1 076	10	380	4	406	290					68		658	1 330	594	81	64	48	35	27	6
Bosnia & Herzegovina	100	2 111	54	640	16	1 106	258		107			49	0	1 036	2 016	907	99	71	37	30	12	7
Bulgaria	100	3 225	42	1 214	16	1 511	376		124			77		1 214	3 012	1 355	103	90	45	38	12	6
Croatia	25														1 849	832						
Cyprus	100	34	4	9	1	13	12		0	0	0	3		19	35	16	96	57	41	26	35	8
Czech Republic	100	973	10	308	3	461	204		0	0	0	34		543	1 060	476	92	65	40	32	21	3
Denmark	100	395	7	129	2	145	121		0	0	0	29		220	406	182	97	71	47	33	31	7
Estonia	100	479	36	162	12	217	46		54	6	12	22		292	568	253	75	64	43	34	10	18
Finland	0														327	147						
France	0														7 793	3 466						
Georgia	100	4 501	101	1 509	34	1 524	1 261		207	175	501	1 269	2	1 512	3 695	1 659	116	91	50	34	28	33
Germany	100	5 539	7	1 379	2	2 801	1 211		148	12	39	294	161	3 165	5 949	2 667	91	52	33	25	22	8
Greece	0	0	0	0	0	0	0		0			0		0	1 838	823	0	0				
Hungary	100	1 808	18	423	4	1 137	117		131			216		716	2 187	984	77	43	27	23	6	17
Iceland	100	10	3	2	1	3	5		0			1		5	8	4	119	53	40	20	50	9
Ireland	0	0	0	0	0	0	0		0			0		0	503	225	0	0				
Israel	100	402	6	98	1	203	98		3			4		186	515	232	77	42	33	24	24	2
Italy	65	3 828	7	1 275	2	1 506	1 047		0			293	16	1 778	3 975	1 764	96	72	46	33	27	7
Kazakhstan	100	25 739	174	6 911	47	14 472	920		3 436	1 227	1 198	3 023		8 290	21 347	9 583	104	72	32	27	4	28
Kyrgyzstan	100	6 209	118	1 901	36	2 115	1 782		411			436	0	4 016	6 346	2 852	91	67	47	31	29	13
Latvia	100	1 409	61	536	23	554	148		171	3	31			843	1 444	645	86	83	49	38	11	14
Lithuania	96	2 114	62	964	28	793	357		0			460		1 266	2 146	964	99	100	55	46	17	18
Luxembourg	100	37	8	14	3	20	3		0			0		34	53	24	70	59	41	38	8	
Malta	100	21	5	5	1	10	6		0			1	1	8	22	10	94	50	33	24	29	5
Monaco															1	0						
Montenegro	0														203	91						
Netherlands	100	1 127	7	237	1	491	385		14			30		543	1 138	509	98	47	33	21	34	4
Norway	100	269	6	48	1	119	102		0			14	7	128	241	108	112	44	29	18	38	5
Poland	100	8 203	21	2 823	7	4 591	789		0			1 077		4 514	10 072	4 528	81	62	38	34	10	12
Portugal	100	3 303	31	1 302	12	974	905		122	8	58	162	5	1 825	3 457	1 538	92	85	57	39	27	10
Republic of Moldova	100	5 141	122	1 696	40	2 237	568		640	369	280	488			5 817	2 593	77	65	43	33	11	28
Romania	100	26 104	120	10 801	50	8 038	3 568		3 697	1 600	536	1 105	2	12 716	29 143	13 114	77	82	57	41	14	24
Russian Federation	83	82 643	58	22 690	16	47 151	6 776		6 026			6 433		32 833	170 422	75 937	45	30	32	27	8	14
San Marino															2	1						
Serbia	98	3 208	34	1 105	12	1 584	479		40	6	16	238	0	1 470	3 120	1 400	102	79	41	34	15	9
Serbia (without Kosovo)	100	2 106	28	873	12	988	245			6	16	238		1 238					47	41	12	11
Kosovo	98	1 102	52	232	11	596	234		40					232					28	21	21	4
Slovakia	100	710	13	162	3	356	134		58	5	1	44		301	920	414	71	39	31	23	19	14
Slovenia	100	269	14	109	6	110	30		20	0	6	3		199	287	129	87	84	50	41	11	10
Spain	0	0	0	0	0	0	0		0			0		0	11 839	5 241	0	0				
Sweden	100	539	6	134	1	208	197		0			30		279	535	239	101	56	39	25	37	5
Switzerland	0	0	0	0	0	0	0		0			0		0	528	235	0	0				
Tajikistan	61	3 384	52	1 294	20	1 085	920		85	24	26	1 248		1 294	12 854	5 776	26	22	54	38	27	30
TFYR Macedonia	100	598	29	178	9	236	141		43			60		209	601	270	92	66	43	30	24	16
Turkey	3	613	1	256	0	143	172		42	5	4	14		307	21 089	9 490	3	3	64	42	28	10
Turkmenistan	37	1 660	34	661	14	608	349		42			100		661	3 393	1 527	48	43	52	40	21	8
Ukraine	29	39 608	85												46 183	20 525						
United Kingdom	0	0	0	0	0	0	0		0			0		0	8 494	3 796	0	0				
Uzbekistan	100	18 332	69	5 259	20	7 040	4 396		1 637	316	213	6 849		5 259	30 173	13 551	55	39	43	29	24	35
EUR	**60**	**270 290**	**31**	**70 299**	**8**	**111 802**	**29 792**	**0**	**18 789**	**3 826**	**4 853**	**25 256**	**194**	**93 346**	**445 028**	**198 903**	**48**	**35**	**39**	**26**	**11**	**20**

ss+ indicates sputum smear-positive; ss-, sputum smear-negative; unk., sputum smear result unknown; re-treat., re-treatment; pulm.lab. confirmed, pulmonary case confirmed by positive smear or culture. See Explanatory notes on page 163 for further details. Data can be downloaded from www.who.int/tb

Table A2.4 **Laboratory services, collaborative TB/HIV activities and management of MDR-TB, Europe, 2004–2005**

	Laboratory services, 2005				Collaborative TB/HIV activities								Management of MDR-TB, 2005				
					2004				2005								
	number of labs working with NTP			number of labs included in EQA	TB pts tested for HIV	TB pts HIV-positive	HIV+ TB pts CPT	HIV+ TB pts ART	TB pts tested for HIV	TB pts HIV-positive	HIV+ TB pts CPT	HIV+ TB pts ART	Lab-confirmed MDR	DST in new cases	MDR in new cases	Re-treatment DST	Re-treatment MDR
	smear	culture	DST														
Albania													1	161	0	12	1
Andorra	1	1	1										0	9	0	0	0
Armenia	46	2	1	1	270	6		0	270	6	5	4	162	576	86	182	76
Austria													13	557	11	14	2
Azerbaijan	69	6	6	6									800	453	270	366	58
Belarus					6 457	77				139							
Belgium	165	155	25		751	53			937	52			10	596	7	41	3
Bosnia & Herzegovina		8	8										5	1 036	4	105	1
Bulgaria	33	31	18	4	19				23				47	482	22	691	25
Croatia	15	15	8	15									7	581	4	59	3
Cyprus	1	1	0	0	0				0				1	16	1	0	0
Czech Republic	45	45	14	45	234	2			187	2			10	466	5	17	5
Denmark	10	1	1			7							5	308	5	18	0
Estonia	8	3	2	8	477	26	0		470	33	0		79	316	42	71	37
Finland		15	2										3	198	2	22	1
France		310	110														
Georgia	30	1	1	1	726	9	5	9	674	13	7	13	195	799	54	515	141
Germany	225	200	63	63									84	2 991	55	245	29
Greece													12	497	12	0	0
Hungary													26	442	13	88	13
Iceland	1	1	0		8	1	1	1	10	1	1	1	0	7	0	1	0
Ireland	13	13	4	13		13				2			2	101	1	18	1
Israel						13				22							
Italy																	
Kazakhstan																	
Kyrgyzstan	103	9	1	103									989	837	169	152	96
Latvia	15	9	1	24	1 449	40			1 226	53			156	860	91	182	65
Lithuania	5	5	5										336	1 294	127	439	209
Luxembourg	1	1	1										0	36	0	0	0
Malta	1	1	1										0	10	0	0	0
Monaco																	
Montenegro	1	1	1	0					8	0	0	0	1	82	0	14	2
Netherlands		43	15										3	644	3	27	0
Norway	19	13	3	19									3	193	3	8	0
Poland	104	72	72	104									72	5 409			
Portugal	110	60	14		2 504	626			1 756	546			23	998	12	102	11
Republic of Moldova	50	4	4	4									338	536	68	652	270
Romania	166	110	65	42	1 710	5			10 791	30			530	1 594	95	1 300	435
Russian Federation	4 953								85 537				6 581				
San Marino																	
Serbia	68	45	10			8	7	8		15	13	15	10	1 111	5	123	5
Slovakia	14	14	6	0	700	0	0	0	720	1	0	1	8	248	4	56	4
Slovenia	5	5	1	1	89	3	3	3	107	0	0	0	1	217	0	28	1
Spain																	
Sweden	5	5	5										4	427	2	17	2
Switzerland	45	28	28	45									4	326	2	43	2
Tajikistan	46	0	0	0	0	0	0	0	0	0	0	0					
TFYR Macedonia	11	7	1	0	10	0	0	0	42	2	0	2	4	106	0	19	4
Turkey	172	20	7	0									191	3 237	101	508	90
Turkmenistan																	
Ukraine																	
United Kingdom			9										26	3 379	23	112	3
Uzbekistan	315	3	1	26	31 579	138	0	0	35 801	147	0	0	86	0	0	435	86
EUR	**6 871**	**1 263**	**515**	**524**	**46 983**	**1 027**	**16**	**21**	**138 559**	**1 064**	**26**	**36**	**10 828**	**32 136**	**1 299**	**6 682**	**1 681**

ART indicates antiretroviral therapy; CPT, co-trimoxazole preventive therapy; DST, drug susceptibility testing; EQA, external quality assurance; HIV+, HIV-positive; pts, patients. See Explanatory notes on pages 163 for further details. Some countries provided the number of TB patients found to be HIV-positive, but did not provide the number of TB patients tested. The regional total of TB patients tested is therefore lower than the number of patients actually tested, and cannot be used to calculated a regional estimate of HIV prevalence in TB patients. Data can be downloaded from www.who.int/tb

Table A2.5 **Treatment outcomes, Europe, 2004 cohort**

	New smear-positive cases, DOTS											New smear-positive cases, non-DOTS											Smear-positive re-treatment cases, DOTS								
	Number of cases		% of notif	% of cohort							%	Number of cases		% of notif	% of cohort							%	Number	% of cohort							%
	Notified	Regist'd	regist'd	Cured	Compl-eted	Died	Failed	Default	Trans-ferred	Not eval.	Success	Notified	Regist'd	regist'd	Cured	Compl-eted	Died	Failed	Default	Trans-ferred	Not eval.	Success	Regist'd	Cured	Compl-eted	Died	Failed	Default	Trans-ferred	Not eval.	Success
Albania	104	104	100	62	16	4	0	3		15	78	97	97	100	31	40	7	0	4		18	71	18	22	61	0	0	17	0	0	83
Andorra	3	3	100	67	33					0	100																				
Armenia	461	461	100	57	13	4	6	16	1	3	70	141											143	25	23	5	16	24	0	6	48
Austria	216	240	111	17	52	10		7		15	69												20	15	50	15	0	5	0	15	65
Azerbaijan	1 333	1 325	99	52	8	2	5	9	21	3	60	139	924	665	33	16	1	17	19	10	3	49	1 147	30	21	6	9	13	19	1	51
[1] Belarus	2 287	2 284	100		74	9	9	2	5	0	74																				
[2] Belgium	391	302	77	18	54	8	8	3	2	8	72												90	11	22	10	0	7	2	48	33
[1] Bosnia & Herzegovina	1 025	1 025		96	3	0	0	0	0	0	98												97	88	4	3	1	2	2	0	92
Bulgaria	1 315	1 315	100	80		3	4	7	4	2	80												309	18	58	4	5	10	2	3	75
Croatia												416	423	102	37	9	6		1	1	46	46									
Cyprus	10	10	100	20		30		10	10	30	20												1	100	0	0	0	0	0	0	100
Czech Republic	302	308	102	67	6	5	0	3	1	18	73												30	23	47	0	0	0	0	30	70
Denmark	146	146	100	47	40	8	1	2	1	1	88												30	17	53	17	0	3	0	10	70
Estonia	203	203	100	71	0	12	0	6		10	71												116	25	17	14	2	20	0	22	42
Finland												124																			
France												1 923																			
Georgia	1 311	1 301	99	54	14	3	5	13	5	7	68												2 034	14	35	5	6	22	9	8	49
[2] Germany	1 562	1 338	86	36	32	11	0	3		18	68												545	31	35	9	1	6	0	19	66
Greece												176																			
Hungary	560	561	100	37	17	12	11	6	4	13	54												384	15	41	13	9	5	3	14	55
Iceland	2	2	100		50	50				0	50												1	100	0	0	0	0	0	0	100
Ireland												127	105	83	4	74	4	1	2		15	78									
[1] Israel	262	262		74	6	10	0	3	4	2	80												11	55	27	0	9	0	9	0	82
Italy	1 058																														
Kazakhstan	7 927	7 927	100	71	1	5	11	5	2	5	72												4 294	48	1	11	15	6	2	18	49
Kyrgyzstan	1 761	1 716	97	81	4	4	5	4	1	0	85												885	40	33	9	9	8	1	1	74
Latvia	582	582	100	71	2	9	0	7		10	73												237	46	1	12	2	8	0	30	48
Lithuania	863	856	99	72		11	3	9	1	5	72												478	31	1	24	5	21	0	18	32
Luxembourg	20																														
Malta	2	2	100		100					0	100												1	0	100	0	0	0	0	0	100
Monaco																															
Montenegro																															
[2] Netherlands	360	305	85	11	72	7		2	2	6	83												36	8	61	3	0	17	3	8	69
Norway	50	46	92	65	24	4		2	4	0	89												18	28	61	6	0	6	0	0	89
Poland	2 777	2 773	100	68	11	6	1	8	1	5	79												1 156	20	3	5	0	24	0	46	23
Portugal	1 514	1 534	101	10	74	4	0	4	3	4	84												399	7	61	11	1	9	3	9	68
Republic of Moldova	1 536	1 530	100	58	4	9	12	10	6	1	62												1 486	29	9	14	19	16	9	3	38
Romania	5 895	5 910	100	71	10	5	4	5	1	4	82	4 993	5 040	101	67	11	5	5	7	1	5	78	3 443	34	16	10	9	14	1	17	50
Russian Federation	9 926	7 108	72	55	4	14	14	10	4	0	59	20 964	18 570	89	61						39	61	3 011	35	4	15	26	15	5	0	39
San Marino	0	0										0	0										0							0	
[1] Serbia	577	581	101	74	17	4	0	4	1	0	91												96	47	27	10	3	13	0	0	74
Slovakia	157	155	99	86	3	6		3		3	88												89	51	43	3	1	1	1	0	93
Slovenia	89	89	100	33	57	7		2	1	0	90												34	24	50	9	3	12	3	0	74
Spain												2 082																			
Sweden	120	116	97		64	9	1		3	23	64												7	0	57	0	0	0	29	14	57
Switzerland												119																			
Tajikistan	601	598	100	82	2	5	5	6	1	0	84	457	457	100	13	7	12	4	44	0	20	20	598	40	36	10	6	7	1	0	77
TFYR Macedonia	200	189	95	65	20	2	1	13	0	0	84	0	0										70	31	56	10	0	0	3	0	87
[1] Turkey	332	297	89	81	10	3	0	1	4	0	91	5 572	5 519	99		85	3	0	5	5	3	85	51	49	31	4	2	4	4	6	80
[1] Turkmenistan	532	1 134	213	35	52	3	4	6	1	0	86	571	1 451	254	28	61	2	4	4	0	0	89	828	17	47	11	13	12	1	0	63
Ukraine																															
[2] United Kingdom												1 693	1 329	78		68	5		1	2	25	68									
Uzbekistan	3 914	3 833	98	68	10	5	6	9	1	0	78	1 205	1 201	100		95	5				0	95	2 966	34	38	9	7	10	2	0	72
EUR	**52 286**	**48 471**	**93**	**59**	**14**	**7**	**7**	**7**	**3**	**3**	**74**	**40 799**	**35 116**	**86**	**45**	**24**	**2**	**1**	**3**	**1**	**24**	**69**	**25 159**	**33**	**20**	**10**	**11**	**12**	**4**	**10**	**52**

[1] Indicates that the outcomes belong to the lab-confimred cases, i.e. smear and or culture-positive

[2] Indicates that cases with "history unknown" are included in Tables A2.2 and A2.3 but not in this table

Not eval. indicates not evaluated (percentage of registered cases for which outcomes were not recorded); success, sum of cured and completed; cases regist'd, the denominator for calculating treatment outcomes. The number of cases registered for treatment in 2004 is used as the denominator for calculating treatment outcomes unless it is less than the sum of outcomes, in which case the sum of outcomes is used. If the number of cases registered is not reported, then the number of cases notified in 2004 is used, or the sum of outcomes if the latter is greater. Data can be downloaded from www.who.int/tb

Table A2.6 **Re-treatment outcomes, Europe, 2004 cohort**

	Relapse, DOTS									After failure, DOTS									After default, DOTS								
		% of cohort							%		% of cohort							%		% of cohort							%
	Number regist'd	Cured	Compl-eted	Died	Failed	Default	Trans-ferred	Not eval.	Success	Number regist'd	Cured	Compl-eted	Died	Failed	Default	Trans-ferred	Not eval.	Success	Number regist'd	Cured	Compl-eted	Died	Failed	Default	Trans-ferred	Not eval.	Success
Albania	1	100	0	0	0	0		0	100										1		0	0	0			100	0
Andorra																											
Armenia	102	29	22	4	15	25	0	6	51																		
Austria																											
Azerbaijan	799	35	22	7	9	8	18	2	57										348	17	19	5	9	26	24	0	36
Belarus																											
Belgium																											
[1] Bosnia & Herzegovina	97	88	4	3	1	2	2	0	92																		
Bulgaria	102	54		11	15	21		0	54																		
Croatia																											
[1] Cyprus	1	100	0	0	0	0	0	0	100																		
Czech Republic																											
Denmark																											
Estonia	32	38	6	9	0	19		28	44	5	0	0	0		60		40	0	14	21	0		7	29		43	21
Finland																											
France																											
Georgia	146	38	8	6	12	22	10	5	45	131	27	9	11	21	11	12	8	36	251	21	13	8	9	28	10	11	33
Germany	90	37	26	11	1	2		23	62	6	33	0		17	17		33	33	14	50	29	7	0			14	79
Greece																											
Hungary	94	29	16	20	16	4	2	13	45										1	0	0	0	0		0	100	0
Iceland																											
Ireland																											
[1] Israel	10	60	30				10	0	90	1				100			0										
Italy																											
Kazakhstan	3 126	55	1	12	14	5	3	10	56	1 168	29	1	8	16	6	2	38	30									
Kyrgyzstan	398	68	6	10	10	6	1	0	73																		
Latvia	133	44	2	14	3	6		32	46	1	100	0	0	0	0		0	100	26	38	0		0			62	38
Lithuania																											
Luxembourg																											
Malta																											
Monaco																											
Montenegro																											
Netherlands	5	20	40	0		40	0	0	60										2	50	50	0		0	0	0	100
Norway																											
Poland																											
Portugal	114	12	61	9	1	6	2	10	73	2	0	0	0		0	0	100	0	34	12	44	9	0		6	29	56
Republic of Moldova	766	37	4	16	17	14	9	2	41	410	25	8	13	26	10	14	4	33	261	18	12	14	16	31	4	5	30
Romania	1 576	49	9	9	9	13	1	10	58	789	20	6	13	13	16	1	31	27	163	28	10	8	8	29	1	17	37
Russian Federation	1 276	43	3	14	24	11	5	0	46																		
San Marino																											
[1] Serbia	84	54	21	8	4	13	0	0	75																		
Slovakia	21	90	0	5		0	5	0	90	2	100	0	0		0	0	0	100	2	100	0	0		0	0	0	100
Slovenia	11	18	55	9		9	9	0	73	1	100	0	0		0	0	0	100	5	40	40	0		20	0	0	80
Spain																											
Sweden																											
Switzerland																											
Tajikistan	45	64	0	16	11	9	0	0	64	5	40	20	20	0		0	20	60	7	57	0		14	14	0	14	57
TFYR Macedonia	36	61	28	6	0	0	6	0	89	4	0		25	0	0	0	75	0	12	0		8	0	0	0	92	0
[1] Turkey	30	70	10	7	3	7	3	0	80										8	50	38					13	88
[1] Turkmenistan	51	49	10	8	16	18	0	0	59																		
Ukraine																											
United Kingdom																											
Uzbekistan	770	44	16	11	10	16	3	0	60	150	47	13	9	13	15	3	0	59	79	23	25	10	6	33	3	0	48
EUR	**9 916**	**46**	**7**	**11**	**13**	**9**	**4**	**9**	**53**	**2 675**	**27**	**5**	**11**	**16**	**11**	**4**	**27**	**32**	**1 228**	**21**	**16**	**9**	**10**	**28**	**10**	**7**	**37**

[1] Indicates that the outcomes belong to the lab-confimred cases, i.e. smear and or culture-positive.
Not eval. indicates not evaluated (percentage of registered cases for which outcomes were not recorded); success, sum of cured and completed; cases regist'd, the denominator for calculating treatment outcomes. The number of cases registered for treatment in 2004 is used as the denominator for calculating treatment outcomes unless it is missing or is less than the sum of outcomes, in which case the sum of outcomes is used. Data can be downloaded from www.who.int/tb

Table A2.7 **DOTS treatment success and case detection rates, Europe, 1994–2005**

	DOTS new smear-positive treatment success (%)											DOTS new smear-positive case detection rate (%)										
	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Albania								98	90	91	78							25	30	31	35	25
Andorra					100	67	50	100	100	100	100			224	14	59	16	50	35	125	55	94
Armenia		83	77	82	81	88	87	90	79	77	70	12	25	44	44	41	47	29	30	43	48	60
Austria						77	73	64	78	68	69						64	55	48	61	50	56
Azerbaijan			86	87	86	88	91	66	84	70	60	5	9	7	7	7	6	0	46	29	47	55
Belarus										73	74									39	42	46
Belgium								64	69	73	72							64	61	56	63	64
Bosnia & Herzegovina				93	88	90	94	98	95	94	98				37	66	70	79	53	51	95	71
Bulgaria								87	86	91	80						24	11	49	90	96	90
Croatia																						
Cyprus					42			92	75	79	20				90	44			48	85	62	57
Czech Republic	73	60	66	69	65	78	70	73	73	79	73	52	64	53	64	57	60	62	57	63	60	65
Denmark									77	84	88									75	78	71
Estonia						63	70	64	67	70	71						64	57	61	67	73	64
Finland																						
France																						
Georgia		58		65	78	61	63	67	65	66	68	18	35		34	45	34	58	57	58	78	91
Germany				54	54	58	77	67	69	71	68			62	62	62		53	57	54	54	52
Greece																						
Hungary					80		64	46	55	48	54					36	25	36	39	40	49	43
Iceland								67	100	100	50							68	59	31	57	53
Ireland																						
Israel							78	79	81	80	80						7	70	69	63	39	42
Italy		80	82	69	72	71	74	40	79	95			14	8	13	56	32	10	66	79	58	72
Kazakhstan					79	79	79	78	78	75	72				4	79	93	92	95	86	81	72
Kyrgyzstan			88	76	82	83	82	81	82	84	85		3	4	31	58	42		48	56	61	67
Latvia		61	64	65	71	74	72	73	76	74	73		71	70	73	64	72	76	77	84	83	83
Lithuania					79	84	92	75	72	74	72					3	2	30	56	86	85	100
Luxembourg																		43	69	127	83	59
Malta		100	100	100	100	75	100	100	60	100	100		34	21	45	71	42	27	46	19	19	50
Monaco																						
Montenegro																						
Netherlands	81	72	81	80	65	79	76		68	86	83	74	48	44	37	48	48	54	60	53	69	47
Norway		77	80	44	69	77	70	87	80	97	89		65	66	34	15	29	49	27	46	45	44
Poland					75	69	72	77	86	78	79				2	3	4	3	56	57	57	62
Portugal	48	69	74	78	74	85	79	78	82	84	84	77	76	65	84	80	89	99	99	92	88	85
Republic of Moldova							83	66	61	65	62							40	21	39	59	65
Romania				72	85	78	80	78	76	80	82				87	4	9	10	43	40	43	82
Russian Federation		65	62	67	68	65	68	67	67	61	59		0	1	1	2	4	5	7	8	13	30
San Marino				100										100			117					
Serbia								88	91	89	91							27	24	38	31	79
Slovakia	96	64	73	67	85	79	82	87	85	87	88	80	85	34	40	35	37	37	34	38	34	39
Slovenia		90	87	82	78	88	84	82	85	85	90		79	59	65	75	71	73	75	75	63	84
Spain																						
Sweden							79	62	73	83	64							56	59	58	56	56
Switzerland																						
Tajikistan									79	86	84								2		11	22
TFYR Macedonia							86	88	79	84	84							54	49	50	72	66
Turkey										93	91									5	3	3
Turkmenistan							69	75	77	82	86						17	36	42	43	33	43
Ukraine																						
United Kingdom																						
Uzbekistan					78	79	80	76	80	81	78				0	2	4	7	22	21	29	39
EUR	**68**	**69**	**72**	**72**	**76**	**77**	**77**	**75**	**76**	**75**	**74**	**3**	**3**	**4**	**11**	**10**	**11**	**14**	**21**	**22**	**25**	**35**

Treatment success, sum of cured and completed; DOTS new smear-positive case detection rate, notified (new and relapse) cases divided by estimated incident cases. The table includes updated information; data shown here may differ from those published in previous reports. Data can be downloaded from www.who.int/tb

Table A2.8 **New smear-positive case notification by age and sex, absolute numbers, DOTS and non-DOTS, Europe, 2005**

	Male							Female							All							Male/female
	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+	ratio
Albania	0	26	21	16	31	20	37	0	3	9	5	5	5	18	0	29	30	21	36	25	55	3.4
Andorra	0	0	1	1	0	0	0	0	1	1	1	0	0	0	0	1	2	2	0	0	0	0.7
Armenia	3	170	104	83	84	30	24	3	27	21	10	11	4	7	6	197	125	93	95	34	31	6.0
Austria	1	32	23	22	41	24	30	0	13	11	8	3	5	10	1	45	34	30	44	29	40	3.5
Azerbaijan	77	109	297	215	209	187	88	90	64	98	47	32	24	24	167	173	395	262	241	211	112	3.1
Belarus		71	180	273	287	118	62		25	53	50	43	11	62		96	233	323	330	129	124	4.1
[1] Belgium	1	26	50	32	27	15	47	2	27	31	15	12	4	23	3	53	81	47	39	19	70	1.7
Bosnia & Herzegovina	1	22	58	61	78	44	80	2	35	39	33	28	28	130	3	57	97	94	106	72	210	1.2
Bulgaria	9	98	150	195	195	150	136	9	90	111	59	29	37	70	18	188	261	254	224	187	206	2.3
Croatia	1	24	27	48	72	47	34	1	12	18	15	11	6	56	2	36	45	63	83	53	90	2.1
Cyprus	0	3	1	1	1	0	1	0	1	0	0	0	0	0	0	4	1	1	1	0	1	7.0
Czech Republic	0	8	24	57	55	45	46	0	3	14	16	7	5	28	0	11	38	73	62	50	74	3.2
Denmark	0	12	12	18	23	9	7	2	11	5	13	9	3	5	2	23	17	31	32	12	12	1.7
Estonia	0	9	25	19	40	12	7	0	6	11	8	11	6	8	0	15	36	27	51	18	15	2.2
Finland	1	5	4	3	14	11	25	0	3	4	1	0	6	20	1	8	8	4	14	17	45	1.9
France	12	127	212	222	196	134	205	16	104	134	82	56	38	180	28	231	346	304	252	172	385	1.8
Georgia	0	226	272	268	207	76	60	4	109	105	58	46	17	47	4	335	377	326	253	93	107	2.9
[1] Germany	6	59	113	171	167	92	167	4	51	104	73	43	37	103	10	110	217	244	210	129	270	1.9
Greece	1	14	25	22	14	12	23	0	13	18	8	7	2	17	1	27	43	30	21	14	40	1.7
Hungary	0	6	24	67	117	67	39	1	5	13	11	22	15	33	1	11	37	78	139	82	72	3.2
Iceland	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	1	
Ireland	1	6	10	21	10	7	6	0	9	10	3	3	0	8	1	15	20	24	13	7	14	1.8
Israel	0	5	10	12	12	5	14	1	3	9	8	6	1	9	1	8	19	20	18	6	23	1.6
Italy	8	93	191	137	101	61	115	3	80	145	56	25	19	70	11	173	336	193	126	80	185	1.8
Kazakhstan	31	917	1 142	983	795	274	175	46	751	767	436	286	121	187	77	1 668	1 909	1 419	1 081	395	362	1.7
Kyrgyzstan	1	247	303	269	194	66	84	15	215	236	141	70	33	98	16	462	539	410	264	99	182	1.4
Latvia	1	22	71	104	117	55	34	0	17	31	31	23	18	12	1	39	102	135	140	73	46	3.1
Lithuania	0	42	118	186	187	108	67	1	25	41	57	49	23	54	1	67	159	243	236	131	121	2.8
Luxembourg	0	0	2	2	1	1	2	0	0	2	1	1	1	0	0	0	4	3	2	2	2	1.6
Malta	0	1	1	1	1	1	0	0	0	0	0	0	0	0	0	1	1	1	1	1	0	
Monaco																						
Montenegro	0	3	5	7	15	4	8	0	0	7	3	4	0	8	0	3	12	10	19	4	16	1.9
[1] Netherlands	0	23	42	23	26	14	19	3	14	19	11	9	1	4	3	37	61	34	35	15	23	2.4
Norway	0	9	4	6	4	4	3	0	4	7	2	1	0	3	0	13	11	8	5	4	6	1.8
Poland	3	109	199	389	639	292	310	3	95	142	112	151	63	316	6	204	341	501	790	355	626	2.2
Portugal	5	85	227	284	181	90	93	7	67	109	66	29	11	42	12	152	336	350	210	101	135	2.9
Republic of Moldova	2	211	337	345	313	106	31	3	97	92	57	61	23	18	5	308	429	402	374	129	49	3.8
Romania	36	752	1 511	1 786	1 999	952	638	55	758	780	493	374	219	442	91	1 510	2 291	2 279	2 373	1 171	1 080	2.5
Russian Federation															59	4 003	7 889	7 992	7 960	2 804	1 898	
San Marino																						
Serbia	3	62	96	118	156	112	132	6	69	76	55	49	22	149	9	131	172	173	205	134	281	1.6
Slovakia	0	3	13	16	25	25	20	0	1	8	9	5	6	27	0	4	21	25	30	31	47	1.8
Slovenia	0	4	10	16	15	11	14	0	4	4	6	5	4	16	0	8	14	22	20	15	30	1.8
Spain	13	166	394	367	230	140	230	10	142	252	151	63	24	108	23	308	646	518	293	164	338	2.1
Sweden	0	7	21	16	10	5	16	1	10	15	12	5	3	13	1	17	36	28	15	8	29	1.3
Switzerland	1	10	9	13	12	2	7	0	6	11	8	3	2	4	1	16	20	21	15	4	11	1.6
Tajikistan	8	308	279	164	104	54	48	26	225	185	151	89	43	53	34	533	464	315	193	97	101	1.3
TFYR Macedonia	2	14	20	23	20	18	13	2	17	13	10	7	5	13	4	31	33	33	27	23	26	1.6
Turkey	33	1 148	1 295	1 028	963	534	429	50	699	474	243	175	166	213	83	1 847	1 769	1 271	1 138	700	642	2.7
Turkmenistan	2	148	181	146	97	51	13	3	100	101	72	46	27	8	5	248	282	218	143	78	21	1.8
Ukraine																						
[1] United Kingdom	9	135	200	166	95	95	124	14	115	163	80	39	28	83	23	250	363	246	134	123	207	1.6
Uzbekistan	25	596	831	723	522	263	313	40	538	597	375	288	217	367	65	1 134	1 428	1 098	810	480	680	1.4
EUR	**297**	**6 173**	**9 145**	**9 146**	**8 702**	**4 443**	**4 077**	**423**	**4 664**	**5 096**	**3 162**	**2 241**	**1 333**	**3 166**	**779**	**14 840**	**22 130**	**20 300**	**18 903**	**8 580**	**9 141**	**2.1**

[1] Indicates that cases with "history unknown" are included in Tables A2.2 and A2.3 but not in this table.
For some countries, breakdown of notified cases by age and sex is missing, or is provided for a subset of cases. See Explanatory notes on page 164 for further details. Data can be downloaded from www.who.int/tb

Table A2.9 **New smear-positive case notification rates by age and sex, DOTS and non-DOTS, Europe, 2005**

	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	9	11	8	17	16	32	0	1	4	2	3	4	13	0	5	7	5	10	10	21
Andorra																					
Armenia	1	57	58	46	45	37	16	1	9	10	4	5	4	3	1	33	32	22	22	18	8
Austria	0	6	4	3	7	5	5	0	3	2	1	1	1	1	0	5	3	2	4	3	3
Azerbaijan	7	13	50	35	45	107	36	9	8	15	7	6	12	7	8	10	32	20	25	55	19
Belarus		8	26	38	41	32	13		3	8	7	5	2	6		6	17	22	22	15	9
Belgium	0	4	7	4	4	3	6	0	4	5	2	2	1	2	0	4	6	3	3	2	4
Bosnia & Herzegovina	0	8	20	21	28	22	35	1	13	14	11	10	12	41	0	10	17	16	19	17	38
Bulgaria	2	18	25	37	36	33	25	2	17	19	11	5	7	9	2	18	22	24	20	19	16
Croatia	0	8	9	15	21	19	11	0	4	6	5	3	2	12	0	6	7	10	12	10	11
Cyprus	0	5	2	2	2	0	2	0	2	0	0	0	0	0	0	3	1	1	1	0	1
Czech Republic	0	1	3	8	8	7	8	0	0	2	2	1	1	3	0	1	2	5	4	4	5
Denmark	0	4	3	4	6	3	2	0	4	1	3	2	1	1	0	4	2	4	4	2	1
Estonia	0	8	27	22	47	19	10	0	6	12	9	11	7	5	0	7	19	15	27	12	7
Finland	0	1	1	1	4	3	8	0	1	1	0	0	2	4	0	1	1	1	2	2	5
France	0	3	5	5	5	4	5	0	3	3	2	1	1	3	0	3	4	4	3	3	4
Georgia	0	61	91	90	73	45	24	1	30	33	17	14	8	12	0	45	61	51	42	24	17
Germany	0	1	2	2	3	2	3	0	1	2	1	1	1	1	0	1	2	2	2	1	2
Greece	0	2	3	3	2	2	3	0	2	2	1	1	0	1	0	2	2	2	1	1	2
Hungary	0	1	3	10	16	12	7	0	1	2	2	3	2	3	0	1	2	6	9	7	5
Iceland	0	0	0	5	0	0	6	0	0	0	0	0	0	0	0	0	0	2	0	0	3
Ireland	0	2	3	6	4	3	3	0	3	3	1	1	0	3	0	2	3	4	3	2	3
Israel	0	1	2	3	3	2	5	0	1	2	2	2	0	2	0	1	2	2	2	1	3
Italy	0	3	5	3	3	2	2	0	3	4	1	1	1	1	0	3	4	2	2	1	2
Kazakhstan	2	62	99	97	92	70	38	3	52	65	40	28	23	23	2	57	82	68	58	43	29
Kyrgyzstan	0	45	74	84	81	65	67	2	40	58	43	27	28	50	1	42	66	63	53	46	56
Latvia	1	12	44	66	80	50	28	0	10	20	19	14	12	4	0	11	32	42	44	28	12
Lithuania	0	15	51	73	88	73	37	0	9	18	21	20	12	15	0	12	34	47	52	38	23
Luxembourg	0	0	6	5	3	4	8	0	0	6	2	3	4	0	0	0	6	4	3	4	3
Malta	0	3	3	4	3	4	0	0	0	0	0	0	0	0	0	2	2	2	2	2	0
Monaco																					
Montenegro	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Netherlands	0	2	4	2	2	1	2	0	1	2	1	1	0	0	0	2	3	1	1	1	1
Norway	0	3	1	2	1	1	1	0	1	2	1	0	0	1	0	2	2	1	1	1	1
Poland	0	3	7	15	21	16	16	0	3	5	5	5	3	10	0	3	6	10	13	9	13
Portugal	1	13	28	37	26	16	13	1	11	14	8	4	2	4	1	12	21	23	15	9	8
Republic of Moldova	1	52	103	125	107	68	20	1	25	28	19	18	12	7	1	38	65	70	60	36	12
Romania	2	44	83	119	134	92	48	3	46	44	33	24	19	24	3	45	64	76	78	53	34
Russian Federation															0	16	37	39	35	22	10
San Marino																					
Serbia																					
Slovakia	0	1	3	4	6	10	8	0	0	2	2	1	2	7	0	0	2	3	4	6	7
Slovenia	0	3	7	11	10	10	12	0	3	3	4	3	3	8	0	3	5	7	6	7	10
Spain	0	6	10	11	8	6	8	0	6	7	4	2	1	3	0	6	8	7	5	4	5
Sweden	0	1	4	2	2	1	2	0	2	3	2	1	1	1	0	2	3	2	1	1	2
Switzerland	0	2	2	2	2	0	1	0	1	2	1	1	0	1	0	2	2	2	1	0	1
Tajikistan	1	42	65	47	47	56	43	2	31	41	40	38	44	38	1	36	53	44	42	50	40
TFYR Macedonia	1	8	12	15	14	19	13	1	11	8	7	5	5	10	1	10	10	11	10	12	12
Turkey	0	17	20	20	26	25	24	0	10	8	5	5	7	10	0	14	14	13	16	16	16
Turkmenistan	0	28	47	47	47	58	15	0	19	26	22	20	27	6	0	24	36	35	33	41	9
Ukraine																					
United Kingdom	0	3	5	4	3	3	3	0	3	4	2	1	1	2	0	3	5	3	2	2	2
Uzbekistan	1	20	40	44	47	57	59	1	19	29	22	24	43	50	1	20	34	33	35	50	54
EUR	**0**	**5**	**8**	**9**	**9**	**7**	**5**	**0**	**4**	**5**	**3**	**2**	**2**	**3**	**0**	**7**	**10**	**10**	**9**	**6**	**5**

Rates are per 100 000 population of each age/sex group. Rates are calculated excluding those countries for which breakdown of notified cases or population by age and sex is missing. Data can be downloaded from www.who.int/tb

Table A2.10 **Number of TB cases notified, Europe, 1980–2005**

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Albania	1 050	954	978	891	975	916	989	915	759	695	653	628			707	641	738	655	694	733	604	555	594	543	547	506
Andorra										12	23	24	21	15	24		17	19	8	10	12	10	5	10	7	10
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	1 538	1 660	2 206
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	1 481	1 290	1 394	1 302	1 085	1 185	1 013	1 044	946	895	928
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	3 840	5 404	6 034
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	5 106	5 443	5 308
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	1 030	1 128	1 076
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	1 740	2 353	2 111
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	3 069	3 025	3 225
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	1 356	1 170	1 050
Cyprus	69	69	86	73	39	61	48	35	39	23	29	43	39	37	37	36	24	47	45	39	33	40	20	35	30	34
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	1 101	1 027	973
Denmark	430	394	378	348	302	312	299	322	304	328	350	334	359	411	495	448	484	554	529	587	587	494	403	378	356	395
Estonia	614	560	563	587	546	541	522	446	471	422	423	406	403	532	623	624	683	744	820	754	791	708	620	557	537	479
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	392	319	339
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	5 740	5 004	4 887
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	4 212	4 011	4 501
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	6 526	6 007	5 539
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	503	570	571	668	626
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	2 720	2 507	2 251	1 808
Iceland	25	23	25	24	26	13	13	12	16	18	18	15	16	11	18	12	11	10	17	10	13	12	8	5	11	10
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	354	380	387
Israel	249	227	232	222	257	368	239	184	226	160	234	505	345	419	395	398	369	422	656	490	557	546	485	505	497	402
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	4 234	3 968	3 828
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	26 936	26 493	25 739
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	6 172	6 104	6 329
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	1 686	1 579	1 409
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	2 586	2 036	2 114
Luxembourg	71	45	41	41	46	42	45	48	16	45	48	48	25	35	33	32	41	38	44	37	44	31	31	54	31	37
Malta	24	26	13	24	15	11	14	14	12	16	13	26	30	26	25	11	28	11	16	22	16	16	24	6	18	21
Monaco	1	0	0	0	0	1	2	2	1	1	1	0	1		1	1	0	0	0	3	0	0	0			
Montenegro																										156
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	1 282	1 316	1 127
Norway	499	461	448	396	373	374	343	307	294	255	285	290	288	256	242	236	217	205	244	213	221	276	243	320	278	269
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	9 677	8 698	8 203
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	3 861	3 600	3 303
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	3 619	4 806	5 141
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	28 335	28 570	26 104
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	124 041	121 426	127 930
San Marino											1	1		3	2	2	0	1	0	0	1	0	1	1	0	
Serbia	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	3 895	3 600	3 208
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	904	664	710
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	275	249	269
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	7 343	6 015	7 281
Sweden	926	875	784	832	754	702	640	545	536	595	557	521	610	616	537	564	497	456	446	479	417	394	375	386	416	539
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	554	528	508
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	4 260	4 529	5 460
TFYR Macedonia													1 602	1 712	728	786	724	693	620	557	641	648	686	653	644	598
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	17 923	17 543	19 744
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	3 771	3 382	3 191
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	37 043	38 403	39 608
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	6 400	7 039	8 173
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	20 700	20 289	21 513
EUR	**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**	**290 031**	**322 080**	**353 361**	**349 795**	**373 765**	**373 081**	**368 433**	**373 670**	**358 978**	**354 954**	**365 346**
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	51	51	51
% reporting	92	92	92	92	92	92	92	92	92	94	96	92	94	91	89	96	98	98	98	98	98	98	98	96	96	96

From 1995 on, number shown is all notified new and relapse cases (DOTS and non-DOTS). The table includes updated information; data shown here may differ from those published in previous reports. Data can be downloaded from www.who.int/tb

Table A2.11 **Case notification rates, Europe, 1980–2005**

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Albania	39	35	35	31	34	31	33	29	24	21	20	19			22	20	24	21	23	24	20	18	19	18	18	16
Andorra										24	44	44	37	25	38		26	29	12	15	18	15	8	15	10	15
Armenia	24	29	24	22	24	23	24	22	19	18	17	21	7	17	23	36	29	33	47	48	43	45	47	51	55	73
Austria	29	27	26	24	23	19	18	18	18	17	20	18	17	16	16	18	16	17	16	13	15	12	13	12	11	11
Azerbaijan	50	51	51	49	53	57	56	53	48	42	36	38	38	40	37	21	31	58	58	58	64	60	62	46	65	72
Belarus	62	64	56	56	51	49	41	39	37	36	30	36	23	40	42	47	55	59	61	73	68	55	52	52	55	54
Belgium	27	29	27	22	22	20	19	18	16	17	16	15	13	15	15	14	13	12	12	11	12	13	12	10	11	10
Bosnia & Herzegovina	113	111	117	111	115	113	110	106	94	96	95	85	15	18	45	62	65	82	75	78	64	63	43	44	60	54
Bulgaria	37	34	34	32	32	29	28	26	27	26	26	30	36	38	63	39	38	42	51	44	42	49	42	39	39	42
Croatia	91	91	84	82	81	81	75	74	66	64	57	47	48	49	48	45	47	44	46	39	36	31	32	30	26	23
Cyprus	11	11	14	12	6	9	7	5	6	3	4	6	6	5	5	5	3	6	6	5	4	5	2	4	4	4
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	11	10	10
Denmark	8	8	7	7	6	6	6	6	6	6	7	6	7	8	10	9	9	11	10	11	11	9	7	7	7	7
Estonia	42	38	38	39	36	35	34	29	30	27	27	26	26	35	42	43	48	53	59	55	58	52	46	42	40	36
Finland	47	46	45	39	37	37	31	29	22	20	15	15	14	11	11	13	13	11	12	11	10	9	9	8	6	6
France	32	30	28	25	22	20	19	18	16	16	16	15	15	17	16	15	13	12	10	10	10	10	10	10	8	8
Georgia	41	42	42	36	35	34	34	34	29	29	28		40	72		32	71	173	131	100	93	86	97	92	89	101
Germany	38	35	33	30	26	26	23	22	21	19	18	17	18	18	16	15	14	14	13	12	11	8	8	8	7	7
Greece	56	75	53	39	20	16	16	12	9	11	9	7	9			9	9	7	11	9	6	5	5	5	6	6
Hungary	51	50	48	47	42	46	43	39	38	36	35	35	38	41	40	42	43	41	39	34	30	29	27	25	22	18
Iceland	11	10	11	10	11	5	5	5	6	7	7	6	6	4	7	4	4	4	6	4	5	4	3	2	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	9	9	9
Israel	7	6	6	6	6	9	6	4	5	4	5	11	7	8	8	7	7	7	11	8	9	9	8	8	8	6
Italy	6	6	7	8	6	7	7	6	6	7	7	7	8	8	10	10	7	8	10	8	6	7	7	7	7	7
Kazakhstan	97	92	91	87	81	79	82	82	83	81	66	66	67	64	66	71	89	104	135	165	172	176	185	181	179	174
Kyrgyzstan	54	56	54	51	51	52	52	50	51	49	52	57	58	54	60	74	88	110	119	131	125	133	130	120	117	120
Latvia	48	45	43	42	41	47	38	36	35	32	33	35	36	38	44	62	72	82	91	79	84	85	77	72	68	61
Lithuania	48	47	43	42	40	41	39	38	37	38	40	42	43	52	58	65	72	82	85	79	76	75	70	75	59	62
Luxembourg	20	12	11	11	13	11	12	13	4	12	13	13	6	9	8	8	10	9	10	9	10	7	7	12	7	8
Malta	7	8	4	7	4	3	4	4	3	4	4	7	8	7	7	3	7	3	4	6	4	4	6	2	5	5
Monaco	4	0	0	0	0	4	7	7	3	3	3	0	3		3	3	0	0	0	9	0	0	0			
Montenegro																										25
Netherlands	12	12	11	10	10	9	8	8	9	9	9	9	10	10	12	10	11	10	9	9	8	9	8	8	8	7
Norway	12	11	11	10	9	9	8	7	7	6	7	7	7	6	6	5	5	5	5	5	5	6	5	7	6	6
Poland	73	67	65	64	61	58	55	52	49	43	42	43	43	44	43	41	40	36	34	31	28	26	26	25	23	21
Portugal	70	74	74	71	69	69	66	71	64	67	62	60	59	55	56	56	52	51	52	45	41	42	42	37	34	31
Republic of Moldova	69	70	78	69	61	65	71	66	58	52	40	44	42	56	60	67	68	67	61	63	69	85	89	86	114	122
Romania	61	61	61	60	57	56	56	58	61	63	70	67	78	89	94	103	107	107	115	118	124	130	136	130	131	120
Russian Federation	54	53	51	52	52	45	50	48	46	43	34	34	36	43	48	57	75	81	75	91	96	91	89	86	84	89
San Marino											4	4		12	8	8	0	4	0	0	4	0	4	4	0	
Serbia	65	66	65	66	66	63	62	61	56	50	41	44	37	37	34	27	38	38	29	25	27	43	40	37	34	34
Slovakia	50	46	45	44	42	39	39	35	32	29	28	31	33	34	33	29	28	24	24	20	19	18	18	17	12	13
Slovenia	59	51	53	50	48	49	43	42	40	40	37	30	33	33	27	27	29	24	23	22	19	18	17	14	13	14
Spain	13	15	21	24	26	28	36	24	22	21	19	23	25	24		22	21	23	22	21	20	17	18	17	14	17
Sweden	11	11	9	10	9	8	8	6	6	7	7	6	7	7	6	6	6	5	5	5	5	4	4	4	5	6
Switzerland	18	19	18	17	15	15	13	15	18	16	19	16	14	13	13	12	11	11	11	11	8	7	8	8	7	7
Tajikistan	67	65	63	58	55	54	55	56	49	51	46	39	30	12	16	35	28	36	41	42	45	56	64	67	70	84
TFYR Macedonia													83	88	37	40	37	35	31	28	32	32	34	32	32	29
Turkey	79	84	54	57	54	59	58	56	50	47	43	43	43			37	32	40	39	33	26	25	26	25	24	27
Turkmenistan	59	55	52	50	51	50	49	58	55	61	63	62	53	69		46	49	79	87	92	90	86	79	80	71	66
Ukraine	52	51	49	48	48	47	45	43	40	39	32	32	35	38	40	42	46	56	55	66	67	76	84	78	82	85
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	11	12	14
Uzbekistan	57	59	52	51	48	48	51	51	52	53	46		44	44	66	43	51	56	61	62	64	69	81	80	77	81
EUR	**44**	**43**	**40**	**39**	**38**	**36**	**36**	**35**	**33**	**32**	**29**	**27**	**29**	**28**	**28**	**34**	**37**	**41**	**40**	**43**	**43**	**42**	**43**	**41**	**40**	**41**

Rates are per 100 000 population. The table includes updated information; data shown here may differ from those published in previous reports. Data can be downloaded from www.who.int/tb

Table A2.12 **New smear-positive cases notified, numbers and rates, Europe, 1993–2005**

	Number of cases													Rate (per 100 000 population)												
	1993	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**
Albania		250	139	173	241	212	168	171	171	225	211	201	196		8	4	6	8	7	5	6	6	7	7	6	6
Andorra	15	24		8	17	1	4	1	3	2	7	3	5	25	38		12	26	2	6	2	5	3	11	4	7
Armenia		319	436	327	400	475	576	621	572	511	575	602	581		10	14	10	13	15	19	20	19	17	19	20	19
Austria			467	442	434	381	323	324	262	220	269	216	234			6	5	5	5	4	4	3	3	3	3	3
Azerbaijan	499	513	669	990	981	727	763	890	927	1 661	1 161	1 472	1 561	7	7	9	13	12	9	9	11	11	20	14	18	19
Belarus	1 493	1 775	1 845	2 117	2 273	5 047	2 769	2 547	2 341		1 018	1 109	1 235	15	17	18	21	22	50	27	25	23		10	11	13
Belgium	484	427	400	364	434	418	403	409	472	419	362	391	380	5	4	4	4	4	4	4	4	5	4	3	4	4
Bosnia & Herzegovina			865	927	803	640	786	759	800	526	493	889	640			25	27	23	18	21	20	21	13	13	23	16
Bulgaria		3 096	1 087	903	1 037	1 325	1 697	2 524	897	1 007	1 254	1 315	1 214		37	13	11	13	16	21	32	11	13	16	17	16
Croatia			1 204	1 228	1 073	1 129	748	0	421	437	438	416	372			26	26	23	25	17	0	9	10	10	9	8
Cyprus			6	3	19	20	9	4	0	8	14	10	9			1	0	3	3	1	1	0	1	2	1	1
Czech Republic	548	524	487	586	481	545	449	420	391	329	338	302	308	5	5	5	6	5	5	4	4	4	3	3	3	3
Denmark	243	120	128	97	114	132	172	171	127	135	143	146	129	5	2	2	2	2	2	3	3	2	3	3	3	2
Estonia	303	347	369	240	269	299	274	255	212	203	201	203	162	20	24	26	17	19	22	20	19	16	15	15	15	12
Finland			244	240	186	188	179	205	150	130	138	124	130			5	5	4	4	3	4	3	2	3	2	2
France	4 455	3 196	3 449	3 002	2 430		2 325	1 815	2 398	2 276	2 219	1 923	1 941	8	6	6	5	4		4	3	4	4	4	3	3
Georgia			221	482	595	547	746	601	1 014	987	989	1 311	1 509			4	10	12	11	16	13	22	21	22	29	34
Germany	4 730	4 177	3 852	3 689	3 346	3 124	2 918	0	1 935	1 868	1 679	1 562	1 379	6	5	5	5	4	4	4	0	2	2	2	2	2
Greece					285	313	143	235	213	212	234	176	197					3	3	1	2	2	2	2	2	2
Hungary	1 905	1 357	796	1 066	702	667	660	412	546	556	526	560	423	18	13	8	10	7	6	6	4	5	5	5	6	4
Iceland		6	2	1	4	2	2	1	3	2	1	2	2		2	1	0	1	1	1	0	1	1	0	1	1
Ireland				339	123	116	117	138	123	100	141	127	130				9	3	3	3	4	3	3	4	3	3
Israel	150	129		147	207	221	170	17	172	164	150	91	98	3	2		3	4	4	3	0	3	3	2	1	1
Italy		1 441	1 413	1 738	1 903	2 361	1 277	687	1 361	1 275	1 481	1 058	1 275		3	2	3	3	4	2	1	2	2	3	2	2
Kazakhstan			3 022	4 290	4 332	6 180	6 977	8 903	9 079	9 452	8 665	7 927	6 911			19	27	28	40	46	59	61	63	58	53	47
Kyrgyzstan		681	832	991	1 536	830	1 642	1 296	0	1 587	1 643	1 761	1 972		15	18	21	33	17	34	26	0	31	32	34	37
Latvia	470		504	575	634	668	588	637	661	636	641	582	536	18		20	23	26	28	25	27	28	27	28	25	23
Lithuania	688		979	1 121	1 200	787	787	776	935	822	912	863	964	19		27	31	34	22	22	22	27	24	26	25	28
Luxembourg				29	31	24		21	11	17	31	20	14				7	7	6		5	2	4	7	4	3
Malta	13	6	5	5	3	6	9	5	3	5	2	2	5	4	2	1	1	1	2	2	1	1	1	1	1	1
Monaco				0	0	0	2	0	0	0							0	0	0	6	0	0	0			
Montenegro													64													10
Netherlands	1 063		575	358	312	254	308	289	307	330	282	360	237	7		4	2	2	2	2	2	2	2	2	2	1
Norway		86	62	103	100	49	21	37	59	31	52	50	48		2	1	2	2	1	0	1	1	1	1	1	1
Poland	7 606	4 000	6 955	6 819	3 497	3 502	3 177	3 180	3 155	3 060	2 983	2 777	2 823	20	10	18	18	9	9	8	8	8	8	8	7	7
Portugal		2 072	2 019	1 938	1 628	2 016	1 801	1 863	2 042	1 976	1 742	1 514	1 302		21	20	19	16	20	18	18	20	19	17	14	12
Republic of Moldova	615	704	665	219	397	477	609	651	1 060	1 146	1 214	1 536	1 696	14	16	15	5	9	11	14	15	25	27	29	36	40
Romania	9 339	10 385	10 469	10 359	11 666	10 841	10 317	10 202	11 184	10 703	10 418	10 888	10 801	41	46	46	46	52	49	46	46	51	49	48	50	50
Russian Federation		30 389	37 512	42 534	42 094	42 219	21 744	27 467	26 605	27 865	28 868	30 890	32 605		20	25	29	29	29	15	19	18	19	20	21	23
San Marino				0	1	0	0	1	0	0	0	0					0	4	0	0	4	0	0	0	0	
Serbia			1 497	1 783	1 702	1 873	2 517	0	461	402	611	1 244	1 105			14	17	16	18	24	0	4	4	6	12	12
Slovakia	882	409	788	760	283	303	246	236	226	202	200	157	162	17	8	15	14	5	6	5	4	4	4	4	3	3
Slovenia	361	294	303	221	156	157	165	145	139	130	116	89	109	18	15	15	11	8	8	8	7	7	7	6	5	6
Spain			2 605			1 906		3 423	2 456	3 317	2 876	2 082	2 511			7			5		8	6	8	7	5	6
Sweden	312	106	102	90	94	97	117	118	105	109	109	120	134	4	1	1	1	1	1	1	1	1	1	1	1	1
Switzerland	528	507	185	172	144	165	98	118	116	123	107	119	108	8	7	3	2	2	2	1	2	2	2	1	2	1
Tajikistan			1 042	232	373	435	0	434	719	687	0	1 058	1 745			18	4	6	7	0	7	12	11	0	16	27
TFYR Macedonia			319	209	192	179	122	167	164	200	200	200	178			16	11	10	9	6	8	8	10	10	10	9
Turkey			4 383	2 816	3 439	3 692	4 124	4 315	4 444	0	5 816	5 870	7 450			7	4	5	6	6	6	6	0	8	8	10
Turkmenistan	472		544	557	764	790	964	1 017	1 243	1 254	1 197	1 103	995	12		13	13	18	18	22	23	27	27	25	23	21
Ukraine	8 314	8 471	8 263	7 827	9 533	10 586	10 412	10 738	0	0	12 785	0		16	16	16	15	19	21	21	22	0	0	27	0	
United Kingdom	283	270		4 147	844	1 342	797	1 204	946	1 365	1 455	1 693	1 821	0	0		7	1	2	1	2	2	2	2	3	3
Uzbekistan		7 487	2 735	3 350	3 388	3 504	3 977	3 825	4 608	4 783	4 690	5 119	5 695		33	12	14	14	15	16	15	18	19	18	20	21
EUR	**45 771**	**83 568**	**104 444**	**110 614**	**106 700**	**111 772**	**89 199**	**94 275**	**86 239**	**83 455**	**101 657**	**92 233**	**96 101**	**5**	**10**	**12**	**13**	**12**	**13**	**10**	**11**	**10**	**10**	**12**	**10**	**11**

Rates are per 100 000 population. The table includes updated information; data shown here may differ from those published in previous reports. Data can be downloaded from www.who.int/tb

Notes

Armenia

The data on MDR-TB are from a MSF pilot project which started in September 2005, and which will be expanded nationally by 2008.

Denmark

Data for Denmark exclude Greenland. A total of 99 TB cases were notified in Greenland for 2005 (174 per 100 000 population). No MDR-TB cases were identified.

Georgia

The data on MDR-TB are from a nationwide drug resistance survey carried out between July 2005 and June 2006.

Montenegro

An estimate of population size was not available from the UN Population Division; an estimate was provided by the country.

Romania

The number of TB patients tested for HIV and found to be HIV-positive in 2004 were reported only from the last two months of 2004.

Russian Federation

Of 298 505 prevalent TB cases in 2005, 218 481 were tested for HIV and 3533 were found to be HIV-positive.

Serbia

An estimate of population was not available from the United Nations Population Division; an estimate was provided by the country. In tables A2.7, A2.10, A2.11 and A2.12, reported notifications and case detection rates for the years prior to 2005, and treatment outcomes for years prior to 2004, are for Serbia and Montenegro.

Spain

In 2005, 39% of TB cases were tested for HIV, and 4% of those tested were HIV-positive.

Ukraine

The NTP reports nationwide DOTS implemention. However, data were received only from oblasts representing 29% of the population.

Summary by WHO region …
Africa …
The Americas …
Eastern Mediterranean…
Europe …
South-East Asia …
Western Pacific …

South-East Asia

NTP MANAGER (OR EQUIVALENT); PERSON FILLING OUT DATA COLLECTION FORM (IF DIFFERENT)

Bangladesh	Vikarunnessa Begum
Bhutan	Lungten Zangmo Wangchuk; Kuenzang Namgyal
DPR Korea	Ri Hyon Chol; Han Man Gap
India	L.S. Singh
Indonesia	Carmelia Basri; Sudarman
Maldives	Shameema Hussain
Myanmar	Win Maung; Thandar Lwin; Aye Thein
Nepal	Pushpa Malla; Sita Ram Ghimire
Sri Lanka	Chandra Sarukkali; Kamal Herath
Thailand	Sriprapa Nateniyom; Suksont Jittimanee
Timor-Leste	Constantino Lopes

This list shows the people named on the data collection form sent to WHO in 2006, not necessarily the current NTP manager. It is intended as an acknowledgement rather than a directory.

SOUTH-EAST ASIA: SUMMARY OF TB CONTROL POLICIES

	DOTS COVERAGE, %	NTP MANUAL	SMEAR MICROSCOPY FOR DIAGNOSIS	STANDARDIZED CHEMOTHERAPY	DOT	MONITORING OUTCOMES	CASES NOTIFIED BY TYPE; AGE & SEX	2004 COHORT OUTCOMES REPORTED: NEW; RETREATMENT	SMEAR MICROSCOPY FREE-OF-CHARGE	DRUGS FREE-OF-CHARGE	UNINTERRUPTED DRUG SUPPLY	EQA FOR SMEAR MICROSCOPY	STRATEGIC HRD PLAN	TB CONTROL IN CURRICULA OF DOCTORS AND NURSES	UP-TO-DATE JOB DESCRIPTIONS	GUIDELINES FOR PRIVATE PRACTITIONERS	PUBLIC PROVIDERS NOTIFIED/REFERRED	PRIVATE PROVIDERS NOTIFIED/REFERRED	ISTC PROMOTED IN 2006	HEALTH SYSTEM STRENGTHENING IN PLAN	PAL IN PLAN	COMMUNITY-BASED TB CARE	PATIENTS' CHARTER PROMOTED IN 2006	OPERATIONAL RESEARCH	MDR-TB MGMT; IN LINE WITH WHO GUIDELINES	HIV COUNSELLING & TESTING	SURVEILLANCE OF HIV PREV. IN TB PTS
BANGLADESH	99	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	▲▲	●●	●●	■■	■■	▲▲	■■	■■	■■	▲▲	▲▲	▲▲
BHUTAN	100	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	▲▲	■■	▲▲	■■	▲▲		■■	▲▲	■■	▲▲	■■	●●	■■	■■
DPR KOREA	100	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	▲▲	●●	▲▲	■■	■■	■■	■■	■■				
INDIA	91	■■	■■	■■	■■	■■	■■	■■	■■	■■	●●	■■	■■	■■	■■	■■	●●	●●	■■	■■	▲▲	■■	▲▲	■■	▲▲	■■	■■
INDONESIA	98	■■	■■	■■	■■	■■	■■	■■	■■	■■	●●	■■	■■	■■	■■	▲▲	●●	●●	■■	■■	▲▲	■■	■■	■■	▲▲	▲▲	▲▲
MALDIVES	100	■■	■■	■■	■■	■■	■■	■■	●●	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	▲▲	■■	■■	▲▲	▲▲		
MYANMAR	95	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	●●	●●	■■	■■	▲▲	■■	■■	■■	▲▲	▲▲	▲▲
NEPAL	100	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	●●	●●	■■	■■	■■	■■	■■		■■		
SRI LANKA	98	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	▲▲	▲▲	▲▲	■■	●●	●●	■■	■■	■■	■■	■■	■■	●●	▲▲	■■
THAILAND	100	■■	■■	■■	●●	●●	■■	■■	●●	●●	●●	■■	■■	▲▲	■■	▲▲	●●	●●	■■	■■	▲▲	▲▲	▲▲		■■	■■	▲▲
TIMOR-LESTE	85	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■		●●	●●	■■	■■	■■	■■	▲▲	▲▲	▲▲	■■	▲▲
SEAR	**93**	**100**	**100**	**100**	**91**	**91**	**100**	**100**	**82**	**91**	**27**	**100**	**91**	**73**	**91**	**45**	**18**	**9**	**91**	**91**	**36**	**91**	**64**	**55**	**18**	**18**	**3**

DOT indicates directly observed treatment; EQA, external quality assurance; HRD, human resources development; ISTC, International Standards for Tuberculosis Care; PAL, Practical Approach to Lung Health; prev., prevalence.
First number in final row shows regional coverage; remaining numbers show the proportion of countries for which the answer is "yes" or "all" (i.e. those shown in dark green in the table).

■■ Yes/all ●● Some/partially ▲▲ No/none ☐ Answer not provided **NA** Not applicable. See explanatory notes on page 163 for details of colour-coding.

Table A2.1 **Estimated burden of TB, South-East Asia, 1990 and 2005**

	Incidence, 1990				Prevalence, 1990		TB mortality, 1990		Incidence, 2005								Prevalence, 2005				TB mortality, 2005				HIV prevalence in adult incident TB cases (%)
	All forms*		Smear-positive*		All forms*		All forms*		All forms*		All forms HIV+		Smear-positive*		Smear-positive HIV+		All forms*		All forms HIV+		All forms*		All forms HIV+		
	number	rate	number	rate	number	rate	number	rate	number	rate	number	rate	number	rate	number	rate	number	rate	number	rate	number	rate	number	rate	
Bangladesh	274 460	264	123 507	119	655 607	630	78 904	76	321 996	227	183	≤ 1	144 880	102	64	≤ 1	575 391	406	92	≤ 1	66 423	47	79	≤ 1	0.1
Bhutan	3 340	203	1 503	92	6 146	374	649	40	2 219	103	3	≤ 1	998	46	1	≤ 1	3 757	174	2	≤ 1	412	19	1	≤ 1	0.2
DPR Korea	35 004	178	15 752	80	84 350	428	11 559	59	39 978	178	–	–	17 990	80	–	–	40 172	179	–	–	3 015	13	–	–	–
India	1 425 475	168	639 342	75	4 842 185	570	359 279	42	1 851 661	168	65 845	6	826 663	75	23 046	2	3 299 197	299	32 923	3	322 322	29	19 644	2	5.2
Indonesia	621 955	343	279 880	154	799 077	440	165 387	91	532 871	239	2 883	1	239 504	108	1 009	≤ 1	583 924	262	1 441	≤ 1	91 663	41	1 024	≤ 1	0.8
Maldives	306	142	138	64	326	151	17	8	155	47	–	–	70	21	–	–	175	53	–	–	11	3	–	–	–
Myanmar	69 653	171	31 066	76	169 902	417	20 286	50	86 345	171	4 132	8	38 442	76	1 446	3	86 108	170	2 066	4	7 523	15	465	≤ 1	7.1
Nepal	46 445	243	20 863	109	118 655	621	9 773	51	48 842	180	1 025	4	21 876	81	359	1	66 158	244	512	2	6 305	23	228	≤ 1	3.1
Sri Lanka	10 760	60	4 842	27	19 365	109	1 841	10	12 549	60	20	≤ 1	5 645	27	7	≤ 1	16 571	80	10	≤ 1	1 622	8	5	≤ 1	0.2
Thailand	77 727	142	34 426	63	193 918	355	14 751	27	91 374	142	4 693	7	40 649	63	1 643	3	131 023	204	2 347	4	12 191	19	1 135	2	7.6
Timor-Leste	4 112	556	1 850	250	8 881	1 200	932	126	5 261	556	–	–	2 368	250	–	–	6 756	713	–	–	835	88	–	–	–
SEAR	**2 569 237**	**199**	**1 153 169**	**89**	**6 898 413**	**535**	**663 378**	**51**	**2 993 252**	**181**	**78 784**	**5**	**1 339 085**	**81**	**27 574**	**2**	**4 809 232**	**290**	**39 392**	**2**	**512 322**	**31**	**22 580**	**1**	**3.9**

– Indicates no estimate.

* Incidence, prevalence and mortality estimates include patients with HIV. Estimates labelled "HIV+" are estimates of TB in HIV-positive adults (aged 15-49 years). Estimates for all years are re-calculated as new information becomes available and techniques are refined, so they may differ from those published previously. See Explanatory notes on page 163 for further details. Data can be downloaded from www.who.int/tb

Table A2.2 **Whole country case notifications and case detection rates, South-East Asia, 2005**

		TB cases notified from whole country (DOTS + non-DOTS)														Incidence and case detection rates				Proportions			
		Country	New and relapse		New pulmonary			New extra-	Other	Re-treatment cases					New pulm.	Estimated incidence		Case detection rate		ss+	ss+	Extrapulm.	Re-treat.
	Population	total	(WHO total)		ss+		ss- / unk.	pulmonary	new	Relapse	After failure	After default	Other re-treat.	Other	lab. confirm.	all forms	ss+	all new	new ss+	(% of	(% of	(% of	(% of
	thousands	number	number	rate	number	rate	number	number	number	number	number	number	number	number	number	number	number	%	%	pulm.)	new+relapse)	new+relapse)	new+re-treat.)
Bangladesh	141 822	123 118	123 118	87	84 848	60	23 076	11 318		3 876					84 848	321 996	144 880	37	59	79	69	9	3
Bhutan	2 163	1 018	1 007	47	308	14	272	387		40	7	4			308	2 219	998	44	31	53	31	38	5
DPR Korea	22 488	50 474	42 722	190	17 796	79	18 123	5 381	58	1 364	1 524	1 018	5 210		17 796	39 978	17 990	103	99	50	42	13	18
India	1 103 371	1 304 828	1 156 248	105	508 890	46	399 066	171 838	1 381	75 073	17 764	72 125	58 691	0	508 890	1 851 661	826 663	58	62	56	44	15	17
Indonesia	222 781	254 601	254 601	114	158 640	71	85 373	6 142					4 446		158 640	532 871	239 504	47	66	65	62	2	2
Maldives	329	123	122	37	66	20	23	29	0	4	0	0	1	0	89	155	70	76	94	74	54	24	4
Myanmar	50 519	107 991	107 009	212	36 541	72	35 601	30 252		4 615		982			36 601	86 345	38 442	119	95	51	34	28	5
Nepal	27 133	37 077	33 448	123	14 617	54	9 474	7 013	0	2 344	316	313	0		14 617	48 842	21 876	64	67	61	44	21	9
Sri Lanka	20 743	9 695	9 249	45	4 868	23	2 198	1 917	0	266	55	189	0	202	5 358	12 549	5 645	72	86	69	53	21	5
Thailand	64 233	57 895	57 895	90	29 762	46	18 837	7 501		1 795					29 762	91 374	40 649	61	73	61	51	13	3
Timor-Leste	947	3 783	3 767	398	1 035	109	2 142	554		36	4	12			1 035	5 261	2 368	71	44	33	27	15	1
SEAR	**1 656 529**	**1 950 603**	**1 789 186**	**108**	**857 371**	**52**	**594 185**	**242332**	**1439**	**89 413**	**19 670**	**74 643**	**68 348**	**202**	**857 944**	**2 993 252**	**1 339 085**	**57**	**64**	**59**	**48**	**14**	**13**

ss+ indicates sputum smear-positive; ss-, sputum smear-negative; unk., sputum smear result unknown; re-treat., re-treatment; pulm.lab. confirmed, pulmonary case confirmed by positive smear or culture. See Explanatory notes on page 163 for further details. Data can be downloaded from www.who.int/tb

Table A2.3 **DOTS coverage, case notifications and case detection rates, South-East Asia, 2005**

		TB cases reported from DOTS services													Estimated incidence and case detection rate				Proportions			
	DOTS	New and relapse		New pulmonary			New extra-	Other	Re-treatment cases					New pulm.	Estimated incidence		Case detection rate		ss+	ss+	Extrapulm.	Re-treat.
	coverage	(WHO total)		ss+		ss- / unk.	pulmonary	new	Relapse	After failure	After default	Other re-treat.	Other	lab. confirm.	all forms	ss+	all new	new ss+	(% of	(% of	(% of	(% of
	%	number	rate	number	rate	number	number	number	number	number	number	number	number	number	number	number	%	%	pulm.)	new+relapse)	new+relapse)	new+re-treat.)
Bangladesh	99	123 118	87	84 848	60	23 076	11 318		3 876					84 848	321 996	144 880	37	59	79	69	9	3
Bhutan	100	1 007	47	308	14	272	387		40	7	4			308	2 219	998	44	31	53	31	38	5
DPR Korea	100	42 722	190	17 796	79	18 123	5 381	58	1 364	1 524	1 018	5 210		17 796	39 978	17 990	103	99	50	42	13	18
India	91	1 146 599	104	506 852	46	392 390	170 948	1 381	75 028	17 764	72 089	58 642	0	506 852	1 851 661	826 663	58	61	56	44	15	17
Indonesia	98	254 601	114	158 640	71	85 373	6 142					4 446		158 640	532 871	239 504	47	66	65	62	2	2
Maldives	100	122	37	66	20	23	29	0	4	0	0	1	0	89	155	70	76	94	74	54	24	4
Myanmar	95	107 009	212	36 541	72	35 601	30 252		4 615		982			36 601	86 345	38 442	119	95	51	34	28	5
Nepal	100	33 448	123	14 617	54	9 474	7 013	0	2 344	316	313	0		14 617	48 842	21 876	64	67	61	44	21	9
Sri Lanka	98	9 208	44	4 841	23	2 191	1 913	0	263	55	186	0	189	5 331	12 549	5 645	71	86	69	53	21	5
Thailand	100	57 895	90	29 762	46	18 837	7 501		1 795					29 762	91 374	40 649	61	73	61	51	13	3
Timor-Leste	85	3 767	398	1 035	109	2 142	554		36	4	12			1 035	5 261	2 368	71	44	33	27	15	1
SEAR	**93**	**1 779 496**	**107**	**855 306**	**52**	**587 502**	**241 438**	**1 439**	**89 365**	**19 670**	**74 604**	**68 299**	**189**	**855 879**	**2 993 252**	**1 339 085**	**56**	**64**	**59**	**48**	**14**	**13**

ss+ indicates sputum smear-positive; ss-, sputum smear-negative; unk., sputum smear result unknown; re-treat., re-treatment; pulm.lab. confirmed, pulmonary case confirmed by positive smear or culture. See Explanatory notes on page 163 for further details. Data can be downloaded from www.who.int/tb

Table A2.4 **Laboratory services, collaborative TB/HIV activities and management of MDR-TB, South-East Asia, 2004–2005**

	Laboratory services, 2005				Collaborative TB/HIV activities								Management of MDR-TB, 2005				
					2004				2005								
	number of labs working with NTP			number of labs included in EQA	TB pts tested for HIV	TB pts HIV-positive	HIV+ TB pts CPT	HIV+ TB pts ART	TB pts tested for HIV	TB pts HIV-positive	HIV+ TB pts CPT	HIV+ TB pts ART	Lab-confirmed MDR	DST in new cases	MDR in new cases	Re-treatment DST	Re-treatment MDR
	smear	culture	DST														
Bangladesh	635	2	0	22	0				0					0		0	0
Bhutan	29	1	0	28	250	0	0	0	250	1	0	0	2	2	2	3	0
DPR Korea	266	3	3	220													
India	11 813	5	5	11 465					29 617	6 414			33	0	0	0	0
Indonesia	3 320	41	22	3 294													
Maldives	18	2	0	7		1	1						0	0	0	0	0
Myanmar	310	2	1	14					2 109	611	305	190		0	0		
Nepal	380	2	2	380													
Sri Lanka	151	1	1	149		0	0	0		2	0	0	32	659	7	417	25
Thailand	846	40	8	846													
Timor-Leste	21	0	0		0				0				0	0	0	0	0
SEAR	**17 789**	**99**	**42**	**16 425**	**250**	**1**	**1**	**0**	**31 976**	**7 028**	**305**	**190**	**67**	**661**	**9**	**420**	**25**

ART indicates antiretroviral therapy; CPT, co-trimoxazole preventive therapy; DST, drug susceptibility testing; EQA, external quality assurance; HIV+, HIV-positive; pts, patients. See Explanatory notes on pages 163 for further details. Some countries provided the number of TB patients found to be HIV-positive, but did not provide the number of TB patients tested. The regional total of TB patients tested is therefore lower than the number of patients actually tested, and cannot be used to calculated a regional estimate of HIV prevalence in TB patients. Data can be downloaded from www.who.int/tb

Table A2.5 **Treatment outcomes, South-East Asia, 2004 cohort**

	New smear-positive cases, DOTS											New smear-positive cases, non-DOTS											Smear-positive re-treatment cases, DOTS								
	Number of cases		% of notif	% of cohort							%	Number of cases		% of notif	% of cohort							%	Number	% of cohort							%
	Notified	Regist'd	regist'd	Cured	Compl-eted	Died	Failed	Default	Trans-ferred	Not eval.	Success	Notified	Regist'd	regist'd	Cured	Compl-eted	Died	Failed	Default	Trans-ferred	Not eval.	Success	Regist'd	Cured	Compl-eted	Died	Failed	Default	Trans-ferred	Not eval.	Success
Bangladesh	62 694	62 694	100	88	1	4	1	3	2	1	90												4 305	76	5	4	3	6	4	2	81
Bhutan	356	375	105	78	5	5	4	1	0	7	83												45	71	11	2	9	0	7	0	82
DPR Korea	18 479	18 479	100	84	5	2	3	3	3	0	89												9 342	63	12	5	12	4	4	0	75
India	465 518	465 518	100	84	2	4	2	7	0	0	86	23 677	23 677	100	4	1	0	0	2	0	93	5	196 726	50	23	7	4	15	1	0	73
Indonesia	128 981	128 981	100	81	8	3	1	5	2	0	90												4 429	62	20	4	3	7	4	0	82
Maldives	66	66	100	95		3			2	0	95												5	80	0	20	0	0	0	0	80
Myanmar	31 408	31 413	100	75	8	6	2	6	2	0	84	0											6 012	60	14	9	5	8	4	0	74
Nepal	14 614	14 614	100	86	2	5	2	3	2	0	87												2 821	80	2	6	5	7	1	0	81
Sri Lanka	3 928	3 928	100	84	2	5	1	8	1	0	85	374	374	100	61	20	5	1	10	2	1	81	397	64	4	7	2	20	2	0	69
Thailand	28 421	28 421	100	70	4	9	2	6	4	5	74												2 240	51	5	10	6	7	4	17	56
Timor-Leste	1 014	1 000	99	67	13	5	1	9	6	0	80												42	83	5	7	0	5	0	0	88
SEAR	**755 479**	**755 489**	**100**	**83**	**4**	**4**	**2**	**6**	**1**	**0**	**87**	**24 051**	**24 051**	**100**	**5**	**1**	**0**	**0**	**2**	**0**	**92**	**6**	**226 364**	**52**	**22**	**7**	**5**	**14**	**1**	**0**	**73**

Not eval. indicates not evaluated (percentage of registered cases for which outcomes were not recorded); success, sum of cured and completed; cases regist'd, the denominator for calculating treatment outcomes. The number of cases registered for treatment in 2004 is used as the denominator for calculating treatment outcomes unless it is less than the sum of outcomes, in which case the sum of outcomes is used. If the number of cases registered is not reported, then the number of cases notified in 2004 is used, or the sum of outcomes if the latter is greater. Data can be downloaded from www.who.int/tb

Table A2.6 **Re-treatment outcomes, South-East Asia, 2004 cohort**

	Relapse, DOTS									After failure, DOTS									After default, DOTS								
		% of cohort							%		% of cohort							%		% of cohort							%
	Number regist'd	Cured	Compl-eted	Died	Failed	Default	Trans-ferred	Not eval.	Success	Number regist'd	Cured	Compl-eted	Died	Failed	Default	Trans-ferred	Not eval.	Success	Number regist'd	Cured	Compl-eted	Died	Failed	Default	Trans-ferred	Not eval.	Success
Bangladesh	3 213	77	5	4	2	5	5	3	82										1 092	72	6	5	5	9	2	0	79
Bhutan	31	77	10	0	13	0	0	0	87	6	67	0		0	0		33	67	8	50	25	0	0	0		25	75
DPR Korea	1 663	68	11	3	10	4	4	0	79	1 170	66	12	4	10	4	4	0	78	957	67	13	3	10	4	3	0	80
India	62 228	69	5	7	5	13	1	0	75	16 316	55	6	8	13	16	1	0	61	67 967	63	7	7	4	18	1	0	69
Indonesia																											
Maldives	5	80		20				0	80																		
Myanmar	4 682	65	11	9	4	7	3	0	77	1 330	41	22	10	10	10	7	0	63									
Nepal	2 122	82	1	6	3	8	0	0	83	337	67	2	8	15	5	1	1	69	362	76	4	9	3	6	2	1	79
Sri Lanka	199	68	4	9	3	14	3	0	72	37	73	8	5	3	8	3	0	81	161	58	3	5	1	30	2	0	61
Thailand	1 704	51	5	9	4	6	3	22	56	536	51	6	12	14	9	8	0	58									
Timor-Leste																											
SEAR	**75 847**	**69**	**6**	**7**	**5**	**12**	**1**	**1**	**75**	**19 732**	**55**	**8**	**8**	**13**	**15**	**1**	**0**	**63**	**70 547**	**63**	**7**	**7**	**4**	**18**	**1**	**0**	**70**

Not eval. indicates not evaluated (percentage of registered cases for which outcomes were not recorded); success, sum of cured and completed; cases regist'd, the denominator for calculating treatment outcomes. The number of cases registered for treatment in 2004 is used as the denominator for calculating treatment outcomes unless it is missing or is less than the sum of outcomes, in which case the sum of outcomes is used. Data can be downloaded from www.who.int/tb

Table A2.7 **DOTS treatment success and case detection rates, South-East Asia, 1994–2005**

	DOTS new smear-positive treatment success (%)											DOTS new smear-positive case detection rate (%)										
	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Bangladesh	73	71	72	78	80	81	83	84	84	85	90	7	15	19	24	25	26	28	32	38	44	59
Bhutan	71	97	96	85	90	85	90	93	86	90	83	29	25	24	23	27	31	33	34	34	35	31
DPR Korea					91	94	91	91	88	88	89					2	26	54	81	92	103	99
India	83	79	79	82	84	82	84	85	87	86	86	0	1	1	2	7	12	24	31	45	57	61
Indonesia	94	91	81	54	58	50	87	86	86	87	90	1	4	7	12	19	20	22	31	38	53	66
Maldives	95	97	93	94	94	94	97	97	95	91	95	102	99	93	90	94	73	70	74	88	90	94
Myanmar		66	79	82	82	81	82	81	81	81	84		26	26	29	32	48	56	65	73	83	95
Nepal			85	87	89	87	86	88	86	87	87		5	11	16	44	57	58	61	66	67	67
Sri Lanka	77	79	80	76	76	84	77	80	81	81	85	59	57	67	71	73	63	68	66	66	70	86
Thailand			78	62	68	77	69	75	74	73	74		0	5	21	39	46	72	65	71	70	73
Timor-Leste								73	81	81	80								56	50	46	44
SEAR	**80**	**74**	**77**	**72**	**72**	**73**	**83**	**84**	**85**	**85**	**87**	**1**	**4**	**6**	**8**	**14**	**19**	**27**	**34**	**45**	**57**	**64**

Treatment success, sum of cured and completed; DOTS new smear-positive case detection rate, notified (new and relapse) cases divided by estimated incident cases. The table includes updated information; data shown here may differ from those published in previous reports. Data can be downloaded from www.who.int/tb

Table A2.8 **New smear-positive case notification by age and sex, absolute numbers, DOTS and non-DOTS, South-East Asia, 2005**

	Male							Female							All							Male/female
	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+	ratio
Bangladesh	524	8 170	10 443	11 423	11 038	8 476	7 453	751	6 776	6 785	5 538	3 960	2 281	1 230	1 275	14 946	17 228	16 961	14 998	10 757	8 683	2.1
Bhutan	1	47	58	26	23	14	12	9	45	38	13	11	9	2	10	92	96	39	34	23	14	1.4
DPR Korea	167	1 409	2 422	2 688	2 040	1 185	485	166	1 127	1 756	1 890	1 381	764	336	333	2 536	4 178	4 578	3 421	1 949	821	1.4
India	3 185	62 620	74 678	76 870	64 843	43 038	24 726	6 292	45 136	45 629	28 577	17 042	10 513	5 408	9 477	107 756	120 307	105 447	81 885	53 551	30 134	2.2
Indonesia	846	15 215	20 906	18 401	17 847	13 509	6 390	946	13 916	16 393	13 022	10 927	7 539	2 783	1 792	29 131	37 299	31 423	28 774	21 048	9 173	1.4
Maldives	0	9	8	5	6	6	5	1	10	7	1	2	2	4	1	19	15	6	8	8	9	1.4
Myanmar	132	3 401	5 877	5 888	4 585	2 557	1 764	147	2 376	3 047	2 563	2 101	1 218	885	279	5 777	8 924	8 451	6 686	3 775	2 649	2.0
Nepal	148	1 946	1 685	1 722	1 806	1 759	820	195	1 208	1 111	797	658	532	230	343	3 154	2 796	2 519	2 464	2 291	1 050	2.1
Sri Lanka	9	341	520	724	918	657	424	19	295	261	189	200	154	130	28	636	781	913	1 118	811	554	2.9
Thailand	44	1 344	3 814	4 393	4 003	2 831	3 407	57	907	1 662	1 334	1 367	1 259	1 938	101	2 251	5 476	5 727	5 370	4 090	5 345	2.3
Timor-Leste	8	136	149	116	119	52	47	8	127	90	76	60	18	29	16	263	239	192	179	70	76	1.5
SEAR	**5 064**	**94 638**	**120 560**	**122 256**	**107 228**	**74 084**	**45 533**	**8 591**	**71 923**	**76 779**	**54 000**	**37 709**	**24 289**	**12 975**	**13 655**	**166 561**	**197 339**	**176 256**	**144 937**	**98 373**	**58 508**	**2.0**

For some countries, breakdown of notified cases by age and sex is missing, or is provided for a subset of cases. See Explanatory notes on page 164 for further details. Data can be downloaded from www.who.int/tb

Table A2.9 **New smear-positive case notification rates by age and sex, DOTS and non-DOTS, South-East Asia, 2005**

	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	55	91	130	184	263	302	3	48	62	67	71	68	46	3	52	77	99	129	164	170
Bhutan	0	20	37	25	31	25	26	2	20	25	13	15	16	4	1	20	31	19	23	20	14
DPR Korea	6	77	132	141	179	118	76	6	64	99	103	122	70	38	6	70	116	122	150	93	54
India	2	57	84	106	122	131	91	4	44	55	42	34	32	18	3	51	70	75	79	81	52
Indonesia	3	71	108	118	162	210	117	3	66	85	84	100	105	41	3	69	97	101	131	154	75
Maldives	0	25	34	30	54	100	84	2	28	31	7	18	35	74	1	26	32	19	36	68	79
Myanmar	2	68	134	182	198	174	155	2	48	69	77	86	77	65	2	58	101	129	140	124	106
Nepal	3	70	87	130	190	299	193	4	46	55	52	61	76	41	3	58	71	88	121	177	106
Sri Lanka	0	18	30	46	72	79	62	1	16	16	13	17	20	16	1	17	23	30	46	51	37
Thailand	1	25	74	93	101	116	171	1	17	32	26	33	48	77	1	21	53	58	66	81	118
Timor-Leste	4	118	263	236	322	244	349	4	118	221	167	177	80	207	4	118	245	203	252	160	276
SEAR	**2**	**58**	**90**	**111**	**134**	**151**	**113**	**3**	**47**	**60**	**52**	**49**	**48**	**28**	**3**	**53**	**75**	**82**	**93**	**99**	**67**

Rates are per 100 000 population of each age/sex group. Rates are calculated excluding those countries for which breakdown of notified cases or population by age and sex is missing. Data can be downloaded from www.who.int/tb

Table A2.10 **Number of TB cases notified, South-East Asia, 1980–2005**

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
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	81 963	88 156	98 336	123 118
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	1 026	988	1 007
DPR Korea																		11 050	1 152	12 287	34 131	29 284	40 159	41 810	44 602	42 722
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	1 073 282	1 136 182	1 156 248
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	174 174	210 229	254 601
Maldives	73	112	111	143	123	91	111	115	85	203	152	123	92	175	249	231	212	173	176	153	132	139	125	137	119	122
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	75 744	96 662	107 009
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	30 925	31 979	33 448
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	5 956	5 366	6 542	6 925	7 157	8 413	7 499	8 939	8 998	8 562	9 249
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	54 504	55 306	57 895
Timor-Leste	0																						2 760	2 760	3 716	3 767
SEAR	**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**	**1 401 096**	**1 470 352**	**1 308 981**	**1 279 041**	**1 464 312**	**1 414 228**	**1 414 141**	**1 488 126**	**1 551 516**	**1 686 681**	**1 789 186**
Number reporting	10	9	9	9	9	9	9	8	9	9	9	9	8	9	9	9	9	10	10	10	10	10	11	11	11	11
% reporting	91	82	82	82	82	82	82	73	82	82	82	82	73	82	82	82	82	91	91	91	91	91	130	100	100	100

From 1995 on, number shown is all notified new and relapse cases (DOTS and non-DOTS). The table includes updated information; data shown here may differ from those published in previous reports. Data can be downloaded from www.who.int/tb

Table A2.11 **Case notification rates, South-East Asia, 1980–2005**

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Bangladesh	48	51	58	60	50	45	48	47	45	44	47	53	29	48	42	48	53	52	58	63	59	58	61	65	71	87
Bhutan	119	201	53	74	64	74	106	40	72	95	70	60	8	6	68	75	72	67	70	62	59	52	54	50	47	47
DPR Korea																		52	5	57	156	133	181	188	199	190
India	102	109	128	146	148	153	164	176	179	181	179	179	127	120	121	130	135	117	112	121	109	105	101	100	105	105
Indonesia	17	21	21	20	20	11	10		56	59	41	33	53	33	26	18	12	11	20	33	40	44	72	80	96	114
Maldives	46	69	66	83	69	50	59	59	42	97	70	55	40	74	102	92	82	65	64	54	45	47	41	44	37	37
Myanmar	38	36	34	31	30	28	29	31	24	27	30	36	40	44	36	41	49	37	32	42	65	89	117	153	193	212
Nepal	7	2	9	4	1	0	1	6	9	59	53	46		64	74	91	103	106	103	115	121	118	119	119	120	123
Sri Lanka	41	41	47	42	39	36	39	38	35	37	37	34	37	37	33	32	28	34	36	36	42	37	44	44	42	45
Thailand	99	105	101	134	139	153	101	99	94	83	85	79	85	87	83	78	68	51	26	48	56	80	79	86	87	90
Timor-Leste																							356	334	419	398
SEAR	**80**	**85**	**98**	**111**	**112**	**113**	**119**	**125**	**134**	**137**	**133**	**133**	**99**	**94**	**93**	**99**	**102**	**89**	**86**	**97**	**92**	**91**	**94**	**96**	**103**	**108**

Rates are per 100 000 population. The table includes updated information; data shown here may differ from those published in previous reports. Data can be downloaded from www.who.int/tb

Table A2.12 **New smear-positive cases notified, numbers and rates, South-East Asia, 1993–2005**

	Number of cases													Rate (per 100 000 population)												
	1993	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**
Bangladesh	18 993	1 710	20 524	29 674	33 117	37 737	37 821	38 484	40 777	46 811	53 618	62 694	84 848	17	2	18	25	27	30	30	30	31	35	39	45	60
Bhutan		352	367	308	284	270	315	347	359	364	360	356	308		21	21	17	16	15	17	18	18	18	17	17	14
DPR Korea					3 980	403	5 073	16 440	14 429	18 576	17 392	18 479	17 796					19	2	23	75	66	84	78	83	79
India	225 256	226 543	264 515	290 953	274 877	278 275	345 150	349 374	384 827	395 833	433 564	489 195	508 890	25	25	28	31	28	28	34	34	37	38	40	45	46
Indonesia	62 966	49 647	31 768	11 790	19 492	32 280	49 172	52 338	53 965	76 230	92 566	128 981	158 640	33	26	16	6	10	16	24	25	25	36	43	59	71
Maldives	126	125	114	106	95	88	88	65	59	60	68	66	66	53	51	45	41	36	32	31	22	20	20	22	21	20
Myanmar		946	8 681	9 716	9 695	10 089	11 458	17 254	21 161	24 162	27 448	31 408	36 541		2	20	21	21	22	24	36	44	49	55	63	72
Nepal	6 679	10 442	8 591	10 365	11 323	11 306	13 410	13 683	13 683	13 714	14 348	14 614	14 617	32	49	40	47	50	48	56	56	55	54	55	55	54
Sri Lanka	3 335	3 405	3 049	2 958	3 506	3 761	3 911	4 314	4 316	4 297	4 321	4 302	4 868	18	18	16	16	18	19	20	22	22	21	21	21	23
Thailand		20 260	20 273	16 997	13 214	7 962	14 934	17 754	28 363	25 593	28 459	28 421	29 762		35	35	29	22	13	25	29	46	41	45	45	46
Timor-Leste										1 090	1 027	1 014	1 035										141	124	114	109
SEAR	**317 355**	**313 430**	**357 882**	**372 867**	**369 583**	**382 171**	**481 332**	**510 053**	**561 939**	**606 730**	**673 171**	**779 530**	**857 371**	**23**	**23**	**25**	**26**	**25**	**26**	**32**	**33**	**36**	**38**	**42**	**48**	**52**

Rates are per 100 000 population. The table includes updated information; data shown here may differ from those published in previous reports. Data can be downloaded from www.who.int/tb

Notes

Bhutan

The population estimate used by the NTP (0.67 million) differs from that of the United Nations Population Division (2.16 million). Using the smaller population estimate gives a notification rate for new smear-positive cases of 46 per 100 000 population, and a smear-positive case detection rate of 99%.

Thailand

Breakdown of cases by age and sex not provided for cases notified by Bangkok Metropolitan Administration.

Summary by WHO region …
Africa …
The Americas …
Eastern Mediterranean…
Europe …
South-East Asia …
Western Pacific …

Western Pacific

NTP MANAGER (OR EQUIVALENT); PERSON FILLING OUT DATA COLLECTION FORM (IF DIFFERENT)

American Samoa	Faatuai Faoa
Australia	John Walker; Paul Roche
Brunei Darussalam	Hjh Kalsom Binti Abdul Latif; Bheemayya Badesab
Cambodia	Mao Tan Eang; Tieng Sivanna
China	Liu Jianjun; Cheng Shiming
China; Hong Kong SAR	Cheuk-ming Tam
China; Macao SAR	Chou Kuok Hei
Cook Islands	Ngapoko Short; Tae Nootutai
Fiji	William Kaitani; Lobi Batio
French Polynesia	Axel Wiegandt
Guam	Cecilia Teresa Arciaga
Japan	Tarou Tsukahara; Nobukatsu Ishikawa
Kiribati	Taketiau Beiriki; Sno Bereka Reiher
Lao PDR	Phannasinh Sylavanh; Phonenaly Chittamany
Malaysia	Abdul Rasid bin Kasri; Fuad bin Hashim
Marshall Islands	Kenner Briand; Risa J. Bukbuk
Micronesia	Lerina Nena
Mongolia	Naranbat Nymadawa; Tseveen Tserenbaljid
Nauru	Isabella Amwano
New Caledonia	Bernard Rouchon; Oksana Segur
New Zealand	Alison Roberts; Andrea M. Forde
Niue	Kara Okesene Gafa
Northern Mariana Is	Richard Brostrom; Susan Schorr
Palau	Henrietta Merei
Papua New Guinea	Paul Aia; Rajendra Yadav
Philippines	Rosalind Vianzon; Anna Marie Celina Garfin; Arlene Rivera
Rep. Korea	Hwa Hyun Kim; Hee Jin Kim
Samoa	Robert Thomsen; Serafi Moa Mulumulu; Robert Thomsen
Singapore	Wang Yee Tang; Khin Mar Kyi Win
Solomon Islands	Noel Itogo
Tokelau	Tekie Iosefa
Tonga	Malakai Ake
Tuvalu	Nese Ituaso Conway
Vanuatu	Russel Tamata
Viet Nam	Dinh Ngoc Sy
Wallis & Futuna Is	Laurent Morisse

This list shows the people named on the data collection form sent to WHO in 2006, not necessarily the current NTP manager. It is intended as an acknowledgement rather than a directory.

WESTERN PACIFIC: SUMMARY OF TB CONTROL POLICIES

	DOTS COVERAGE, %	NTP MANUAL	SMEAR MICROSCOPY FOR DIAGNOSIS	STANDARDIZED CHEMOTHERAPY	DOT	MONITORING OUTCOMES	CASES NOTIFIED BY TYPE; AGE & SEX	2004 COHORT OUTCOMES REPORTED: NEW; RETREATMENT	SMEAR MICROSCOPY FREE-OF-CHARGE	DRUGS FREE-OF-CHARGE	UNINTERRUPTED DRUG SUPPLY	EQA FOR SMEAR MICROSCOPY	STRATEGIC HRD PLAN	TB CONTROL IN CURRICULA OF DOCTORS AND NURSES	UP-TO-DATE JOB DESCRIPTIONS	GUIDELINES FOR PRIVATE PRACTITIONERS	PUBLIC PROVIDERS NOTIFIED/REFERRED	PRIVATE PROVIDERS NOTIFIED/REFERRED	ISTC PROMOTED IN 2006	HEALTH SYSTEM STRENGTHENING IN PLAN	PAL IN PLAN	COMMUNITY-BASED TB CARE	PATIENTS' CHARTER PROMOTED IN 2006	OPERATIONAL RESEARCH	MDR-TB MGMT; IN LINE WITH WHO GUIDELINES	HIV COUNSELLING & TESTING	SURVEILLANCE OF HIV PREV. IN TB PTS
AMERICAN SAMOA	100	■■	■■	■■	■■	■■	●●	●●	▲▲	■■	■■		▲▲	■■	■■	▲▲	▲▲	▲▲	▲▲	▲▲	▲▲	▲▲	▲▲	▲▲	▲▲	▲▲	▲▲
AUSTRALIA	88	■■	■■	■■	■■	■■	■■	■■	■■	■■	●●	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	▲▲
BRUNEI DARUSSALAM	100	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	▲▲	▲▲	●●	■■	■■	●●	●●	■■	■■	▲▲			▲▲	■■	■■	■■
CAMBODIA	100	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	▲▲	●●	●●	■■	■■	■■	■■	■■	■■	▲▲	■■	■■
CHINA	100	■■	■■	■■	■■	▲▲	■■	■■	■■	▲▲	●●	■■	▲▲	■■	▲▲	■■	●●	●●	■■	■■	■■	▲▲	▲▲	■■	▲▲	▲▲	▲▲
CHINA, HONG KONG SAR	100	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■
CHINA, MACAO SAR	100	▲▲	■■	■■	■■	■■	■■	■■	■■	■■	■■	▲▲	▲▲	■■	■■	■■	●●	●●	■■	▲▲	■■	■■	■■	■■	■■	■■	■■
COOK ISLANDS	100	■■	■■	■■	■■	■■	■■	●●	■■	■■	■■	■■	▲▲	▲▲	▲▲	■■	■■	■■	▲▲					▲▲	▲▲	▲▲	▲▲
FIJI	100	■■	■■	■■	■■	■■	■■	▲▲	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	▲▲	■■	■■	▲▲	▲▲	▲▲	■■	■■	■■
FRENCH POLYNESIA	100	■■	■■	■■	■■	■■	■■	■■	▲▲	■■	■■	▲▲	▲▲	●●	■■	■■	●●	■■	■■						■■		▲▲
GUAM	100	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	▲▲	■■		■■	■■	■■	■■	■■	■■	■■	▲▲	■■	■■	■■
JAPAN	83	■■	■■	■■	■■	●●	■■	■■	▲▲	▲▲	■■	▲▲	▲▲	■■	■■	■■	●●	■■	▲▲	▲▲	▲▲	▲▲	▲▲		●●	▲▲	▲▲
KIRIBATI	100		■■	■■	■■	■■	■■	■■	■■	■■	●●	■■	▲▲	●●	■■		●●	●●	▲▲	■■	▲▲	■■	▲▲	■■	■■	▲▲	▲▲
LAO PDR	100	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	▲▲	■■	■■	▲▲	●●	▲▲	▲▲	■■	▲▲	■■	▲▲	▲▲	▲▲	▲▲	▲▲
MALAYSIA	100	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	▲▲	■■	■■	■■	■■	■■	●●	■■	▲▲	▲▲	■■	■■	▲▲	■■	■■	■■
MARSHALL ISLANDS	100	■■	■■	■■	■■	■■	■■	■■	■■	■■	●●	■■	■■	■■	■■	■■	■■	■■	■■	▲▲	■■	■■	▲▲	▲▲	■■	■■	■■
MICRONESIA	100	■■	■■	■■	■■	■■	●●	●●	■■	■■	■■	■■	▲▲	■■	▲▲	▲▲	■■	NA	▲▲	▲▲	▲▲	▲▲	▲▲		●●	▲▲	▲▲
MONGOLIA	100	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	▲▲	●●	▲▲	■■	■■	▲▲	■■	▲▲	■■	■■	▲▲	■■
NAURU	100	▲▲	■■	■■	■■	■■	●●	▲▲	■■	■■	▲▲	■■	▲▲		▲▲	■■	■■	NA	▲▲	▲▲	▲▲	▲▲	▲▲	▲▲	▲▲		
NEW CALEDONIA	100	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	▲▲	■■	■■	■■	■■	■■	■■	■■	■■	▲▲				▲▲	■■	▲▲
NEW ZEALAND	100	■■	■■	■■	●●	■■	■■	■■	■■	▲▲	■■	▲▲	▲▲	▲▲	■■	■■	■■	■■	▲▲	▲▲	▲▲	▲▲	▲▲	▲▲	▲▲	▲▲	▲▲
NIUE	100	▲▲	■■	■■	■■	■■	■■	●●	■■	■■	■■	▲▲	▲▲		▲▲	■■	■■	■■		▲▲	▲▲	▲▲		▲▲			
NORTHERN MARIANA IS	100	■■	■■	■■	■■	■■	■■	●●	■■	■■	■■	■■	▲▲		▲▲	▲▲	NA	■■	■■		▲▲	▲▲	▲▲	▲▲	▲▲	●●	■■	■■
PALAU	100	■■	■■	■■	■■	■■	■■	●●	■■	■■	■■	■■	▲▲	●●	▲▲	■■	■■	■■	▲▲	▲▲	▲▲	▲▲	▲▲	▲▲	■■	■■	■■
PAPUA NEW GUINEA	53	■■	●●	■■	●●	●●	■■	■■	■■	■■	▲▲	■■	■■	■■	▲▲	■■	●●	●●	■■	■■	▲▲	■■	▲▲	▲▲	▲▲	▲▲	▲▲
PHILIPPINES	100	■■	■■	■■	■■	●●	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	●●	●●	■■	■■	▲▲	■■	■■	■■	■■	▲▲	▲▲
REP. KOREA	100	■■	■■	■■	▲▲	■■	■■	■■	■■	■■	■■	■■	▲▲	■■	■■	▲▲	●●	●●	▲▲	▲▲	▲▲	▲▲	▲▲	■■	▲▲	▲▲	▲▲
SAMOA	100	■■	■■	■■	■■	■■	■■	●●	■■	■■	■■	▲▲	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	▲▲	▲▲	▲▲	▲▲	■■
SINGAPORE	100	■■	■■	■■	●●	■■	■■	■■	▲▲	●●	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	▲▲	■■	■■	■■	■■	▲▲	▲▲
SOLOMON ISLANDS	100	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	■■	▲▲	■■	■■	■■	■■	●●	■■	■■	▲▲		▲▲	▲▲	■■	▲▲	▲▲
TOKELAU	0	▲▲	▲▲	▲▲	▲▲		●●	●●		▲▲		▲▲	▲▲	▲▲		▲▲	NA	NA	▲▲	▲▲	▲▲	▲▲	▲▲	▲▲	▲▲	▲▲	▲▲
TONGA	100						■■	▲▲																			
TUVALU	100	■■	■■	■■	■■	■■	■■	●●	■■	■■	●●	▲▲	▲▲	■■	▲▲	▲▲	■■	NA	▲▲	▲▲	▲▲	▲▲	▲▲	▲▲	▲▲	▲▲	▲▲
VANUATU	100	■■	■■	■■	■■	■■	■■	●●	■■	■■	▲▲	■■	▲▲	●●	▲▲	■■	■■	■■		▲▲	▲▲	▲▲		▲▲	▲▲	▲▲	▲▲
VIET NAM	100	■■	■■	■■	■■	■■	■■	■■	■■	■■	●●	■■	■■	■■	■■	▲▲	●●	●●	▲▲	■■	■■	■■	■■	■■	▲▲	■■	▲▲
WALLIS & FUTUNA IS	100	■■	■■	■■	■■	■■	●●	■■	■■	■■	■■	■■	■■	▲▲	■■	■■	■■	NA	■■	▲▲	▲▲	▲▲	■■	▲▲	▲▲	■■	■■
WPR	98	83	92	94	83	83	86	67	83	83	25	64	42	61	67	64	53	44	53	47	28	42	28	31	42	36	13

DOT indicates directly observed treatment; EQA, external quality assurance; HRD, human resources development; ISTC, International Standards for Tuberculosis Care; PAL, Practical Approach to Lung Health; prev., prevalence.
First number in final row shows regional coverage; remaining numbers show the proportion of countries for which the answer is "yes" or "all" (i.e. those shown in dark green in the table).
■■ Yes/all ●● Some/partially ▲▲ No/none Answer not provided **NA** Not applicable. See explanatory notes on page 163 for details of colour-coding.

Table A2.1 **Estimated burden of TB, Western Pacific, 1990 and 2005**

	Incidence, 1990				Prevalence, 1990		TB mortality, 1990		Incidence, 2005								Prevalence, 2005				TB mortality, 2005				HIV prevalence in adult incident TB cases (%)
	All forms*		Smear-positive*		All forms*		All forms*		All forms*		All forms HIV+		Smear-positive*		Smear-positive HIV+		All forms*		All forms HIV+		All forms*		All forms HIV+		
	number	rate	number	rate	number	rate	number	rate	number	rate	number	rate	number	rate	number	rate	number	rate	number	rate	number	rate	number	rate	
American Samoa	6	12	3	5	13	27	1	3	6	9	–	–	3	4	–	–	6	9	–	–	≤ 1	≤ 1	–	–	–
Australia	1 115	7	501	3	1 140	7	112	≤ 1	1 168	6	16	≤ 1	524	3	6	≤ 1	1 186	6	8	≤ 1	117	≤ 1	2	≤ 1	2.9
Brunei Darussalam	159	62	71	28	291	113	31	12	200	54	≤ 1	≤ 1	90	24	≤ 1	≤ 1	235	63	≤ 1	≤ 1	19	5	≤ 1	≤ 1	0.2
Cambodia	56 698	582	25 203	259	92 649	951	10 898	112	71 130	506	2 586	18	31 750	226	905	6	98 901	703	1 293	9	12 281	87	862	6	6.0
China	1 345 828	116	605 554	52	3 749 162	325	281 964	24	1 319 328	100	3 864	≤ 1	593 311	45	1 352	≤ 1	2 736 852	208	1 932	≤ 1	204 603	16	1 137	≤ 1	0.5
China, Hong Kong SAR	6 178	108	2 779	49	7 896	138	641	11	5 278	75	18	≤ 1	2 373	34	6	≤ 1	5 388	77	9	≤ 1	454	6	2	≤ 1	0.5
China, Macao SAR	346	93	156	42	458	123	45	12	372	81	–	–	167	36	–	–	400	87	–	–	43	9	–	–	–
Cook Islands	4	22	2	10	9	49	≤ 1	5	3	16	–	–	1	7	–	–	5	26	–	–	≤ 1	3	–	–	–
Fiji	303	42	136	19	451	62	49	7	195	23	≤ 1	≤ 1	88	10	≤ 1	≤ 1	257	30	≤ 1	≤ 1	31	4	≤ 1	≤ 1	0.7
French Polynesia	145	74	65	33	327	167	33	17	72	28	–	–	32	13	–	–	83	32	–	–	10	4	–	–	–
Guam	69	51	31	23	155	116	15	11	64	38	–	–	29	17	–	–	66	39	–	–	6	3	–	–	–
Japan	64 517	52	29 015	23	86 055	70	8 036	7	36 065	28	120	≤ 1	16 217	13	42	≤ 1	48 046	38	60	≤ 1	4 491	4	14	≤ 1	0.7
Kiribati	369	513	166	231	831	1 157	83	115	378	380	–	–	170	171	–	–	423	426	–	–	49	49	–	–	–
Lao PDR	7 357	178	3 311	80	19 523	472	1 546	37	9 157	155	40	≤ 1	4 117	69	14	≤ 1	18 115	306	20	≤ 1	1 440	24	13	≤ 1	0.7
Malaysia	21 736	122	9 775	55	34 851	195	3 894	22	25 752	102	431	2	11 545	46	151	≤ 1	33 181	131	216	≤ 1	4 041	16	123	≤ 1	2.8
Marshall Islands	143	302	64	136	323	682	32	68	139	224	–	–	62	101	–	–	167	269	–	–	20	32	–	–	–
Micronesia	182	188	82	85	300	311	32	33	116	105	–	–	52	47	–	–	136	123	–	–	16	14	–	–	–
Mongolia	4 863	219	2 188	99	12 532	566	1 141	51	5 042	191	5	≤ 1	2 268	86	2	≤ 1	5 463	206	3	≤ 1	609	23	≤ 1	≤ 1	0.2
Nauru	14	146	6	66	31	328	3	33	15	108	–	–	7	49	–	–	21	156	–	–	2	18	–	–	–
New Caledonia	162	95	73	43	247	145	26	15	60	25	–	–	27	11	–	–	71	30	–	–	8	3	–	–	–
New Zealand	343	10	154	5	351	10	34	1	364	9	–	–	164	4	–	–	372	9	–	–	36	≤ 1	–	–	–
Niue	1	59	≤ 1	26	3	133	≤ 1	13	≤ 1	44	–	–	≤ 1	20	–	–	1	87	–	–	≤ 1	9	–	–	–
Northern Mariana Islands	46	103	21	46	103	232	9	21	62	76	–	–	28	34	–	–	74	92	–	–	8	11	–	–	–
Palau	11	70	5	32	13	88	≤ 1	6	10	52	–	–	5	23	–	–	12	61	–	–	1	7	–	–	–
Papua New Guinea	10 264	250	4 614	112	32 445	789	2 786	68	14 689	250	863	15	6 524	111	302	5	27 992	475	432	7	2 725	46	194	3	9.7
Philippines	204 963	335	92 234	151	500 834	820	48 621	80	241 879	291	219	≤ 1	108 824	131	77	≤ 1	374 014	450	110	≤ 1	38 964	47	74	≤ 1	0.1
Rep. of Korea	33 802	79	15 207	35	52 714	123	4 419	10	46 102	96	339	≤ 1	20 712	43	119	≤ 1	64 404	135	170	≤ 1	5 213	11	37	≤ 1	1.2
Samoa	51	32	23	14	71	44	8	5	37	20	–	–	17	9	–	–	50	27	–	–	6	3	–	–	–
Singapore	1 493	50	670	22	1 555	52	169	6	1 241	29	47	1	554	13	16	≤ 1	1 219	28	23	≤ 1	109	3	4	≤ 1	8.1
Solomon Islands	924	292	416	131	2 086	658	207	65	678	142	–	–	305	64	–	–	960	201	–	–	112	23	–	–	–
Tokelau	≤ 1	56	≤ 1	25	2	126	≤ 1	9	≤ 1	56	–	–	≤ 1	25	–	–	2	112	–	–	≤ 1	12	–	–	–
Tonga	32	34	14	15	50	53	6	6	26	25	–	–	12	11	–	–	33	32	–	–	3	3	–	–	–
Tuvalu	48	508	22	229	108	1 146	10	105	32	305	–	–	14	137	–	–	52	495	–	–	6	55	–	–	–
Vanuatu	140	94	63	42	317	212	31	21	127	60	–	–	57	27	–	–	177	84	–	–	21	10	–	–	–
Viet Nam	133 581	202	60 084	91	311 199	470	27 110	41	147 566	175	2 664	3	66 138	79	933	1	197 763	235	1 332	2	19 149	23	692	≤ 1	3.0
Wallis & Futuna	9	63	4	28	20	142	2	14	7	47	–	–	3	21	–	–	9	61	–	–	1	7	–	–	–
WPR	**1 895 900**	**125**	**852 713**	**56**	**4 909 113**	**323**	**391 995**	**26**	**1 927 359**	**110**	**11 213**	**≤ 1**	**866 190**	**49**	**3 925**	**≤ 1**	**3 616 138**	**206**	**5 607**	**≤ 1**	**294 597**	**17**	**3 156**	**≤ 1**	**1.0**

– Indicates no estimate.

* Incidence, prevalence and mortality estimates include patients with HIV. Estimates labelled "HIV+" are estimates of TB in HIV-positive adults (aged 15-49 years). Estimates for all years are re-calculated as new information becomes available and techniques are refined, so they may differ from those published previously. See Explanatory notes on page 163 for further details. Data can be downloaded from www.who.int/tb

Table A2.2 **Whole country case notifications and case detection rates, Western Pacific, 2005**

		TB cases notified from whole country (DOTS + non-DOTS)														Incidence and case detection rates				Proportions			
		Country	New and relapse		New pulmonary		New extra-	Other	Re-treatment cases					New pulm.	Estimated incidence		Case detection rate		ss+	ss+	Extrapulm.	Re-treat.
	Population	total	(WHO total)		ss+		ss- / unk.	pulmonary	new	Relapse	After failure	After default	Other re-treat.	Other	lab. confirm.	all forms	ss+	all new	new ss+	(% of	(% of	(% of	(% of
	thousands	number	number	rate	number	rate	number	number	number	number	number	number	number	number	number	number	number	%	%	pulm.)	new+relapse)	new+relapse)	new+re-treat.)
American Samoa	65	5	6	9	3	5	2	0	0	1	0	0	0	0	3	6	3	86	114	60	50		17
Australia	20 155	1 072	1 033	5	244	1	319	440	19	11	0	4	16	19	473	1 168	524	87	47	43	24	43	3
Brunei Darussalam	374	163	163	44	101	27	30	27		5	0	0	0	0	101	200	90	79	112	77	62	17	3
Cambodia	14 071	36 123	35 535	253	21 001	149	7 057	6 759		718	62	46	480		21 001	71 130	31 750	49	66	75	59	19	4
China	1 315 844	990 509	894 428	68	472 719	36	329 157	42 845		49 707	3 616	6 011	81 153	5 301	472 719	1 319 328	593 311	64	80	59	53	5	14
China, Hong Kong SAR	7 041	6 237	5 718	81	1 585	23	3 201	707	0	225	1	27	491	0	3 487	5 278	2 373	104	67	33	28	12	12
China, Macao SAR	460	415	355	77	136	30	162	43	0	14	0	4	13	43	136	372	167	92	81	46	38	12	8
Cook Islands	18	1	1	6	1	6	0	0	0	0	0	0	0	0	1	3	1	35	77	100	100		
Fiji	848	132	132	16	63	7	29	40							63	195	88	68	72	68	48	30	
French Polynesia	257		63	25	21	8	25	14		3	0	0	0	0	58	72	32	84	65	46	33	22	5
Guam	170	64	63	37	27	16	26	9	0	1	0	0	1	0	36	64	29	96	93	51	43	14	3
Japan	128 085	28 319	27 194	21	10 931	9	10 056	5 340		867			1 125		15 090	36 065	16 217	73	67	52	40	20	7
Kiribati	99		332	334	124	125	79	126		3			7		124	378	170	87	73	61	37	38	3
Lao PDR	5 924	3 820	3 777	64	2 806	47	485	277	65	144	18	25		65	2 806	9 157	4 117	40	68	85	74	7	5
Malaysia	25 347	16 066	15 342	61	8 446	33	4 862	1 702	0	332	239	29	383	73	8 446	25 752	11 545	58	73	63	55	11	6
Marshall Islands	62	112	111	179	48	77	31	28		4	0	1	0	0	48	139	62	77	77	61	43	25	4
Micronesia	110	112	98	89	32	29	35	19	5	7		14			32	116	52	78	61	48	33	19	19
Mongolia	2 646	4 743	4 618	174	1 868	71	901	1 633	0	216	94	31	0	0	1 868	5 042	2 268	87	82	67	40	35	7
Nauru	14	11	11	81	0	0	11									15	7	75	0				
New Caledonia	237	51	49	21	18	8	13	18						2	28	60	27	82	67	58	37	37	
New Zealand	4 028	342	332	8	83	2	114	95	29	11			8		165	364	164	88	51	42	25	29	6
Niue	1	0	0	0	0	0										1	0	0	0				
Northern Mariana Islands	81	57	57	71	15	19	35	7	0	0	0	0		0	23	62	28	93	54	30	26	12	
Palau	20	10	10	50	3	15	6	1		0	0	0	0		3	10	5	96	64	33	30	10	
Papua New Guinea	5 887	12 564	12 564	213	1 805	31	5 105	4 198		1 456					1 805	14 689	6 524	76	28	26	14	33	12
Philippines	83 054	137 100	137 100	165	81 647	98	50 347	1 149	0	3 957					81 647	241 879	108 824	55	75	62	60	1	3
Rep. of Korea	47 817	46 969	38 290	80	11 638	24	18 460	5 171	0	3 021	237	359	3 481	4 602	16 029	46 102	20 712	77	56	39	30	14	17
Samoa	185	24	24	13	11	6	8	5	0	0	0	0	0	0	18	37	17	65	66	58	46	21	
Singapore	4 326	1 469	1 356	31	552	13	570	174	0	60	0	8	85	20	933	1 241	554	104	100	49	41	13	11
Solomon Islands	478	397	397	83	169	35	161	62	0	5	0	0	0	0	169	678	305	58	55	51	43	16	1
Tokelau	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0				
Tonga	102		18	18	11	11	3	4								26	12	70	96	79	61	22	
Tuvalu	10	15	12	115	5	48	3	4					3		5	32	14	38	35	63	42	33	20
Vanuatu	211	81	76	36	35	17	21	17	0	3	5	0	0	0	81	127	57	58	61	63	46	22	10
Viet Nam	84 238	95 970	94 994	113	55 570	66	16 429	16 670	0	6 325	577	399	0	0	55 570	147 566	66 138	60	84	77	58	18	8
Wallis & Futuna	15	7	7	45	1	6	6								1	7	3	97	31	14	14		
WPR	**1 752 283**	**1 382 960**	**1 274 266**	**73**	**671 719**	**38**	**447 749**	**87584**	**118**	**67 096**	**4 849**	**6 958**	**87 246**	**10 125**	**682 969**	**1 927 359**	**866 190**	**63**	**78**	**60**	**53**	**7**	**12**

ss+ indicates sputum smear-positive; ss-, sputum smear-negative; unk., sputum smear result unknown; re-treat., re-treatment; pulm.lab. confirmed, pulmonary case confirmed by positive smear or culture. See Explanatory notes on page 163 for further details. Data can be downloaded from www.who.int/tb

Table A2.3 **DOTS coverage, case notifications and case detection rates, Western Pacific, 2005**

		TB cases reported from DOTS services													Estimated incidence and case detection rate				Proportions			
	DOTS	New and relapse		New pulmonary			New extra-	Other	Re-treatment cases					New pulm.	Estimated incidence		Case detection rate		ss+	ss+	Extrapulm.	Re-treat.
	coverage	(WHO total)		ss+		ss- / unk.	pulmonary	new	Relapse	After failure	After default	Other re-treat.	Other	lab. confirm.	all forms	ss+	all new	new ss+	(% of	(% of	(% of	(% of
	%	number	rate	number	rate	number	number	number	number	number	number	number	number	number	number	number	%	%	pulm.)	new+relapse)	new+relapse)	new+re-treat.)
American Samoa	100	6	9	3	5	2	0	0	1	0	0	0	0	3	6	3	86	114	60	50		17
Australia	88	964	5	222	1	291	421	19	11	0	2	13	19	435	1 168	524	82	42	43	23	44	3
Brunei Darussalam	100	163	44	101	27	30	27		5	0	0	0	0	101	200	90	79	112	77	62	17	3
Cambodia	100	35 535	253	21 001	149	7 057	6 759		718	62	46	480		21 001	71 130	31 750	49	66	75	59	19	4
China	100	894 428	68	472 719	36	329 157	42 845		49 707	3 616	6 011	81 153	5 301	472 719	1 319 328	593 311	64	80	59	53	5	14
China, Hong Kong SAR	100	4 485	64	1 251	18	2 515	539	0	180	0	22	382	0	2 663	5 278	2 373	82	53	33	28	12	12
China, Macao SAR	100	355	77	136	30	162	43	0	14	0	4	13	6	136	372	167	92	81	46	38	12	8
Cook Islands	100	1	6	1	6	0	0	0	0	0	0	0	0	1	3	1	35	77	100	100		
Fiji	100	132	16	63	7	29	40							63	195	88	68	72	68	48	30	
French Polynesia	100	63	25	21	8	25	14		3	0	0	0	0	58	72	32	84	65	46	33	22	5
Guam	100	63	37	27	16	26	9	0	1	0	0	1	0	36	64	29	96	93	51	43	14	3
Japan	83	23 260	18	9 297	7	8 710	4 505		748			973		12 988	36 065	16 217	62	57	52	40	19	7
Kiribati	100	332	334	124	125	79	126		3			7		124	378	170	87	73	61	37	38	3
Lao PDR	100	3 777	64	2 806	47	485	277	65	144	18	25		65	2 806	9 157	4 117	40	68	85	74	7	5
Malaysia	100	15 342	61	8 446	33	4 862	1 702	0	332	239	29	383	73	8 446	25 752	11 545	58	73	63	55	11	6
Marshall Islands	100	111	179	48	77	31	28		4	0	1	0	0	48	139	62	77	77	61	43	25	4
Micronesia	100	98	89	32	29	35	19	5	7		14			32	116	52	78	61	48	33	19	19
Mongolia	100	4 618	174	1 868	71	901	1 633	0	216	94	31	0	0	1 868	5 042	2 268	87	82	67	40	35	7
Nauru	100	11	81			11									15	7	75					
New Caledonia	100	49	21	18	8	13	18						2	28	60	27	82	67	58	37	37	
New Zealand	100	332	8	83	2	114	95	29	11			8		165	364	164	88	51	42	25	29	6
Niue	100	0	0	0	0										1	0	0	0				
Northern Mariana Islands	100	57	71	15	19	35	7	0	0	0	0		0	23	62	28	93	54	30	26	12	
Palau	100	10	50	3	15	6	1		0	0	0	0		3	10	5	96	64	33	30	10	
Papua New Guinea	53	9 039	154	1 346	23	3 965	3 619		109					1 346	14 689	6 524	61	21	25	15	40	1
Philippines	100	137 100	165	81 647	98	50 347	1 149	0	3 957					81 647	241 879	108 824	55	75	62	60	1	3
Rep. of Korea	100	10 965	23	3 758	8	5 776	146	0	1 285	5	138	895	1 025	4 951	46 102	20 712	21	18	39	34	1	19
Samoa	100	24	13	11	6	8	5	0	0	0	0	0	0	18	37	17	65	66	58	46	21	
Singapore	100	1 356	31	552	13	570	174	0	60	0	8	85	20	933	1 241	554	104	100	49	41	13	11
Solomon Islands	100	397	83	169	35	161	62	0	5	0	0	0	0	169	678	305	58	55	51	43	16	1
Tokelau	0	0	0												1	0						
Tonga	100	18	18	11	11	3	4								26	12	70	96	79	61	22	
Tuvalu	100	12	115	5	48	3	4					3		5	32	14	38	35	63	42	33	20
Vanuatu	100	76	36	35	17	21	17	0	3	5	0	0	0	81	127	57	58	61	63	46	22	10
Viet Nam	100	94 994	113	55 570	66	16 429	16 670	0	6 325	577	399	0	0	55 570	147 566	66 138	60	84	77	58	18	8
Wallis & Futuna	100	7	45	1	6	6								1	7	3	97	31	14	14		
WPR	**98**	**1 238 180**	**71**	**661 390**	**38**	**431 865**	**80 958**	**118**	**63 849**	**4 616**	**6 730**	**84 396**	**6 511**	**668 468**	**1 927 359**	**866 190**	**61**	**76**	**60**	**53**	**7**	**12**

ss+ indicates sputum smear-positive; ss-, sputum smear-negative; unk., sputum smear result unknown; re-treat., re-treatment; pulm.lab. confirmed, pulmonary case confirmed by positive smear or culture. See Explanatory notes on page 163 for further details. Data can be downloaded from www.who.int/tb

Table A2.4 **Laboratory services, collaborative TB/HIV activities and management of MDR-TB, Western Pacific, 2004–2005**

	Laboratory services, 2005				Collaborative TB/HIV activities								Management of MDR-TB, 2005				
					2004				2005								
	number of labs working with NTP			number of labs included in EQA	TB pts tested for HIV	TB pts HIV-positive	HIV+ TB pts CPT	HIV+ TB pts ART	TB pts tested for HIV	TB pts HIV-positive	HIV+ TB pts CPT	HIV+ TB pts ART	Lab-confirmed MDR	DST in new cases	MDR in new cases	Re-treatment DST	Re-treatment MDR
	smear	culture	DST														
American Samoa	1			1	0				0				0	0	0	0	0
Australia	127	33	6	127	211	23			224	18			12	787			
Brunei Darussalam	1	1	1		189	1	0	0	163	0	0	0	0	0	0	0	0
Cambodia	186	3	1	180	1 724	313			1 044	86							
China	3 240	327	187	2 754													
China, Hong Kong SAR	1	1	1	1	3 202	10	5	5	3 934	11	2	6	29	3 382	16	473	13
China, Macao SAR	5	1	1	0	334	0	0	0	341	1	0	0	7	341	5	31	2
Cook Islands	1			1	0	0	0	0	0	0	0	0	0	0	0	0	0
Fiji	5	1	0	4	132	0	0	0									
French Polynesia	4	2	2		28	0			30	0			0		0	3	0
Guam	1	1	1	1	9	0	0	0	46	0	0	0	1	39	1	0	0
Japan																	
Kiribati	2	1	1	1			0	0	44	2	0	0	1	1			
Lao PDR	153	0	0	153									0	0	0	0	0
Malaysia	241	1	1			1 276				315			1	15 010	1	1 056	
Marshall Islands	3	1	1	1	26	0			79	0			2	52	2	3	0
Micronesia	4			4	8				8				1	35	0	21	1
Mongolia	35	1	1	35	991	0	0	0	1 008	2	0	0	0	0	0	16	0
Nauru	5	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
New Caledonia	3	1	1	1	21	1	1	1	21	0			0	0	0		0
New Zealand	10	10	3		119	10			137	8			4	248	1	14	3
Niue	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Northern Mariana Islands	2	1	1	2		0	0	0		0	0	0	2	8	2	1	0
Palau	1	0	0	1	5	0	0	0	9	0	0	0	0	3	0	0	0
Papua New Guinea	60	1	0	5	569	82	82	40									
Philippines	1 858	3	3	491									274	4	4	138	119
Rep. of Korea	248	12	1	248													
Samoa	2	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
Singapore	4	2	2	2									3	895	2	105	1
Solomon Islands	7	1	1	7	0	0	0	0	0	0	0	0		0	0	0	0
Tokelau	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
Tonga																	
Tuvalu	1	0	0	0	1	1											
Vanuatu	5	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Viet Nam	875	30	2	740									2				
Wallis & Futuna	1	1	1	1		0				0			0	0	0	0	0
WPR	**7 093**	**436**	**219**	**4 763**	**7 570**	**1 717**	**88**	**46**	**7 090**	**443**	**2**	**6**	**339**	**20 805**	**34**	**1 861**	**139**

ART indicates antiretroviral therapy; CPT, co-trimoxazole preventive therapy; DST, drug susceptibility testing; EQA, external quality assurance; HIV+, HIV-positive; pts, patients. See Explanatory notes on pages 163 for further details. Some countries provided the number of TB patients found to be HIV-positive, but did not provide the number of TB patients tested. The regional total of TB patients tested is therefore lower than the number of patients actually tested, and cannot be used to calculated a regional estimate of HIV prevalence in TB patients. Data can be downloaded from www.who.int/tb

Table A2.5 **Treatment outcomes, Western Pacific, 2004 cohort**

	New smear-positive cases, DOTS											New smear-positive cases, non-DOTS											Smear-positive re-treatment cases, DOTS								
	Number of cases		% of notif	% of cohort							%	Number of cases		% of notif	% of cohort							%	Number	% of cohort							%
	Notified	Regist'd	regist'd	Cured	Compl-eted	Died	Failed	Default	Trans-ferred	Not eval.	Success	Notified	Regist'd	regist'd	Cured	Compl-eted	Died	Failed	Default	Trans-ferred	Not eval.	Success	Regist'd	Cured	Compl-eted	Died	Failed	Default	Trans-ferred	Not eval.	Success
American Samoa	2	3	150		67				33	0	67																				
[1] Australia	351	418	119	12	73	9	0	1	5	0	85	190	25	13	24	48	16	0	0	12	0	72	26	12	50	0	0	0	12	27	62
Brunei Darussalam	115	115	100	63	8	5	0	1	23	0	71												8	63	13	25	0	0	0	0	75
Cambodia	18 978	18 978	100	89	3	4	0	2	2	0	91												912	71	15	6	1	4	4	0	86
China	377 546	377 546	100	91	3	2	1	1	1	2	94	7 340	7 340	100	85	6	2	2	2	2	2	91	106 741	84	5	3	3	2	1	3	89
China, Hong Kong SAR	1 356	1 356	100	72	8	6	8	3	2	0	80	337	337	100	6	0	1	1	0	1	91	6	638	40	27	5	11	6	2	8	68
China, Macao SAR	128	128	100	88	1	2	0	2	2	5	89												20	60	25	10	0	0	0	5	85
Cook Islands	1	1	100	0	0	100	0	0	0	0	0												0							0	
Fiji	62																														
French Polynesia	30	30	100	0	80	20	0	0	0	0	80												9	0	100	0	0	0	0	0	100
Guam	22	22	100	95	5	0	0	0	0	0	100												2	100	0	0	0	0	0	0	100
[1] Japan	11 527	12 929	112	35	23	9	3	2		29	57	4 220	1 853	44	35	25	7	3	2		28	60	2 010	27	17	7	2	2	0	45	44
Kiribati	142	142	100	87	7	1	1	1		3	94												3	67	0	0	33	0	0	0	67
Lao PDR	2 226	2 226	100	79	7	8	1	4	2	0	86												174	74	4	10	3	8	1	0	78
Malaysia	7 843	7 843	100	55	2	6	0	5	4	28	56												1 092	19	15	6	1	9	2	48	35
Marshall Islands	39	39	100	87	3	3	0	5	3	0	90												8	75	13	0	0	13	0	0	88
Micronesia	35	35	100	80		9		6	6	0	80																				
Mongolia	1 808	1 808	100	79	9	3	4	3	2	0	88												264	48	22	10	10	6	3	0	70
Nauru																															
New Caledonia	15	18	120	94					6	0	94												3	0	67	0	0	33	0	0	67
[1] New Zealand	173	111	64		66	10		0	6	18	66												5	0	40	20	0	20	0	20	40
Niue	0	1		0	0	0	0	0	100	0	0																				
Northern Mariana Islands	14	24	171	88	0	0	0	0	13	0	88												0							0	
Palau	5	5	100		100					0	100																				
Papua New Guinea	1 151	1 151	100	45	20	4	2	20	6	3	65	745											245	37	16	5	2	7	5	28	53
Philippines	78 163	78 163	100	79	8	2	1	5	3	3	87												3 498	41	12	4	5	6	4	28	53
Rep. of Korea	4 014	4 044	101	79	2	2	1	3	13	1	80	7 457											2 864	69	2	2	1	6	17	4	71
Samoa	11	11	100	91	9	0	0	0	0	0	100												0							0	
Singapore	501	501	100		81	16		2	1	1	81												98	0	74	18	0	3	0	4	74
Solomon Islands	152	156	103	58	28	5	1	7	1	0	87												13	54	38	0	0	8	0	0	92
Tokelau												0	2		50	50					0	100									
Tonga	8																														
Tuvalu	0	4		100						0	100																				
Vanuatu	59	59	100	73	17	10	0	0	0	0	90												3	100	0	0	0	0	0	0	100
Viet Nam	58 394	58 370	100	91	2	3	1	1	2	0	93												7 438	80	4	6	5	3	2	0	84
Wallis & Futuna	0	1		100			0	0	0	0	100												1	100	0	0	0	0	0	0	100
WPR	**564 871**	**566 238**	**100**	**87**	**4**	**2**	**1**	**2**	**1**	**3**	**91**	**20 289**	**9 557**	**47**	**72**	**9**	**3**	**2**	**2**	**2**	**10**	**82**	**126 075**	**80**	**6**	**3**	**3**	**2**	**2**	**5**	**86**

[1] Indicates that the outcomes belong to the lab-confimred cases, i.e. smear and or culture-positive

Not eval. indicates not evaluated (percentage of registered cases for which outcomes were not recorded); success, sum of cured and completed; cases regist'd, the denominator for calculating treatment outcomes. The number of cases registered for treatment in 2004 is used as the denominator for calculating treatment outcomes unless it is less than the sum of outcomes, in which case the sum of outcomes is used. If the number of cases registered is not reported, then the number of cases notified in 2004 is used, or the sum of outcomes if the latter is greater. Data can be downloaded from www.who.int/tb

Table A2.6 **Re-treatment outcomes, Western Pacific, 2004 cohort**

	Relapse, DOTS									After failure, DOTS									After default, DOTS								
		% of cohort							%		% of cohort							%		% of cohort							%
	Number regist'd	Cured	Compl-eted	Died	Failed	Default	Trans-ferred	Not eval.	Success	Number regist'd	Cured	Compl-eted	Died	Failed	Default	Trans-ferred	Not eval.	Success	Number regist'd	Cured	Compl-eted	Died	Failed	Default	Trans-ferred	Not eval.	Success
American Samoa																											
[1] Australia	20	15	65				10	10	80																		
Brunei Darussalam	8	63	13	25	0	0	0	0	75	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0		0
Cambodia	645	84	3	4	1	4	4	0	86	41	73	7	5	5	2	7	0	80	29	76	3	7	3	7	3	0	79
China	51 022	84	5	3	3	1	1	3	89																		
China, Hong Kong SAR	195	58	7	6	13	5	1	9	66	1	0		0	0	0	0	100	0	13	23	8	8	38	15	0	8	31
China, Macao SAR	14	79	0	14	0	0	0	7	79	0	0	0	0	0	0	0		0	3	33	67	0	0	0	0	0	100
Cook Islands	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0		0
Fiji																											
French Polynesia	9		100					0	100																		
Guam	2	100	0	0	0	0	0	0	100	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0		0
[1] Japan	1 187	36	21	9	3	3		27	57																		
Kiribati	2	100						0	100	1	0			100			0	0									
Lao PDR	117	78	3	9	3	6	1	0	81	12	75	0		8	0	0	17	75	45	64	7	9	2	16	2	0	71
Malaysia	464	30	1	4	0	5	1	59	31	27	22	4	7	0		0	67	26	357	18	2	3	0		1	76	20
Marshall Islands	5	100	0	0	0	0	0	0	100	0	0	0	0	0	0	0		0	2	50	0	0	0		0	50	50
Micronesia																											
Mongolia	178	53	24	10	8	4	2	0	76	53	30	11	17	23	11	8	0	42	33	48	33	0		9	6	3	82
Nauru																											
New Caledonia	2		100					0	100																		
[1] New Zealand	5		40	20		20	0	20	40																		
Niue																											
Northern Mariana Islands	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0		0
Palau																											
Papua New Guinea	245	37	16	5	2	7	5	28	53																		
Philippines	3 155	41	12	3	4	5	4	31	52	343	45	13	7	21	9	5	0	59									
Rep. of Korea	1 506	69	2	1	1	4	20	2	71	4	50	25	0	0	0		25	75	344	53	3	1	1	19	22	1	56
Samoa	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0		0
Singapore	85		72	21		2		5	72	3		100					0	100	10		90			10		0	90
Solomon Islands	13	54	38	0	0	8	0	0	92	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0		0
Tokelau																											
Tonga																											
Tuvalu																											
Vanuatu	1	100	0	0	0	0	0	0	100	2	100	0	0	0	0	0	0	100	0	0	0	0	0	0	0		0
Viet Nam	6 668	81	5	5	4	3	2	0	86	520	68	2	7	16	3	4	0	70	250	65	3	12	8	9	3	0	68
Wallis & Futuna	1	100		0	0	0	0	0	100	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0		0
WPR	**65 549**	**78**	**6**	**3**	**3**	**2**	**2**	**6**	**84**	**1 007**	**57**	**7**	**7**	**17**	**6**	**4**	**1**	**64**	**1 086**	**44**	**5**	**5**	**3**	**12**	**8**	**23**	**49**

[1] Indicates that the outcomes belong to the lab-confimred cases, i.e. smear and or culture-positive.
Not eval. indicates not evaluated (percentage of registered cases for which outcomes were not recorded); success, sum of cured and completed; cases regist'd, the denominator for calculating treatment outcomes. The number of cases registered for treatment in 2004 is used as the denominator for calculating treatment outcomes unless it is missing or is less than the sum of outcomes, in which case the sum of outcomes is used. Data can be downloaded from www.who.int/tb

Table A2.7 **DOTS treatment success and case detection rates, Western Pacific, 1994–2005**

	DOTS new smear-positive treatment success (%)											DOTS new smear-positive case detection rate (%)										
	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
American Samoa		100			50	100	100	100	100	100	67			230		116	77	77	38	77	76	114
Australia				66	75	84	74	66	78	82	85				22	29	23	19	25	9	32	42
Brunei Darussalam					85	76	63	56	84	60	71					123	100	111	129	138	129	112
Cambodia	84	91	94	91	95	93	91	92	92	93	91	40	34	44	47	53	49	47	56	61	60	66
China	94	96	96	96	97	96	95	96	93	94	94	15	28	32	32	29	31	31	30	43	63	80
China, Hong Kong SAR					85	78	76	78	79	78	80					60	60	58	62	60	56	53
China, Macao SAR	75			81		78	89	86	89	88	89	85	155	194	164		95	93	80	77	76	81
Cook Islands				50		80		100	100						62			138	71		75	77
Fiji	90	86	86	91	90	92	85	85	78	86		57	60	59	68	62	61	73	77	84	69	72
French Polynesia		67	95	100	74	85	97	80	82	83	80		74	86	75	76	70		75	59	88	65
Guam						94	93	71	68	96	100						146	161	106		76	93
Japan						76	70	75	76	76	57						23	31	35	42	45	57
Kiribati					83	88	91	86	94	88	94			7	31	35	32	38	48	58	84	73
Lao PDR		70	55	65	80	79	77	76	75	79	86		24	33	40	45	40	40	46	47	55	68
Malaysia		69				90	78	79	76	72	56	64	68				73	74	70	70	68	73
Marshall Islands					83	82	91	86	100	90	90				19	29	19	26	30	33	64	77
Micronesia	64	80				95	93	100	91	92	80	12	19				24	13	38	47	65	61
Mongolia			78	86	84	86	87	87	87	87	88	7	6	31	60	67	62	73	74	68	80	82
Nauru						50	25	100	50								61	30	30	15		
New Caledonia	62	75			70	77	89	84	85	75	94	40	52			54	53	53	63	39	52	67
New Zealand							30	9	60	36	66						40	41	51	64	67	51
Niue									100										314			
Northern Mariana Islands						80	81	74	71	75	88						102	71	78	59	51	54
Palau	64	67	75					100	38	80	100	181	80	139					184	104	105	64
Papua New Guinea				93	72	66	63	67	53	58	65			1	7	8	7	8	15	17	18	21
Philippines	80		82	83	84	87	88	88	88	88	87	0	0	3	10	20	48	56	61	68	72	75
Rep. of Korea	71	76	71	82					83	82	80	34	65	56	57					22	20	18
Samoa	50	80	100		86	94	92	77	84		100	73	45	71		89	70	60	106	69	64	66
Singapore	88	86				95	85	88	87	77	81	62	27				16	28	51	57	87	100
Solomon Islands		65	73	92	92		81	89	90	87	87		24	31	40	27	32	35	33	43	49	55
Tokelau																						
Tonga	89	75	82	75	94	80	93	92	83			68	107	85	125	79	120	65	190	92	68	96
Tuvalu											100											35
Vanuatu						88	88	88	79	75	90					40	43	81	53	69	102	61
Viet Nam	91	91	90	85	93	92	92	93	92	92	93	30	59	78	83	83	82	83	87	85	89	84
Wallis & Futuna								100	100		100							29	30	210		31
WPR	**90**	**91**	**93**	**93**	**95**	**94**	**92**	**93**	**90**	**91**	**91**	**15**	**28**	**31**	**33**	**31**	**37**	**38**	**39**	**50**	**65**	**76**

Treatment success, sum of cured and completed; DOTS new smear-positive case detection rate, notified (new and relapse) cases divided by estimated incident cases. The table includes updated information; data shown here may differ from those published in previous reports. Data can be downloaded from www.who.int/tb

Table A2.8 **New smear-positive case notification by age and sex, absolute numbers, DOTS and non-DOTS, Western Pacific, 2005**

	Male							Female							All							Male/female
	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+	ratio
American Samoa										1		2					1		2			
Australia	0	32	27	23	11	12	30	2	18	26	11	10	6	14	2	50	53	34	21	18	44	1.6
Brunei Darussalam	0	9	19	19	12	9	0	0	9	11	8	3	2	0	0	18	30	27	15	11	0	2.1
Cambodia	49	894	1 600	2 349	2 043	1 964	1 811	45	790	1 413	2 089	2 323	2 058	1 573	94	1 684	3 013	4 438	4 366	4 022	3 384	1.0
China	1 416	43 005	49 558	55 400	54 872	53 822	69 779	1 864	31 180	27 759	24 728	19 889	18 203	21 244	3 280	74 185	77 317	80 128	74 761	72 025	91 023	2.3
China, Hong Kong SAR	2	76	84	111	204	165	460	3	67	84	93	59	35	142	5	143	168	204	263	200	602	2.3
China, Macao SAR	3	6	9	21	23	17	22	0	5	9	7	8	1	5	3	11	18	28	31	18	27	2.9
Cook Islands	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	
Fiji	7	9	18	18	14	16	6	7	7	9	6	4	6	5	14	16	27	24	18	22	11	2.0
French Polynesia	0	2	2	2	0	4	2	0	2	3	0	1	1	3	0	4	5	2	1	5	5	1.2
Guam	0	2	4	4	2	2	4	0	3	1	1	2	0	2	0	5	5	5	4	2	6	2.0
Japan	9	197	488	605	868	1 418	3 867	5	187	428	249	224	309	2 077	14	384	916	854	1 092	1 727	5 944	2.1
Kiribati	3	15	15	12	17	4	1	5	22	12	7	7	3	1	8	37	27	19	24	7	2	1.2
Lao PDR	13	136	223	296	373	300	352	7	101	186	205	244	192	178	20	237	409	501	617	492	530	1.5
Malaysia	244	1 179	2 218	2 277	1 980	1 427	1 507	208	1 044	1 061	947	816	586	572	452	2 223	3 279	3 224	2 796	2 013	2 079	2.1
Marshall Islands	2	4	4	5	6	1	1	1	9	2	4	3	4	2	3	13	6	9	9	5	3	0.9
Micronesia																						
Mongolia	7	271	253	232	147	52	36	15	320	270	145	63	32	25	22	591	523	377	210	84	61	1.1
Nauru																						
New Caledonia	0	2	1	1	0	3	1	0	1	2	1	2	0	4	0	3	3	2	2	3	5	0.8
New Zealand	4	6	10	6	6	5	10	1	11	9	6	6	1	2	5	17	19	12	12	6	12	1.3
Niue	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Northern Mariana Islands	0	0	1	3	4	1	2	0	0	0	1	1	1	1	0	0	1	4	5	2	3	2.8
Palau			2				1										2				1	
Papua New Guinea	28	183	205	108	94	48	12	38	200	204	124	65	35	2	66	383	409	232	159	83	14	1.0
Philippines	482	7 358	11 275	13 253	12 531	7 646	4 279	374	3 710	5 268	5 565	4 603	3 274	2 029	856	11 068	16 543	18 818	17 134	10 920	6 308	2.3
Rep. of Korea	22	687	1 171	1 326	1 336	1 005	1 669	27	590	842	491	370	373	1 729	49	1 277	2 013	1 817	1 706	1 378	3 398	1.6
Samoa	0	4	0	1	1	0	0	0	2	0	2	0	1	0	0	6	0	3	1	1	0	1.2
Singapore	0	8	25	61	94	96	118	0	5	20	33	29	20	43	0	13	45	94	123	116	161	2.7
Solomon Islands	4	14	18	9	15	12	11	9	23	21	12	11	9	1	13	37	39	21	26	21	12	1.0
Tokelau																						
Tonga	0	2	1	0	2	1	0	0	2	1	0	0	2	0	0	4	2	0	2	3	0	1.2
Tuvalu					1	1			1				2			1			1	3		0.7
Vanuatu	1	4	5	5	0	4	1	0	5	1	2	4	1	2	1	9	6	7	4	5	3	1.3
Viet Nam	54	3 408	7 105	8 738	8 606	4 958	7 573	47	1 747	2 293	2 116	2 298	2 023	4 604	101	5 155	9 398	10 854	10 904	6 981	12 177	2.7
Wallis & Futuna																						
WPR	**2 350**	**57 514**	**74 341**	**84 885**	**83 262**	**72 993**	**91 555**	**2 658**	**40 061**	**39 936**	**36 853**	**31 047**	**27 180**	**34 260**	**5 008**	**97 575**	**114 277**	**121 738**	**114 309**	**100 173**	**125 815**	**2.2**

For some countries, breakdown of notified cases by age and sex is missing, or is provided for a subset of cases. See Explanatory notes on page 164 for further details. Data can be downloaded from www.who.int/tb

Table A2.9 **New smear-positive case notification rates by age and sex, DOTS and non-DOTS, Western Pacific, 2005**

	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	2	2	2	1	1	3	0	1	2	1	1	1	1	0	2	2	1	1	1	2
Brunei Darussalam	0	26	53	68	54	91	0	0	27	29	29	18	33	0	0	27	41	48	39	69	0
Cambodia	2	52	198	335	433	683	1101	2	47	167	251	382	498	497	2	49	182	290	404	574	703
China	1	38	44	47	64	101	150	1	30	26	22	25	36	40	1	34	36	35	45	69	91
China, Hong Kong SAR	0	17	17	19	36	51	118	1	14	13	13	9	11	31	0	16	15	16	22	31	71
China, Macao SAR	8	15	32	59	53	80	144	0	13	25	14	19	6	25	4	14	28	33	37	47	77
Cook Islands																					
Fiji	5	11	26	32	32	64	41	5	9	14	11	9	23	27	5	10	20	22	21	43	34
French Polynesia	0	8	10	10	0	47	33	0	8	16	0	8	13	46	0	8	13	5	4	31	40
Guam	0	15	32	30	20	34	83	0	23	8	8	21	0	36	0	19	20	19	20	17	58
Japan	0	3	5	7	10	15	36	0	3	5	3	3	3	14	0	3	5	5	7	9	24
Kiribati																					
Lao PDR	1	22	53	103	190	268	353	1	17	44	67	117	150	153	1	20	48	84	152	205	245
Malaysia	6	50	111	135	151	189	279	5	47	55	57	64	79	92	6	48	83	96	108	135	178
Marshall Islands																					
Micronesia																					
Mongolia	2	91	108	128	140	99	82	4	110	117	79	58	57	45	3	100	112	103	98	78	61
Nauru																					
New Caledonia	0	10	5	5	0	32	15	0	5	11	6	16	0	53	0	8	8	6	8	17	35
New Zealand	1	2	4	2	2	2	5	0	4	3	2	2	0	1	1	3	4	2	2	1	2
Niue																					
Northern Mariana Islands																					
Palau																					
Papua New Guinea	2	30	46	31	44	41	16	3	37	45	36	32	33	3	3	33	46	34	38	37	10
Philippines	3	86	170	273	370	379	299	3	45	81	115	132	157	113	3	66	126	194	249	266	196
Rep. of Korea	0	19	29	32	39	47	90	1	18	21	12	11	17	65	1	18	25	22	25	31	75
Samoa	0	22	0	8	14	0	0	0	13	0	19	0	26	0	0	18	0	13	7	13	0
Singapore	0	3	8	15	25	45	70	0	2	7	8	8	9	22	0	2	8	12	16	27	44
Solomon Islands	4	27	45	38	100	126	180	10	48	58	50	74	100	18	7	37	51	44	87	113	103
Tokelau																					
Tonga	0	18	15	0	56	35	0	0	20	15	0	0	64	0	0	19	15	0	26	50	0
Tuvalu																					
Vanuatu	2	19	33	43	0	83	26	0	24	6	18	57	23	62	1	21	19	30	28	55	42
Viet Nam	0	39	100	154	226	270	356	0	20	32	36	58	104	187	0	30	66	94	141	184	265
Wallis & Futuna																					
WPR	**1**	**38**	**51**	**58**	**76**	**102**	**140**	**1**	**29**	**29**	**26**	**30**	**39**	**43**	**1**	**34**	**40**	**42**	**53**	**71**	**87**

Rates are per 100 000 population of each age/sex group. Rates are calculated excluding those countries for which breakdown of notified cases or population by age and sex is missing. Data can be downloaded from www.who.int/tb

Table A2.10 **Number of TB cases notified, Western Pacific, 1980–2005**

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
American Samoa	2	6	6	8	12	5	8	9	13	5	9	3	1	4	4		0	6	3	4	3	3	2	3	5	6
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	949	1 059	1 033
Brunei Darussalam	196	285	245	276	256	238	212	189	126	128	143		180	160				160		272	307	216	230	206	176	163
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	28 216	30 838	35 535
China	0		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	615 868	790 603	894 428
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	6 534	6 537	6 319	6 212	6 501	7 072	7 673	5 605	6 015	6 788	6 277	5 914	5 684	5 718
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	371	309	355
Cook Islands	37	10	19	29	20	36	17	16	20	1	1	8	12	6	4		0	0	1	3	2	2	1	0	1	1
Fiji	210	180	163	185	165	230	199	173	162	218	226	247	240	183	225	203	200	171	166	192	144	183	148	185	134	132
French Polynesia	76	66	65	78	80	78	85	80	63	73	59	49	83	78	89		86	91	105	93	62	62	64	50	60	63
Guam	55	41	49	48	54	37	49	34	41	75			60	70	94						54	63	51	22	50	63
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	31 638	29 736	27 194
Kiribati	146	187	193	127	111	103	129	110	208	121	68	91	100	99	253		327	464	276	255	252	189	196	284	310	332
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	2 149	2 420	2 227	2 418	2 621	2 748	3 162	3 777
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	15 671	14 986	15 342
Marshall Islands	6	7	12	15	12	15	37	32	11	7		26	52	61			59		49	41	34	56	51	60	117	111
Micronesia	0		67	73	75	66	60	98	77	68	367	350	111	151	173	172	126	107	123		91	104	127	99	118	98
Mongolia	1 160	1 094	1 325	1 514	1 652	2 994	2 819	2 433	2 538	2 233	1 659	1 611	1 516	1 418	1 730	2 780	4 062	3 592	2 915	3 348	3 109	3 526	3 829	3 918	4 542	4 618
Nauru	0	2	8	0	0	0	8	6	8	0	7				4					2	4	3	5	3		11
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	38	61	49
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	386	371	332
Niue	1	0	2	3	1	0	5	0	3		0		2	1	2	0	2	0	0	1	0	0	4	0	0	0
Northern Mariana Islands	0	26	75	74	58	64	16	56	27	28	28		67		46	48	51	93	97	66	75	58	53	45	53	57
Palau	17	10	17	14	20	26	13	38	17	3		6	4	25	41	19	5	15		32			11	9	5	10
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	3 195	7 977	11 291	13 003	10 520	12 658	11 197	12 798	12 743	12 564
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	132 759	130 530	137 100
Rep. of 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	33 843	34 389	38 290
Samoa	59	49	43	41	37	43	65	29	29	37	44	44	26	49	45	45	31	32	22	31	43	22	31	27	34	24
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	1 581	1 414	1 356
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	293	340	397
Tokelau	0	1	0	0	0	2	0	9	1	0	1	1	1		0	2	0			0	0	0		0		0
Tonga	64	49	45	50	54	49	35	24	14	36	23	20	29	33	23	20	22	21	30	22	24	12	29	16	12	18
Tuvalu	33	18	12	23	9	32	27	22	24	26	23	30	30	28	19	36			18	14	16	16	13	30		12
Vanuatu	178	92	173	196	188	124	131	90	118	144	140	230	193	114	152	79	126	184	178	120	152	175	101	104	115	76
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	95 044	92 741	98 173	94 994
Wallis & Futuna	23	24	5	17	14	14		34	1	30		22	4	11	11	6	8	14				1	19	15		7
WPR	**356 481**	**355 345**	**461 557**	**462 195**	**541 002**	**615 181**	**651 854**	**655 020**	**716 447**	**741 912**	**894 074**	**760 870**	**754 469**	**718 784**	**724 290**	**824 952**	**873 424**	**870 918**	**834 600**	**820 469**	**786 286**	**805 105**	**811 482**	**980 890**	**1 160 130**	**1 274 266**
Number reporting	36	33	36	36	36	36	35	36	36	35	32	31	35	33	33	28	31	31	30	32	34	35	35	36	32	36
% reporting	100	92	100	100	100	100	97	100	100	97	89	86	97	92	92	78	86	86	83	89	94	97	97	100	89	100

From 1995 on, number shown is all notified new and relapse cases (DOTS and non-DOTS). The table includes updated information; data shown here may differ from those published in previous reports. Data can be downloaded from www.who.int/tb

Table A2.11 **Case notification rates, Western Pacific, 1980–2005**

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
American Samoa	6	18	17	22	32	13	19	21	29	11	19	6	2	8	8		0	11	5	7	5	5	3	5	8	9
Australia	10	9	8	8	8	7	6	6	6	6	6	6	6	6	6	6		6	5	6	5	5	5	5	5	5
Brunei Darussalam	102	143	120	131	118	107	92	80	52	51	56		66	57				52		84	92	63	66	58	48	44
Cambodia	39	29	116	103	132	125	122	104	118	84	67	108	155	124	137	128	127	131	139	154	148	147	185	209	223	253
China			10	11	14	21	24	23	27	27	33	29	27	29	30	42	41	38	36	36	36	37	36	47	60	68
China, Hong Kong SAR	160	150	144	137	145	138	135	131	126	119	114	109	111	109	104	100	103	111	119	86	91	101	92	86	82	81
China, Macao SAR	437	226	87	163	229	186	131	117	92	76	92	86	75	71		97	136	135	107		101	104	86	82	68	77
Cook Islands	208	57	107	162	111	198	93	88	110	5	5	43	63	31	20		0	0	5	16	11	11	5	0	6	6
Fiji	33	28	24	27	24	32	28	24	23	30	31	34	33	24	30	26	26	22	21	24	18	22	18	22	16	16
French Polynesia	50	42	41	47	47	45	48	44	34	38	30	25	41	38	42		39	41	46	40	26	26	26	20	24	25
Guam	52	38	44	42	46	31	40	27	32	57			43	50	66						35	40	32	13	30	37
Japan	61	56	54	52	51	48	47	46	44	43	42	41	39	39	36	34	33	33	35	32	31	28	26	25	23	21
Kiribati	267	333	334	214	182	164	200	166	305	173	95	124	133	129	322		398	553	322	291	281	206	210	298	318	334
Lao PDR	238		141	137	185	118	41	91	186	73	44	46	23	47	25	18	30	39	43	47	42	45	47	49	55	64
Malaysia	82	78	82	78	69	67	67	67	65	61	66	60	61	64	59	58	61	63	64	66	65	63	60	64	60	61
Marshall Islands	20	22	36	43	33	39	92	76	25	15		54	105	122			115		96	80	65	105	92	104	196	179
Micronesia			86	91	90	77	68	109	84	72	381	354	110	146	163	160	117	99	114		85	97	118	91	108	89
Mongolia	70	64	76	84	89	157	143	120	121	103	75	71	66	61	73	116	168	148	119	135	124	140	150	152	174	174
Nauru	0	26	104	0	0	0	95	69	90	0	74				38					17	33	24	39	23		81
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	17	26	21
New Zealand	15	14	14	13	13	11	10	9	9	9	10	10	9	8	10	11	10	9	10	12	9	10	8	10	9	8
Niue	31	0	69	110	39	0	216	0	141		0		106	54	110	0	114	0	0	61	0	0	262	0	0	0
Northern Mariana Islands		147	397	362	258	254	56	173	74	69	63		134		84	84	86	150	150	98	108	80	71	59	67	71
Palau	139	80	133	106	147	186	91	263	116	20		38	25	152	242	109	28	82		168			56	46	25	50
Papua New Guinea	78	76	81	85	98	94	77	59	109	85	61	81	59	168	117	172	66	162	223	251	199	234	202	226	221	213
Philippines	234	237	207	205	287	278	276	288	314	364	519	332	369	272	269	174	237	274	223	196	158	139	150	166	160	165
Rep. of Korea	236	255	257	230	212	214	215	210	177	165	149	134	110	106	86	94	87	73	75	69	47	79	74	71	72	80
Samoa	38	32	28	26	24	27	41	18	18	23	27	27	16	30	27	27	18	19	13	18	24	12	17	15	19	13
Singapore	112	98	86	80	81	72	64	57	58	55	53	59	56	56	50	54	54	53	56	46	43	37	36	37	33	31
Solomon Islands	116	132	132	119	128	139	104	115	125	159	121	95	109	107	94	97	80	83	74	71	72	68	58	65	73	83
Tokelau	0	67	0	0	0	127	0	575	64	0	66	67	68		0	142	0			0	0	0		0		0
Tonga	66	51	47	53	58	53	38	26	15	38	24	21	30	34	24	21	23	21	30	22	24	12	29	16	12	18
Tuvalu	410	221	145	274	106	370	307	245	263	280	244	315	312	289	195	367			179	138	157	156	126	290		115
Vanuatu	152	77	141	156	146	94	97	65	83	99	94	150	122	70	91	46	71	102	97	64	79	90	51	51	55	36
Viet Nam	81	80	93	76	76	79	79	90	83	81	76	88	82	75	72	76	100	103	114	115	114	114	118	113	118	113
Wallis & Futuna	200	200	40	130	104	101		243	7	216		158	29	78	77	42	55	96				7	125	98		45
WPR	**27**	**27**	**34**	**34**	**39**	**44**	**46**	**45**	**49**	**50**	**59**	**49**	**48**	**46**	**45**	**51**	**54**	**53**	**50**	**49**	**47**	**47**	**47**	**57**	**67**	**73**

Rates are per 100 000 population. The table includes updated information; data shown here may differ from those published in previous reports. Data can be downloaded from www.who.int/tb

Table A2.12 **New smear-positive cases notified, numbers and rates, Western Pacific, 1993–2005**

	Number of cases													Rate (per 100 000 population)												
	1993	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**
American Samoa	1	4		0	6	2	3	2	2	1	2	2	3	2	8		0	11	4	5	3	3	2	3	3	5
Australia	557				226	203	285	251	228	210	113	285	244	3				1	1	2	1	1	1	1	1	1
Brunei Darussalam	68				0		102	84	95	112	121	115	101	24				0		31	25	28	32	34	31	27
Cambodia		11 058	11 101	12 065	12 686	13 865	15 744	14 822	14 361	17 258	18 923	18 978	21 001		100	98	103	106	114	126	116	110	130	140	138	149
China	84 898	104 729	134 488	203 670	236 021	202 817	201 775	204 765	204 591	194 972	267 414	384 886	472 719	7	9	11	17	19	16	16	16	16	15	21	29	36
China, Hong Kong SAR	2 429		0	1 774	1 943	2 091	1 536	1 940	1 857	1 892	1 794	1 693	1 585	41		0	28	30	32	23	29	28	28	26	24	23
China, Macao SAR	108		141	258	325	276		160	157	147	138	128	136	27		34	61	76	64		36	35	33	30	28	30
Cook Islands	4	1		0	0	1	0	0	2	1	0	1	1	21	5		0	0	5	0	0	11	5	0	6	6
Fiji	58	0	68	69	66	74	65	62	73	74	78	62	63	8	0	9	9	8	9	8	8	9	9	9	7	7
French Polynesia		38		37	41	34	33	29	0	28	21	30	21		18		17	18	15	14	12	0	11	8	12	8
Guam		40						43	47	31	0	22	27		28						28	30	19	0	13	16
Japan	17 890	16 770	14 367	12 867	13 571	11 935	12 909	11 853	11 408	10 807	10 843	10 471	10 931	14	13	11	10	11	9	10	9	9	8	8	8	9
Kiribati	99	184		144	50	52	59	54	64	82	99	142	124	129	234		175	60	61	67	60	70	88	104	146	125
Lao PDR			478	886	1 234	1 494	1 706	1 526	1 563	1 829	1 866	2 226	2 806			10	18	25	30	33	29	29	33	33	38	47
Malaysia	6 954	6 861	6 688	7 271	7 496	7 802	8 207	8 156	8 309	7 958	7 989	7 843	8 446	36	35	33	35	35	36	36	35	35	33	33	32	33
Marshall Islands	12			12		11	17	11	15	18	20	39	48	24			23		22	33	21	28	33	35	65	77
Micronesia			9	14	9	14		15	8	22	26	35	32			8	13	8	13		14	7	20	24	32	29
Mongolia	0	145	455	769	1 171	1 356	1 513	1 389	1 631	1 670	1 541	1 808	1 868	0	6	19	32	48	55	61	56	65	65	60	69	71
Nauru		2					2	4	2	2	1		0		19					17	33	16	16	8		0
New Caledonia	16	28	21	26	24	26	22	20	19	21	12	15	18	9	15	11	13	12	13	10	9	9	9	5	6	8
New Zealand	91	61	78	90	83	106	94	74	68	88	106	111	83	3	2	2	2	2	3	2	2	2	2	3	3	2
Niue	0	0	0	1	0	0	1	0	0	1	0	0	0	0	0	0	57	0	0	61	0	0	65	0	0	0
Northern Mariana Islands			14	26	21	26	15	27	19	21	16	14	15			25	44	34	40	22	39	26	28	21	18	19
Palau	8	11	9	4	7		20			9	5	5	3	49	65	52	22	38		105			46	25	25	15
Papua New Guinea			1 652	447	1 195	2 107	2 140	1 933	1 351	1 345	2 310	1 896	1 805			35	9	24	42	41	36	25	24	41	33	31
Philippines	92 279	87 401	94 768	86 695	80 163	69 476	73 373	67 056	59 341	65 148	72 670	78 163	81 647	141	131	139	124	112	95	99	89	77	83	91	96	98
Rep. of Korea	16 630	13 266	11 754	11 420	9 957	10 359	9 559	8 216	11 805	11 345	10 976	11 471	11 638	38	30	26	25	22	22	21	18	25	24	23	24	24
Samoa	21	18	15	9	14	7	17	13	11	19	12	11	11	13	11	9	5	8	4	10	7	6	11	7	6	6
Singapore	513	861	455	519	436	482	465	248	357	549	583	501	552	16	26	13	14	12	13	12	6	9	13	14	12	13
Solomon Islands	155	114	109	90	113	140	93	109	118	108	138	152	169	45	32	30	24	29	35	23	26	27	24	30	33	35
Tokelau		0	1	0			0	0	0		0		0		0	71	0			0	0	0		0		0
Tonga	16	17	9	14	11	16	10	15	8	23	11	8	11	17	18	9	14	11	16	10	15	8	23	11	8	11
Tuvalu	2	1	6				0	0	0	0	0		5	21	10	61				0	0	0	0	0		48
Vanuatu		62	30	50	66	38	43	63	57	38	40	59	35		37	17	28	37	21	23	33	29	19	20	28	17
Viet Nam			37 550	48 911	50 016	54 889	53 805	53 169	54 238	56 698	55 937	58 394	55 570			51	66	66	72	69	68	68	70	68	70	66
Wallis & Futuna			3	3	1				1	1	7		1			21	21	7				7	7	46		6
WPR	**222 809**	**241 672**	**314 269**	**388 141**	**416 952**	**379 699**	**383 613**	**376 109**	**371 806**	**372 528**	**453 812**	**579 566**	**671 719**	**14**	**15**	**20**	**24**	**25**	**23**	**23**	**22**	**22**	**22**	**26**	**33**	**38**

Rates are per 100 000 population. The table includes updated information; data shown here may differ from those published in previous reports. Data can be downloaded from www.who.int/tb

Notes

Australia

Pyrazinamide and ethambutol supply disrupted; drugs were obtained through the Special Access Scheme to ensure continuity of treatment for patients.

One DOTS unit could not supply breakdown by age and sex of notified cases in 2005.

Japan

Treatment outcomes are only available for pulmonary TB patients treated using standardized regimens (with isoniazid and rifampicin).

Lao PDR

The population estimate used by the NTP (5.62 million) differs from that of the United Nations Population Division (5.92 million). Using the smaller population estimate gives a notification rate for new smear-positive cases of 67 per 100 000 population, and a smear-positive case detection rate of 72%.

Malaysia

Breakdown by age and sex was provided for all notified TB cases rather than for new smear-positive cases only.

New Zealand

All MDR patients were immigrants and visitors.

Among TB patients found to be HIV-positive in 2005, all of those with CD4 counts below 200 and some others started CPT.

ANNEX 3

Surveys of tuberculosis infection and disease, and death registrations, by country and year

Table A3.1 **National and subnational surveys of prevalence of tuberculosis disease**

National surveys

Bangladesh	1964, 1987
Cambodia	2002
China	1979, 1984, 1990, 2000
Eritrea	2005
Gambia	1960
Ghana	1957
Indonesia	2004
Iraq	1970
Japan	1953, 1958, 1963, 1968
Kenya	1948, 1958
Liberia	1959
Libyan Arab Jamahir	1976
Malaysia	2003
Mauritius	1958
Myanmar	2006
Netherlands	1970
Nigeria	1957
Pakistan	1959, 1987
Philippines	1981, 1997
Rep. of Korea	1965, 1970, 1975, 1980, 1985, 1990, 1995
Samoa	1975
Sierra Leone	1958
Somalia	1956
Sri Lanka	1970
Uganda	1958
Viet Nam	2006

Subnational surveys

Afghanistan	1982
Bangladesh	1995, 2001, 2002, 2006
Botswana	1981, 1995
Brunei Darussalam	1985
China	1957, 1959
Cambodia	1981, 1982, 1983, 1984, 1985, 1989, 1995, 1998
Colombia	1988
Cyprus	1963
Ethiopia	2001
India	1948–1993 (numerous surveys)
Indonesia	1979, 1983–1993, 1994
Iraq	1961
Japan	1954, 1964
Kenya	1958, 2006
Liberia	1959
Malawi	1960
Malaysia	1970
Mozambique	1961
Myanmar	1972, 1989, 1990, 1991, 1994
Nepal	1965, 1976, 1994
Nigeria	1958, 1973
Pakistan	1962
South Africa	1972–1985
Spain	1991
Syrian Arab	1960
Thailand	1962, 1970, 1977, 1983, 1987, 1991
Tunisia	1957, 1961
Turkey	1971
South Africa	1974, 1978, 1982
Uganda	2000
UR Tanzania	1958
Viet Nam	1961
Zambia	1980

Planned surveys (national or subnational)

Afghanistan	2010
Armenia	
Bangladesh	2011
Cambodia	2010
China	2010
Djibouti*	
Gambia	
India	2007
Indonesia	2009
Kenya	
Malawi	
Mali	
Myanmar	2010
Nigeria	2007
Philippines	2007
Rwanda *	
South Africa	
Syrian Arab Republic*	
UR Tanzania	2007
Uganda	2007
Viet Nam	2007

Exact timing of surveys not always clear from reports; year given here is year in which survey apparently started. In some cases more than one subnational survey was completed in a country in a given year. Detailed reference list available at www.who.int/tb/publications/globalreport

* Funding for surveys in these countries has been approved by the GFATM.

Table A3.2 **National and subnational surveys of prevalence of tuberculosis infection**

National surveys

Afghanistan	1978, 1982
Algeria	1949, 1966, 1980, 1985
Argentina	1979
Bahrain	1969, 1981, 1985, yearly 1988–1994
Bangladesh	1964
Benin	1987, 1994
Botswana	1956, 1981
Cambodia	2002
China, Hong Kong SAR	1999
China	1970, 1979, 1984, 1990, 2000
Cyprus	1955
Djibouti	1994, 2001
Egypt	1951, 1996
Ethiopia	1954, 1989
Gambia	1960
Ghana	1957
Greece	yearly 1981–1991
India	2000
Indonesia	2004
Iraq	1995
Japan	1953, 1958, 1963, 1968
Jordan	1986, 1990
Kenya	1958, 1986, 1995
Lao PDR	1995
Lesotho	1956, 1981
Libyan Arab Jamahiriya	1976
Madagascar	1991
Malawi	1994
Mauritius	1956, 1958
Mexico	1961
Myanmar	1972
Nepal	2006
Netherlands	yearly 1956–1979, 1989
Pakistan	1987
Philippines	1981, 1997
Rep. of Korea	every 5 years 1965–1995
Samoa	1975
Somalia	1956, 2006
Sudan	1976, 1986
Thailand	1980
Tunisia	1959, 1986
Uganda	1958, 1970, 1989
UR Tanzania	1985, 1990, 1995, 2002
Yemen	1991

Planned surveys (national or subnational)

Afghanistan	2010
Armenia	
Cambodia	2010
China	2010
Ghana	
India	2007
Nigeria	2007
Philippines	2007
South Africa	
UR Tanzania	2007
Viet Nam	

Subnational surveys

Afghanistan	1985, 1989
Algeria	1938, 1948, 1958, 1968, 1976, 1981
Angola	1991
Bhutan	1991
Botswana	1989
Brazil	1970, 1973, 1979, 1983, 1986, 1988, 1990
Burundi	1982
Cambodia	1955, 1968, 1981, 1995
Cameroon	1984
Central African Republic	1988
Colombia	1970–1998
Cyprus	1963, 1995
Czech Republic	1961, 2001
France	1990
Gabon	1987
Gambia	1958, 1976
Guinea	1989
India, Bangalore	1962, 1963, 1965, 1967, 1977
India, Chingleput	1969, 1979, 1984
India, other	1948–1993
Indonesia	1952–1965, 2005, 2006
Iran (Islamic Republic of)	1946, 1952, 1963, 1972, 1983, 1990
Iraq	1989
Italy	1997
Japan	1954, 1964, 1992
Jordan	1949, 1970, 1976, 1982
Kenya	1974, 2006
Kuwait	1962, 1972–1981, 1991, 1993–1997
Lebanon	1994
Lesotho	1962, 1992
Libyan Arab Jamahiriya	1954, 1959, 1971
Morocco	1994
Mozambique	1961, 1987, 1988
Myanmar	1991
Nepal	1947, 1962, 1963, 1965, 1966, 1973, 1974 1976, 1979, 1980, 1988, 1989, 1990, 1991, 1992, 1993, 1994
Oman	1995
Pakistan	1992, 1994
Peru	1981, 1982, 1987, 1993
Philippines	1992
Saudi Arabia	1988
Sierra Leone	1958
Somalia	1986
South Africa	1972–1985, 1988
Syrian Arab Republic	1960, 1978, 1983, 1992
Togo	1978, 1986, 1988
Tunisia	1980
Turkey	1994
Uganda	1971, 1987
UR Tanzania	1958, 1988–1992, 1993–1998, 2000
USA	1997
Viet Nam	1955, 1961, 1986, 1990, 1991, 1996
Zambia	1980

Exact timing of surveys not always clear from reports; year given here is year in which survey apparently started. In some cases more than one subnational survey was completed in a country in a given year. Detailed reference list available at www.who.int/tb/publications/globalreport

Table A3.3 **Availability of death registrations by cause-of-death, WHO Mortality Database, 2006**

	Cov/qual[1]		
Albania	73	L	1987–1989, 1992–2003
Anguilla			1985–1995, 2000–2001, 2004
Antigua & Barbuda	74		1985–1995, 2000–2002
Argentina	100	L	1985–2003
Armenia	63	L	1985–2003
Australia	100	H	1985–2003
Austria	99	M	1985–2005
Azerbaijan	68	M	1985–2002
Bahamas	83	H	1985, 1987, 1993–2000
Bahrain	87	L	1985, 1987–1988, 1993–2000
Barbados	76	M	1985–1995, 2000–2001
Belarus	98	M	1985–2003
Belgium		M	1985–1997
Belize	81	M	1986–1987, 1989–1991, 1993–2001
Bermuda			1985–1994, 1996–2000, 2002
Bosnia & Herzegovina			1985–1991
Brazil	79	L	1985–2000, 2002
British Virgin Islands			1985–1998
Brunei Darussalam	100	M	1996–2000
Bulgaria	100	M	1985–2004
Canada	100	H	1985–2003
Cayman Islands			1985–2000
Chile	94	M	1985–2003
Colombia		M	1985–1999
Costa Rica	88	M	1985–2004
Croatia	95	M	1985–2004
Cuba	100	H	1985–2004
Czech Republic	100	M	1986–2004
Denmark	100	M	1985–2001
Dominica	100	M	1985–2003
Dominican Republic	45		1985–1992, 1994–2001
Ecuador	74	L	1985–2004
Egypt	81	L	1987,1991, 1992, 2000
El Salvador	76	M	1990–1993, 1995–2003
Estonia	100	H	1985–2005
Fiji		L	1999
Finland	100	H	1985–2004
France	100	M	1985–2003
Georgia	97	M	1985–2001
Germany	99	M	1990–2004
Greece	99	L	1985–2004
Grenada		M	1985, 1988–1996
Guatemala	89	M	1986–2003
Guyana	72	M	1988–1990, 1993–1996, 2001–2003
Haiti	8		2001–2003
China, Hong Kong SAR			1985–2004
Hungary	100	H	1985–2003
Iceland	95	H	1985–2004
Iran (Islamic Republic of)			1985, 1987
Ireland	95	H	1985–2005
Israel	100	M	1985–2001, 2003
Italy	100	M	1985–2002
Jamaica			1985–1991
Japan	100	H	1985–2004
Kazakhstan	77	M	1985–2004
Kuwait	100	M	1985–1987, 1993–2002
Kyrgyzstan	70	M	1985–2004
Latvia	95	H	1985–2004
Lithuania	98	H	1985–2004
Luxembourg	96	M	1985–2004

	Cov/qual[1]		
China, Macao SAR			1994
Malaysia		M	1997
Malta	94	H	1985–2004
Mauritius	93	M	1985–2004
Mexico	96	H	1985–2003
Monaco			1986, 1987
Mongolia			1994
Montserrat			1990–1994
Myanmar			1998–2000
Netherlands	100	M	1985–2004
New Zealand	100	H	1985–2003
Nicaragua	58	L	1988–1994, 1996–2003
Norway	98	M	1985–2004
Pakistan			1993, 1994
Panama	91	M	1985–2003
Paraguay	74	L	1985–2001, 2003
Peru	54	L	1986–2000
Philippines		M	1992–1998
Poland	100	L	1985–1996, 1999–2004
Portugal	100	L	1985–2003
Puerto Rico			1985–2002
Qatar		L	1995
Rep. of Korea	87		1985–2004
Republic of Moldova	80	H	1985–2004
Romania	100	H	1985–2004
Russian Federation	100	M	1985–2004
Saint Kitts & Nevis			1985–1997
Saint Lucia	99	M	1986–2002
St Vincent & Grenadines	93		1985–1987, 1995–2003
San Marino	73	L	1995–2000
Sao Tome & Principe			1985, 1987
Serbia & Montenegro	89	M	1997–2002
Seychelles			1985–1987
Singapore	82	H	1985–2003
Slovakia	98	H	1992–2002
Slovenia	99	H	1985–2004
South Africa	78	L	1993–1996, 2004
Spain	100	M	1985–2004
Sri Lanka			1985–1989, 1991, 1992, 1995
Suriname	73		1985–2000
Sweden	100	M	1985–2002
Switzerland	99	M	1985–2004
Syrian Arab Republic			1985
Tajikistan	54	L	1985–2001
TFYR Macedonia	93	M	1991–2003
Thailand	87	L	1985–1987, 1994–2000, 2002
Trinidad & Tobago	83		1985–2000
Turkey			1987
Turkmenistan		M	1985–1998
Turks & Caicos Islands			1985–2001
Ukraine	100	M	1985–2004
United Kingdom	99	H	1985–1999, 2001–2004
USA	100		1985–2002
Uruguay	100	M	1985–1990, 1993–2001
Uzbekistan	73	M	1985–2000, 2002, 2003
Venezuela	99	H	1985–1990, 1992–1994, 1996–2002
US Virgin Islands			1997–2002
Zimbabwe			1990

Shown are years for which cause-of-data (1985–2005) were available in the WHO Mortality Database at the end of 2006 (see also http://www.who.int/healthinfo/morttables/en/index.html). In some cases more recent data are available in the country in question, but have not yet been sent to WHO.

[1]Cov/qual: Coverage and quality. Coverage is calculated by dividing the total deaths reported for a country in a given year from the vital registration system by the total deaths estimated by WHO for that year for the national population (shown is coverage for most recent year, but not for data before 2000). Coverage can be low because vital registration is implemented in only part of the country, or because only a proportion of deaths is recorded, or both. Source: EIP/WHO. Assessment of data quality based on coding system used, and on proportion of deaths assigned to ill-defined codes; L, indicates low; M, medium; H, high. Source: Mathers, C et al. Counting the dead and what they died from: an assessment of the global status of cause of death data. *Bulletin of the World Health Organization*, 2005, 83: 171–177.

The World Health Organization monitors the global tuberculosis eidemic and evaluates surveillance, planning and financial data in support of national TB control programmes.

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