Warning: This report is out-of-date. In particular, entire time-series of TB disease burden estimates are updated every year. For the latest data and analysis, please see the most recent edition of the global TB report.

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Cover design by Chris Dye. The disintegration of the Union of Soviet Socialist Republics in 1991 had dire consequences for the control of tuberculosis. From 1992, the number of cases reported to WHO continued to decline in western and central European countries (lower series) but increased steeply in the newly independent states (upper series). This resurgence was probably due to failures in tuberculosis control, but also to other biological, social and economic factors influencing transmission of infection and susceptibility to disease (see Section 1.8.2). The cover image shows the bifurcation in European case notifications layered on a colour-saturated image of stains used in sputum-smear microscopy, including carbol fuchsin and methylene blue.

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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
BMU	basic management unit
BPHS	basic package of health-care services
BRAC	Bangladesh Rural Advancement Committee
CAREC	Caribbean Epidemiology Centre
CDC	Centers for Disease Control and Prevention
CHW	community health worker
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
GDP	gross domestic product
GHW	General health worker
GLC	Green Light Committee
Global Plan	*The Global Plan to Stop TB, 2006–2015*
GNI	gross national income
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 resource development
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
ISTC	International standards for tuberculosis care
JICA	Japan International Cooperation Agency
KAP	knowledge, attitudes and practice
LACEN	Brazilian public health laboratories
LGA	local government area
LHW	lady health workers
LQAS	Laboratory quality assurance services
MDG	Millennium Development Goal
MDR	multidrug resistance (resistance to, at least, 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
SEAR	WHO South-East Asia Region
SEARO	WHO Regional Office for South-East Asia
SINAN	Brazilian national disease information system
SOP	standard operating procedures
SRLN	supranational reference laboratory network
SUS	Unified Health System for Brazil
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
UNITAID	international facility for the purchase of drugs to treat HIV/AIDS, malaria and TB
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)

Summary

Tuberculosis (TB) is a major cause of illness and death worldwide, especially in Asia and Africa. Globally, 9.2 million new cases and 1.7 million deaths from TB occurred in 2006, of which 0.7 million cases and 0.2 million deaths were in HIV-positive people. Population growth has boosted these numbers compared with those reported by the World Health Organization (WHO) for previous years. More positively, and reinforcing a finding first reported in 2007, the number of new cases per capita appears to have been falling globally since 2003, and in all six WHO regions except the European Region where rates are approximately stable. If this trend is sustained, Millennium Development Goal 6, to have halted and begun to reverse the incidence of TB, will be achieved well before the target date of 2015. Four regions are also on track to halve prevalence and death rates by 2015 compared with 1990 levels, in line with targets set by the Stop TB Partnership. Africa and Europe are not on track to reach these targets, following large increases in the incidence of TB during the 1990s. At current rates of progress these regions will prevent the targets being achieved globally.

The Stop TB Strategy is WHO's recommended approach to reducing the burden of TB in line with global targets. The Global Plan of the Stop TB Partnership details the scale at which the six components of the strategy should be implemented if the global targets are to be achieved. To date, progress has been mixed. The first component of the strategy – the detection and treatment of new cases in DOTS programmes – fares best. Globally, the rate of case detection for new smear-positive cases reached 61% in 2006 (compared with the target of at least 70%) and the treatment success rate improved to 84.7% in 2005, just below the target of 85%. Progress in the implementation and planning of other parts of the strategy ranges from major – with provision of TB/HIV interventions for TB patients in the African Region – to minor – with a need for improved guidance on advocacy, communication and social mobilization (ACSM) activities, and more ambitious planning for treatment of patients with multidrug-resistant TB (MDR-TB), in the European, South-East Asia and Western Pacific regions.

Available funding for TB control in 2008 peaked at US$ 3.3 billion across 90 countries (with 91% of global cases) that reported data, up from less than US$ 1 billion in 2002. Nonetheless, these same countries reported funding gaps totalling US$ 385 million in 2008; only five of the 22 high-burden countries reported no funding gap. The gap between the funding reported to be available by countries and the funding requirements estimated to be needed for the same countries in the Global Plan is larger still: US$ 1 billion. This is mainly due to the higher funding requirements for collaborative TB/HIV activities, management of MDR-TB and ACSM in the Global Plan, compared with country reports.

Progress in case detection slowed globally in 2006 and began to stall in China and India. The detection rate in the African Region remains low in absolute terms. Budgets stagnated between 2007 and 2008 in all but five of the 22 high-burden countries. Incidence rates are falling slowly compared with the 5–10% decline annually that is theoretically feasible. Renewed effort to accelerate progress in global TB control in line with the expectations of the Global Plan, supported by intensified resource mobilization from domestic and donor sources, is needed.

Key points

The global burden of TB

1. There were an estimated 9.2 million new cases of TB in 2006 (139 per 100 000 population), including 4.1 million new smear-positive cases (44% of the total) and 0.7 million HIV-positive cases (8% of the total). This is an increase from 9.1 million cases in 2005, due to population growth. India, China, Indonesia, South Africa and Nigeria rank first to fifth respectively in terms of absolute numbers of cases. The African Region has the highest incidence rate per capita (363 per 100 000 population).

2. There were an estimated 14.4 million prevalent cases of TB in 2006.

3. There were an estimated 0.5 million cases of multidrug-resistant TB (MDR-TB) in 2006.

4. In 2006 there were an estimated 1.5 million deaths from TB in HIV-negative people and 0.2 million among people infected with HIV.

5. In 2007, a total of 202 (out of 212) countries and territories reported TB notification data for 2006 to WHO. A total of 5.1 million new cases (out of the estimated 9.2 million new cases) were notified for 2006 among these 202 countries and territories, of which 2.5 million (50%) were new smear-positive cases. The African, South-East Asia and Western Pacific regions accounted for 83% of total case notifications.

Targets and strategies for TB control

6. Targets for global TB control have been set within the framework of the Millennium Developments Goals (MDGs). MDG 6 Target 6.C is to halt and reverse incidence by 2015. The Stop TB Partnership has set two additional impact targets, which are to halve prevalence and death rates by 2015 compared with their level in 1990. The outcome targets first set by the World Health Assembly in 1991 are to detect at least 70% of new smear-positive cases in DOTS programmes and to successfully treat at least 85% of detected cases. All five targets have been adopted by the Stop TB Partnership and, in 2007, were recognized in a World Health Assembly resolution (WHA 60.19).

7. The Stop TB Strategy launched by WHO in 2006 is designed to achieve the 2015 impact targets as well as the targets for case detection and treatment success. The Global Plan, launched in January 2006, details the scale at which the six components of the Stop TB Strategy should be implemented to achieve these targets, and the funding required, for each year 2006–2015.

8. The Stop TB Strategy has six major components: (i) DOTS expansion and enhancement; (ii) addressing TB/HIV, MDR-TB and other challenges; (iii) contributing to health system strengthening; (iv) engaging all care providers; (v) empowering patients, and communities; and (vi) enabling and promoting research.

Implementing the Stop TB Strategy

DOTS expansion and enhancement

9. DOTS was being implemented in 184 countries that accounted for 99% of all estimated TB cases and 93% of the world's population in 2006. A total of 4.9 million new cases of TB were notified by DOTS programmes in 2006 (98% of the total of 5.1 million new cases notified globally), including 2.5 million new smear-positive cases (99% of the total notified globally). Between 1995 (when reliable records began) and 2006, a total of 31.8 million new and relapse cases, and 15.5 million new smear-positive cases were notified by DOTS programmes.

Addressing TB/HIV, MDR-TB and other challenges

10. There has been considerable progress in HIV testing among TB patients, and in provision of co-trimoxozole preventive therapy (CPT) and antiretroviral therapy (ART) to HIV-positive TB patients.

11. Almost 700 000 TB patients were tested for HIV in 2006 among all reporting countries, up from 470 000 in 2005 and 22 000 in 2002. The numbers tested in 2006 are equivalent to 12% of TB case notifications globally, and 22% of notified cases in the African Region. Among 11 African countries with over 50% of the world's HIV-positive TB cases that reported data for all years 2002–2006, the percentage of notified cases that were tested quadrupled, from 8% to 35%. Rwanda (76%), Malawi (64%) and Kenya (60%) achieved the highest testing rates, which are also ahead of the 51% target set for the African Region in the Global Plan.

12. The number of HIV-positive TB patients treated with CPT reached 147 000 in 2006, equivalent to 78% of the HIV-positive TB patients that were identified

through testing and 2.5 times higher than the 58 000 patients treated with CPT in 2005. The number started on CPT is less than the 0.5 million specified in the Global Plan for 2006; numbers could be increased if more countries emulated the high testing rates of countries such as Rwanda, Malawi and Kenya.

13. The number of HIV-positive TB patients enrolled on ART was 67 000 in 2006, more than double the 29 000 reported for 2005 and seven times the 9 800 reported in 2004, but less than the 220 000 target for 2006 in the Global Plan. The proportion of diagnosed HIV-positive TB patients enrolled on ART was 41% compared with the 44% target for 2006 in the Global Plan; as with CPT, one reason why numbers fall short of the Global Plan is that HIV testing rates are not yet high enough.

14. Implementation of interventions to reduce the burden of TB in HIV-positive people was far below the targets set in the Global Plan in 2006. The Global Plan target for 2006 was to screen 11 million HIV-positive people for TB disease; the actual figure reported was 314 211. Only 27 000 HIV-positive people without active TB were started on IPT (0.1% of the 33 million people estimated to be infected with HIV), almost all of whom were in Botswana.

15. A total of 23 353 cases of MDR-TB were notified in 2006, of which just over half were in the European Region. Among these notified cases, only the 2 032 cases reported from projects and programmes approved by the Green Light Committee (GLC) are known to have been enrolled on treatment that meets the standards established in WHO guidelines.

16. The total number of MDR-TB cases that countries forecast will be enrolled on treatment in 2007 and 2008 is about 50 000 in both years. Projections for 2008 are much less than the target of 98 000 that was set in the Global MDR-TB/XDR-TB Response Plan. Most of the shortfall is in the European, South-East Asia and Western Pacific regions, and within these regions in China and India in particular. Major expansion of services that meet the standards established in WHO guidelines is needed.

Health system strengthening; engaging all care providers

17. Implementation of components 3–6 of the Stop TB Strategy is currently less well understood than for components 1 and 2, because the available data are more limited.

18. In the area of health system strengthening (component 3), diagnosis and treatment of TB is fully integrated into general health services in most countries. Links with general health sector or development planning frameworks are variable, but alignment with sector-wide approaches was comparatively good among reporting countries. The Practical Approach to Lung Health is being piloted or expanded nationwide in 15 countries, and is included in the plans of 73 countries. Many countries lack comprehensive plans for human resource development or a recent assessment of staffing needs.

19. Among the 22 high-burden countries (HBCs) that collectively account for 80% of TB cases globally, 14 are scaling up public–private and public–public mix approaches to involve the full range of care providers in TB control, and seven have used the International Standards for Tuberculosis Care to facilitate this process. However, the contribution of different providers to detection, referral and treatment of cases will remain unclear until recording and reporting forms recommended by WHO are more widely introduced.

Empowering patients, and communities; enabling and promoting research

20. Surveys of Knowledge, Attitudes and Practice (KAP) have been conducted in 13 of the 22 HBCs to help with the design of advocacy, communication and social mobilization (ACSM) activities. However, ACSM is still a new area for many countries, and much more guidance and technical support are necessary. Involvement of communities in TB care was reported by 20 of the 22 HBCs. Operational research (part of component 6) was reported by 49 countries.

Financing TB control

21. The total budgets of national TB control programmes (NTPs) in HBCs amount to US$ 1.8 billion in 2008, up from US$ 0.5 billion in 2002 but almost the same as budgets for 2007; NTP budgets for the 90 countries with 91% of global TB cases that reported complete data total US$ 2.3 billion in 2008. Budgets are typically equivalent to about US$ 100–300 per patient treated.

22. DOTS accounts for the largest single share of NTP budgets in almost all countries. Budgets for the diagnosis and treatment of MDR-TB have become strikingly large in the Russian Federation (US$ 267 million) and South Africa (US$ 239 million) and, when combined, these two countries account for 93% of the budgets for MDR-TB reported by HBCs.

23. With a few exceptions, NTP budgets do not include the costs associated with using general health system resources, such as staff and infrastructure for TB control. When these costs are added to NTP budgets, we estimate that the total cost of TB control in HBCs will reach US$ 2.3 billion in 2008 (up from US$ 0.6 billion in 2002), and US$ 3.1 billion across 90 reporting countries. Costs per patient treated are generally US$ 100–400.

24. For the 22 HBCs, NTP budgets and our estimates of the total costs of TB control activities planned for 2008 are very similar to those in 2007 for all but five countries (Brazil, Ethiopia, Mozambique, Nigeria and the United Republic of Tanzania). This stagnation is worrying, because it suggests that the deceleration in case detection that occurred between 2005 and 2006 could persist into 2008.

25. Funding for TB control has grown to US$ 2.0 billion in HBCs and US$ 2.7 billion across the 90 reporting countries in 2008. Increased funding is mainly from domestic sources in Brazil, China, the Russian Federation and South Africa and from Global Fund grants in other countries. Across HBCs in 2008, governments will cover 73% of the total costs of TB control and grants will cover 13% (including US$ 200 million from the Global Fund). Reported funding gaps for 2008 total US$ 328 million among HBCs (14% of total costs) and US$ 385 million across 90 reporting countries (13% of total costs). Only five HBCs reported no funding gap for 2008 (Bangladesh, Ethiopia, India, Indonesia, and South Africa)

26. Funding gaps reported by countries would be larger if country plans and assessments of funding requirements were fully aligned with the Global Plan. In 2008, the gap between the total available funding reported by countries and the total funding requirements laid out in the Global Plan is US$ 0.8 billion in HBCs and US$ 0.9 billion across all 90 reporting countries. The discrepancy is mostly due to higher budgets for MDR-TB (South-East Asia and Western Pacific regions), collaborative TB/HIV activities (African and South-East Asia regions) and ACSM (all regions) in the Global Plan.

27. Several countries have plans and budgets that are well aligned with the Global Plan. Many countries in Africa have embarked upon, and in some cases completed, the development of medium-term plans and budgets using a WHO tool designed to support planning and budgeting in line with targets set out in the Global Plan. Completion of this work, and its expansion to other countries, are now crucial and should form the basis for intensified efforts to mobilize the necessary resources from domestic and donor sources.

Progress towards outcome targets

28. The case detection rate for new smear-positive cases in DOTS programmes is estimated at 61% globally in 2006 (i.e. the 2.5 million notified cases divided by the 4.1 million estimated cases), a small increase from 2005 but still short of the 70% target. The Western Pacific Region (77%) and 77 countries achieved the 70% target; the Region of the Americas (69%) and the South-East Asia Region were close (67%). The Eastern Mediterranean Region (52%), the European Region (52%) and the African Region (46%) were much further from the target. The European Region could reach the target by increasing both DOTS population coverage and the use of smear microscopy.

29. The estimated case detection rate in the African Region in 2006 may be an underestimate, given the difficulty of disentangling the effect of improved programme performance from the effect of the HIV epidemic on notifications. Analytical work of the type recently done in Kenya, and new surveys of the prevalence of disease planned in several African countries, will help to improve the current estimates.

30. The treatment success rate in DOTS programmes was 84.7% in 2005, just short of the 85% target. This is the highest rate since reliable monitoring began, despite an increase in the size of the cohort evaluated to 2.4 million patients in 2005. Treatment success rates were lowest in the European Region (71%), the African Region (76%) and the Region of the Americas (78%). The South-East Asia and Western Pacific regions and 58 countries achieved the 85% target; the Eastern Mediterranean Region (83%) was close.

31. Based on current data and estimates, the Western Pacific Region achieved both the 70% case detection target (in 2006) and the 85% treatment success target (in 2005), as did 32 individual countries including five HBCs: China, Indonesia, Myanmar, the Philippines and Viet Nam.

32. Progress in case detection decelerated globally between 2005 and 2006, stalled in China and India, and fell short of the Global Plan milestone of 65% for 2006. The African Region, China and India collectively account for 69% of undetected cases.

Progress towards impact targets

33. Globally, the TB incidence rate per 100 000 population is falling slowly (–0.6% between 2005 and 2006), having peaked around 2003. By 2006, TB incidence per capita was approximately stable in the European Region and in slow decline in all other WHO regions (from 0.5% between 2005 and 2006 in the South-East Asia Region to 3.2% between 2005 and 2006 in the Region of the Americas). MDG 6 Target 6.C, to halt and reverse the incidence of TB, will be achieved well before the target date of 2015 if the global trend is sustained.

34. Prevalence and death rates per capita are falling, and faster than TB incidence. Globally, prevalence rates fell by 2.8% between 2005 and 2006, to 219 per 100 000 population (compared with the 2015 target of 147 per 100 000 population). Death rates fell by 2.6% between 2005 and 2006, to 25 per 100 000 population (compared with the 2015 target of 14 per 100 000

population). These estimates and targets include cases and deaths in HIV-positive people.

35. If trends in prevalence and death rates for the past five years are sustained, the Stop TB Partnership targets of halving prevalence and death rates by 2015 compared with 1990 levels could be achieved in the South-East Asia, Western Pacific and Eastern Mediterranean regions, and in the Region of the Americas. Targets are unlikely to be achieved globally, however, because the African and European regions are far from the targets. For example, deaths are estimated at 83 per 100 000 population in 2006 in the African Region, compared with a target for the region of 21.

36. While DOTS programmes are reducing death and prevalence rates, a new ecological analysis suggests that they have not yet had a major impact on TB transmission and trends in TB incidence around the world. If this is correct, then the challenge is to show that the diagnosis of active TB can be made early enough, and that treatment success rates can be high enough, to have a substantial impact on incidence on a large geographical scale. The greater the impact of TB control on incidence, the more likely it is that prevalence and death rates will be halved by the MDG deadline of 2015.

Principales constatations

La charge mondiale de tuberculose

1. On a estimé à 9,2 millions le nombre de nouveaux cas de tuberculose en 2006 (139 pour 100 000) dont 4,1 millions de nouveaux cas à frottis positif (44 % du total) et 0,7 million de VIH-positifs (8 % du total). L'augmentation par rapport aux 9,1 millions de cas en 2005 résulte de la croissance démographique. Les cinq pays qui ont enregistré le plus grand nombre de cas étaient, dans l'ordre, l'Inde, la Chine, l'Indonésie, l'Afrique du Sud et le Nigéria. C'est dans la Région africaine que le taux d'incidence pour 100 000 est le plus élevé (363).
2. La prévalence de la tuberculose en 2006 a été estimée à 14,4 millions de cas.
3. Le nombre de cas de tuberculose à bacilles multirésistants (tuberculose MR) en 2006 a été estimé à 0,5 million.
4. Le nombre de décès par tuberculose en 2006 a été estimé à 1,7 millions dont 0,2 millions VIH-positifs.
5. En 2007, 202 pays et territoires (sur 212) ont notifié à l'OMS des données concernant la tuberculose pour 2006. Au total, 5,1 millions de nouveaux cas (sur les 9,2 millions de nouveaux cas estimés) ont été notifiés pour 2006 par ces 202 pays et territoires, dont 2,5 millions (50 %) étaient des nouveaux cas à frottis positif. Trois Régions de l'OMS, l'Afrique, l'Asie du Sud-Est et le Pacifique occidental, totalisaient 83% des cas notifiés.

Cibles et stratégies de lutte antituberculeuse

6. Les cibles de la lutte mondiale ont été fixées dans le cadre des objectifs du Millénaire pour le développement (OMD). La cible 6.C de l'OMD 6 consiste à maîtriser la tuberculose et commencer à inverser la tendance d'ici 2015. Le Partenariat Halte à la tuberculose a fixé deux cibles supplémentaires concernant l'impact, qui consistent à réduire de moitié les taux de prévalence et de mortalité d'ici 2015 comparativement au niveau de 1990. Les cibles initialement fixées par l'Assemblée mondiale de la Santé en 1991 consistent à détecter au moins 70 % des nouveaux cas à frottis positif dans le cadre des programmes DOTS et à traiter avec succès au moins 85 % des cas détectés. Les cinq cibles ont été adoptées par le Partenariat Halte à la tuberculose et reconnues en 2007 dans une résolution de l'Assemblée mondiale de la Santé (WHA60.19).
7. La Stratégie Halte à la tuberculose lancée par l'OMS en 2006 vise à atteindre les cibles pour 2015 concernant l'impact ainsi que les cibles concernant la détection des cas et le taux de succès thérapeutiques. Le plan mondial, lancé en janvier 2006, précise à quelle échelle les six éléments de la Stratégie Halte à la tuberculose doivent être appliqués pour atteindre ces cibles et indique le financement nécessaire pour chaque année de 2006 à 2015.
8. La Stratégie Halte à la tuberculose comprend six éléments essentiels : i) poursuivre l'extension d'une stratégie DOTS de qualité et son amélioration ; ii) lutter contre la co-infection tuberculose-VIH, contre la tuberculose MR et s'attaquer à d'autres défis ; iii) contribuer au renforcement des systèmes de santé ; iv) impliquer tous les soignants ; v) donner aux personnes atteintes de tuberculose et aux communautés la capacité d'agir et vi) favoriser et promouvoir la recherche.

Mise en œuvre de la Stratégie Halte à la tuberculose

Poursuivre l'extension d'une stratégie DOTS de qualité et son amélioration

9. La stratégie DOTS a été appliquée dans 184 pays regroupant 99 % des cas de tuberculose et 93 % de la population mondiale en 2006. Au total, 4.9 millions de nouveaux cas de tuberculose estimés ont été notifiés par des programmes DOTS en 2006 (98 % du total mondial de 5,1 millions de nouveaux cas notifiés), dont 2,5 millions de nouveaux cas à frottis positif (99 % du total mondial des cas notifiés). Entre 1995 (quand on a commencé à disposer de données fiables) et 2006, les programmes DOTS ont notifié en tout 31,8 millions de nouveaux cas et de rechutes et 15,5 millions de nouveaux cas à frottis positif.

Lutter contre la co-infection tuberculose-VIH, contre la tuberculose MR et s'attaquer à d'autres défis

10. Des progrès considérables ont été enregistrés concernant le test de dépistage du VIH chez les malades de la tuberculose, et l'administration d'un traitement préventif au cotrimoxazole (TPC) et d'un traitement antirétroviral (ART) aux cas de tuberculose VIH-positifs.

11. Près de 700 000 malades de la tuberculose ont subi un test de dépistage du VIH en 2006 dans l'ensemble des pays fournissant des données, contre 470 000 en 2005 et 22 000 en 2002. Le nombre de malades ayant subi un test en 2006 représentait 12 % du total mondial de cas de tuberculose notifiés et 22 % des cas notifiés dans la Région africaine. Parmi les 11 pays africains enregistrant plus de 50 % du nombre total de cas de tuberculose chez des VIH-positifs qui ont signalé des données pour l'ensemble des années 2002–2006, le pourcentage des cas notifiés ayant subi un test a quadruplé, passant de 8 % à 35 %. Le Rwanda (76 %), le Malawi (64 %) et le Kenya (60 %) ont présenté les taux de tests de dépistage les plus élevés – des pourcentages supérieurs à la cible de 51 % fixée pour la Région africaine dans le plan mondial.

12. Le nombre de malades de la tuberculose VIH-positifs sous CPT a atteint 147 000 en 2006, ce qui correspond à 78 % des cas de tuberculose VIH-positifs recensés par un test de dépistage et à 2,5 fois plus que les 58 000 cas sous CPT en 2005. Le nombre de TPC commencé est inférieur au demi-million prévu par le plan mondial pour 2006 ; il pourrait augmenter si davantage de pays enregistraient des taux de dépistage plus élevés comparables à ceux du Rwanda, du Malawi et du Kenya.

13. Le nombre de malades de la tuberculose VIH-positifs commençant un ART a été de 67 000 en 2006, c'est-à-dire plus du double des 29 000 signalés en 2005 et sept fois plus que les 9800 signalés en 2004, mais il reste inférieur à la cible de 220 000 pour 2006, prévue dans le plan mondial. La proportion des cas de tuberculose diagnostiqués comme VIH-positifs commençant un ART était de 41 % contre une cible de 44 % pour 2006 prévue par le plan mondial ; comme pour le TPC, les résultats ont été inférieurs à ceux prévus par le plan mondial en partie en raison de taux de dépistage du VIH pas assez élevés.

14. Les interventions visant à réduire la charge de morbidité tuberculeuse chez les VIH-positifs sont bien en deçà des cibles fixées dans le plan mondial en 2006. La cible du plan mondial pour 2006 prévoyait le dépistage de 11 millions de VIH-positifs pour la tuberculose alors que le nombre effectivement signalé était de 314 211. Seuls 27 000 VIH-positifs sans tuberculose évolutive ont commencé un traitement préventif à l'isoniazide (0,1 % des 33 millions de sujets qu'on estime infectés par le VIH), presque tous au Botswana.

15. Au total, 23 353 cas de tuberculose MR ont été notifiés en 2006 dont un peu plus de la moitié dans la Région européenne. Parmi ces cas notifiés, on sait qu'un traitement répondant aux normes fixées par les directives de l'OMS a commencé uniquement pour les 2 032 cas signalés par des projets et des programmes approuvés par le Comité Feu Vert.

16. Le nombre total de cas de tuberculose MR pour lesquels les pays prévoient de commencer un traitement en 2007 et 2008 est d'environ 50 000 pour chacune des deux années. Les projections pour 2008 sont bien inférieures à la cible de 98 000 fixée dans le plan d'intervention mondial contre la tuberculose MR et ultrarésistante. C'est surtout en Europe, en Asie du Sud-Est et dans le Pacifique occidental, et dans ces deux dernières Régions en Chine et en Inde en particulier, que le déficit est le plus important. Une forte extension des services s'impose pour atteindre les normes fixées dans les directives de l'OMS.

Renforcer les systèmes de santé ; impliquer tous les soignants

17. La mise en œuvre des éléments 3 à 6 de la Stratégie Halte à la tuberculose est actuellement moins bien comprise que celle des éléments 1 et 2, les données disponibles étant plus limitées.

18. Dans le domaine du renforcement des systèmes de santé (élément 3), le diagnostic et le traitement de la tuberculose sont entièrement intégrés aux services de santé généraux dans la plupart des pays. Les liens avec les cadres de planification du secteur de la santé en général ou du développement varient, mais l'alignement sur des approches sectorielles est assez satisfaisant dans les pays notifiant des données. L'approche pratique de la santé respiratoire est appliquée au stade pilote ou élargie à l'échelle nationale par 15 pays et figure dans les plans de 73 pays. De nombreux pays ne disposent pas encore de plans complets de développement des ressources humaines ni d'une évaluation récente des besoins en personnels.

19. Parmi les 22 pays à forte charge de morbidité tuberculeuse qui regroupent 80 % des cas dans le monde, 14 sont en train de renforcer leurs approches public-privé et public-public pour associer tout l'éventail des dispensateurs de soins à la lutte antituberculeuse, et sept ont utilisé les normes internationales de soins pour la tuberculose afin de faciliter le processus. La contribution des différents dispensateurs à la détection, à la référence et au traitement des cas restera incertaine tant que les formulaires dont l'OMS a recommandé l'utilisation pour l'enregistrement et la notification n'auront pas été plus largement introduits.

Donner aux personnes atteintes de tuberculose et aux communautés la capacité d'agir ; encourager et promouvoir la recherche

20. Des enquêtes sur les connaissances, les attitudes et les pratiques ont été effectuées dans 13 des 22 pays à forte morbidité pour contribuer à la mise au point d'activités de sensibilisation, de communication

et de mobilisation sociale. Il s'agit là toutefois d'un domaine encore nouveau pour de nombreux pays qui ont besoin de recommandations et d'un appui technique bien plus importants. Vingt des 22 pays à forte morbidité ont fait état d'une participation des communautés aux soins. La recherche opérationnelle (qui fait partie de l'élément 6) a été mentionnée par 49 pays.

Financer la lutte antituberculeuse

21. Les budgets des programmes nationaux de lutte antituberculeuse dans les pays à forte morbidité s'établissent au total à US $1,8 milliard en 2008, contre US $0,5 milliard en 2002, le montant total pour 2008 étant pratiquement le même qu'en 2007 ; les budgets de ces programmes pour les 90 pays regroupant 91 % des cas mondiaux de tuberculose et qui ont signalé des données complètes s'établissent au total à US $2,3 milliards en 2008. Ces budgets correspondent à des dépenses de l'ordre de US $100 à 300 par malade soigné.

22. La stratégie DOTS absorbe la part la plus importante des budgets de la tuberculose dans la plupart des pays. Les budgets consacrés au diagnostic et au traitement de la tuberculose MR sont devenus particulièrement importants en Fédération de Russie (US $267 millions) et en Afrique du Sud (US $239 millions) et ils représentent ensemble 93 % des budgets de pays à forte morbidité consacrés à la tuberculose MR.

23. A quelques exceptions près, les budgets nationaux de la tuberculose n'englobent pas les coûts associés à l'utilisation des ressources des systèmes de santé généraux, par exemple les personnels et l'infrastructure de la lutte antituberculeuse. En ajoutant ces coûts aux budgets nationaux de la tuberculose, on estime que le coût total de la lutte antituberculeuse dans les pays à forte morbidité atteindra US $2,3 milliards en 2008 (contre 0,6 milliard en 2002), et US $3,1 milliards pour les 90 pays notifiant des données. Les coûts par malade traité sont généralement de l'ordre de US $100 à 400.

24. Dans les 22 pays à forte morbidité, les budgets nationaux et les estimations du coût total des activités de lutte antituberculeuse prévus en 2008 sont très semblables à 2007, sauf dans cinq cas (Brésil, Ethiopie, Mozambique, Nigéria et République-Unie de Tanzanie). Cette stagnation est préoccupante car elle semble indiquer que la décélération en matière de détection des cas observée en 2005 et 2006 pourrait se maintenir en 2008.

25. Le financement de la lutte antituberculeuse est passé en 2008 à US $2,0 milliards dans les pays à forte morbidité et à US $2,7 milliards dans les 90 pays notifiant des données. L'augmentation provient principalement de ressources intérieures en Afrique du Sud, au Brésil, en Chine et en Fédération de Russie et de subventions du Fonds mondial dans les autres pays. Dans l'ensemble des pays à forte morbidité en 2008, les autorités nationales couvriront 73 % de l'ensemble des coûts de la lutte antituberculeuse et les subventions 13 % (dont US $200 millions du Fonds mondial). Les déficits de financement signalés pour 2008 atteignent au total US $328 millions dans les pays à forte morbidité (14 % de l'ensemble des coûts) et US $385 millions dans les 90 pays notifiant des données (13 % de l'ensemble des coûts). Seuls cinq des pays à forte morbidité n'ont pas signalé de déficit de financement pour 2008 (Afrique du Sud, Bangladesh, Ethiopie, Inde et Indonésie).

26. Les déficits de financement signalés par les pays seraient plus importants si l'on alignait les plans des pays et les évaluations des besoins de fonds sur le plan mondial. Pour 2008, l'écart entre le montant total des fonds disponibles indiqué par les pays et le montant total des besoins de financement prévu dans le plan mondial est de US $0,8 milliard dans les pays à forte morbidité et de US $0,9 milliard dans l'ensemble des pays notifiant des données. La différence est due en grande partie aux budgets plus élevés consacrés à la tuberculose MR (Régions de l'Asie du Sud-Est et du Pacifique occidental), aux activités de collaboration tuberculose/VIH (Régions de l'Afrique et de l'Asie du Sud-Est) et aux activités de sensibilisation, de communication et de mobilisation sociale (ensemble des Régions) dans le plan mondial.

27. Plusieurs pays ont des plans et des budgets qui sont bien alignés sur le plan mondial. De nombreux pays d'Afrique ont commencé, et dans certains cas mené à bien, la mise au point de plans et de budgets à moyen terme utilisant un outil de l'OMS qui vise à appuyer la planification et la budgétisation conformément aux cibles fixées dans le plan mondial. Il est maintenant crucial de mener à bien ce travail et de l'étendre à d'autres pays pour servir de base aux efforts intensifiés visant à mobiliser les ressources nécessaires sur le plan interne et auprès des donateurs.

Progrès réalisés en vue d'atteindre les cibles en matière de résultats

28. Le taux mondial de détection des cas pour les nouveaux cas à frottis positif dans les programmes DOTS est estimé à 61 % en 2006 (ce qui correspond aux 2,5 millions de cas notifiés divisés par les 4,1 millions de cas estimés), en légère augmentation par rapport à 2005, mais encore loin de la cible de 70 %. La Région du Pacifique occidental (77 %) ainsi que 77 pays ont atteint la cible de 70 % ; alors que la Région des Amériques (69 %) et celle de l'Asie du Sud-Est (67 %) sont un peu au-dessous. En revanche, les autres Régions sont beaucoup plus éloignées

de la cible, à savoir la Méditerranée orientale (52 %), l'Europe (52 %) et l'Afrique (46 %). La Région européenne pourrait atteindre la cible en améliorant la couverture de la population par la stratégie DOTS ainsi qu'en recourant à l'examen microscopique des frottis.

29. Le taux estimé de détection des cas dans la Région africaine en 2006 est peut-être en deçà de la réalité, car il est difficile de distinguer l'effet de l'amélioration des programmes de l'effet de l'épidémie de VIH sur les notifications. Les travaux analytiques du genre de ceux qui ont récemment été entrepris au Kenya, et les nouvelles enquêtes sur la prévalence de la maladie prévues dans plusieurs pays africains, contribueront à améliorer les estimations.

30. Le taux des succès thérapeutiques dans le cadre des programmes DOTS était de 84,7 % en 2005, juste au-dessous de la cible de 85 %. C'est là le taux le plus élevé obtenu depuis l'introduction d'un suivi fiable, malgré l'augmentation de la taille de la cohorte évaluée à 2,4 millions de patients en 2005. Les taux de succès thérapeutiques les plus faibles ont été enregistrés dans la Région européenne (71 %), la Région africaine (76 %) et la Région des Amériques (78 %). La Région de l'Asie du Sud-Est et celle du Pacifique occidental ainsi que 58 pays ont atteint la cible de 85 % et la Région de la Méditerranée orientale, avec 83 %, n'en était pas loin.

31. Sur la base des données et des estimations actuelles, la Région du Pacifique occidental a atteint la cible de détection des cas de 70 % (en 2006) et la cible des succès thérapeutiques de 85 % (en 2005), de même que 32 pays dont cinq parmi ceux à forte morbidité, à savoir la Chine, l'Indonésie, le Myanmar, les Philippines et le Viet Nam.

32. On a observé un ralentissement des progrès dans le domaine de la détection des cas au niveau mondial entre 2005 et 2006, et un coup d'arrêt en Chine et en Inde, la cible de 65 % pour 2006 fixée dans le plan mondial n'ayant pas été atteinte. Ensemble, la Région africaine, la Chine et l'Inde regroupent 69 % des cas non détectés.

Progrès réalisés en vue d'atteindre les cibles concernant l'impact

33. Au niveau mondial, le taux d'incidence de la tuberculose pour 100 000 a légèrement diminué (-0,6 % entre 2005 et 2006), après avoir atteint un pic vers 2003. En 2006, le taux d'incidence pour 100 000 était relativement stable dans la Région européenne et légèrement en baisse dans toutes les autres Régions de l'OMS (la diminution entre 2005 et 2006 s'établissant entre 0,5 % dans la Région de l'Asie du Sud-Est et 3,2 % dans la Région des Amériques). La cible 6.C de l'OMD 6, qui vise à maîtriser la tuberculose et à commencer à inverser la tendance, sera atteinte bien avant la date butoir de 2015 si la tendance mondiale est maintenue.

34. Les taux de prévalence et de mortalité pour 100 000 diminuent plus rapidement que l'incidence. Au niveau mondial, les taux de prévalence ont diminué de 2,8 % entre 2005 et 2006, étant ramenés à 219 pour 100 000 (alors que la cible pour 2015 était de 147 pour 100 000). Les taux de mortalité ont eux diminué de 2,6 % entre 2005 et 2006, pour atteindre 25 pour 100 000 (alors que la cible pour 2015 était de 14 pour 100 000).

35. Si les tendances de la prévalence et de la mortalité des cinq dernières années sont maintenues, les cibles du Partenariat Halte à la tuberculose qui consistent à réduire de moitié les taux de prévalence et de mortalité d'ici 2015 comparativement aux niveaux de 1990 pourraient être atteintes dans les Régions de l'Asie du Sud-Est, du Pacifique occidental et de la Méditerranée orientale, ainsi que dans celle des Amériques. Mais il est peu probable que l'on réussira à atteindre les cibles au niveau mondial, car les Régions africaine et européenne sont loin du niveau fixé. C'est ainsi qu'on estime à 83 pour 100 000 les décès en 2006 dans la Région africaine, alors que la cible pour la Région est de 21.

36. Alors que les programmes DOTS parviennent à réduire les taux de mortalité et de prévalence, une nouvelle analyse écologique laisse penser qu'ils n'ont pas encore eu un impact majeur sur la transmission et les tendances de l'incidence tuberculeuse dans le monde entier. Si tel est le cas, le défi consiste à montrer que le diagnostic de tuberculose évolutive peut être réalisé suffisamment tôt, et que les taux de succès thérapeutique peuvent être suffisamment élevés pour avoir un impact substantiel sur l'incidence sur une grande échelle géographique. Plus l'impact de la lutte antituberculeuse sur l'incidence est important, plus on a de chances de réduire de moitié les taux de prévalence et de mortalité d'ici la date butoir de 2015 pour les OMD.

Resultados fundamentales

La carga mundial de la tuberculosis

1. El número estimado de nuevos casos de tuberculosis en 2006 fue de 9,2 millones (139 por 100 000 habitantes), entre ellos 4,1 millones de nuevos casos bacilíferos (44% del total) y 0,7 millones de casos VIH-positivos (8% del total). El incremento respecto de los 9,1 millones de casos de 2005 se debe al crecimiento de la población. La India, China, Indonesia, Sudáfrica y Nigeria ocupan, por este orden, los cinco primeros puestos en cifras absolutas de casos. La Región de África es la de mayor tasa de incidencia (363 por 100 000 habitantes).
2. En 2006 se estima que hubo 14,4 millones de casos prevalentes de tuberculosis.
3. La cifra estimada de casos de tuberculosis multirresistente en 2006 fue de 0,5 millones de casos.
4. La cifra estimada de defunciones por tuberculosis en 2006 fue de 1,7 millones, incluidos 0,2 millones de personas infectadas por el VIH.
5. En 2007, 202 de 212 países y territorios comunicaron a la OMS datos de notificación de la tuberculosis correspondientes a 2006. Para ese año, se notificó un total de 5,1 millones de casos nuevos (de una cifra estimada de 9,2 millones de casos nuevos) en esos 202 países y territorios, de los cuales 2,5 millones (50%) eran nuevos casos bacilíferos. El 83% del total de casos correspondió a las Regiones de África, Asia Sudoriental y el Pacífico Occidental.

Metas y estrategias para el control de la tuberculosis

6. Las metas para el control mundial de la tuberculosis se han fijado en el marco de los Objetivos de Desarrollo del Milenio (ODM). La meta 6.C, incluida en el ODM 6, consiste en haber detenido y comenzado a reducir la incidencia para el año 2015. La Alianza Alto a la Tuberculosis ha fijado otras dos metas de impacto, que son reducir a la mitad respecto de los niveles de 1990 las tasas de prevalencia y de mortalidad antes de 2015. Las metas de resultados fijadas en primer lugar por la Asamblea Mundial de la Salud en 1991 son detectar al menos el 70% de los nuevos casos bacilíferos en los programas DOTS y tratar satisfactoriamente a al menos el 85% de los casos detectados. Las cinco metas han sido adoptadas por la Alianza Alto a la Tuberculosis y, en 2007, fueron reconocidas en una resolución de la Asamblea Mundial de la Salud (WHA60.19).
7. La estrategia Alto a la Tuberculosis, lanzada por la OMS, en 2006, está diseñada para alcanzar las metas de impacto de 2015 así como las metas en materia de detección de casos y éxito terapéutico. El Plan Mundial, lanzado en enero de 2006, detalla la escala en la que deben aplicarse los seis componentes de la estrategia Alto a la Tuberculosis para alcanzar esas metas, así como los fondos necesarios, para cada año entre 2006 y 2015.
8. La estrategia Alto a la Tuberculosis consta de seis grandes componentes: i) expandir y mejorar el DOTS; ii) hacer frente a la tuberculosis acompañada del VIH, la tuberculosis multirresistente y otros problemas; iii) contribuir al fortalecimiento de los sistemas de salud; iv) involucrar a todo el personal de salud; v) dar mayor capacidad de acción a los pacientes y a las comunidades, y vi) favorecer y promover las investigaciones.

Ejecución de la estrategia Alto a la Tuberculosis

Expansión y mejora del DOTS

9. En 2006, el DOTS se estaba ejecutando en 184 países que albergaban el 99% de los casos de tuberculosis y el 93% de la población mundial. En ese año, los programas de DOTS notificaron un total de 4,9 millones de nuevos casos de tuberculosis (un 98% del total de 5,1 millones de casos nuevos notificados en todo el mundo), entre ellos 2,5 millones de nuevos casos bacilíferos (un 99% del total de nuevos casos bacilíferos notificados en todo el mundo). Entre 1995, cuando comenzaron los registros fiables, y 2006 los programas de DOTS notificaron un total de 31,8 millones de casos nuevos y recaídas y 15,5 millones de nuevos casos bacilíferos.

Hacer frente a la tuberculosis acompañada de VIH, la tuberculosis multirresistente y otros problemas

10. Se ha avanzado considerablemente en la realización de pruebas de detección del VIH entre pacientes de tuberculosis, así como en la administración de tratamiento preventivo con cotrimoxazol y tratamiento antirretroviral (TAR) a los pacientes de tuberculosis VIH-positivos.
11. En 2006 casi 700 000 pacientes se sometieron a las pruebas de detección del VIH en todos los países

notificantes, frente a los 470 000 de 2005 y los 22 000 de 2002. La cifra de 2006 equivale al 12% de los casos de tuberculosis notificados en todo el mundo, y al 22% de los casos notificados en la Región de África. En los 11 países africanos con más del 50% de los casos de tuberculosis VIH-positivos del mundo y que notificaron datos todos los años comprendidos entre 2002 y 2006, el porcentaje de casos notificados que fueron sometidos a pruebas de detección se cuadruplicó, del 8% al 35%. Rwanda (76%), Malawi (64%) y Kenya (60%) alcanzaron las tasas más altas de realización de pruebas de detección y con ello se situaron por delante de la meta del 51% fijada en el Plan Mundial para la Región de África.

12. El número de pacientes de tuberculosis VIH-positivos a los que se administró profilaxis tratados con cotrimoxazol se elevó a 147 000 en 2006, lo que equivale al 78% de los pacientes tuberculosos con VIH que se detectaron gracias a las pruebas, y es 2,5 veces mayor que los 58 000 pacientes tratados con cotrimoxazol en 2005. La cifra de los que empezaron la profilaxis con cotrimoxazol no llega a los 0,5 millones indicados en el Plan Mundial para 2006; podría aumentar si más países emularan las elevadas tasas de realización de pruebas de detección de países como Rwanda, Malawi y Kenya.

13. El número de pacientes de tuberculosis VIH-positivos participantes en el TAR fue de 67 000 en 2006, más del doble de los 29 000 notificados en 2005 y siete veces los 9800 notificados en 2004, aunque no se llegó a la meta de 220 000 indicada en el Plan Mundial para 2006. La proporción de pacientes de tuberculosis con diagnóstico positivo de VIH inscritos en el TAR fue del 41% frente a la meta del 44% del Plan Mundial para 2006. Como con la profilaxis con cotrimoxazol, una de las razones de que las cifras no alcancen las previstas en el Plan Mundial es que las tasas de realización de pruebas de detección del VIH aún no son lo bastante altas.

14. La ejecución de intervenciones para reducir la carga de la tuberculosis entre las personas VIH-positivas estuvo muy por debajo de lo previsto en el Plan Mundial para 2006. La meta del Plan Mundial para 2006 consistía en someter a 11 millones de personas VIH-positivas a pruebas de detección de la tuberculosis; la cifra real comunicada fue de 314 211. Sólo 27 000 VIH-positivos sin tuberculosis activa comenzaron a recibir tratamiento preventivo intermitente (el 0,1% de los 33 millones de personas que se estima están infectadas por el VIH), casi todos ellos en Botswana.

15. En 2006 se notificó un total de 23 353 casos de tuberculosis multirresistente, de los cuales algo más de la mitad se encontraban en la Región de Europa. De esos casos notificados, sólo se sabe con seguridad que han comenzado un tratamiento que cumple las directrices de la OMS los 2032 casos notificados por proyectos y programas aprobados por el Comité Luz Verde.

16. La cifra total de casos de tuberculosis multirresistente que los países prevén que comenzarán el tratamiento en 2007 y 2008 es de unos 50 000 en ambos años. Las proyecciones para 2008 son muy inferiores a la meta de 98 000 fijada en el Plan Mundial de Respuesta ante la Tuberculosis Multirresistente y Extremadamente Resistente. El mayor retraso se observa en las Regiones de Europa, Asia Sudoriental y Pacífico Occidental, y dentro de esas regiones en China y la India. Se necesita proceder a una importante expansión de servicios que cumplan las normas establecidas en las directrices de la OMS.

Fortalecimiento de los sistemas de salud: involucrar a todo el personal de salud

17. Actualmente, la ejecución de los componentes 3 a 6 de la estrategia Alto a la Tuberculosis no se comprende tan bien como la de los componentes 1 y 2, pues los datos disponibles son más limitados.

18. En la esfera del fortalecimiento de los sistemas de salud (componente 3), el diagnóstico y el tratamiento de la tuberculosis están plenamente integrados en los servicios de salud generales en la mayoría de los países. La relación con el sector sanitario en general o con los marcos de planificación del desarrollo es variable, pero el alineamiento con los enfoques sectoriales fue comparativamente bueno entre los países informantes. El enfoque práctico de la salud pulmonar se está ensayando o ampliando a escala nacional en 15 países y figura en los planes de 72 países. Muchos países carecen de planes integrales de desarrollo de recursos humanos o de una evaluación reciente de las necesidades de dotación de personal.

19. Entre los 22 países con alta carga de morbilidad, que colectivamente albergan el 80% de los casos de tuberculosis en el mundo, 14 están expandiendo los enfoques de asociación publicoprivada o entre entidades públicas para hacer participar a todo el abanico de proveedores de atención de salud en la lucha contra la tuberculosis, y siete han utilizado las normas internacionales de tratamiento de la tuberculosis para facilitar ese proceso. Sin embargo, la contribución de distintos proveedores a la detección, el envío y el tratamiento de casos seguirá estando poco clara hasta que se difundan más ampliamente los formularios de notificación y registro recomendados por la OMS.

Dar más capacidad de acción a los pacientes y las comunidades; permitir y promover las investigaciones

20. Se han realizado encuestas sobre conocimientos, actitudes y prácticas en 13 de los 22 países con alta

carga de morbilidad para ayudar con el diseño de las actividades de promoción, comunicación y movilización social. Esas actividades, no obstante, aún resultan bastante nuevas en algunos países, que necesitan mucha más orientación y apoyo técnico. Veinte de los 22 países con alta carga de morbilidad han informado de la participación de las comunidades en la atención de la tuberculosis. Cuarenta y nueve países informaron de investigaciones operacionales (parte del componente 6).

Financiación de la lucha contra la tuberculosis

21. Los presupuestos totales de los programas nacionales de lucha contra la tuberculosis en los países con alta carga de morbilidad se elevan a US$ 1800 millones en 2008, frente a US$ 500 millones en 2002, aunque permanecen casi al mismo nivel que los presupuestos de 2007; los presupuestos de los programas nacionales de los 90 países con el 91% de los casos mundiales de tuberculosis que comunicaron datos completos suman US$ 2300 millones en 2008. Los presupuestos son típicamente equivalentes a unos US$ 100–US$ 300 por paciente tratado.

22. El DOTS representa la parte más importante de los presupuestos de los programas antituberculosos nacionales en casi todos los países. Los presupuestos para el diagnóstico y el tratamiento de la tuberculosis multirresistente han crecido de manera muy llamativa en la Federación de Rusia (US$ 267 millones) y Sudáfrica (US$ 239 millones); tomados conjuntamente, los presupuestos de esos dos países representan el 93% de los presupuestos para combatir la tuberculosis multirresistente comunicados por los países con alta carga de morbilidad.

23. Salvo raras excepciones, los presupuestos de los programas nacionales de lucha contra la tuberculosis no incluyen los costos asociados al uso de recursos del sistema de salud general, como personal e infraestructura para combatir la enfermedad. Cuando esos costos se suman a los presupuestos de los programas, se estima que el costo total de la lucha contra la tuberculosis en los países con alta carga de morbilidad alcanzará los US$ 2300 millones en 2008 (desde US$ 600 millones en 2002), y US$ 3100 millones en los 90 países que presentan informes. Los costos por paciente tratado suelen ser de US$ 100–US$ 400.

24. En cuanto a los 22 países con alta carga de morbilidad, los presupuestos de los programas nacionales de lucha y nuestras estimaciones de los costos totales de las actividades de control de la tuberculosis previstas para 2008 son muy parecidos a los de 2007 en todos los países salvo cinco (Brasil, Etiopía, Mozambique, Nigeria y República Unida de Tanzanía). Este estancamiento resulta preocupante, pues sugiere que la desaceleración en la detección de casos que tuvo lugar entre 2005 y 2006 podría prolongarse en 2008.

25. En 2008, los fondos destinados a la lucha contra la tuberculosis han crecido hasta US$ 2000 millones en los países con alta carga de morbilidad y US$ 2700 millones en los 90 países informantes. El aumento de fondos procede principalmente de fuentes nacionales en el Brasil, China, la Federación de Rusia y Sudáfrica, y de donaciones del Fondo Mundial en otros países. En todos los países con alta carga de morbilidad, los gobiernos sufragarán en 2008 el 73% de los costos totales de la lucha antituberculosa y las donaciones cubrirán el 13% (incluidos US$ 200 millones del Fondo Mundial). Los déficits de financiación comunicados para 2008 alcanzan un total de US$ 328 millones entre los países con alta carga de morbilidad (14% de los costos totales) y US$ 385 millones en los 90 países informantes (13% de los costos totales). Sólo cinco países con alta carga de morbilidad informaron de que no tenían déficit de financiación en 2008 (Bangladesh, Etiopía, India, Indonesia y Sudáfrica).

26. Los déficits de financiación comunicados por los países serían mayores si los planes y las evaluaciones de las necesidades de fondos en los países concordaran plenamente con el Plan Mundial. En 2008, la diferencia entre el total de fondos disponibles comunicado por los países y las necesidades totales de financiación expuestas en el Plan Mundial es de US$ 800 millones en los países con alta carga de morbilidad y US$ 900 millones en los 90 países informantes. La discrepancia se debe sobre todo a los presupuestos más elevados para la tuberculosis multirresistente (Asia Sudoriental y Pacífico Occidental), actividades colaborativas contra la tuberculosis y el VIH (África y Asia Sudoriental) y actividades de promoción, comunicación y movilización social (todas las regiones) en el Plan Mundial.

27. Varios países tienen planes y presupuestos bien alineados con el Plan Mundial. Muchos países de África han emprendido, y en algunos casos terminado, la elaboración de planes y presupuestos a plazo medio utilizando un instrumento de la OMS diseñado para apoyar la formulación de planes y presupuestos de acuerdo con las metas establecidas en el Plan Mundial. La terminación de estos trabajos y su expansión a otros países son ahora cruciales y deben constituir la base de esfuerzos mayores para movilizar los recursos necesarios tanto de procedencia interna como de donantes.

Progresos realizados hacia las metas en materia de resultados

28. La tasa de detección de nuevos casos bacilíferos en los programas de DOTS se estima en un 61% a escala mundial en 2006 (es decir, los 2,5 millones de casos

notificados divididos por los 4,1 millones de casos estimados), lo que representa un ligero aumento con respecto a 2005 pero no llega a la meta del 70%. La Región del Pacífico Occidental (77%) y 77 países alcanzaron la meta del 70%; la Región de las Américas (69%) y la Región de Asia Sudoriental (67%) se acercaron a ella. Las Regiones del Mediterráneo Oriental (52%), Europa (52%) y África (46%) estuvieron mucho más lejos de la meta. La Región de Europa podría alcanzar la meta aumentando tanto la cobertura de la población con DOTS como el uso de microscopia de frotis.

29. Es posible que la tasa estimada de detección de casos en la Región de África en 2006 sea inferior a la real, dada la dificultad de separar el efecto de la mejora en los resultados de los programas del efecto de la epidemia de VIH en las notificaciones. Los trabajos analíticos como los realizados recientemente en Kenya y las nuevas encuestas de prevalencia de la enfermedad previstas en varios países africanos ayudarán a mejorar las estimaciones actuales.

30. La tasa de éxito terapéutico de los programas DOTS fue del 84,7% en 2005, prácticamente la meta del 85%. Se trata de la tasa más elevada desde que comenzaron las observaciones fiables, a pesar del aumento del tamaño de la cohorte evaluada a 2,4 millones de pacientes en 2005. Las tasas de éxito terapéutico fueron particularmente bajas en las Regiones de Europa (71%), África (76%) y las Américas (78%). Las Regiones de Asia Sudoriental y del Pacífico Occidental y 58 países alcanzaron la meta del 85%; la Región del Mediterráneo Oriental se acercó a ella (83%).

31. De acuerdo con los datos y las estimaciones actuales, la Región del Pacífico Occidental llegó tanto a la meta de detección de casos (70%) en 2006 como a la meta de éxito terapéutico (85%) en 2005, al igual que otros 32 países, incluidos cinco países con alta carga de morbilidad: China, Indonesia, Myanmar, Filipinas y Viet Nam.

32. El avance en la detección de casos se desaceleró en todo el mundo entre 2005 y 2006, se estancó en China y la India, y no llegó a la cifra del 65% fijada en el Plan Mundial para 2006. La Región de África, China y la India colectivamente albergan al 69% de los casos no detectados.

Avance hacia las metas de impacto

33. A escala mundial, la incidencia de la tuberculosis por 100 000 habitantes está disminuyendo lentamente (–0,6% entre 2005 y 2006), tras haber alcanzado un máximo en torno a 2003. En 2006, la incidencia era aproximadamente estable en la Región de Europa y disminuía lentamente en todas las demás regiones de la OMS (desde el 0,5% entre 2005 y 2006 en la Región de Asia Sudoriental hasta el 3,2% entre 2005 y 2006 en la Región de las Américas). La meta 6.C del ODM 6, detener e invertir la incidencia de la tuberculosis, se conseguirá bastante antes de la meta fijada para 2015 si se mantiene la tendencia mundial.

34. Las tasas de prevalencia y de mortalidad están disminuyendo, y más deprisa que la incidencia de la tuberculosis. A escala mundial, las tasas de prevalencia cayeron en un 2,8% entre 2005 y 2006, hasta 219 por 100 000 habitantes (en comparación con la meta de 147 por 100 000 habitantes en 2015). Las tasas de mortalidad se redujeron en un 2,6% entre 2005 y 2006, hasta 25 por 100 000 habitantes (en comparación con la meta de 14 por 100 000 habitantes en 2015). Estas estimaciones y metas incluyen casos y muertes en personas VIH-positivas.

35. Si se mantienen las tendencias de las tasas de prevalencia y de mortalidad de los últimos cinco años, las metas de la Alianza Alto a la Tuberculosis de reducir a la mitad esas tasas antes de 2015 en relación con las cifras de 1990 podrían conseguirse en las Regiones de Asia Sudoriental, el Pacífico Occidental y el Mediterráneo Oriental, así como en la Región de las Américas. No es probable, sin embargo, que se alcancen las metas a escala mundial, dado que las Regiones de África y Europa se encuentran alejadas de ellas. Por ejemplo, en la Región de África se estima una tasa de mortalidad de 83 por 100 000 habitantes en 2006, frente a la meta de 21 prevista para la región.

36. Mientras que los programas DOTS están reduciendo las tasas de mortalidad y de prevalencia, un nuevo análisis ecológico sugiere que aún no han ejercido un efecto importante en la transmisión de la tuberculosis ni en las tendencias de su incidencia en todo el mundo. Si esto es así, el reto consiste en demostrar que el diagnóstico de la tuberculosis activa puede hacerse con antelación suficiente, y que las tasas de éxito terapéutico pueden ser lo bastante altas como para tener un impacto considerable en la incidencia a una escala geográfica importante. Cuanto mayor sea el impacto del control de la tuberculosis en la incidencia, más probabilidad habrá de que las tasas de prevalencia y de mortalidad sean reducidas a la mitad antes del plazo de 2015 fijado en el ODM.

Introduction

This report is the twelfth annual report on global control of tuberculosis (TB) published by the World Health Organization (WHO) in a series that started in 1997. It is based on data reported to WHO via its standard data collection form by 202 out of 212 countries and territories in 2007, and on the series of data collected from these countries and territories annually since 1996.

Using these data, we present our latest assessment of the epidemiological burden of TB as well as progress towards targets for global TB control that have been established within the context of the Millennium Development Goals (MDGs) and by the World Health Assembly (WHA) and Stop TB Partnership.[1,2,3,4] The impact targets are to halt and reverse incidence by 2015 (MDG 6 Target 6.C) and to halve prevalence and death rates by 2015 compared with 1990. The outcome targets are to detect at least 70% of new smear-positive cases and to successfully treat 85% of those cases that are detected.

The Stop TB Strategy launched by WHO in 2006 describes the interventions that should be implemented to achieve the 2015 targets, and the Global Plan to Stop TB details the scale at which many of these interventions should be provided.[5,6] The report thus includes analysis of the extent to which the components and subcomponents of the strategy are being implemented, including comparisons with the Global Plan. With implementation of the Stop TB Strategy at the scale needed to achieve global targets dependent on accurate budgeting of the funding required backed up by resource mobilization and effective spending, the third major topic of the report is financing for TB control.

Following these three major themes, the report is structured in three chapters, as follows:

- *The global TB epidemic and progress in TB control*. This chapter includes estimates of incidence, prevalence and mortality in 2006 and of trends in incidence since 1990; case notifications reported for 2006; estimates of the case detection rate for new smear-positive cases as well as all types of case between 1995 (when reliable monitoring began) and 2006; treatment outcomes between 1994 and 2005 for new and re-treatment cases; and analysis and discussion of progress towards the MDG, Stop TB Partnership and WHA targets. All data are presented globally, for each WHO region and for each of the 22 high-burden countries (HBCs) that collectively account for 80% of TB cases globally.
- *Implementing the Stop TB Strategy*. This chapter describes and assesses implementation of each of the six major components of the strategy as well as their subcomponents. The major components are: (i) DOTS implementation; (ii) addressing TB/HIV, MDR-TB and other challenges; (iii) contributing to health system strengthening; (iv) engaging all care providers; (v) empowering patients, and communities; and (vi) promoting research. The chapter gives most attention to DOTS, collaborative TB/HIV activities, and the diagnosis of MDR-TB and treatment of MDR-TB patients, since the quantity and quality of data for these was comparatively high.
- *Financing TB control*. This chapter presents and discusses data on the following topics: (i) the budgets of national TB control programmes (NTPs) and available funding and funding gaps for these budgets between 2002 (when reliable monitoring began) and 2008 for the 22 HBCs, and for the 90 countries (with 91% of the world's estimated cases) that reported complete data for 2008; (ii) the total costs of TB control, which include NTP budgets plus the costs associated with use of general health system staff and infrastructure not usually included in NTP budgets, again for the 22 HBCs for 2002–2008 and for all 90 countries that reported complete data for 2008; (iii) comparisons of funding needs set out in the Global Plan with those based on country reports; (iv) per patient costs and budgets; (v) expenditures compared with available funding and changes in the number of patients treated; (vi) the contribution of the Global Fund to financing for TB control; and (vii) a discussion of why funding gaps for TB control persist.

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

2 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).

3 *Stop Tuberculosis Initiative. Report by the Director-General*. Fifty-third World Health Assembly. Geneva, 15–20 May 2000 (A53/5, 5 May 2000).

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

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

6 *The Global Plan to Stop TB, 2006–2015*. WHO and Stop TB Partnership, 2006.

Each chapter begins with a summary of the data reported to WHO in 2007, and ends with a short summary of major findings. The main part of the report finishes with a short summary of the major conclusions from all three chapters.

The remainder of the report consists of four annexes. Three of these annexes (Annex 1, Annex 3 and Annex 4) provide detailed regional or country-specific data. Annex 1 comprises 22 country profiles (one for each HBC); each profile includes epidemiological and financial data as well as an assessment of how the Stop TB Strategy is being implemented. Annex 3 includes country-specific data for 1990–2006 for surveillance and epidemiological indicators discussed in the main part of the report, i.e. case notifications and treatment outcomes, and estimates of incidence, prevalence and mortality. Annex 4 lists the surveys of the prevalence of TB disease and infection that have been conducted in the past and that are planned in the near future, as well as the countries for which mortality data are available in a central WHO database. Annex 2 explains the methods used to produce the main findings included in Chapters 1, 2 and 3.

In short, *Global tuberculosis control 2008* presents an overview of progress in reducing the burden of TB worldwide.

CHAPTER 1

The global TB epidemic and progress in control

The status of the TB epidemic and progress in control of the disease have been assessed by WHO annually since 1997. This assessment has included estimates of TB incidence, prevalence and mortality from 1990 onwards; analysis of case notification data from around 200 (of 212) countries and territories since 1995 (when reliable records began); and analysis of progress towards the global targets for case detection and treatment success established by the World Health Assembly in 1991. More recently, it has also included assessment of progress towards the newer impact targets related to incidence, prevalence and mortality that have been set within the framework of the Millennium Development Goals (MDGs) and by the Stop TB Partnership.

This chapter provides our current assessment of the state of the TB epidemic and progress towards targets, using the most recent data reported to WHO in 2007 as well as new analytical work on the broader determinants of the TB epidemic conducted in 2007. It is structured in eight major sections as follows:

- *Goals, targets and indicators for TB control*. This section explains the targets and related indicators for global TB control that have been set for 2005, 2015 and 2050.
- *Data reported to WHO in 2007*. This section describes the data on case notifications reported for 2006 and those for treatment outcomes reported for 2005, the years for which data were requested by WHO in 2007.
- *Incidence in 2006 and trends since 1990*. This section provides estimates of the number of new cases of TB in 2006, including estimates of the number of TB cases that were HIV-positive. It also includes analysis of the trend in incidence since 1990 and its relationship with trends in HIV prevalence in the general population.
- *Case notifications*. This section summarizes the total number of TB cases notified in 2006 at global as well as regional and country levels.
- *Case detection rates*. Combining case notification data for 2006 with the estimates of incidence for 2006, this section presents estimates of the rates of case detection in 2006, at global and regional levels. Trends since 1995, and their implications for progress towards the global target of 70%, are discussed.
- *Treatment outcomes in DOTS programmes*. This section covers results on outcomes of treatment for all new cases and re-treatment cases (2005 cohorts) and progress towards the global target of an 85% treatment success rate.
- *Progress towards targets for case detection and cure*. This section reports the number of countries and regions that have met both targets, as well as the number that have reached the milestones of a 50% case detection rate and a 70% treatment success rate.
- *Progress towards impact targets included in the Millennium Development Goals*. This section assesses the current status of progress towards targets for reductions in incidence, prevalence and mortality set for 2015, including a new (and still developing) analysis of the extent to which TB control efforts or broader determinants of TB epidemiology are driving the global TB epidemic.

Throughout the chapter, particular attention is given to the 22 high-burden countries (HBCs) that collectively account for around 80% of TB cases globally. This is because these countries are the focus of intensive efforts to implement the Stop TB Strategy (see also **Chapter 2**). However, additional data for all countries are provided in **Annex 3**. Further details for the HBCs are also available in **Annex 1**. The methods used to produce the results presented in this chapter are explained in **Annex 2**.

1.1 Goals, targets and indicators for TB control

Global targets and indicators for TB control have been developed within the framework of the MDGs as well as by the Stop TB Partnership and WHO's World Health Assembly (**Table 1.1**).[1,2,3] The impact targets are to halt and reverse TB incidence by 2015 and to halve prevalence and death rates by 2015 compared with a baseline of 1990. The incidence target is MDG Target 6.C, while the targets for reducing prevalence and death rates

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

[2] *The Global Plan to Stop TB, 2006–2015*. Geneva, Stop TB Partnership and World Health Organization, 2006 (WHO/HTM/STB/2006.35).

[3] 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).

TABLE 1.1

Goals, targets and indicators for TB control

MILLENNIUM DEVELOPMENT GOAL 6

Combat HIV/AIDS, malaria and other diseases

Target 6.C:	Have halted by 2015 and begun to reverse the incidence of malaria and other major diseases
Indicator 6.8:	Incidence, prevalence and death rates associated with tuberculosis
Indicator 6.9:	Proportion of tuberculosis cases detected and cured under DOTS (the internationally recommended strategy for TB control)

STOP TB PARTNERSHIP TARGETS

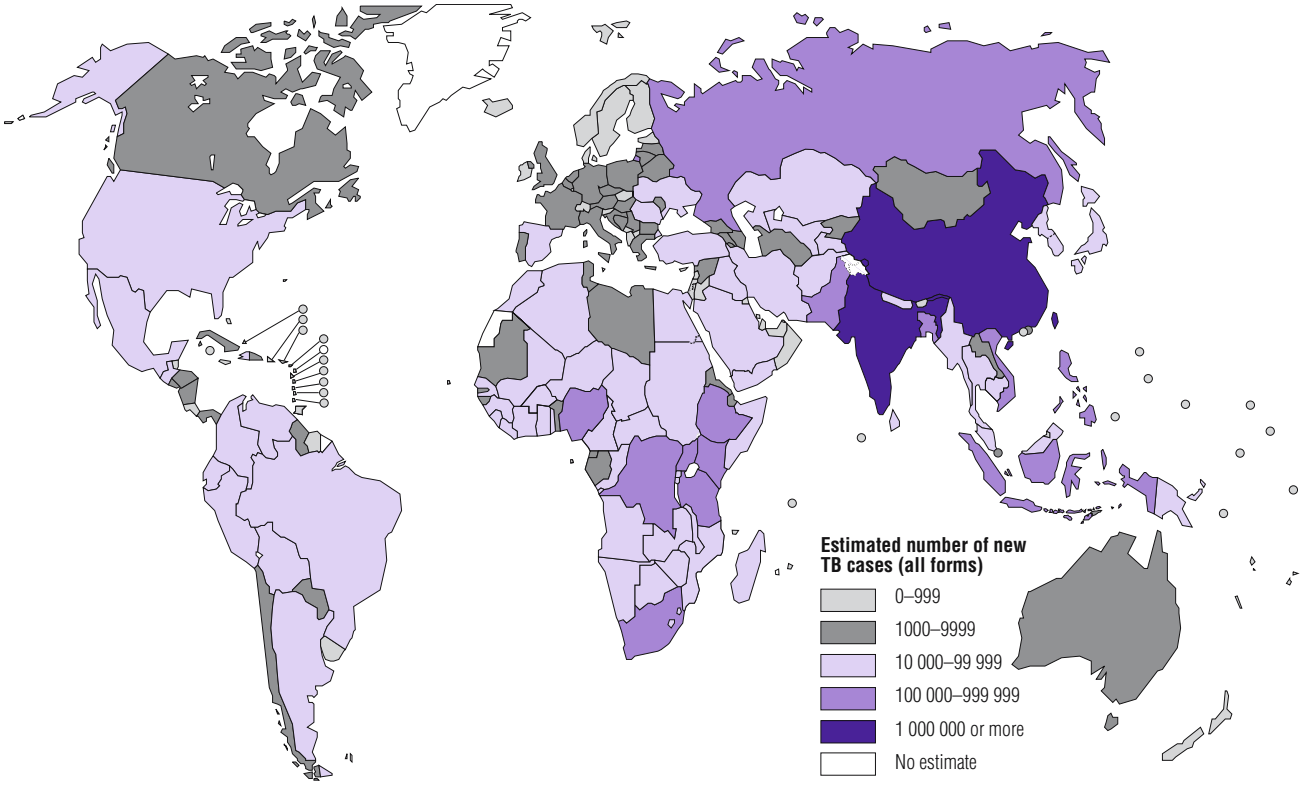
By 2005:	At least 70% of people with sputum smear-positive TB will be diagnosed (i.e. under the DOTS strategy), and at least 85% cured. These are targets set by the World Health Assembly of WHO.
By 2015:	The global burden of TB (per capita prevalence and death rates) will be reduced by 50% relative to 1990 levels.
By 2050:	The global incidence of active TB will be less than 1 case per million population per year.

were based on a resolution of the year 2000 meeting of the Group of Eight (G8) industrialized countries, held in Okinawa, Japan. The outcome targets, which are related to DOTS implementation, are to achieve a case detection rate of at least 70% under DOTS and to reach a treatment success rate of at least 85% in DOTS cohorts. These outcome targets were first established by the World Health Assembly in 1991. The ultimate goal of TB elimination by 2050, with the target of less than 1 case per million population, has been set by the Stop TB Partnership.

The Stop TB Strategy, launched by WHO in 2006, sets out the major interventions that should be implemented to achieve the MDG, Stop TB Partnership and World Health Assembly targets. These are divided into six broad components: (i) pursuing high-quality DOTS expansion and enhancement; (ii) addressing TB/HIV, MDR-TB and other challenges; (iii) contributing to health system strengthening; (iv) engaging all care providers; (v) empowering people with TB, and communities; and (vi) enabling and promoting research. The Global Plan to Stop TB, launched by the Stop TB Partnership in 2006, sets out how, and at what scale, the Stop TB Strategy should be implemented over the decade 2006–2015, and the funding requirements.[1] This means that in addition to the targets shown in **Table 1.1**, the Global Plan also

FIGURE 1.1

Estimated number of new TB cases, by country, 2006



[1] *The Global Plan to Stop TB, 2006–2015*. Geneva, Stop TB Partnership and World Health Organization, 2006 (WHO/HTM/STB/2006.35).

TABLE 1.2

Estimated epidemiological burden of TB, 2006

		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	1 151 751	1 933	168	867	75	3 445	299	325	28	1.2
2 China	1 320 864	1 311	99	590	45	2 658	201	201	15	0.3
3 Indonesia	228 864	534	234	240	105	578	253	88	38	0.6
4 South Africa	48 282	454	940	184	382	482	998	105	218	44
5 Nigeria	144 720	450	311	198	137	890	615	117	81	9.6
6 Bangladesh	155 991	351	225	158	101	610	391	70	45	0.0
7 Ethiopia	81 021	306	378	136	168	520	641	68	83	6.3
8 Pakistan	160 943	292	181	131	82	423	263	55	34	0.3
9 Philippines	86 264	248	287	111	129	373	432	39	45	0.1
10 DR Congo	60 644	237	392	105	173	391	645	51	84	9.2
11 Russian Federation	143 221	153	107	68	48	179	125	24	17	3.8
12 Viet Nam	86 206	149	173	66	77	194	225	20	23	5.0
13 Kenya	36 553	141	384	56	153	122	334	26	72	52
14 UR Tanzania	39 459	123	312	53	135	181	459	26	66	18
15 Uganda	29 899	106	355	46	154	168	561	25	84	16
16 Brazil	189 323	94	50	59	31	104	55	7.6	4.0	12
17 Mozambique	20 971	93	443	39	186	131	624	24	117	30
18 Thailand	63 444	90	142	40	62	125	197	13	20	11
19 Myanmar	48 379	83	171	37	76	82	169	6.1	13	2.6
20 Zimbabwe	13 228	74	557	30	227	79	597	17	131	43
21 Cambodia	14 197	71	500	31	220	94	665	13	92	9.6
22 Afghanistan	26 088	42	161	19	73	60	231	8.3	32	0.0
High-burden countries	**4 150 313**	**7 334**	**177**	**3 265**	**79**	**11 889**	**286**	**1 330**	**32**	**11**
AFR	773 792	2 808	363	1 203	155	4 234	547	639	83	22
AMR	899 388	331	37	165	18	398	44	41	4.5	6.4
EMR	544 173	570	105	256	47	826	152	108	20	1.1
EUR	887 455	433	49	194	22	478	54	62	7.0	3.0
SEAR	1 721 049	3 100	180	1 391	81	4 975	289	515	30	1.3
WPR	1 764 231	1 915	109	860	49	3 513	199	291	17	1.2
Global	**6 590 088**	**9 157**	**139**	**4 068**	**62**	**14 424**	**219**	**1 656**	**25**	**7.7**

[a] All estimates include TB in people with HIV. Estimates of incidence, prevalence and mortality in people with HIV are given by country and region in Annex 3, Table A3.1.
[b] Prevalence of HIV in incident TB cases of all ages.

includes input targets (funding required per year) and output targets (e.g. number of patients with MDR-TB who should be treated each year, number of TB patients to be tested for HIV, number of HIV-positive TB patients who should be enrolled on antiretroviral therapy (ART)).

This chapter focuses on the five principal indicators that are used to measure the outcomes and impact of TB control: case detection and treatment success rates (outcome indicators), and incidence, prevalence and death rates (impact indicators). An analysis of progress against other targets is provided in **Chapters 2 and 3**.

1.2 Data reported to WHO in 2007

By the end of 2007, 202 of 212 countries and territories had reported case notifications for 2006 and/or treatment outcomes for patients registered in 2005 (**Annex 3**). These countries include 99.6% of the world's population. Reports were submitted by all 22 HBCs. The 10 countries and territories that did not report were the Bahamas, the British Virgin Islands, Chad, Equatorial Guinea, Monaco, San Marino, Senegal, Seychelles, the United States Virgin Islands and Wallis and Futuna Islands.

1.3 TB incidence in 2006 and trends since 1990

1.3.1 Estimated incidence in 2006

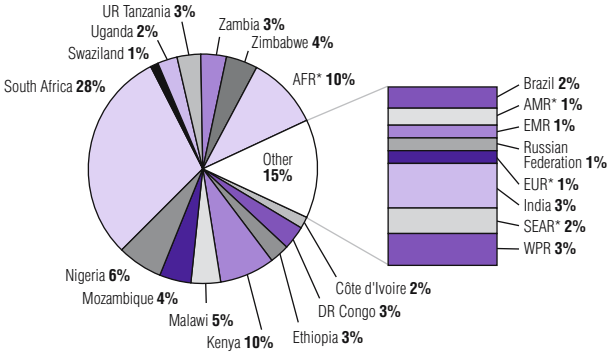
Based on surveillance and survey data (**Annex 3; Annex 4**), we estimate that 9.2 million new cases of TB occurred in 2006 (139 per 100 000), including 4.1 million (62 per 100 000) new smear-positive cases (**Table 1.2; Figure 1.1**). These numbers include TB in HIV-positive people. India, China, Indonesia, South Africa and Nigeria rank first to fifth in terms of incident cases; the estimated numbers of cases in these and other HBCs in 2006 are also shown in **Table 1.2**. Asia (South-East Asia and Western Pacific regions) accounts for 55% of global cases, and Africa accounts for 31%; the other three regions account for relatively small fractions of global cases.

Among the 9.2 million new cases of TB in 2006, we estimate that around 709 000 (7.7%) were HIV-positive. This estimate is based on the global estimates of HIV prevalence among the general population (all ages) published by the Joint United Nations Programme on HIV/AIDS (UNAIDS) and WHO in December 2007,[1] as well as

[1] *2007 AIDS epidemic update*. Geneva, Joint United Nations Programme on HIV/AIDS and World Health Organization, 2007 (UNAIDS/07.27E/JC1322E).

FIGURE 1.2

Geographical distribution of estimated HIV-positive TB cases, 2006. 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.



data on the relative risk of developing TB in HIV-positive and HIV-negative people (see **Annex 2** for further details on methods). As in previous years, the African Region accounts for most HIV-positive cases: 85% in 2006 (**Figure 1.2**). Most of the remaining cases (6%) are in the South-East Asia Region, mainly in India. Some African countries account for a strikingly large number of cases relative to their population. South Africa, for example, has 0.7% of the world's population but 28% of the global number of HIV-positive TB cases and 33% of HIV-positive cases in the African Region.

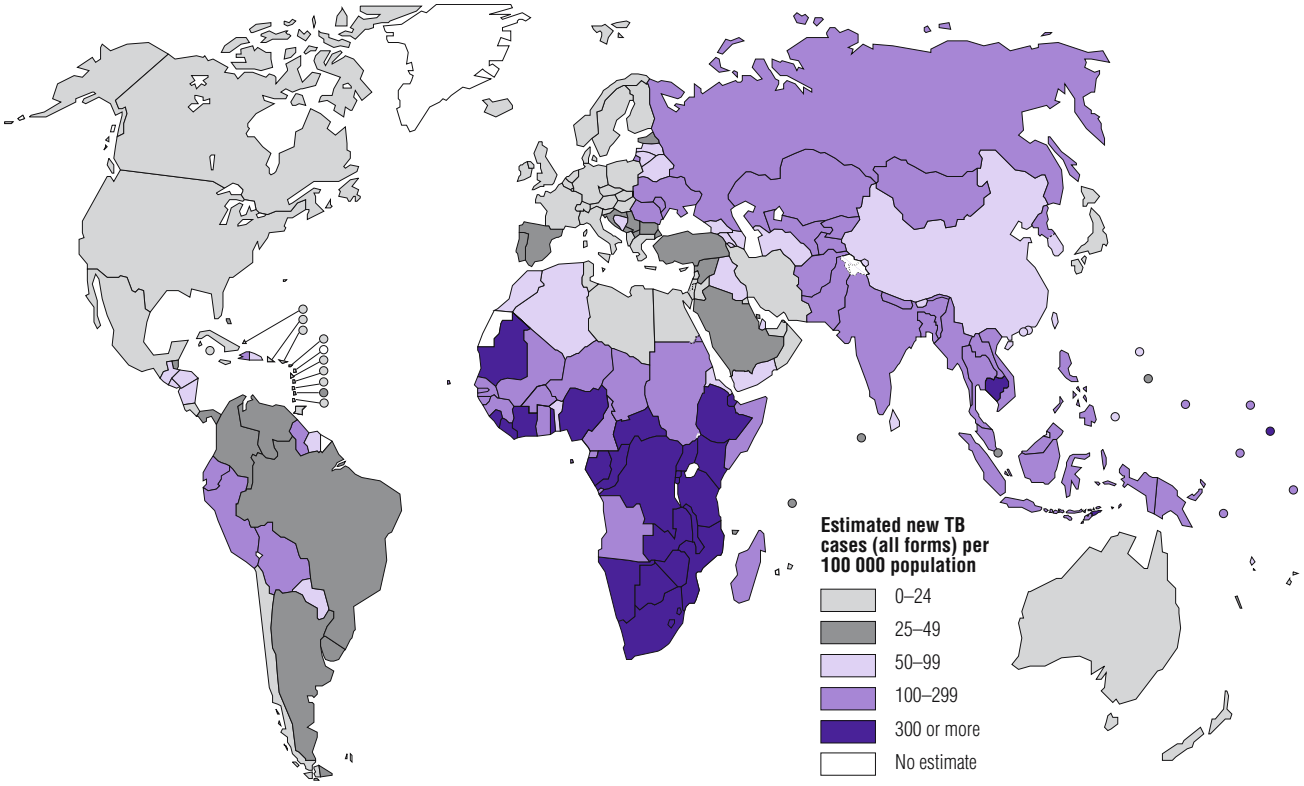
The magnitude of the TB burden within countries can also be expressed as the number of incident cases per 100 000 population (**Figure 1.3**). Among the 15 countries with the highest estimated TB incidence rates, 12 are in Africa (**Figure 1.4**). The high incidence rates estimated for the African countries 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 1.4**). **Figure 1.5** maps the distribution of HIV among TB patients, showing the relatively high rates in countries of eastern and southern Africa.

1.3.2 Trends in incidence

The estimated average change in TB incidence (all forms) per 100 000 population over the 10-year period 1997–2006, based on case notifications reported by 134 countries that were judged to have a reliable series of

FIGURE 1.3

Estimated TB incidence rates, by country, 2006



data, was between –10% and +10% in all countries except for New Caledonia (**Figure 1.6**). Data from 93 countries indicate that incidence per capita was falling, albeit slowly; in 66 of these 93 countries the rate of decline was between zero and 6% per year.

By using estimates of the proportion of cases detected in each country, and by matching countries without trend data to those with such data, we can build a picture of incidence trends (all forms of TB) for nine epidemiologically different subregions of the world for the 17-year period 1990–2006 (**Figure 1.7**). The global incidence of TB per capita peaked around 2003 and appears to have stabilized or begun to decline. Incidence per 100 000 population is approximately stable in the European Region and is falling in all the five other WHO regions. It is also falling in all nine subregions, with the possible exception of African countries with low HIV prevalence (Africa – low HIV). The downward trend was fastest in the Latin America and Caribbean subregion (–3.4% per year, 2001–2006).

Globally, the slow decline in incidence per capita is more than offset by population growth. This means that the number of new cases was still increasing between 2005 and 2006, from 9.1 to 9.2 million (an increase of 0.6%). The increases in numbers of new cases were in the African, Eastern Mediterranean, European and South-East Asia regions.

In subregion Africa – high HIV, the annual change in TB incidence runs almost parallel with the change in HIV prevalence in the general population. Since 1990, both

FIGURE 1.4

Fifteen countries with the highest estimated TB incidence rates per capita (all forms; grey bars) and corresponding incidence rates of HIV-positive TB cases (purple bars), 2006

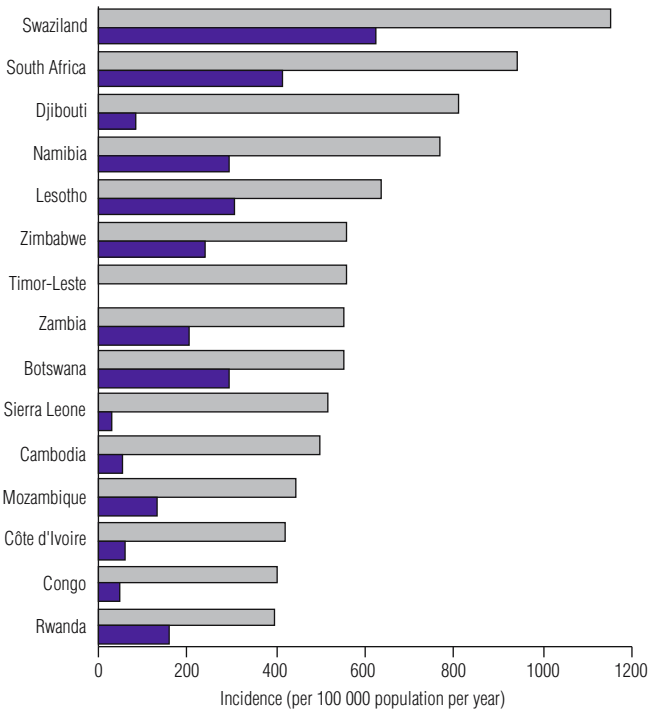


FIGURE 1.5

Estimated HIV prevalence in new TB cases, by country, 2006

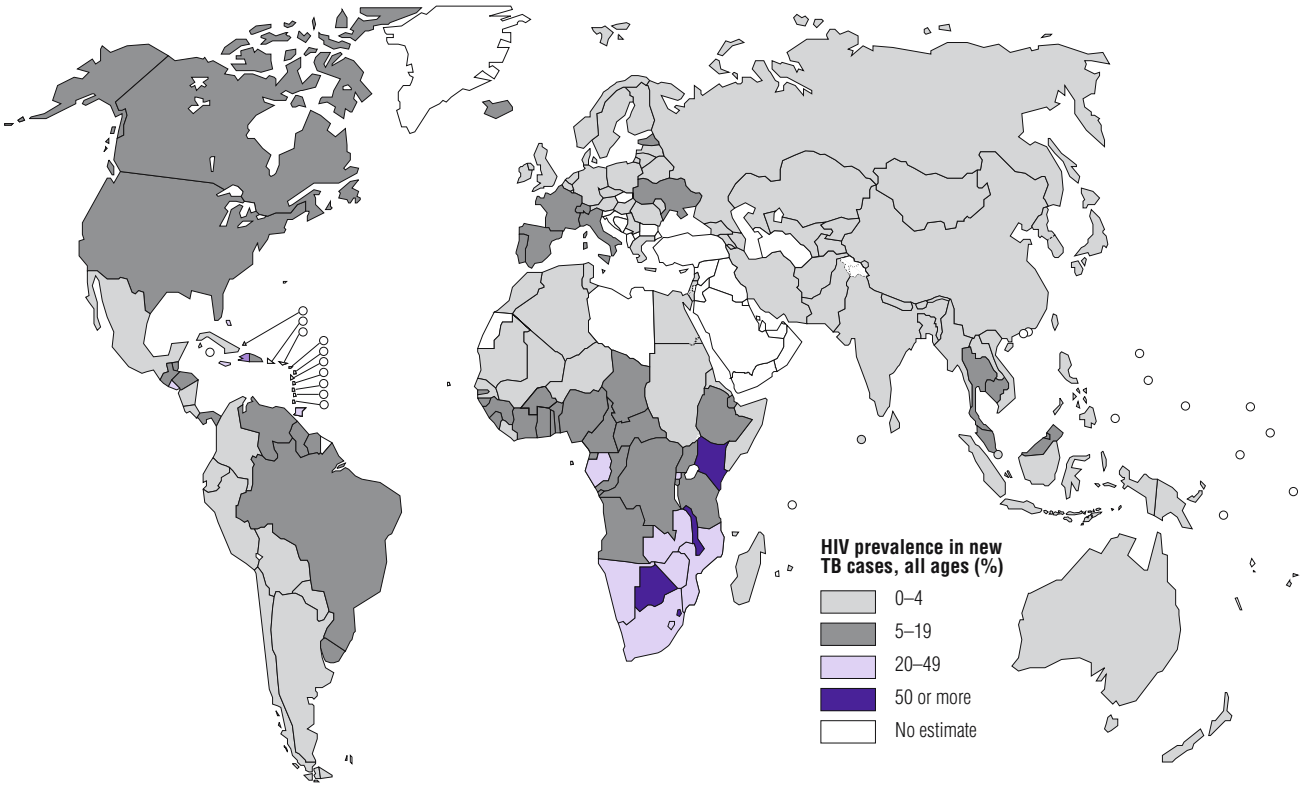
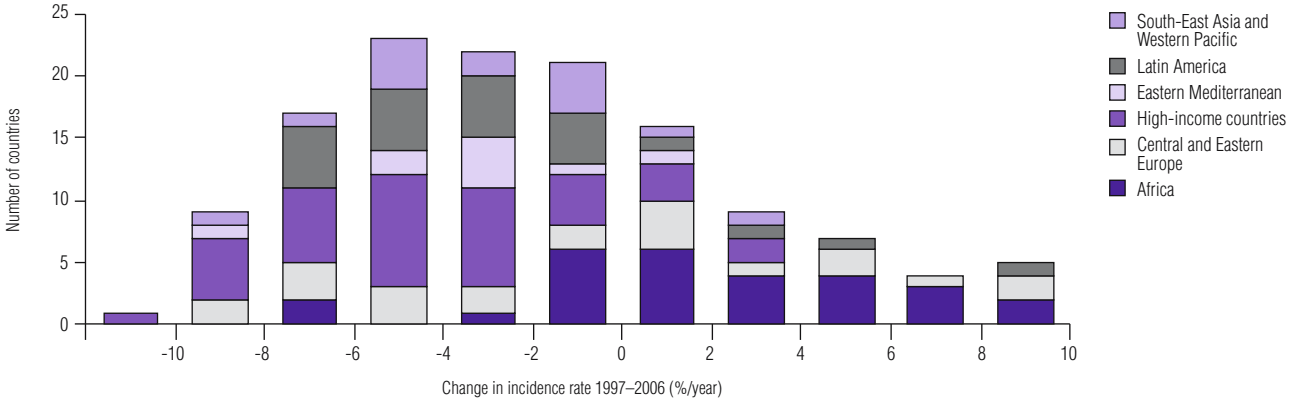


FIGURE 1.6

Frequency distribution of estimated changes in the TB incidence rate for 134 countries in 6 subregions, 1997–2006



HIV prevalence and TB incidence have been increasing more slowly each year and, by 2006, both indicators were falling (**Figure 1.8**). The correspondence between declining HIV prevalence in the general population and reported TB cases is especially close in data from Malawi, the United Republic of Tanzania and Zimbabwe (data not shown).

1.4 Case notifications

The 202 countries reporting to WHO notified 5.4 million new and relapse cases, of which 2.5 million (47%) were new smear-positive cases (**Table 1.3; Figure 1.9**). Of these notifications, 5.3 million were from DOTS areas, including 2.5 million new smear-positive cases. A total of 31.8 million new and relapse cases, and 15.5 million new smear-positive cases, were notified by DOTS programmes in the 12 years between 1995 (when reliable records began) and 2006.

Comparing different parts of the world, the African Region (23%), South-East Asia Region (36%) and Western Pacific Region (25%) together accounted for 83% of all notified new and relapse cases and for similar proportions of new smear-positive cases in 2006. Because DOTS has emphasized diagnosis by sputum smear microscopy, 47% of all new and relapse cases were new smear-positive (approximately 45% expected) in DOTS areas, compared with 30% elsewhere. Among new pulmonary cases reported by DOTS programmes, 58% were new smear-positive (a minimum of 65% expected), compared with 39% elsewhere (**Table 1.3**).

1.5 Case detection rates

1.5.1 Case detection rate, all sources (DOTS and non-DOTS programmes)

The 2.5 million new smear-positive cases notified in 2006 from all sources (i.e. DOTS and non-DOTS programmes) represent 62% of the 4.1 million estimated cases (**Table 1.2, Table 1.3; Annex 3**). This is a small increase from a figure of 60% in 2005, following a slow and linear increase from 35% to 43% between 1995 and 2001 and

FIGURE 1.7 (OPPOSITE)

AFRICA – COUNTRIES WITH HIGH HIV PREVALENCE: **Botswana**, **Burkina Faso**, Burundi, Cameroon, Central African Rep, Chad, Congo, Côte d'Ivoire, Democratic Republic of the Congo, Equatorial Guinea, Ethiopia, **Gabon**, ***Kenya***, **Lesotho**, Liberia, **Malawi**, Mozambique, Namibia, Nigeria, Rwanda, ***South Africa***, **Swaziland**, **Uganda**, **United Republic of 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, **Hungary**, Montenegro, **Poland**, Serbia, **Slovakia**, TFYR Macedonia, **Turkey**.

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

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

HIGH-INCOME COUNTRIES AND TERRITORIES: Andorra, Antigua & Barbuda, **Australia**, Austria, Bahamas, Bahrain, Barbados, **Belgium**, Bermuda, British Virgin Is, Brunei Darussalam, Canada, Cayman Islands, **China Hong Kong SAR**, China Macao SAR, Cyprus, **Czech Rep**, Denmark, Estonia, **Finland**, France, French Polynesia, **Germany**, Greece, Guam, **Iceland**, **Ireland**, Israel, Italy, **Japan**, Kuwait, Luxembourg, Malta, Monaco, Netherlands, Netherlands Antilles, New Caledonia, **New Zealand**, Norway, **Portugal**, **Puerto Rico**, **Qatar**, **Rep. of Korea**, San Marino, **Saudi Arabia**, **Singapore**, **Slovenia**, Spain, **Sweden**, **Switzerland**, Trinidad & Tobago, Turks & Caicos Is, United Arab Emirates, **United Kingdom**, **United States**, US Virgin Is.

LATIN AMERICA: Anguilla, **Argentina**, Belize, **Bolivia**, ***Brazil***, **Chile**, **Colombia**, Costa Rica, **Cuba**, **Dominica**, Dominican Republic, Ecuador, **El Salvador**, **Grenada**, **Guatemala**, Guyana, Haiti, **Honduras**, **Jamaica**, **Mexico**, Montserrat, **Nicaragua**, Panama, **Paraguay**, **Peru**, **St Kitts & Nevis**, **St Lucia**, **St Vincent & the Grenadines**, Suriname, **Uruguay**, **Venezuela**.

SOUTH-EAST ASIA: Bangladesh, **Bhutan**, Democratic People's Republic of Korea, ***India***, Indonesia, Maldives, Myanmar, Nepal, Sri Lanka, Thailand, Timor-Leste.

WESTERN PACIFIC: American Samoa, Cambodia, ***China***, Cook Is, Fiji, Kiribati, Lao PDR, **Malaysia**, Marshall Islands, Micronesia, Mongolia, Nauru, Niue, N Mariana Is, Palau, Papua New Guinea, Philippines, Samoa, Solomon Is, Tokelau, Tonga, Vanuatu, Viet Nam, Wallis & Futuna.

FIGURE 1.7

Trends in estimated TB incidence rates (per 100 000 population per year, all forms, black lines), and the estimated annual change in incidence rates (purple lines), for nine subregions and the world, 1990–2006. For each subregion, series are constructed with data from those countries and territories whose surveillance systems are reliable enough to determine the national and subregional trends in incidence over this period (shown in bold opposite), or for which changes in incidence are assessed on the basis of other data (e.g. death registrations: countries shown in bold italics).

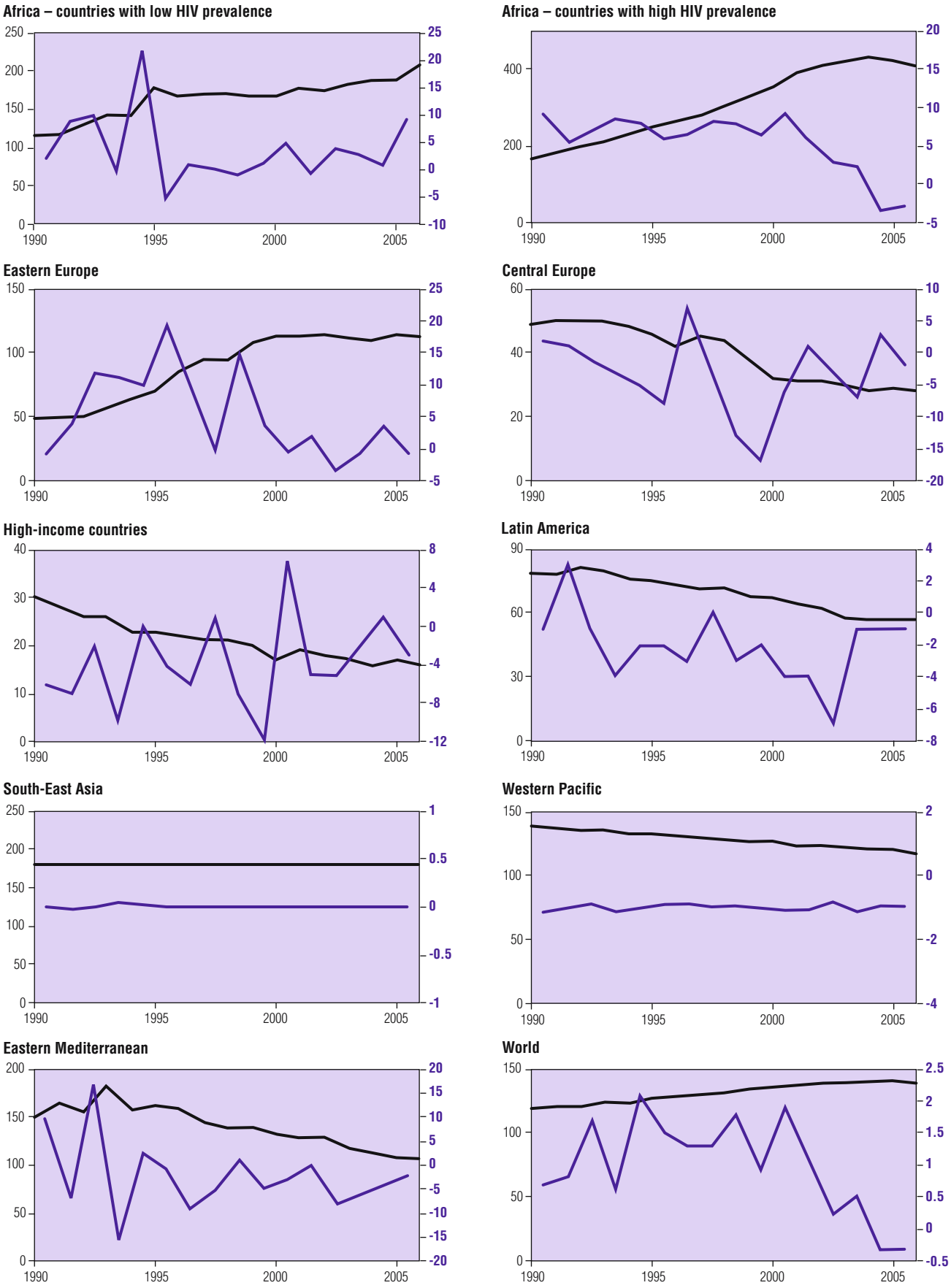
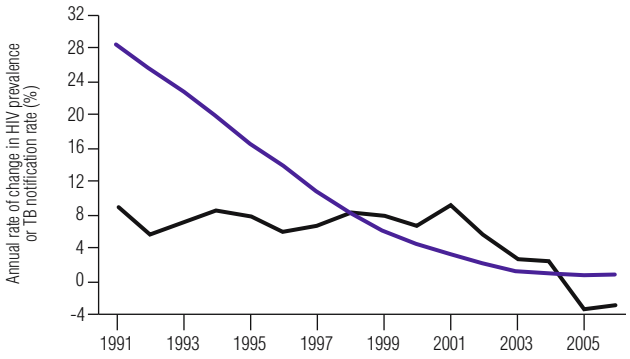


FIGURE 1.8

Annual changes (%) in estimated HIV prevalence rate in the general population, purple line) and the TB case notification rate (black line, see Figure 1.7) for sub-region Africa high-HIV, 1990–2006. Changes are relative to the preceding year. Estimates of HIV prevalence are from UNAIDS (personal communication).



a more rapid increase from 43% to 60% between 2001 and 2005 (Figure 1.10b). The improvement that occurred between 2002 and 2006 was attributable mostly to increases in the numbers of new smear-positive cases reported in the Eastern Mediterranean, South-East Asia and Western Pacific regions (Table 1.4).

The Region of the Americas and the European Region reported the largest numbers of new smear-positive cases from outside DOTS programmes. Counting all smear-positive cases from all sources, the case detection rate in the Region of the Americas was 76% (Table 1.4, Figure 1.11a). Counting all new cases (pulmonary and extrapulmonary) from all sources, the overall case detection rate in Europe was 70% (Figure 1.11b).

The 5.1 million new TB cases (all forms) that were notified from all sources in 2006 represent 56% of the 9.2 million estimated new cases. This is a further improvement from 2005, and continues the upward trend that began in 2002, following several years in which the detection rate had remained stable at 40–50% (Figure 1.10b).

TABLE 1.3

Case notifications, 2006

	NEW AND RELAPSE CASES		NEW CASES						RE-TREATMENT CASES EXCLUDING RELAPSE		OTHER[a]		% OF NEW PULMONARY CASES SMEAR-POSITIVE[b]	
			SMEAR-POSITIVE		SMEAR-NEGATIVE/ UNKNOWN		EXTRA-PULMONARY							
	DOTS	WHOLE COUNTRY	DOTS	WHOLE COUNTRY	DOTS	WHOLE COUNTRY	DOTS	WHOLE COUNTRY	DOTS	WHOLE COUNTRY	DOTS	WHOLE COUNTRY	DOTS	WHOLE COUNTRY
1 India	1 228 589	1 228 827	553 797	–	400 496	400 680	183 203	–	169 138	–	–	–	58	58
2 China	940 889	–	468 291	–	382 492	–	38 294	–	30 492	–	40 007	–	55	–
3 Indonesia	277 589	–	175 320	–	91 029	–	7 013	–	–	–	–	–	66	–
4 South Africa	303 114	–	131 099	–	93 348	–	47 849	–	38 051	–	–	–	58	–
5 Nigeria	70 734	–	39 903	–	25 782	–	2 975	–	3 491	–	–	–	61	–
6 Bangladesh	145 186	–	101 967	–	24 565	–	14 436	–	–	–	–	–	81	–
7 Ethiopia	122 198	–	36 674	–	40 234	–	43 255	–	811	–	–	–	48	–
8 Pakistan	176 678	–	65 253	–	82 519	–	25 745	–	2 389	–	–	–	44	–
9 Philippines	147 305	–	85 740	–	55 964	–	1 445	–	912	–	–	–	61	–
10 DR Congo	95 666	–	63 488	–	10 093	–	18 213	–	1 989	–	484	–	86	–
11 Russian Federation	102 997	124 689	29 989	–	56 713	73 252	9 502	12 059	12 472	27 576	–	–	35	31
12 Viet Nam	97 363	–	56 437	–	16 645	–	17 711	–	921	–	–	–	77	–
13 Kenya	108 342	–	39 154	–	48 338	–	17 443	–	6 892	–	–	–	45	–
14 UR Tanzania	59 282	–	24 724	–	20 120	–	12 621	–	2 818	–	–	–	55	–
15 Uganda	40 782	–	20 364	–	14 940	–	4 027	–	797	–	–	–	58	–
16 Brazil	61 127	77 632	32 463	–	17 688	22 585	8 374	10 656	4 342	5 661	–	–	65	65
17 Mozambique	35 257	–	18 275	–	10 618	–	4 929	–	375	–	–	–	63	–
18 Thailand	56 230	–	29 081	–	17 607	–	7 800	–	1 437	–	1 161	–	62	–
19 Myanmar	122 472	–	40 241	–	42 741	–	34 495	–	3 973	–	–	–	48	–
20 Zimbabwe	44 328	–	12 718	–	23 775	–	6 559	–	3 446	–	–	–	35	–
21 Cambodia	34 660	–	19 294	–	6 875	–	7 800	–	806	–	–	–	74	–
22 Afghanistan	25 475	–	12 468	–	6 809	–	5 066	–	–	–	–	–	65	–
High-burden countries	**4 296 263**	**4 334 698**	**2 056 740**	**2 067 794**	**1 489 391**	**1 511 011**	**518 755**	**523 594**	**285 552**	**301 975**	**41 652**	**41 652**	**58**	**58**
AFR	1 223 008	1 234 260	549 420	555 123	379 631	381 696	220 151	220 643	74 728	75 102	1 479	1 479	59	59
AMR	204 547	224 548	114 412	125178	48 830	54 670	29 824	32 392	9 377	10 803	463	465	70	70
EMR	318 973	322 306	131 820	131 882	113 401	115 040	64 921	66 543	3 474	3 474	17	17	54	53
EUR	310 156	359 735	100 102	109 901	142 303	170 786	45 579	56 363	41 548	61 126	141	3 091	41	39
SEAR	1 920 371	1 920 644	938 572	938 637	609 499	609 705	261 837	261 839	182 640	182 640	1 382	1 389	61	61
WPR	1 297 078	1 331 333	662 152	671254	488 956	506 031	79 672	86 136	36 571	40 752	40 997	44 288	58	57
Global	**5 274 133**	**5 392 826**	**2 496 478**	**2 531 975**	**1 782 620**	**1 837 928**	**701 984**	**723 916**	**348 338**	**373 897**	**44 479**	**50 729**	**58**	**58**

– Indicates zero, or all cases notified under DOTS; no additional cases notified under non-DOTS.
[a] Cases not included elsewhere in table.
[b] Expected percentage of new pulmonary cases that are smear-positive is 65–80%.

FIGURE 1.9

Tuberculosis notification rates, by country, 2006

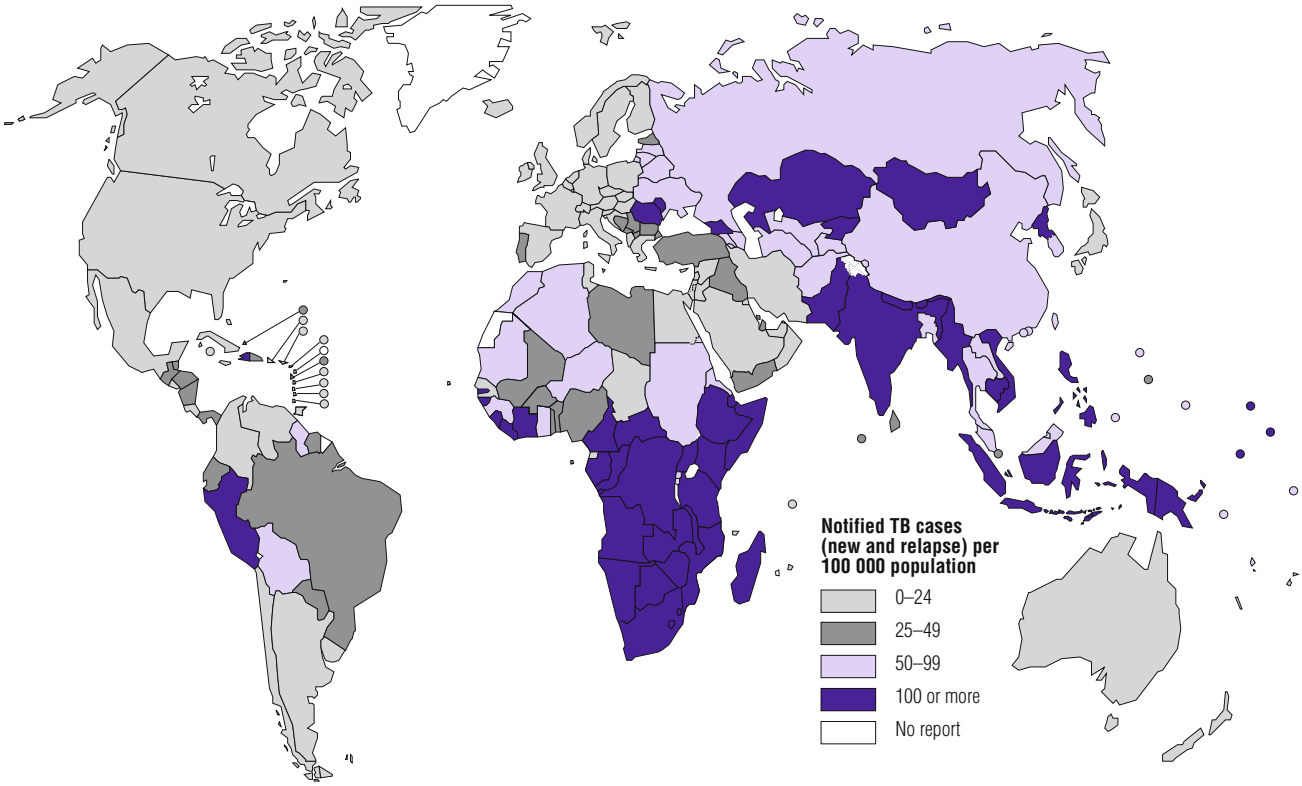


TABLE 1.4

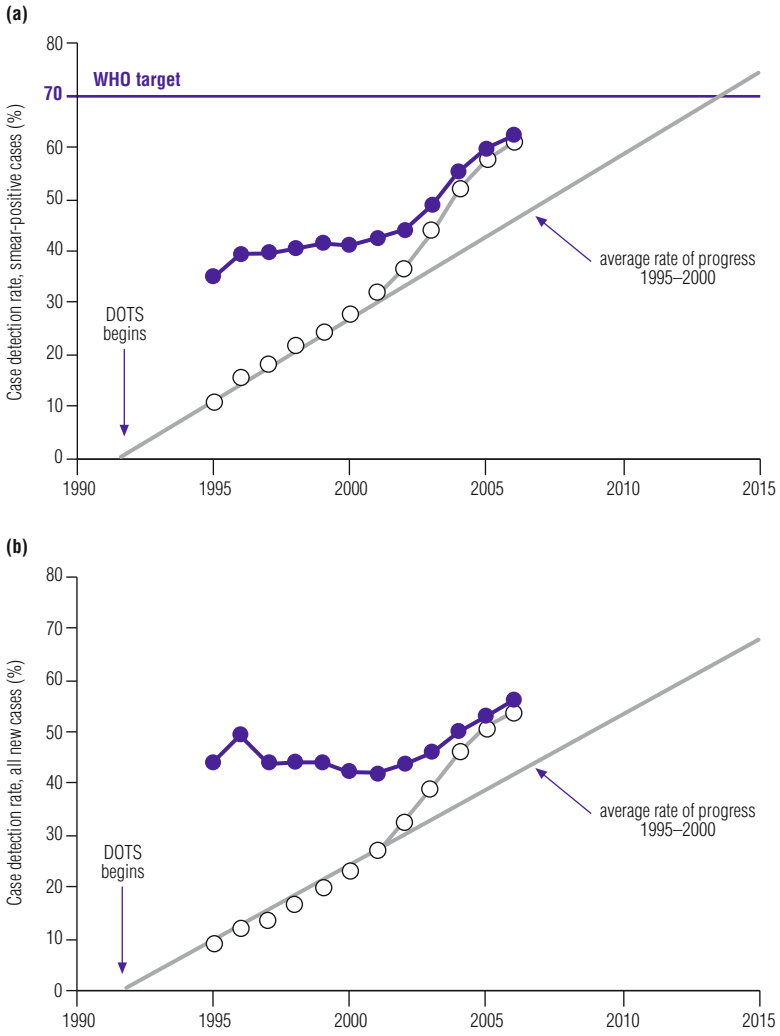
Case detection rate for new smear-positive cases (%), 1995–2006[a]

	DOTS PROGRAMMES												WHOLE COUNTRY											
	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
1 India	0.3	0.9	1.0	1.6	6.8	12	23	30	43	55	59	64	37	40	37	37	45	44	48	49	52	58	60	64
2 China	15	29	32	32	30	31	31	30	43	64	80	79	22	34	39	34	33	34	34	33	45	65	*	*
3 Indonesia	1.3	4.4	7.4	12	19	20	21	30	37	52	65	73	12	*	*	*	*	*	*	*	*	*	*	*
4 South Africa	–	–	6.3	22	61	58	56	66	71	70	67	71	2	70	84	110	88	72	65	67	71	73	70	*
5 Nigeria	11	11	10	11	12	12	12	11	15	17	18	20	*	*	*	*	*	*	14	12	*	*	*	*
6 Bangladesh	6.4	14	18	23	23	24	26	30	35	40	54	65	14.4	21	23	26	25.5	26	27.0	31	*	*	*	*
7 Ethiopia	15	20	22	23	24	30	30	30	31	31	29	27	*	24	*	*	*	*	*	*	*	*	*	*
8 Pakistan	1.0	1.7	–	3.7	2.0	2.8	5.2	13	17	25	37	50	2	*	–	13	5	*	9	13	*	*	*	*
9 Philippines	0.4	0.5	3.2	10	20	48	56	61	67	72	74	77	96	87	82	70	71	64	*	*	*	*	*	*
10 DR Congo	41	47	44	54	51	48	50	49	55	62	63	61	43	*	*	*	*	*	*	*	*	*	*	*
11 Russian Federation	–	0.5	1.1	1.0	1.8	4.9	5.5	7.4	9.3	15	33	44	77	74	67	63	31	37	36	40	42	45	48	47
12 Viet Nam	30	59	78	82	83	82	83	87	85	89	84	85	59	77	84	85	83	*	*	*	*	*	*	*
13 Kenya	57	58	54	59	58	51	59	61	64	66	68	70	*	*	*	*	*	56	*	*	*	*	*	*
14 UR Tanzania	57	56	53	54	52	49	48	45	46	47	47	46	*	*	*	*	*	*	*	*	*	*	*	*
15 Uganda	–	–	56	56	56	48	44	44	44	45	44	44	48	53	*	*	*	*	*	*	*	*	*	*
16 Brazil	–	–	–	3.2	3.1	5.8	6.3	7.5	14	37	43	55	61	61	61	55	60	61	59	65	64	70	70	69
17 Mozambique	57	52	50	49	48	45	43	43	43	44	46	47	*	*	*	*	*	*	*	*	*	*	*	*
18 Thailand	–	0.3	5.1	22	40	47	74	67	73	73	76	73	57	47	36	*	*	*	*	*	*	*	*	*
19 Myanmar	–	26	27	29	33	49	58	68	76	86	100	109	26	29	29	*	*	*	60	*	*	*	*	*
20 Zimbabwe	–	–	–	50	47	45	45	46	41	44	41	42	48	53	56	*	*	*	*	*	*	*	*	*
21 Cambodia	40	34	45	48	54	50	48	57	62	62	68	62	*	43	*	*	*	*	*	*	*	*	*	*
22 Afghanistan	–	–	3.1	9.3	8.6	15	24	33	34	44	52	66	–	–	*	*	*	*	*	*	*	*	*	*
High-burden countries	**8.3**	**14**	**16**	**20**	**23**	**26**	**30**	**34**	**43**	**53**	**59**	**63**	**31**	**36**	**37**	**37**	**39**	**39**	**40**	**42**	**47**	**55**	**60**	**63**
AFR	23	25	29	34	35	35	36	42	44	46	45	46	33	41	40	45	41	40	41	43	45	47	46	46
AMR	25	25	27	31	34	41	40	43	47	56	60	69	65	66	70	68	69	69	71	71	72	73	74	76
EMR	11	9.6	11	18	20	24	26	31	33	38	45	52	24	26	23	32	31	26	29	31	33	38	45	52
EUR	2.6	3.5	4.6	11	11	12	14	22	23	26	36	52	64	63	58	58	45	47	43	42	52	48	50	57
SEAR	1.5	4.0	5.5	8.0	14	18	27	34	44	55	62	67	29	30	29	30	37	39	42	45	50	57	62	67
WPR	16	28	32	33	32	37	39	39	50	65	77	77	36	45	49	44	44	44	43	43	53	67	78	78
Global	**11**	**16**	**18**	**22**	**24**	**28**	**32**	**37**	**44**	**52**	**58**	**61**	**35**	**39**	**40**	**41**	**42**	**41**	**43**	**44**	**49**	**55**	**60**	**62**

– Indicates not available.
* No additional data beyond DOTS report, either because country is 100% DOTS, or because no non-DOTS report was received.
[a] Estimates for all years are recalculated as new information becomes available and techniques are refined, so they may differ from those published previously.

FIGURE 1.10

Progress towards the 70% case detection target. (a) Open circles mark the number of new smear-positive cases notified under DOTS 1995–2006, expressed as a percentage of estimated new cases in each year. The straight line through these points indicates the average annual increment from 1995 to 2000 of about 134 000 new cases, compared to the average increment from 2000 to 2006 of about 243 000 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).



1.5.2 Case detection rate, DOTS programmes

The principal WHO measure of case detection is the rate of case detection for new smear-positive cases in DOTS programmes, i.e. the number of new smear-positive cases detected by DOTS programmes divided by the estimated number of incident smear-positive cases. In 2006, DOTS programmes detected 2 496 478 new smear-positive cases (99% of all new smear-positive cases that were notified) out of an estimated 4.1 million new smear-positive cases, giving a case detection rate of 61% (**Table 1.4, Figure 1.10a**). The point estimate of a 61% case detection rate for 2006 is still below the 70% target set for 2005. There is, however, much uncertainty surrounding this estimate: the calculated 95% confidence limits range from 55% to 75%, but this does not account for all sources of random and systematic error.

New smear-positive case detection rates by DOTS programmes in 2006 were lowest in the African (46%) and European (52%) regions and highest in the Western Pacific Region (77%), the South-East Asia Region (67%) and the Region of the Americas (69%; **Table 1.4, Figure 1.11, Figure 1.12**). The Western Pacific is still the only region to have exceeded the 70% target, although the Americas (69%) and the South-East Asia regions (67%) fall just short on 2006 estimates. The particularly low figure for Europe compared with the overall case detection rate for all forms of TB of 70% (**Figure 1.11b**) suggests two major reasons for failing to reach the WHO target in this region: incomplete geographical coverage of DOTS and lack of emphasis on sputum smear microscopy (countries in the European Region report substantial numbers of cases in whom disease is diagnosed by methods other than sputum smear microscopy, and these cases are not necessarily smear-negative). In the Region of the Americas, the target of a 70% case detection rate for new smear-positive cases in DOTS programmes could be achieved simply by expanding the geographical coverage of DOTS programmes.

Although case detection of new smear-positive cases improved globally between 2005 and 2006, the rate of increase slowed compared with previous years: the increment between 2005 (58%) and 2006 (61%) was just 3%, the smallest reported annual increase since 1999–2000 (**Table 1.4, Figure 1.10a**). In the South-East Asia Region, the acceleration in case-finding after 2000 was

FIGURE 1.11

Proportion of estimated cases notified under DOTS (grey portion of bars) and non-DOTS (purple portion of bars) in 2006. The number of notified cases (in thousands) is shown in or above each portion or each bar. The grey portion of the bars is cases notified in DOTS programmes. The purple portion is the number notified outside DOTS prorammes.

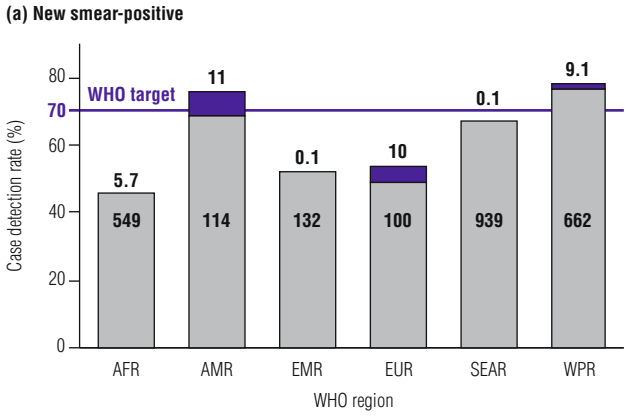


FIGURE 1.12

Smear-positive case detection rate under DOTS, by WHO region, 1995–2006. Heavy line shows global DOTS case detection rate.

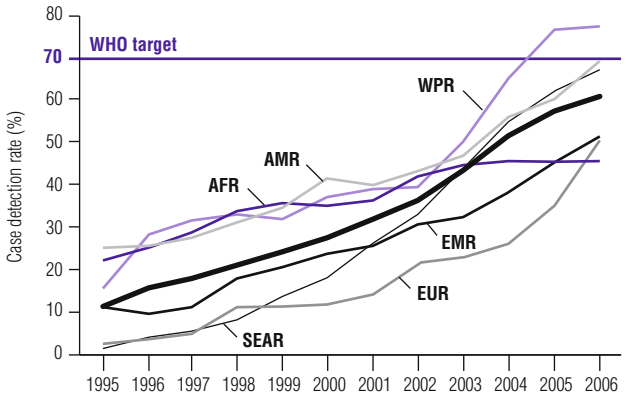
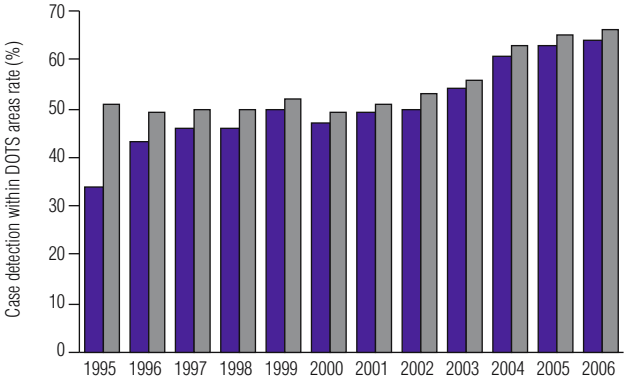


FIGURE 1.13

Smear-positive case detection rate within DOTS areas[a] for high-burden countries (purple) and the world (grey), 1995–2006



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

attributable mostly to progress in Bangladesh, India, Indonesia and Myanmar. The more recent deceleration in detection is mainly a result of slowing DOTS expansion into India's northern states, as the Indian national TB control programme (NTP) reaches full national coverage. The Western Pacific Region is dominated by China, where case-finding expanded rapidly between 2002 and 2005. However, China has made no progress in case-finding since reporting that the 70% target had been met in 2005 (**Table 1.3, Table 1.4; Annex 1**). The South-East Asia and Western Pacific regions are now slowing global progress in case detection.

DOTS programmes detected 4 990 374 new cases in 2006 (98% of all notifications) out of a total of 9.2 million estimated cases (**Table 1.2, Table 1.3**). This is equivalent to a case detection rate (all new cases) of 54%.

1.5.3 Case detection rate within DOTS areas

The case detection rate within DOTS areas (measured by the ratio of case detection to DOTS population coverage) changed little between 1995 and 2001, averaging 50% worldwide. Subsequently, it has increased to 66% in 2006 (**Figure 1.13**). This illustrates how increases in case detection rates in DOTS areas have made an important contribution to the overall improvement in case detection since 2001.

1.5.4 Number of countries reaching the 70% case detection target

National estimates of the case detection rate suggest that 77 countries met the 70% target by the end of 2006. Of the additional new smear-positive cases reported by DOTS programmes in 2006 (compared with 2005), 30% were in India and 33% were in Bangladesh, Pakistan and Indonesia (**Figure 1.14**).

While China and India have made big improvements in case detection in recent years, these two countries

FIGURE 1.14

Contributions to the global increase in the number of new smear-positive cases notified under DOTS made by high-burden countries, 2005–2006

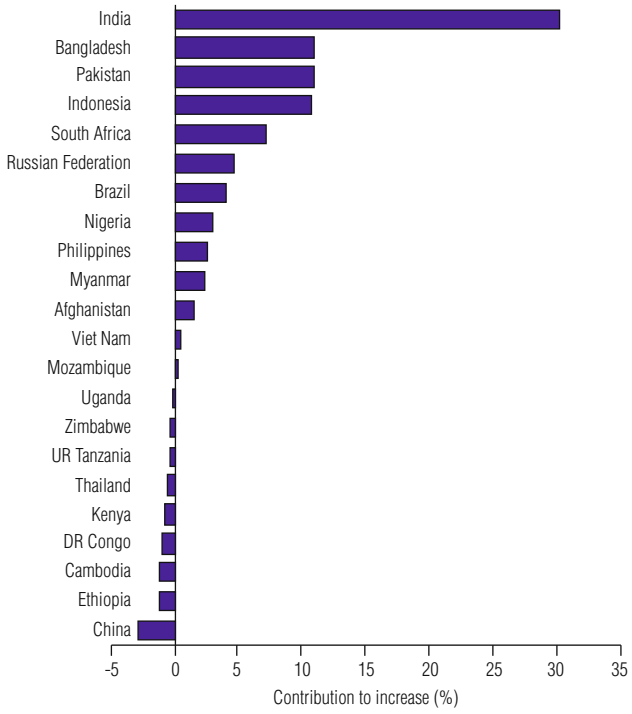
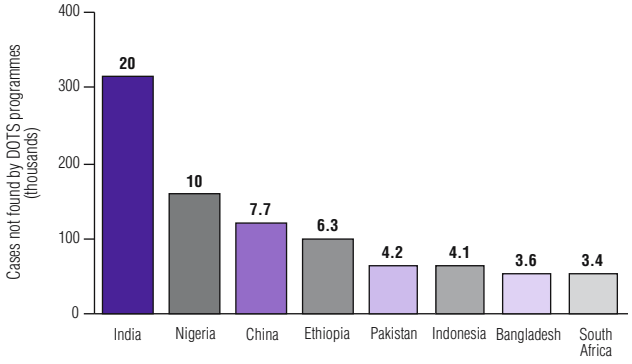


FIGURE 1.15

Smear-positive TB cases undetected by DOTS programmes in eight high-burden countries, 2006. Numbers indicate the percentage of all missed cases that were missed by each country.



still accounted for an estimated 28% of all undetected new smear-positive cases in 2006. In 2006, as in 2005, Nigeria succeeded China as the second largest reservoir of undetected cases (10%). These three countries are among eight that together accounted for 59% of all smear-positive cases not detected by DOTS programmes in 2006 (**Figure 1.15**).

1.5.5 Prospects for future progress

It is inevitable that progress in case-finding of new smear-positive cases will slow as HBCs reach nationwide DOTS coverage, but the rate of increase in case detection is decelerating before reaching the 70% target globally. To compensate for slower progress in the regions where case detection is above (Western Pacific) or close to (South-East Asia) the target, faster progress is needed where case detection is lower, namely in the African (46%), the Eastern Mediterranean (52%) and European (52%) regions. The African Region is the most important in absolute terms; based on the latest estimates, it accounts for 75% of the "missing" cases among these three regions, with Ethiopia and Nigeria alone accounting for more than one-quarter of missing cases in these three regions.

The implication that DOTS programmes in the African Region in particular need to improve case detection comes with an important caveat. Efforts to assess improvements in case detection in the African Region have been confounded by the upward trend in incidence linked to the spread of HIV infection, such that it has been difficult to disentangle the effect of better programme performance leading to better case-finding, and the impact of the HIV epidemic, on increases in case notifications. In this context, a detailed investigation of DOTS implementation in Kenya found that the rise in smear-positive notifications from 92 to 107 per 100 000 between 2000 and 2006 was mostly due to an increase in case detection, rather than an increase in TB incidence linked to HIV. Consequently, the case detection rate has increased to 70% in 2006 (see also **Annex 1**).[1] Similar investigations in other African countries may reveal that case detection is higher than stated in this report, and perhaps increasing more quickly than portrayed in **Table 1.4**.

1.6 Outcomes of treatment in DOTS programmes

1.6.1 New smear-positive cases

A total of 2 359 003 new smear-positive cases were registered for treatment in DOTS programmes in 2005, approximately the same number that were notified that year (**Table 1.5**). The biggest proportional discrepancies, where registered cases exceeded notifications, were in the Americas (Brazil), and in the Russian Federation and South Africa.

[1] Mansoer J et al. Estimating changes in the tuberculosis case detection rate in Kenya [submitted for publication].

TABLE 1.5

Treatment outcomes for new smear-positive cases treated under DOTS, 2005 cohort

	NOTIFIED	REGISTERED[a]	REGST'D (%)	TREATMENT OUTCOMES (%)[a] CURED	COMPLETED TREATMENT	DIED	FAILED	DEFAULTED	TRANS-FERRED	NOT EVAL'D	TREATMENT SUCCESS (%)	% EST[b] CASES SUCCESSFULLY TREATED UNDER DOTS
1 India	506 852	507 204	100	83	2.3	4.5	2.4	6.9	0.6	0.0	86†	51
2 China	472 719	472 719	100	92	1.9	1.7	0.9	0.8	0.9	1.9	94†	75
3 Indonesia	158 640	158 640	100	83	7.7	2.1	1.1	4.1	1.9	0.0	91†	59
4 South Africa	119 906	128 393	107	58	13	7.1	1.7	10	5.6	3.9	71	51
5 Nigeria	35 048	35 080	100	50	25	9.0	3.8	11	0.5	0.4	75	13
6 Bangladesh	84 848	84 848	100	91	0.9	3.5	0.6	2.1	1.8	0.5	91†	50
7 Ethiopia	38 525	39 430	102	64	14	5.4	0.6	4.3	4.6	7.1	78	23
8 Pakistan	48 319	48 205	100	71	13	2.8	0.7	9.5	3.7	0.0	83	31
9 Philippines	81 647	81 125	99	82	7.4	2.4	1.0	4.3	2.4	0.5	89†	66
10 DR Congo	65 040	65 066	100	80	5.2	5.7	1.2	4.4	2.5	1.3	85	54
11 Russian Federation	22 690	25 692	113	55	2.8	13	14	11	4.1	0.0	58	22
12 Viet Nam	55 492	55 492	100	90	2.1	3.3	1.0	1.5	1.9	0.0	92†	78
13 Kenya	40 389	40 436	100	71	12	5.0	0.3	7.7	4.6	0.0	82	56
14 UR Tanzania	25 264	25 324	100	79	3.5	9.5	0.3	3.5	4.5	0.0	82	39
15 Uganda	20 559	20 559	100	32	41	5.7	0.4	16	5.0	0.1	73	32
16 Brazil	26 224	33 527	128	32	44	5.1	0.7	9.0	4.4	4.3	77	42
17 Mozambique	17 877	17 877	100	78	1.1	12	1.1	5.4	1.7	0.8	79	37
18 Thailand	29 762	29 919	101	70	4.8	8.2	1.8	6.7	3.2	5.5	75	57
19 Myanmar	36 541	34 859	95	78	7.4	5.4	2.4	5.1	2.1	0.0	85	81
20 Zimbabwe	13 155	12 860	98	59	9.0	12	1.6	7.4	12	0.0	68	27
21 Cambodia	21 001	21 001	100	89	3.7	3.3	0.3	2.0	1.8	0.1	93†	63
22 Afghanistan	9 949	10 013	101	83	6.9	2.1	1.4	2.1	4.6	0.0	90†	47†
High-burden countries	**1 930 447**	**1 948 269**	**101**	**80**	**6.1**	**4.1**	**1.6**	**5.0**	**2.0**	**1.1**	**86†**	**52**
AFR	538 816	546 832	101	63	13	6.9	1.4	8.6	4.5	2.5	76	35
AMR	101 808	108 413	106	57	21	4.8	1.0	6.5	3.2	6.2	78	50
EMR	113 677	113 555	100	72	11	2.9	1.1	7.7	3.7	1.2	83	37
EUR[c]	72 316	73 768	102	60	10	8.3	8.4	7.7	2.9	2.2	71	27
SEAR	855 306	854 169	100	83	3.5	4.1	1.9	5.6	1.2	0.2	87†	54
WPR	661 322	662 266	100	89	3.2	2.2	0.9	1.5	1.3	1.9	92†	71
Global	**2 343 245**	**2 359 003**	**101**	**78**	**7.1**	**4.3**	**1.7**	**5.4**	**2.3**	**1.6**	**85**	**49**

† Treatment success ≥ 85% (treatment success for DR Congo 84.9%, for the world 84.7%).

[a] Cohort: cases diagnosed during 2005 and treated/followed-up through 2006. See Table A2.1 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.

[b] Est: estimated cases for 2005 (as opposed to notified or registered for treatment).

[c] Laboratory-confirmed notifications and treatment outcomes from Belarus, Bosnia & Herzegovina, Bulgaria, Israel and Italy included here; outcomes for smear-positive cases not available.

The cure rate among cases registered under DOTS worldwide was 77.6%, and a further 7.1% completed treatment (no laboratory confirmation of cure), giving a reported overall treatment success rate of 84.7%, very close to the 85% target (**Table 1.5**). This means that 49% of the smear-positive cases estimated to have occurred in 2005 were treated successfully by DOTS programmes. Among all the patients treated under DOTS, 9% had no reported outcome (defaulted, transferred, not evaluated). Treatment results for 12 consecutive cohorts (1994–2005) of new smear-positive patients show that the success rates have been 80% or higher in DOTS areas since 1998, even though the number of patients has increased 10-fold from 240 000 in 1994 to 2.4 million in 2005 (**Table 1.5, Table 1.6**).

The DOTS treatment success rate reached or exceeded 85% in ten HBCs (**Table 1.5**) and in 58 countries in total (**Annex 3**), and was reported to be 90% or more in cohorts of varying sizes in Afghanistan, Bangladesh, Cambodia, China, Indonesia and Viet Nam.

The global average treatment success rate was brought close to the target level by better outcomes in the South-East Asia and Western Pacific regions. The differences in treatment outcomes among WHO regions were similar to those reported in previous years, varying from 71% in Europe and 76% in Africa, to 87% in South-East Asia and 92% in the Western Pacific. The Western Pacific Region has always reported treatment success above the 85% target; South-East Asia has exceeded the target since 2002, and the Eastern Mediterranean Region has remained just below it (83% since 1999; **Table 1.5, Table 1.6**). Treatment success has been increasing in Africa, although cohorts of DOTS patients in this region continue to have high death and default rates: one or other of these indicators exceeded 10% in Mozambique, Nigeria, South Africa, Uganda and Zimbabwe.

In contrast to other regions, treatment outcomes deteriorated between 2004 and 2005 in the Region of the Americas and the European Region (**Table 1.6**). The treatment success rate of 71% in Europe in 2005 is the lowest recorded in that region since 1996 (albeit in an expanding cohort). In the Russian Federation, death and treat-

TABLE 1.6

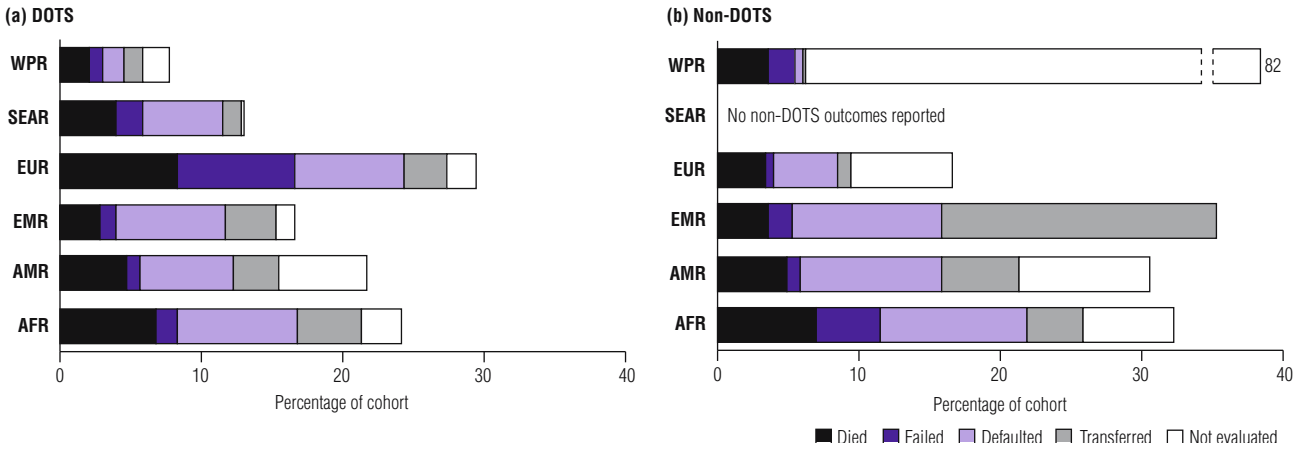
Treatment success for new smear-positive cases treated under DOTS (%), 1994–2005 cohorts[a]

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
1 India	83	79	79	82	84	82	84	85	87	86	86	86
2 China	94	96	96	96	97	96	95	96	93	94	94	94
3 Indonesia	94	91	81	54	58	50	87	86	86	87	90	91
4 South Africa	–	–	69	73	74	60	66	65	68	67	70	71
5 Nigeria	65	49	32	73	73	75	79	79	79	78	73	75
6 Bangladesh	73	71	72	78	80	81	83	84	84	85	90	91
7 Ethiopia	74	61	73	72	74	76	80	76	76	70	79	78
8 Pakistan	74	70	–	67	66	70	74	77	78	79	82	83
9 Philippines	80	–	82	83	84	87	88	88	88	88	87	89
10 DR Congo	71	80	48	64	70	69	78	77	78	83	85	85
11 Russian Federation	–	65	62	67	68	65	68	67	67	61	59	58
12 Viet Nam	91	91	90	85	93	92	92	93	92	92	93	92
13 Kenya	73	75	77	65	77	78	80	80	79	80	80	82
14 UR Tanzania	80	73	76	77	76	78	78	81	80	81	81	82
15 Uganda	–	–	33	40	62	61	63	56	60	68	70	73
16 Brazil	–	–	–	–	91	89	73	67	75	83	81	77
17 Mozambique	67	39	54	67	–	71	75	78	78	76	77	79
18 Thailand	–	–	78	62	68	77	69	75	74	73	74	75
19 Myanmar	–	66	79	82	82	81	82	81	81	81	84	85
20 Zimbabwe	–	–	–	–	70	73	69	71	67	66	54	68
21 Cambodia	84	91	94	91	95	93	91	92	92	93	91	93
22 Afghanistan	–	–	–	45	33	87	86	84	87	86	89	90
High-burden countries	**87**	**83**	**78**	**81**	**83**	**81**	**84**	**84**	**83**	**84**	**86**	**86**
AFR	59	62	57	63	70	69	72	71	73	73	74	76
AMR	76	77	83	82	81	83	81	82	83	83	82	78
EMR	82	87	86	79	77	83	83	83	84	83	83	83
EUR	68	69	72	72	76	77	77	75	76	75	74	71
SEAR	80	74	77	72	72	73	83	84	85	85	87	87
WPR	90	91	93	93	95	94	92	93	90	91	91	92
Global	**77**	**79**	**77**	**79**	**81**	**80**	**82**	**82**	**82**	**83**	**84**	**85**

– Indicates not available.
[a] See notes for Table 1.5.

FIGURE 1.16

Outcomes for those patients not successfully treated in (a) DOTS and (b) non-DOTS areas, by WHO region, 2005 cohort



ment failure rates were higher in 2005 than in any other HBC, and the treatment success rate of 58% was the lowest reported from that country since WHO records began in 1995. In the Region of the Americas in 2005, only 78% of patients completed treatment or were cured, the worst outcome since 1995.

Variation in treatment outcomes among regions raises important questions about the quality of treatment, the quality of the data and how quickly these will improve in future.

Poor outcomes in Africa and Europe are undoubtedly linked to high rates of HIV infection, drug resistance and weak health services.[1,2] Treatment results for individual African countries again point to the effects of HIV and inadequate patient support. The cohort death rate for the region as a whole was 7%, and higher still in Mozambique, Nigeria, South Africa, the United Republic of Tanzania and Zimbabwe (**Table 1.5**). Treatment interruption (default) and transfer without follow-up were also especially high in the African Region, at 8.6% and 4.5% respectively. More than 15% of patients had no known outcome in Ethiopia, South Africa, Uganda and Zimbabwe (**Table 1.5**). Cure was not confirmed (via a final, negative sputum smear) for large numbers of patients in Nigeria (25%) and Uganda (41%).

Death during treatment was 8.3% in the European Region, where a higher fraction of cases are drug resistant (Eastern Europe) or occur among the elderly (Western and Central Europe) (**Figure 1.16**). Treatment interruption was 7.7%, and the treatment failure rate was 8.4%, mainly because failure rates were high in Eastern Europe.

In the Region of the Americas, deteriorating outcomes are explained, at least in part, by the expansion of DOTS coverage, often into regions of countries with weaker health services. No outcome was reported for 16% of patients in the region as a whole (18% in Brazil) and in Brazil, 44% of patients completed treatment without cure being confirmed (via a final, negative sputum smear).

In 2005, as in previous years, treatment success was extraordinarily high in the Western Pacific Region (92%).

1.6.2 Re-treatment cases

A total of 531 232 patients were re-treated under DOTS in 2005 (**Table 1.7**). The re-treatment success rate in 2005 was 71%. As expected from the results of treating new patients, re-treatment success rates were lowest in the European Region (45%) and highest in the Western Pacific Region (87%).

[1] As argued in *Global tuberculosis control: surveillance, planning and financing. WHO report 2007.* Geneva, World Health Organization, 2007 (WHO/HTM/TB/2007.376).

[2] HIV may also have contributed to the high death rate in Thailand (12%) although, among Asian countries, Thailand has a relatively high proportion of elderly patients (Annex 3).

1.6.3 Comparison of treatment outcomes in HIV-positive and HIV-negative TB patients

Data on the outcomes of treatment for HIV-positive and HIV-negative TB patients were reported separately by between 25 and 47 countries, depending on the category of case (**Figure 1.17**; smear-negative and extrapulmonary cases are presented as one category, since separate analysis showed very similar treatment outcomes for these two types of case). These countries were almost exclusively in the Region of the Americas and the European Region. There were few data for African countries (only Comoros, Gabon, and Mauritius), even though Africa accounts for 85% of estimated HIV-positive cases. The data that were reported show lower treatment success rates among HIV-positive patients, due mainly to higher death rates and, to a lesser extent, higher default rates. A similar pattern existed for two regions that could be analysed separately (the Region of the Americas and the European Region; data not shown).

1.7 Progress towards targets for case detection and cure

Point estimates of case detection and treatment success indicate that the world as a whole failed to meet the targets for both indicators. However, measurement uncertainty allows the possibility that case detection exceeded 70% in 2006, and treatment success was only 0.3% below the target of 85% in the 2005 cohort. Both targets for case detection and treatment success were exceeded in the Western Pacific Region. South-East Asia achieved more than 85% treatment success, and case detection was just under 70%. The European Region performed worst on both indicators.

Data on both treatment success and case detection were provided by 202 countries that were implementing DOTS. In 99 countries, the rate of case detection exceeded 50% and the treatment success rate was over 70% (**Figure 1.18**). Of these countries, 32 appear to have reached both WHO targets. They include five HBCs: China, Indonesia, Myanmar, the Philippines and Viet Nam (**Figure 1.18, Figure 1.19**). Among 166 countries that provided data for both the 2004 and the 2005 cohorts, 98 (59%) showed higher treatment success rates for the 2005 cohort, and 56 of 177 (32%) improved case detection by more than 5% between 2005 and 2006.

Progress can also be directly compared with the expectations set out in the Global Plan (**Table 1.8**), which was designed to achieve the MDG, Stop TB Partnership and World Health Assembly targets set for 2015 (**Table 1.1**). The case detection rate for new smear-positive cases under DOTS in 2006, at 61%, lags behind the milestone of 65% in the Global Plan. This further reinforces the message that progress in DOTS implementation has decelerated between 2005 and 2006. The detection of smear-negative and extrapulmonary cases also lags behind the Global Plan, and by a larger amount (48% esti-

TABLE 1.7

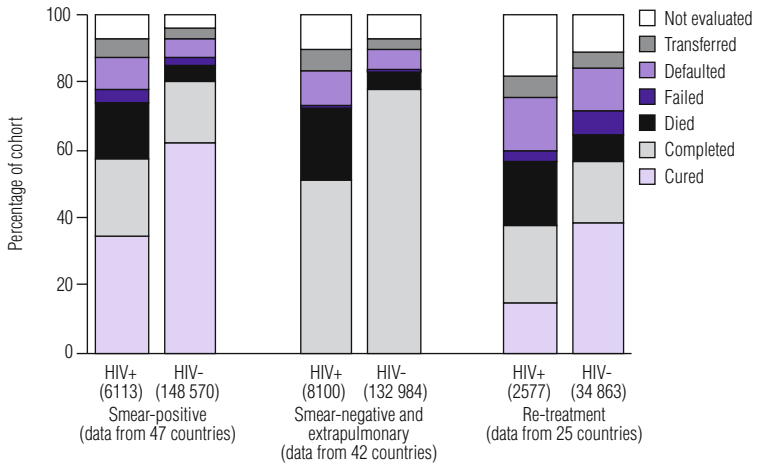
Re-treatment outcomes for smear-positive cases treated under DOTS, 2005 cohort[a]

	REGISTERED	TREATMENT OUTCOMES (%)							
		CURED	TREATMENT COMPLETED	DIED	FAILED	DEFAULTED	TRANS-FERRED	NOT EVAL'D	TREATMENT SUCCESS (%)
1 India	224 143	47	24	7.0	4.5	16	1.2	0.1	71
2 China	89 239	85	5.0	2.6	2.5	1.3	1.0	3.1	90†
3 Indonesia	4 812	63	15	3.4	3.8	8.3	6.5	0.0	78
4 South Africa	63 588	29	29	11	2.3	16	6.4	6.3	58
5 Nigeria	3 662	48	18	1.8	11	20	0.2	0.8	66
6 Bangladesh	3 876	73	6.4	3.9	2.3	4.9	4.1	5.2	80
7 Ethiopia	3 116	41	15	8.7	1.8	4.8	4.2	24	56
8 Pakistan	5 009	61	15	4.6	2.6	11	3.3	1.7	76
9 Philippines	–	–	–	–	–	–	–	–	–
10 DR Congo	5 448	71	3.7	10	4.5	6.1	3.2	2.0	74
11 Russian Federation	10 855	33	3.5	16	26	16	5.5	0.0	37
12 Viet Nam	7 374	79	3.8	5.4	5.8	3.0	2.8	0.3	83
13 Kenya	3 794	68	9.1	9.9	0.6	6.9	5.4	0.0	77
14 UR Tanzania	5 067	37	39	13	0.5	4.0	4.7	1.5	77
15 Uganda	–	–	–	–	–	–	–	–	–
16 Brazil	7 394	26	21	6.8	1.7	18	9.9	16	47
17 Mozambique	1 855	69	1.1	15	2.4	10.1	2.6	0.2	70
18 Thailand	2 285	52	5.9	12	4.9	6.8	4.5	13	58
19 Myanmar	6 039	59	13	9.2	5.9	7.4	4.7	0.0	73
20 Zimbabwe	4 667	13	46	16	0.3	13	11	0.0	60
21 Cambodia	1 306	49	27	8.7	2.1	2.7	4.3	6.7	76
22 Afghanistan	856	87	2.3	2.6	1.3	1.6	4.9	0.5	89†
High-burden countries	**454 298**	**53**	**19**	**7.1**	**4.1**	**12**	**2.6**	**2.2**	**72**
AFR	112 510	35	27	11	2.7	13	5.7	6.1	62
AMR	16 290	40	15	6.4	2.7	14	5.9	15	55
EMR	12 860	60	15	4.5	3.5	10	3.6	2.6	75
EUR	29 865	39	6.7	13	17	15	4.3	6.3	45
SEAR	253 864	49	22	6.8	4.7	15	1.6	0.3	72
WPR	105 843	81	5.8	3.0	2.7	1.7	1.8	3.7	87†
Global	**531 232**	**52**	**19**	**7.1**	**4.5**	**12**	**2.8**	**3.0**	**71**

– Indicates not available.
† Treatment success ≥ 85%.
[a] See notes for Table 1.5.

FIGURE 1.17

Treatment outcomes for HIV-positive and HIV-negative TB patients, 2005 cohort. The numbers under the bars are the numbers of patients included in the cohort.



mated for 2006 compared with the Global Plan milestone of 66%). More positively, progress in the treatment success rate is ahead of the Global Plan, at 85% compared with 83%. In addition, the absolute number of smear-positive patients treated in DOTS programmes in 2006 was higher than the number forecast in the Global Plan, due to the estimated incidence of TB in 2006 being higher than anticipated by the Global Plan.

1.8 Progress towards impact targets included in the Millennium Development Goals

1.8.1 Trends in incidence, prevalence and mortality

With the 9.2 million new incident TB cases in 2006, there were an estimated 14.4 million prevalent cases (219/100 000) on average (**Table 1.2**). An estimated 1.7 million people (25/100 000) died from TB in 2006, including those coinfected with HIV (231 000). The sequence of annual estimates up to 2006 suggests (as in the data up to 2005) that all three major indicators of impact – incidence, prevalence and mortality per 100 000 population – are falling globally. In our assessment, prevalence was already in decline by 1990, mortality peaked before the year 2000 and incidence began to fall in 2003 (**Figure 1.20**). TB prevalence continued to fall globally between 1990 and 2006 because, in Africa, the HIV epidemic caused a smaller increase in prevalence than in incidence or mortality.

The fall in the global incidence rate reinforces data presented in *Global Tuberculosis Control 2007*. If verified by further monitoring, the data show that MDG 6 Target 6.C was met by 2004, well ahead of the target date of 2015 (though as noted above, the total number of new cases continues to rise, due to population growth in the African, Eastern Mediterranean, European and South-East Asia regions). This turnover of the global epidemic is largely explained by stable or falling HIV prevalence in Africa and by the stabilization of TB incidence in the independent states that emerged from the dissolution of the Union of Soviet Socialist Republics. It is unlikely that either of these two phenomena is due primarily to the implementation of

FIGURE 1.18

DOTS status in 2006, countries close to targets. 99 countries reported treatment success rates 70% or over and DOTS detection rates 50% or over. 32 countries (including 2 countries out of range of graph) have reached both targets; 2 in the African Region, 5 in the Region of the Americas, 4 in the Eastern Mediterranean Region, 4 in the European Region, 5 in the South-East Asia Region and 12 in the Western Pacific Region.

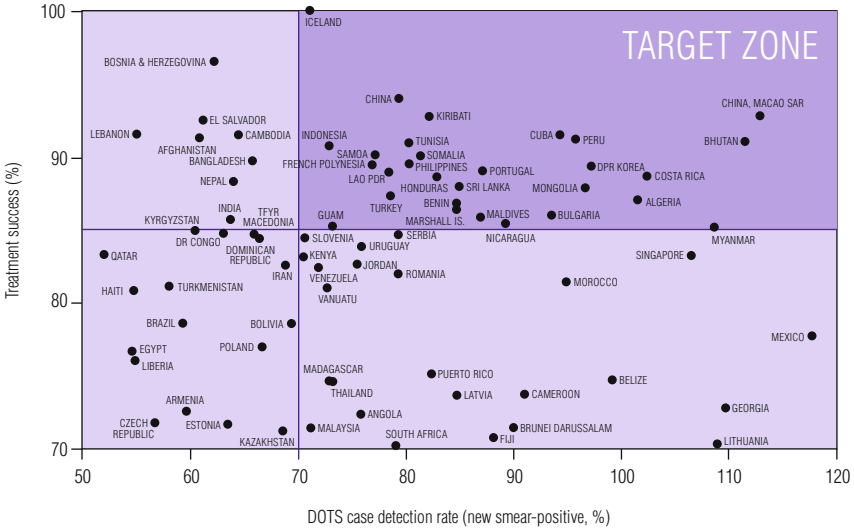


FIGURE 1.19

DOTS progress in high-burden countries, 2005–2006. Treatment success refers to cohorts of patients registered in 2004 or 2005, and evaluated, respectively, by the end of 2005 or 2006. 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 purple, those from SEAR and WPR are shown in black.

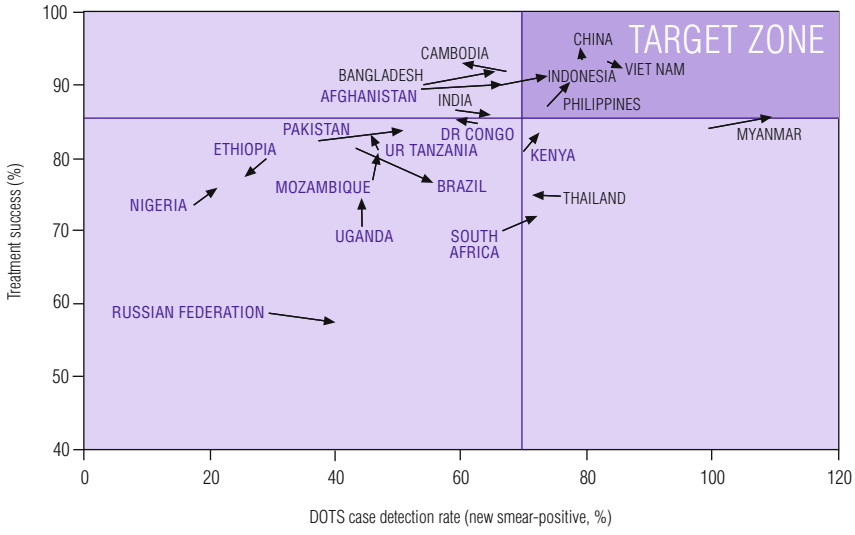


TABLE 1.8

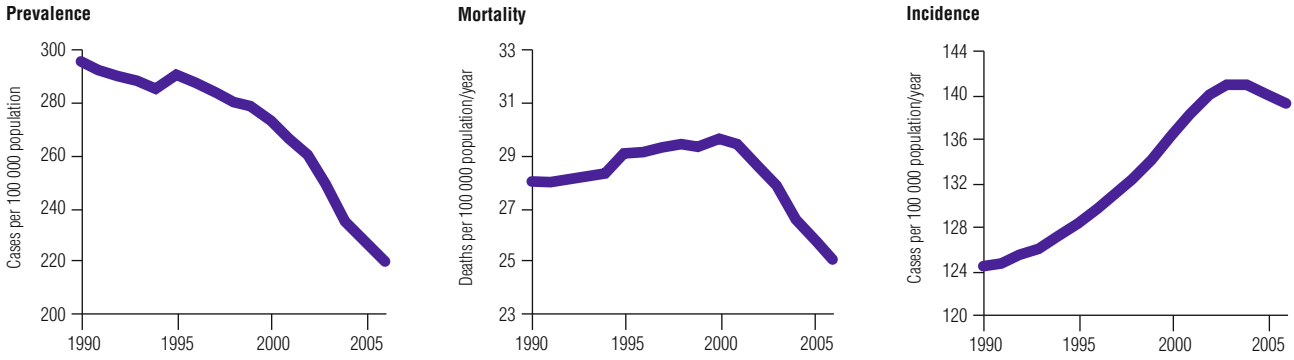
DOTS expansion and enhancement, 2006: country reports compared with expectations given in the Global Plan

	COUNTRY REPORTS[a]	GLOBAL PLAN
	(MILLIONS OR PERCENTAGES)	
Number of new smear-positive cases notified under DOTS	2.5	2.1
Estimated number of new smear-positive cases	4.0	3.3
New smear-positive case detection rate under DOTS	61%	65%
Number of new smear-positive cases successfully treated under DOTS	2.0	1.8
Number of new smear-positive cases registered for treatment under DOTS	2.3	2.1
New smear-positive treatment success rate, 2005	85%	83%
Number of new smear-negative and extrapulmonary cases notified under DOTS	2.4	3
Estimated number of new smear-negative and extrapulmonary cases	5.0	4.5
New smear-negative and extra-pulmonary case detection rate under DOTS	48%	66%

[a] Includes only those countries in the Global Plan, i.e. countries in sub-regions Central Europe and Established Market Economies are excluded here.

FIGURE 1.20

Estimated global prevalence, mortality and incidence rates, 1990–2006. Note the different scales on y-axes.



HIV/AIDS or TB control programmes (see next section 1.8.2 on determinants of TB dynamics), and there is little evidence, from regional trends in case notifications, that DOTS is accelerating the decline of the incidence of TB on a large scale in Asia.

The targets related to reductions in prevalence and deaths that have been set by the Stop TB Partnership – to halve 1990 prevalence and death rates by 2015 – are more demanding. If the estimated changes between 2001 and 2006 are correct, and if the average rates of change over this period persist, then prevalence and deaths per capita will fall quickly enough to meet the 2015 targets in the Region of the Americas and in the Eastern Mediterranean, South-East Asia and Western Pacific regions (**Figure 1.21**). They will not, however, be met in the African and European regions. In line with the trends in incidence (**Figure 1.6**), prevalence and death rates increased in the African and European regions between 1990 and 2006, most dramatically in Africa. For this reason, estimates for these two regions in 2006 are very much larger than the 2015 target values.

Based on progress between 2001 and 2006, and combining the results for all regions, the mortality and prevalence targets are unlikely to be met worldwide by 2015 (**Figure 1.21**).

1.8.2 Determinants of TB dynamics: comparisons among countries

A further assessment of the scale of the impact of DOTS around the world can be made by examining the national statistics that lie behind the regional and global summaries. The series of cases reported by 134 countries between 1997 and 2006 indicate that TB incidence rates per capita in most countries were changing at between –10% and +10% annually between 1997 and 2006, and falling slowly in the majority of these countries (**Figures 1.6 and 1.7**). It is possible that these variable rates of decline are attributable to the uneven success of TB control programmes. Alternatively, the differences among countries might be explained by other factors that affect transmission of and susceptibility to disease.

One way to distinguish between possible explanations is to identify, by comparing countries, which factors are more or less closely associated with changes in TB incidence. In a preliminary ecological analysis[1] of 30 possible explanatory variables (for methods, see **Annex 2**), trends in incidence per 100 000 population in the Latin America and Caribbean subregion are associated (p <0.05) with HIV prevalence (r^2 = 0.41, **Figure 1.22a**),

[1] A fuller analysis is in: Dye C et al, Determinants of trends in tuberculosis incidence: an ecologic analysis for 134 countries. Unpublished paper available from the authors.

with under-5 mortality (r^2 = 0.32), and with access to clean water (r^2 = 0.43) and adequate sanitation (r^2 = 0.50), among other variables. In the high-income countries of Western Europe and the United States of America, immigration is the single most important factor associated with TB dynamics (**Figure 1.22b**). In Central and Eastern Europe and in the Eastern Mediterranean Region, TB trends are linked to a variety of economic indicators including health expenditure per capita (**Figure 1.22c**) and expenditure in relation to GDP (**Figure 1.22d**). Only three of seven direct measures of TB control were significantly associated with trends in TB incidence, and the form of the association does not suggest any causal link. For example, smear-positive treatment success under DOTS (r^2 = 0.29), and the product of case detection (all forms of TB) and treatment success (r^2 = 0.32), were inversely correlated with TB decline in high-income countries.

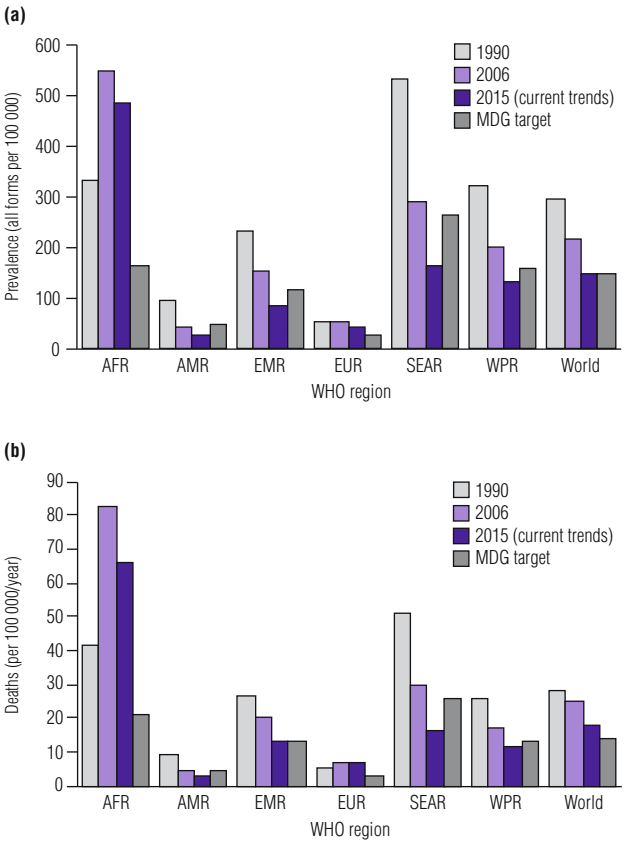
In multivariate analyses of this kind, the numerous explanatory variables tend to be inter-related, and some are more obviously linked to TB trends as covariates, rather than as primary epidemiological determinants. For example, in the African Region incidence was increasing more quickly in countries that spent more on TB control (r^2 = 0.49, **Figure 1.22e**). The likely explanation lies in the association between expenditure on TB per capita and HIV prevalence, with richer African countries that can spend more on health care also having higher HIV prevalence (r^2 = 0.53). Similarly, the decline in TB incidence in Central and Eastern Europe tends to be faster in countries where a higher proportion of women smoke (r^2 = 0.67, **Figure 1.22f**). The likely explanation is that smoking among women reflects affluence, which is linked to health and health services in ways that outweigh the importance of smoking as a risk factor for TB (correlation with GDP, r^2 = 0.67).

In brief, this ecological analysis provides no evidence that the standard, direct measures of DOTS implementation – case detection and treatment success in various combinations – can yet explain the variation in incidence trends among countries, despite the wide variation in DOTS implementation among countries. This observation suggests – subject to further investigation – that DOTS programmes have not yet had a major impact on TB transmission and incidence around the world.

All of the caveats attached to this proposition must be carefully examined before drawing firm conclusions. Key assumptions to be tested are that trends in case notifications reflect trends in TB incidence, and that there is measurable and meaningful variation among countries in incidence trends and their determinants. It is also possible that DOTS programmes have significantly cut transmission, but it is too soon to see the effects on incidence, or that the effects have been offset by the rise of other risk factors, such as diabetes. In addition, it is crucial to distinguish the well-established effects of DOTS on treatment outcome and mortality from the possible effects on transmission (under investigation here).

FIGURE 1.21

Estimated TB prevalence (a) and death rates (b), by WHO region, for the MDG baseline year 1990 and for 2006, compared with the MDG target for 2015 and with prevalence and death rates projected for 2015 based on current trends



1.9 Summary

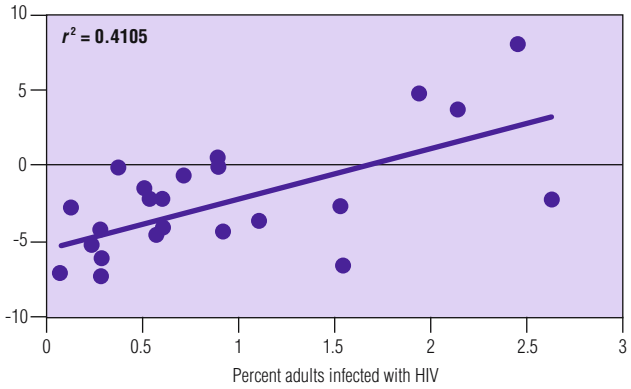
There were an estimated 9.2 million new cases of TB in 2006, of which 709 000 (8%) were HIV-positive. This is an increase from 2005, reflecting population growth in Asia, Africa and Europe. The countries that rank first to fifth in terms of absolute numbers of cases are India, China, Indonesia, South Africa and Nigeria, while Africa has the highest incidence rate per capita (linked to HIV) and accounts for 12 of the 15 countries with the highest TB incidence rates. There were an estimated 1.7 million deaths due to TB in 2006, of which 0.2 million were among HIV-positive people, and 14.4 million prevalent cases. These statistics show that TB remains a major global health problem.

More positively, the TB incidence rate per capita is declining globally, and in five out of the six WHO regions (it is approximately stable in Europe). The latest data indicate that the TB incidence rate has been falling globally since 2003. If this is confirmed by further monitoring, MDG 6 Target 6.C (to halt and reverse the incidence of TB) will be achieved well before the target date of 2015. Prevalence and deaths rates are also falling, and at a faster rate than TB incidence. Based on trends for the last five years, the Stop TB Partnership targets of halving prevalence and death rates by 2015 compared to 1990 could be achieved in the South-East Asia, West-

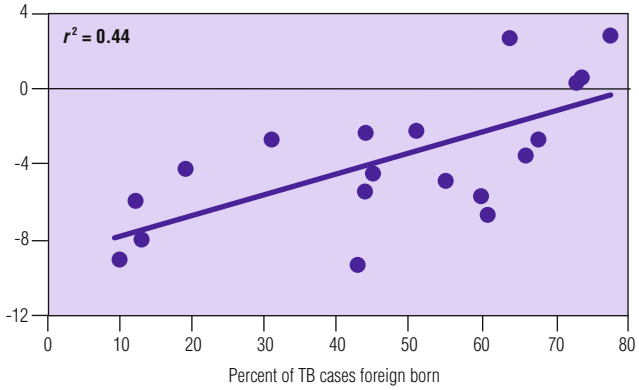
FIGURE 1.22

Correlates of the average annual change in TB incidence rate (vertical axes, %/yr), 1997–2006, in different subregions of the world

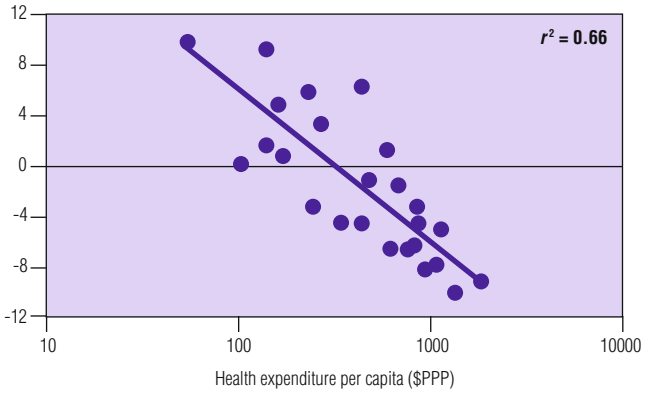
(a) Latin America



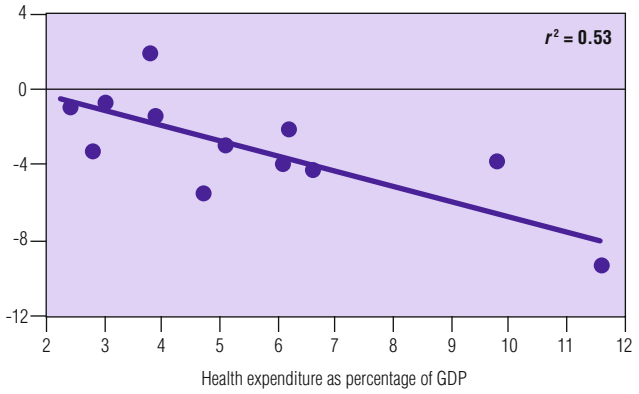
(b) High-income countries



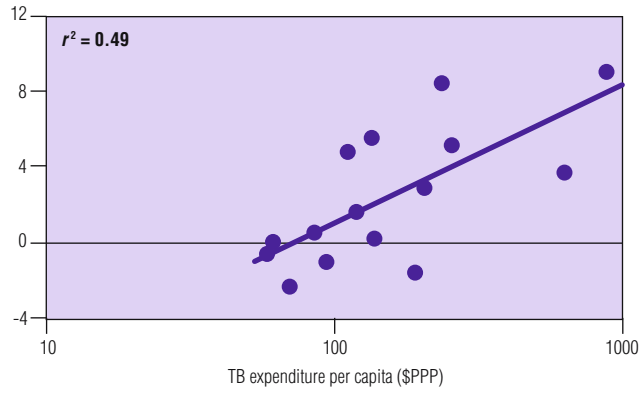
(c) Central and Eastern Europe



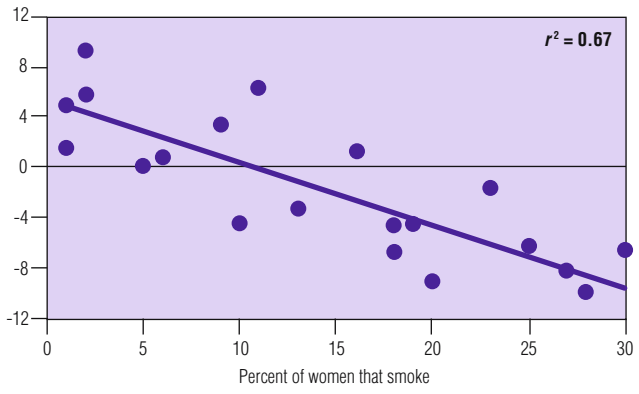
(d) Eastern Mediterranean



(e) Sub-Saharan Africa



(f) Central and Eastern Europe



ern Pacific and Eastern Mediterranean regions, and in the Region of the Americas. However, they are unlikely to be achieved globally based on current trends, due to two regions – the European and African regions – being far from the targets.

In addition to the impact indicators of incidence, prevalence and mortality, progress in TB control can also be assessed with reference to the outcome targets first set by the World Health Assembly in 1991: to detect at least 70% of new (incident) cases of smear-positive TB in DOTS programmes, and to successfully treat 85% of those cases that are detected. In 2005, the treatment success rate globally was 84.7%, just a fraction of one percent below the target, representing a further improvement from previous years despite a 10-fold increase in the annual number of patients treated in DOTS cohorts since 1994. This high average rate conceals the fact that treatment success rates remain well below the target in the European Region and in the Region of the Americas, and indeed the latest data show a worrying deterioration rather than progress in these two regions. With 5.3 million cases notified in DOTS programmes (98% of the total notified globally), of which 2.5 million were new smear-positive cases (99% of the total notified globally), the case detection rate for new smear-positive TB under DOTS is estimated at 61% globally (62% when notifications from non-DOTS programmes are included). The target of 70% has been exceeded in the Western Pacific Region and is close to being achieved in South-East Asia and the Region of the Americas. Increasing DOTS coverage in the Region of the Americas, and increasing both DOTS coverage and the use of smear microscopy in the European Region, could enable both of these regions to achieve the target for case detection. A total of 58 countries met the target for treatment success in 2005, 77 are assessed to have met the target for case detection in 2006, and 32 countries as well as the Western Pacific Region as a whole appear to have met both targets in 2005–2006.

While continued improvement in treatment success and case detection rates is encouraging, there has been a deceleration in the rate of progress in case detection globally, and the rate of 61% achieved in 2006 is behind the Global Plan milestone of 65%. China and India account for 28% of the estimated number of undetected cases, but there was almost no improvement in case detection in either country during 2006. Most of the remaining cases estimated to be undetected are in Africa. This suggests that further progress in case detection globally will depend to a great extent on progress in the African Region, and on further progress in China and India. For the African Region, there is an important caveat, however. It is possible that rates of case detection are currently underestimated, due to the difficulty of disentangling the effect of improved case-finding and the HIV epidemic on TB notifications. Further analytical work of the kind already done in Kenya, and new surveys conducted as part of the impact measurement work discussed in Chapter 2, will help to improve our current estimates of case detection in Africa.

New analytical work is also improving our understanding of the extent to which TB control programmes are driving trends in TB incidence, working with or against other biological, social and economic factors. The ecological analysis presented in this chapter suggests that while DOTS programmes have reduced deaths and prevalence, they have not yet had a major impact on TB transmission and incidence around the world. These observations lay down a challenge: to show that the diagnosis of active TB can be made early enough, and that cure rates can be high enough, to have a substantial impact on incidence on a large geographic scale. The greater the impact on incidence, the more likely it is that prevalence and deaths will be halved by the MDG deadline of 2015.

CHAPTER 2

Implementing the Stop TB Strategy

The Stop TB Strategy, launched by WHO in 2006, sets out the interventions that need to be implemented to achieve the MDG, Stop TB Partnership and World Health Assembly targets discussed in **Chapter 1**. The Global Plan to Stop TB, launched by the Stop TB Partnership in 2006, describes how, and at what scale, the strategy should be implemented over the decade 2006–2015 (see also **Chapter 1**). To monitor implementation of the strategy, WHO has asked countries to report on the implementation of TB control activities according to the strategy's major components and subcomponents (**Tables 2.1 and 2.2**) since 2006. In the 2007 round of data collection, countries were asked to report on activities implemented in 2006 and on activities planned for 2007 (see **Annex 2** for details on methods). In a few cases, data for 2008 were also requested.

This chapter summarizes the major findings and, wherever possible, presents these alongside comparable data reported in previous years to illustrate trends over time. It is structured in seven major sections. The first provides an overview of the completeness of reporting for each component of the Stop TB Strategy. The next six sections present results for the six major components of the Stop TB Strategy, as follows:

- *DOTS expansion and enhancement.* This section starts with an overview of DOTS implementation, including the number of countries in which DOTS is implemented, DOTS population coverage and the number of patients treated in DOTS programmes. It then discusses political commitment, case detection through quality-assured bacteriology, standardized treatment with supervision and patient support, drug supply and management systems, and monitoring and evaluation including impact measurement.
- *TB/HIV, MDR-TB and other challenges.* This section analyses the implementation of collaborative TB/HIV activities, the provision of diagnosis and treatment for cases of MDR-TB, TB control activities for prisoners, refugees and other high-risk groups, and TB control activities in special situations such as humanitarian emergencies.
- *Health system strengthening.* This section covers how the diagnosis of TB and treatment of TB patients are integrated into primary health care services, human resource development (HRD), and the links

TABLE 2.1

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

TABLE 2.2

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

between planning for TB control and planning for the health sector and public sector as a whole. It also covers implementation of the Practical Approach to Lung Health (PAL).

- *Engaging all care providers*. This section provides information on the implementation of public–private and public–public mix (PPM) approaches to TB control, including the use of the International Standards for Tuberculosis Care (ISTC).
- *Empowering people with TB, and communities*. This section assesses advocacy, communication and social mobilization (ACSM) activities, community participation in TB care and adoption of the Patients' Charter;
- *Enabling and promoting research*. This section summarizes operational research activities.

Further details about the implementation of all major components and subcomponents of the Stop TB Strategy are provided for each of the 22 HBCs in Annex 1.

2.1 Data reported to WHO in 2007

The data that were reported to WHO in 2007 are summarized in **Tables 2.3 and 2.4**. Reporting was best for questions about the existence and content of national strategic plans for TB control, ACSM and community TB care. Reporting was least complete for questions about collaborative TB/HIV activities that aim to reduce the burden of TB in HIV-positive people (intensified TB case-finding and provision of isoniazid preventive therapy, or IPT), TB control for special groups and populations, and PPM. Among the 22 HBCs, most of the data that were requested were provided.

2.2 DOTS expansion and enhancement

2.2.1 DOTS coverage and numbers of patients treated

The total number of countries implementing DOTS has increased steadily from 1995, reaching 184 countries by 2006 (**Figure 2.1**). All 22 HBCs have had DOTS programmes since 2000, many of which have been established for much longer.

DOTS coverage within countries has also increased since 1995 (**Table 2.5**). By the end of 2006, 93% of the world's population lived in counties, districts, oblasts and provinces of countries that had adopted DOTS. Population coverage was reported to exceed 90% in all regions except Europe (**Figure 2.2**). All but three HBCs (Brazil, Nigeria and the Russian Federation) reported that at least 90% of the population lived in areas where DOTS was being implemented. Population coverage in Brazil, Nigeria and the Russian Federation was 86%, 75% and 84% respectively (**Table 2.5**).

TABLE 2.3

Reporting on implementation of the Stop TB Strategy, non high-burden countries, 2006. Number of countries (out of 179 countries reporting) answering given percentage of questions on each sub-component of the strategy.

	COMPLETENESS OF REPORTING			
	<50%	50–75%	75–90%	>90%
1. DOTS expansion and enhancement				
National strategic plan for TB control	16	4	8	153
Case detection through quality-assured bacteriology	62	34	41	44
Standardized treatment, with supervision and patient support	30	121	30	0
Drug supply and management system	57	40	63	21
Monitoring and evaluation, including impact measurement	57	46	21	57
2. TB/HIV, MDR-TB and other challenges				
Collaborative TB/HIV activities				
Mechanisms for collaboration and policy development	57	16	52	56
HIV-testing for TB patients, provision of CPT and ART	69	37	12	63
Intensified TB case-finding and IPT for HIV-positive people	119	11	11	40
Management of MDR-TB				
Policy and stage of implementation	59	7	16	99
Diagnosis and treatment of MDR-TB	42	7	65	67
High-risk groups and special situations	120	46	0	15
3. Health system strengthening				
Practical Approach to Lung Health (PAL)	128	3	40	9
Human resource development	55	6	31	89
4. Engaging all care providers				
Public–private and public–public mix approaches (PPM)	128	10	11	32
International Standards for Tuberculosis Care	127	8	0	46
5. Empowering people with TB, and communities				
Advocacy, communication and social mobilization (ACSM)	61	0	0	120
Community participation in TB control	61	0	0	120
Patients' Charter for Tuberculosis Care	68	6	0	107
6. Enabling and promoting research				
Operational research	83	23	0	75

TABLE 2.4

Reporting on implementation of the Stop TB Strategy, high-burden countries, 2006. Number of countries (out of 22) answering given percentage of questions on each sub-component of the strategy.

	PERCENTAGE OF QUESTIONS ANSWERED			
	<50%	50–75%	75–90%	>90%
1. DOTS expansion and enhancement				
National strategic plan for TB control	0	0	3	19
Standardized treatment, with supervision and patient support	0	1	12	9
Case detection through quality-assured bacteriology	1	1	15	5
Drug supply and management system	0	1	10	11
Monitoring and evaluation, including impact measurement	1	7	10	4
2. TB/HIV, MDR-TB and other challenges				
Collaborative TB/HIV activities				
Mechanisms for collaboration and policy development	0	0	12	10
HIV-testing for TB patients, provision of CPT and ART	5	3	1	13
Intensified TB case-finding and IPT for HIV-positive people	11	5	6	0
Management of MDR-TB				
Policy and stage of implementation	0	1	4	17
Diagnosis and treatment of MDR-TB	2	1	5	14
High-risk groups and special situations	1	1	20	0
3. Health system strengthening				
Links with other planning initiatives	1	3	9	9
Practical Approach to Lung Health (PAL)	0	0	19	3
Human resource development	1	6	8	7
4. Engaging all care providers				
Public–private and public–public mix approaches (PPM)	0	2	9	11
International Standards for Tuberculosis Care	2	0	0	20
5. Empowering people with TB, and communities				
Advocacy, communication and social mobilization (ACSM)	3	1	2	16
Community participation in TB control	3	3	15	1
Patients' Charter for Tuberculosis Care	2	9	0	11
6. Enabling and promoting research				
Operational research	4	6	0	12

FIGURE 2.1

Number of countries implementing DOTS (out of a total of 212 countries), 1991–2006

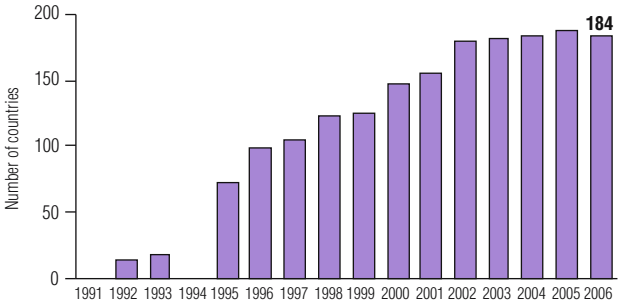


FIGURE 2.2

DOTS coverage by WHO region, 2006. The purple portion of each bar shows DOTS coverage as a percent of the population. The numbers in each bar show the population (in millions) within (purple portion) or outside (grey portion) DOTS areas.

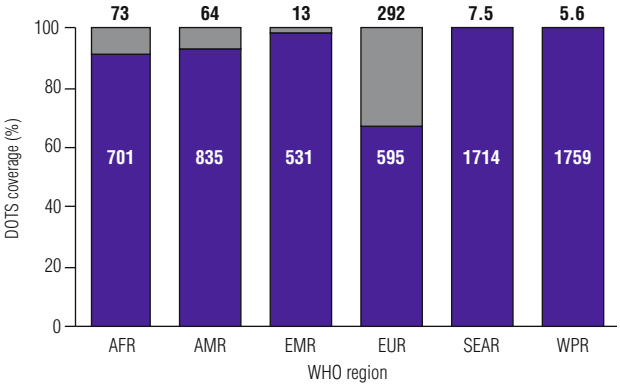


TABLE 2.5

Progress in DOTS implementation, 1995–2006

	PERCENT OF POPULATION COVERED BY DOTS											
	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
1 India	1.5	2	2.3	9	13.5	30	45	51.6	67.2	84.0	91.0	100
2 China	49	60	64	64	64	68	68	78	91	96	100	100
3 Indonesia	6	13.7	28.3	80	90	98	98	98	98	98	98	98
4 South Africa	–	0	13	22	66	77	77	98	99.5	93	94	100
5 Nigeria	47	30	40	45	45	47	55	55	60	65	65	75
6 Bangladesh	40.5	65	80	90	90	92	95	95	99	99	99	100
7 Ethiopia	39	39	48	64.4	63	85	70	95	95	70	90	100
8 Pakistan	2	8	–	8	8	9	24	44	66	79	100	100
9 Philippines	4.3	2	15	16.9	43	89.6	95	98	100	100	100	100
10 DR Congo	47	51.4	60	60	62	70	70	70	75	75	100	100
11 Russian Federation	–	2.3	2.3	5	5	12	16	25	25	45	83	84
12 Viet Nam	50	95	93	96	98.5	99.8	99.8	99.9	100	100	99.9	100
13 Kenya	15	100	100	100	100	100	100	100	100	100	100	100
14 UR Tanzania	98	100	100	100	100	100	100	100	100	100	100	100
15 Uganda	–	0	100	100	100	100	100	100	100	100	100	100
16 Brazil	–	0	0	3	7	7	32	25	33.6	52	68	86
17 Mozambique	97	100	84	95	–	100	100	100	100	100	100	100
18 Thailand	–	1.1	4	32	59	70	82	100	100	100	100	100
19 Myanmar	–	59	60	60.3	64	77	84	88.3	95	95	95	95
20 Zimbabwe	–	0	0	100	11.6	100	100	100	100	100	100	100
21 Cambodia	60	80	88	100	100	99	100	100	100	100	100	100
22 Afghanistan	–	–	12	11	13.5	15	12	38	53	68	81	97
High-burden countries	**24**	**32**	**36**	**43**	**45**	**55**	**61**	**68**	**79**	**87**	**94**	**98**
AFR	43	46	56	61	56	71	70	81	85	83	88	91
AMR	12	48	50	55	65	68	73	73	78	83	88	93
EMR	16	12	18	33	51	65	71	77	87	90	97	98
EUR	5.4	8.2	17	22	23	26	32	40	42	47	60	67
SEAR	6.7	12	16	29	36	49	60	66	77	89	93	100
WPR	43	55	57	58	57	67	68	77	90	94	98	100
Global	**22**	**32**	**37**	**43**	**47**	**57**	**62**	**69**	**78**	**83**	**89**	**93**

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

As reported in greater detail in **Chapter 1**, 4.9 million new cases of TB were notified by DOTS programmes in 2006, of which 2.5 million were new smear-positive cases. These numbers represented 98% and 99% of total TB case notifications (DOTS and non-DOTS programmes), respectively. The percentage of all estimated new cases of smear-positive TB detected by DOTS programmes – the case detection rate – was 61% globally in 2006; the case detection rate for all cases was 54%. A cumulative total of 31.8 million new and relapse cases have been treated in DOTS programmes in the 12 years from 1995 (when reliable records began) to 2006. Globally, the treatment success rate was 84.7% in the 2005 cohort, meaning that the target of 85% has almost been reached. The Western Pacific Region has reached both targets related to DOTS implementation (i.e. 70% case detection rate and 85% treatment success rate), and the South-East Asia Region and the Region of the Americas are close to doing so. The other three regions (African, European and Eastern Mediterranean regions) are much further from achieving these targets. This short summary of the data that are presented in much greater detail in **Chapter 1** is useful for setting the information provided in the rest of this chapter in context.

2.2.2 Political commitment

Continued political commitment is essential for sustaining DOTS as well as for introducing and then scaling up other components of the Stop TB Strategy. Two indicators of political commitment are the existence of a national strategic plan for TB control and the share of the total funding required for TB control that is being provided from domestic sources.

A national strategic plan for TB control was reported to exist in 155 countries, including all HBCs. Among HBCs, eight increased domestic funding for TB control between 2007 and 2008: Afghanistan, Brazil, Ethiopia, Mozambique, Myanmar, the United Republic of Tanzania, Viet Nam and Zimbabwe. In a further eight HBCs (Cambodia, China, the Democratic Republic of the Congo, India, Indonesia, Kenya, the Russian Federation and South Africa), domestic funding in 2008 was maintained at a level similar to 2007. The share of the NTP budget being funded from domestic sources averages 64% across the 22 HBCs for 2008, but varies from less than 20% in Afghanistan, Kenya, Myanmar and Uganda to 30–50% in eight countries (for example, Indonesia, Mozambique, Nigeria and Pakistan) to 50–69% in four countries (for example, China and the Philippines) to over 70% in five countries (Brazil, India, the Russian

TABLE 2.6

Stock-outs of laboratory reagents and of first-line anti-TB drugs, 2006

	LABORATORY REAGENTS AND SUPPLIES		FIRST-LINE ANTI-TB DRUGS	
	CENTRAL	PERIPHERAL	CENTRAL	PERIPHERAL
1 India	N	N	N	N
2 China	Y	Some units	N	N
3 Indonesia	N	N	N	N
4 South Africa	N	N	N	All units
5 Nigeria	N	–	N	N
6 Bangladesh	N	N	N	N
7 Ethiopia	N	N	N	N
8 Pakistan	N	Some units	N	N
9 Philippines	N	N	N	N
10 DR Congo	N	Some units	N	Some units
11 Russian Federation	N	N	N	N
12 Viet Nam	N	N	N	N
13 Kenya	N	N	N	N
14 UR Tanzania	N	N	N	All units
15 Uganda	N	Some units	Y	Some units
16 Brazil	Y	All units	N	N
17 Mozambique	N	N	N	N
18 Thailand	N	N	N	N
19 Myanmar	N	N	N	N
20 Zimbabwe	N	Some units	Y	Some units
21 Cambodia	N	N	N	N
22 Afghanistan	N	N	N	N
High-burden countries[a]	**2/22**	**6/21**	**2/22**	**6/22**
AFR (46)[b]	6/39	9/35	7/38	12/38
AMR (44)	3/35	8/29	6/35	9/27
EMR (22)	2/22	5/21	3/21	3/20
EUR (53)	3/37	6/35	2/35	4/35
SEAR (11)	1/10	2/11	1/10	1/11
WPR (36)	5/32	6/26	7/28	5/24
Global (212)	**20/175**	**36/157**	**26/167**	**34/155**

– Indicates information not provided.

[a] In the lower part of the table the numerator of each fraction is the number of countries reporting stock-outs; the denominator is the number of countries providing information.

[b] The number of countries in each region is shown in parentheses.

Federation, South Africa and Viet Nam). There were insufficient data to make an assessment for Thailand. Full details about financing for TB control, including discussion of how domestic funding is related to a country's income level, are provided in **Chapter 3**.

2.2.3 Case detection through quality-assured bacteriology

Sputum smear microscopy is being widely used for the diagnosis of TB: 85% of reporting countries (151/177) stated that it is used for all people with suspected pulmonary TB. This included 20 HBCs. Laboratory supplies are generally adequate, but six HBCs reported stock-outs at peripheral level in some units: Brazil, China, Pakistan, the Democratic Republic of the Congo, Uganda and Zimbabwe (**Table 2.6**). Among all countries, 20 reported some stock-outs at central level; 36 reported stock-outs at peripheral level (**Table 2.6**). More positively, almost all HBCs have established links with non-NTP laboratory services, including laboratories in the private sector and/or laboratory services provided by nongovernmental organizations (NGOs). This should help to expand diagnostic capacity in future, which is particularly needed in Ethiopia, Nigeria and Pakistan. In these three HBCs, the number of laboratories performing sputum smear microscopy is below the recommended benchmark of 1 per 100 000 population (**Table 2.7**) and case detection rates remain below the global target of 70%.

While coverage and use of sputum smear microscopy services are generally high, the availability of culture and DST remains limited in most HBCs (**Table 2.7**). Only seven HBCs had at least one culture laboratory for every 5 million population, which is the level recommended in the Global Plan. These were Brazil, Cambodia, China, the Russian Federation (with 34 culture laboratories for every 5 million population), South Africa, Thailand and Viet Nam. The same set of countries, plus Indonesia and Uganda, had one laboratory able to provide services for drug susceptibility testing (DST) per 10 million population. This leaves many countries with a major shortage of laboratories providing culture and DST services. Encouragingly, the need for expansion of culture and DST capacity has been widely recognized. Among the 22 HBCs, 17 have plans to establish or scale up culture and DST services.

National reference laboratories (NRLs) are essential for the expansion of quality-assured culture and DST services. Most HBCs listed increased NRL capacity and improved NRL performance as a priority activity for 2007. For this to be successful, there are several major challenges that need to be overcome. These include a shortage of adequately trained staff, insufficient funding, suboptimal biosafety standards and limited availability of sustained technical assistance.

Given the demand for improvement in diagnostic services, particularly for drug-resistant TB, the supranational reference laboratory network (SRLN) is also in

TABLE 2.7

Coverage of laboratory services, high-burden countries, 2006

			ACCESS TO DIAGNOSTIC SERVICES						LABORATORIES INCLUDED IN EXTERNAL QUALITY ASSURANCE (EQA) FOR SPUTUM SMEAR MICROSCOPY	
			SPUTUM SMEAR		CULTURE		DST			
	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	1 151 751	Y	11 968	1.0	8	*0.03*	8	*0.07*	9 422	79
2 China	1 320 864	Y	3 010	0.2	360	*1.4*	90	*2.7*	2 770	92
3 Indonesia	228 864	N	4 855	2.1	41	*0.9*	11	*1.8*	4 855	100
4 South Africa	48 282	Y	143	0.3	13	1.3	8	2.7	143	100
5 Nigeria	144 720	N	694	0.5	0	*0.0*	0	*0.0*	416	60
6 Bangladesh	155 991	Y	687	0.4	3	*0.1*	0	*0.2*	679	99
7 Ethiopia	81 021	Y	713	0.9	1	0.1	1	0.1	–	–
8 Pakistan	160 943	N	982	0.6	3	*0.1*	1	*0.2*	318	32
9 Philippines	86 264	Y	2 374	2.8	3	*0.2*	3	*0.3*	2 374	100
10 DR Congo	60 644	Y	1 069	1.8	1	0.1	1	0.2	1 069	100
11 Russian Federation	143 221	N	4 953	3.5	978	*34*	302	*68*	998	20
12 Viet Nam	86 206	Y	874	1.0	18	1.0	2	2.1	740	85
13 Kenya	36 553	Y	770	2.1	2	0.3	2	0.5	400	52
14 UR Tanzania	39 459	Y	690	1.7	3	0.4	1	0.8	690	100
15 Uganda	29 899	Y	726	2.4	3	0.5	2	1.0	515	71
16 Brazil	189 323	Y	4 044	2.1	193	*5.1*	38	*10*	2 100	52
17 Mozambique	20 971	Y	250	1.2	1	0.2	1	0.5	11	4.4
18 Thailand	63 444	Y	937	1.5	65	5.1	18	10	864	92
19 Myanmar	48 379	Y	391	0.8	2	0.2	1	0.4	50	13
20 Zimbabwe	13 228	Y	180	1.4	1	0.4	1	0.8	10	5.6
21 Cambodia	14 197	Y	186	1.3	3	1.1	1	2.1	186	100
22 Afghanistan	26 088	N	500	1.9	1	0.2	1	0.4	–	–

– Indicates information not provided; 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 in italics), one laboratory for culture and DST in each major administrative area (e.g. province) may be sufficient. See also footnote 3 in country profiles (Annex 1).

the process of global expansion. Currently, there are 26 SRLs: two in the African Region, five in the Region of the Americas, 11 in the European Region, one in the Eastern Mediterranean Region, two in the South-East Asia Region and five in the Western Pacific Region (**Figure 2.3**). All regions have plans to expand their SRL networks, and candidate laboratories will be assessed and evaluated in the near future. This should increase coverage of quality-assured culture and DST services at both national and global levels.

2.2.4 Standardized treatment, with supervision and patient support

The vast majority of reporting countries (96%, 173/181) use standardized short-course chemotherapy, including all HBCs. Treatment with the Category I regimen for 6 months is used in 122 countries worldwide, while 31 countries use an 8-month regimen without rifampicin in the continuation phase of treatment. Among countries using the 8-month regimen, 13 (including five HBCs) have plans to switch to the 6-month regimen.

Health-facility based, community-based or home-based directly observed therapy (DOT) was used during the initial phase of treatment in 166 countries, although only 123 of these stated that it was used for all patients in all DOTS units. Among HBCs, Brazil, China, Nigeria, Pakistan and Thailand reported that DOT was available only in some units and/or only for some patients.

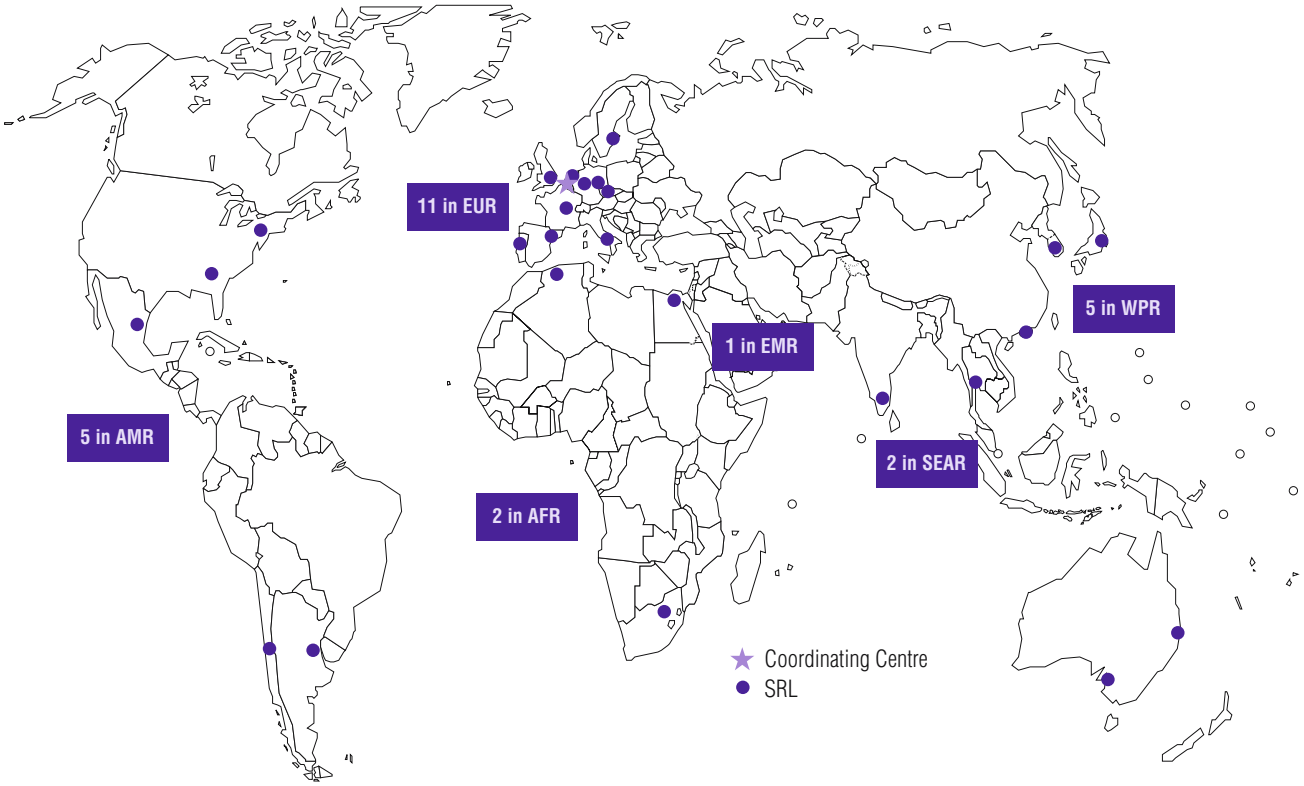
Almost all reporting countries (96%, 170/178), including all HBCs, provided anti-TB drugs free-of-charge to all patients being treated with the Category I regimen under DOTS. Incentives and enablers are used in some countries, mostly in the European Region. Examples include food parcels, tickets for public transport and provision of psychological counselling to ensure adherence to treatment.

2.2.5 Drug supply and management system

Uninterrupted provision of quality-assured anti-TB drugs is fundamental to effective TB control. However, despite the availability of funding from the Global Fund and the Global Drug Facility (GDF), as well as the option of procurement at highly competitive prices from the GDF, drug shortages continue to occur in all regions, at both central and peripheral levels (**Table 2.6**). This includes shortages in two HBCs (Uganda, and Zimbabwe) at central level, and in five HBCs (the Democratic Republic of the Congo, South Africa, Uganda, the United Republic of Tanzania and Zimbabwe) at peripheral level. Reported shortages were particularly common in the African Region and the Region of the Americas. Reporting on drug availability was relatively incomplete for the Region of the Americas as well the European and Western Pacific regions. This suggests that better monitoring of drug stocks is needed in some countries in these regions, for example via the revised recording and

FIGURE 2.3

Tuberculosis supranational reference laboratory network, 2006



reporting forms that have been developed by WHO and other partners.

During the past year, the availability of quality-assured and affordable anti-TB drugs has improved. For example, the prequalification process for paediatric formulations of fixed-dose combinations (FDCs) has been accelerated via mechanisms including pooled procurement by the GDF, the involvement of UNITAID and provision of technical assistance from the WHO prequalification project. A total of 71 countries including 12 HBCs ordered FDCs from the GDF in 2007.

Members of the Stop TB Partnership, including WHO and Management Sciences for Health, continue to hold training workshops in drug management in collaboration with the GDF. In 2007, two workshops were held, one in Benin and the other in Cape Town.

2.2.6 Monitoring and evaluation, including impact measurement

Global targets to reduce the epidemiological burden of TB have been set for 2015 within the context of the MDGs and by the Stop TB Partnership (see **Chapter 1**). Measuring progress towards these targets requires routine monitoring of case notifications and treatment outcomes, as well as evaluation of the impact of TB control on incidence, prevalence and mortality using routine surveillance data (TB case notification data and TB mortality data from vital registration systems) and, in some cases, special surveys of the prevalence of disease, infection or mortality. Questions related to impact measurement were asked on the WHO data collection form for the first time in 2007.

Out of 212 countries, 184 DOTS countries and seven non-DOTS countries routinely record and report data on case notifications and treatment outcomes. In addition, 119 (of 202) reporting countries (59%) stated that they publish an annual report of NTP activities and performance. Although some countries have been publishing an annual report for more than 20 years, most countries started to produce such reports in the 1990s. Among the 22 HBCs, all published annual reports except for the Democratic Republic of the Congo, South Africa and Thailand.

Plans to assess the impact of TB control were reported by 128 out of 202 (63%) countries (**Table 2.8**). Among HBCs, only Afghanistan, the Democratic Republic of the Congo and Mozambique did not report having a plan for impact measurement. The proportion of countries with a plan for impact measurement was particularly high in the South-East Asia Region (9 out of 11 countries).

In-depth analysis of routine surveillance data collected by NTPs was the most frequent method by which countries intended to assess the impact of TB control (116/128, 91%). Analysis of mortality data from vital registration systems (also a form of routine surveillance data) was also reported by a large number of countries (51 out of 128 reporting countries), with numbers in absolute terms highest in the European and Western

TABLE 2.8

Plans to assess the impact of TB control on the epidemiological burden of TB in the next 10 years

	PLAN TO ASSESS IMPACT EXISTS	IN-DEPTH ANALYSIS OF ROUTINE SURVEILLANCE DATA	PREVALENCE OF DISEASE SURVEY[a]	PREVALENCE OF INFECTION SURVEY[a]	MORTALITY SURVEY	ANALYSIS OF VITAL REGISTRATION DATA (MORTALITY RECORDS)
1 India	Y	Y	Y, sub-national	Y	Y	N
2 China	Y	Y	Y	Y	Y	Y
3 Indonesia	Y	N	Y	Y, sub-national	Y	Y
4 South Africa	Y	Y	Y	N	N	Y
5 Nigeria	Y	Y	Y	–	N	N
6 Bangladesh	Y	Y	Y	Y	N	N
7 Ethiopia	Y	Y	N	Y	Y	N
8 Pakistan	Y	Y	Y, sub-national	Y	N	N
9 Philippines	Y	N	Y	Y	N	N
10 DR Congo	N	N	N	N	N	N
11 Russian Federation	Y	Y	Y	Y	Y	Y
12 Viet Nam	Y	Y	Y	Y	N	N
13 Kenya	Y	Y	Y	Y	N	N
14 UR Tanzania	Y	Y	Y	Y	N	N
15 Uganda	Y	Y	Y	N	N	N
16 Brazil	Y	Y	N	N	Y	Y
17 Mozambique	N	N	N	N	N	N
18 Thailand	Y	Y	Y	N	Y	N
19 Myanmar	Y	Y	Y	N	Y	Y
20 Zimbabwe	Y	Y	Y	N	N	Y
21 Cambodia	Y	N	Y	Y	N	N
22 Afghanistan	N	N	N	N	N	N
High-burden countries[b]	**19**	**16**	**17**	**12**	**8**	**7**
AFR (46)[c]	27	22	18	9	5	4
AMR (44)	23	23	5	5	5	9
EMR (22)	15	13	12	10	2	3
EUR (53)	32	32	13	12	9	18
SEAR (11)	9	8	7	5	6	5
WPR (36)	22	18	14	11	7	12
Global (212)	**128**	**116**	**69**	**52**	**34**	**51**

– Indicates information not provided.
[a] National survey unless otherwise specified.
[b] The lower part of table shows the number of countries planning each type of assessment (including those planning sub-national surveys).
[c] The number of countries in each region is shown in parentheses.

Pacific regions and the Region of the Americas. Only four countries in the African Region (Comoros, Rwanda, SouthAfrica and Zimbabwe) reported plans to use mortality data from vital registration systems.

Surveys of the prevalence of disease were being planned by 69 countries, including 55 national and 14 sub-national surveys. Of the 44 countries that reported the year in which they were intending to start their national surveys, 8 (18%) were due to start in 2007, 17 (39%) in 2008, 7 (16%) in 2009 and the remainder in later years. Measurement of burden and impact is particularly well advanced in the Western Pacific Region, where all four HBCs have already undertaken at least one disease prevalence survey and where follow-up surveys are planned.

In December 2007, the WHO Task Force on TB Impact Measurement agreed a set of epidemiological criteria to guide the selection of countries that should undertake prevalence of disease surveys during the period up to 2015.[1] These criteria were used to identify countries with all or a combination of the following characteristics: (i) weak routine reporting systems; (ii) high TB prevalence; (iii) high TB burden (number of cases); and (iv) high HIV/AIDS prevalence. The Task Force also considered whether a country already had a plan to conduct a survey within the next 10 years and whether they had done a survey since the year 2000. Of the 57 countries that met the criteria, 30 reported plans to carry out a national (n=25) or sub-national (n=5) survey. Among HBCs, 20 met the criteria, of which 17 reported plans to carry out either a national survey (n=15) or a sub-national survey (n=2, India and Pakistan). Three HBCs met the criteria but did not report having a plan to conduct a survey within the next 10 years: the Democratic Republic of the Congo, Ethiopia and Mozambique. Of the 155 countries that did not meet the criteria, 39 reported having a plan to conduct either a national (n=30) or a sub-national (n=9) survey.

The Task Force also identified a shorter list of 21 countries[2] in which surveys should be prioritized in order

[1] *Report of the second meeting of the WHO Task Force on TB Impact Measurement. Geneva, 6–7 December 2007.* Geneva, World Health Organization, 2007 (unpublished).
[2] From among the longer list of 57 countries.

to produce credible regional and global assessments of whether the 2015 impact targets are achieved, as well as to assess progress in the period up to 2015. This list includes 15 HBCs and six other countries.[1] Among the 21 countries, 16 countries (including 12 HBCs) have reported plans to carry out national surveys and two (1 HBC) have reported plans to carry out a sub-national survey.

Most of the 52 countries that are planning prevalence of TB infection (tuberculin) surveys at national or sub-national levels also reported plans to conduct prevalence of disease surveys. It is important that these countries try to implement both surveys at the same time and in the same place.

Population-based mortality surveys (e.g. verbal autopsy studies) were being planned by only 34 countries. From the available data, it is not clear if these surveys will be limited to TB or whether they will be combined with collection of data for other diseases.

2.3 TB/HIV, MDR-TB and other challenges

2.3.1 Collaborative TB/HIV activities

Globally, there were an estimated 709 000 new HIV-positive TB cases in 2006 (see **Chapter 1** for further details). This estimate accounts for the revisions to the global estimates of HIV prevalence in the general population that were published by UNAIDS in December 2007.[2] The African Region accounts for 85% of estimated cases, India for 3.3%, the European Region for 1.8% and other countries for 9.4%.

Collaborative TB/HIV activities are essential to ensure that HIV-positive TB patients are identified and treated appropriately, and to prevent TB in HIV-positive people.[3] These activities include establishing mechanisms for collaboration between TB and HIV programmes (coordinating bodies, joint TB/HIV planning, monitoring and evaluation, HIV surveillance); for HIV-positive people, intensified TB case-finding and, for those without active TB, IPT; infection control in health-care and congregate settings; HIV testing for TB patients; and, for those TB patients infected with HIV, co-trimoxazole preventive therapy (CPT) and ART.

Mechanisms for collaboration and policy development

Among 63 countries that have been identified as priorities at global level[4] and which collectively account for 97% of estimated HIV-positive cases worldwide, around 40 had established coordinating bodies, developed a joint TB/HIV plan and were undertaking HIV surveillance by 2006 (**Figure 2.4**). Around 50 countries had policies for HIV counselling and testing among TB patients, as well as for provision of CPT and ART to those coinfected with HIV; these countries account for about 90% of the estimated number of HIV-positive TB cases globally. A relatively high number of countries also had policies for intensified case-finding among HIV-positive people. In contrast, a smaller number of countries had policies related to IPT (26 countries) and infection control (31 countries), with these countries accounting for only 66% and 41% respectively of the global number of HIV-positive TB cases. While there was variation in the extent to which mechanisms for collaboration or policies were in place in 2006, in all instances there was an improvement compared with 2005 (**Figure 2.4**).

When all countries that reported data are considered, the number of countries with policies is much higher, but the fraction of the global number of HIV-positive TB cases covered is almost the same (**Figure 2.5**).

HIV testing for TB patients

HIV testing for TB patients is a critical entry point to interventions for both treatment and prevention. There was a substantial increase in provision of HIV testing for TB patients between 2002 and 2006, with reported numbers increasing from 21 806 patients across 9 countries in 2002 (less than 1% of notified TB cases) to 687 174 patients across 112 countries in 2006 – equivalent to 12% of notified TB cases (**Figure 2.6**). In the African Region, 287 945 patients (22% of all notified cases) were tested (**Table 2.9**).

This increase in numbers of patients tested for HIV may be exaggerated by the increase in the number of countries reporting data and the share of the global number of HIV-positive TB cases accounted for by reporting countries (see numbers and percentages below the bars of **Figure 2.6**). Stronger and clearer evidence that HIV testing has increased since 2004 is presented in **Figure 2.7**. This shows the number of TB patients who were tested for HIV in 64 countries that reported data for all three years 2004–2006. The number of TB patients tested for HIV in 11 African countries representing 57% of estimated HIV-positive TB cases globally (and 66% of cases in the African Region, data not shown) increased almost five-fold in three years, while the percentage of all notified cases that were tested increased from 7.5% to 35%. Most of this increase was driven by two countries (Kenya and South Africa) and, to a lesser extent, by Malawi and Zambia (data not shown). Outside the African Region, the number of patients tested for HIV also increased, but by a much smaller amount in absolute terms. The percentage of TB patients tested outside Africa was, however, relatively high (e.g. 56% in 2006).

Across all reporting countries (n=101), testing led

[1] The list of 21 countries is: Bangladesh, Cambodia, China, Ghana, Indonesia, Kenya, Malawi, Mali, Mozambique, Myanmar, Nigeria, Pakistan, the Philippines, Rwanda, Sierra Leone, South Africa, Thailand, the United Republic of Tanzania, Uganda, Viet Nam and Zimbabwe.

[2] *2007 AIDS epidemic update*. Geneva, Joint United Nations Programme on HIV/AIDS and WHO, 2007 (UNAIDS/07.27E/JC1322E).

[3] *Interim policy on collaborative TB/HIV activities*. Geneva, World Health Organization, 2004 (WHO/HTM/TB/2004.330; WHO/HTM/HIV/2004.1).

[4] Refers to 41 countries that were identified as priorities at global level in 2002 and that account for 97% of estimated HIV-positive TB cases globally, plus 22 additional countries that UNAIDS has defined as having a generalized HIV epidemic.

FIGURE 2.4

Mechanisms for collaboration and policies for collaborative TB/HIV activities, 63 priority countries, 2005–2006. Numbers under bars are the percentage of total estimated HIV-positive TB cases accounted for by reporting countries.

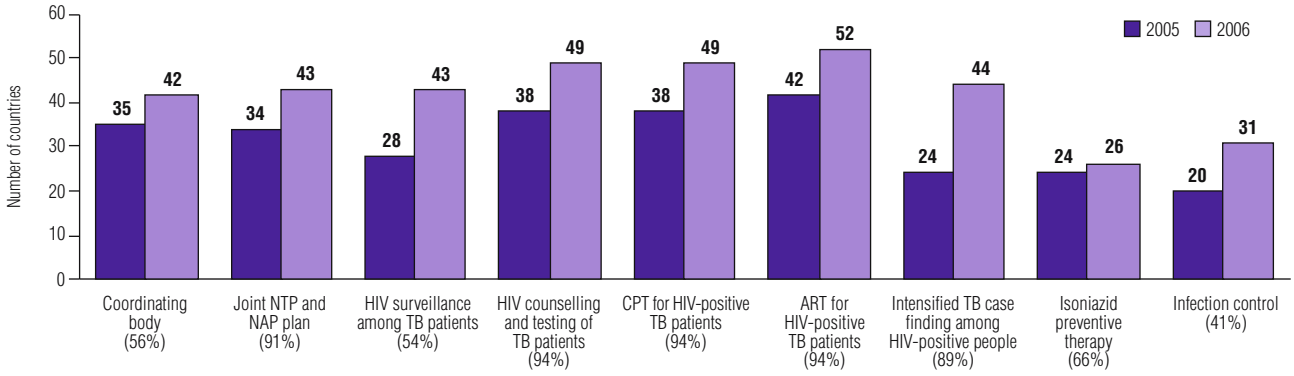


FIGURE 2.5

Mechanisms for collaboration and national policies for collaborative TB/HIV activities, all countries, 2006. Numbers under bars are the percentage of total estimated HIV-positive TB cases accounted for by countries with the respective mechanism or policy.

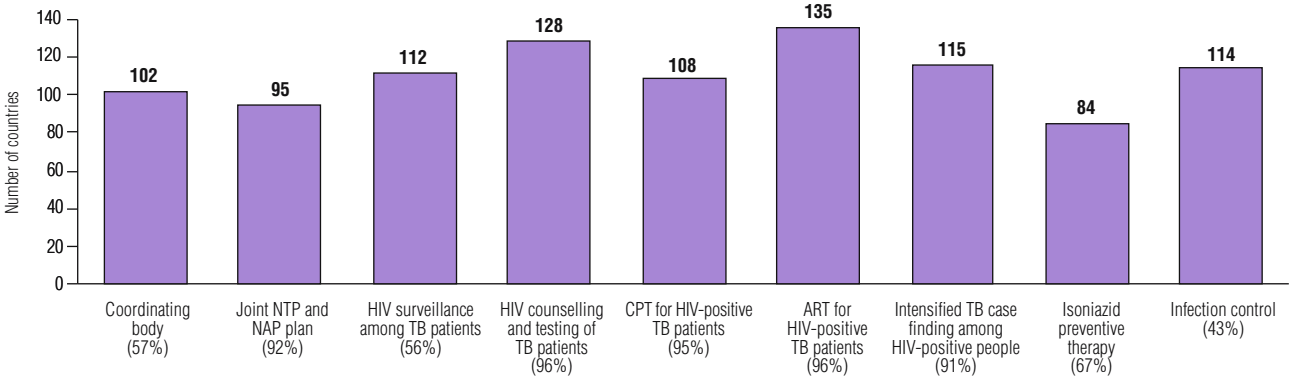


FIGURE 2.6

HIV testing for TB patients, all countries, 2006. Numbers under bars represent the number of countries reporting data followed by the percentage of total estimated HIV-positive TB cases accounted for by reporting countries.

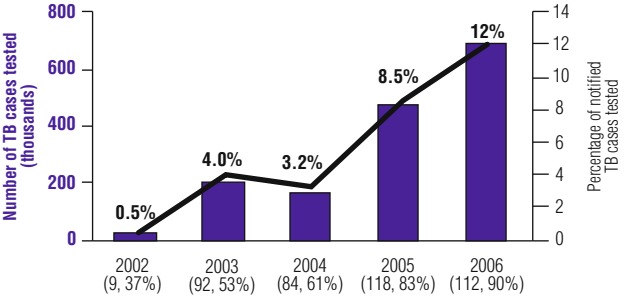


FIGURE 2.7

HIV testing in the 64 countries that reported data for each year 2004–2006. Numbers above bars are the percentage of notified TB cases that were tested for HIV.

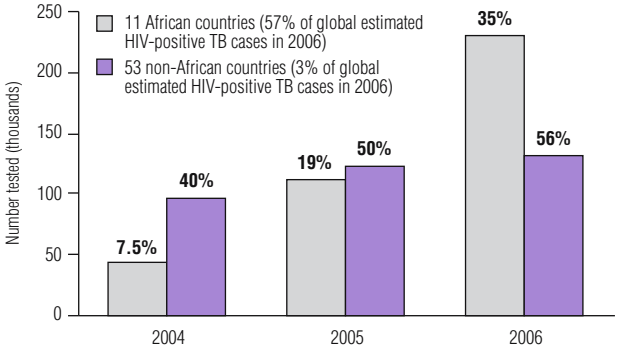


TABLE 2.9

HIV testing and treatment in TB patients, by WHO region, 2006

	% OF NOTIFIED TB PATIENTS TESTED FOR HIV	% OF TESTED TB PATIENTS HIV-POSITIVE	% OF ESTIMATED HIV-POSITIVE TB CASES[a] IDENTIFIED BY TESTING	% OF IDENTIFIED HIV-POSITIVE TB PATIENTS STARTED ON CPT	% OF IDENTIFIED HIV-POSITIVE TB PATIENTS STARTED ON ART	REGIONAL DISTRIBUTION OF ESTIMATED HIV-POSITIVE TB CASES
AFR	22	52	25	78	39	85
AMR	32	15	54	84	76	3.0
EMR	1.4	6.1	4.0	17	16	0.9
EUR	46	1.7	41	54	45	1.8
SEAR	4.1	18	40	66	33	5.6
WPR	2.7	6.9	12	66	35	3.2
Global	**12**	**27**	**26**	**78**	**41**	**100**

[a] Including estimated HIV-positive TB cases in countries which did not provide information on testing.

FIGURE 2.8

HIV testing for TB patients in selected countries, 2006

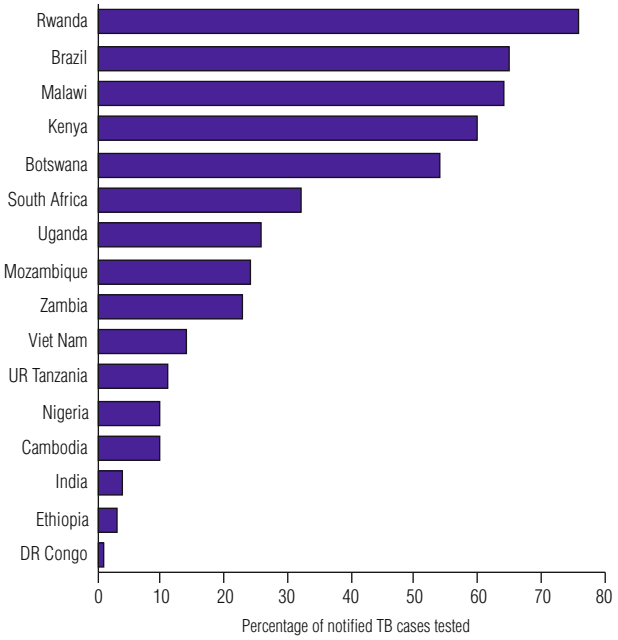
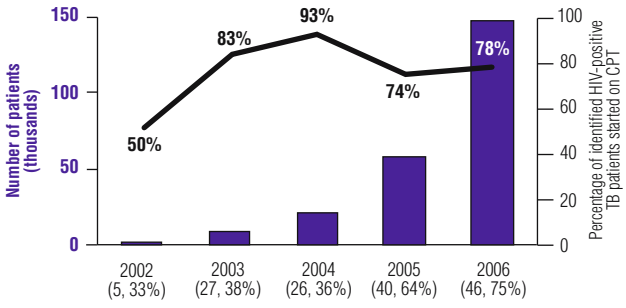


FIGURE 2.9

Co-trimoxazole preventive therapy for HIV-positive TB patients, 2002–2006. Numbers under bars represent the number of countries reporting data followed by the percentage of total estimated HIV-positive TB cases accounted for by reporting countries.



to the detection of 186 217 HIV-positive TB patients. These detected cases represent approximately 26% of the number of HIV-positive TB cases estimated to exist in 2006 (**Table 2.9**). However, there is considerable variation among regions. In the South-East Asia and Western Pacific regions in particular, targeted HIV testing (of patients in specific geographical areas or of patients with specific risk factors) appears to result in a relatively high proportion of the estimated number of HIV-positive TB cases being identified through testing. In South-East Asia, only 4% of notified cases were tested, but this resulted in the detection of 40% of the region's estimated HIV-positive TB cases. In the Western Pacific Region, the figures were 3% and 12%, respectively.

This progress in the number of TB patients being tested for HIV is impressive. However, there is room for further improvement, as illustrated by the high variability in current testing rates among countries (**Figure 2.8**). The high testing rates achieved by a few countries show that there is scope for increasing testing rates elsewhere.

Provision of CPT and ART to HIV-positive TB patients

A major reason for promoting HIV testing in TB patients is to facilitate provision of CPT and ART to HIV-positive patients. This seems to be working. The benefits of testing can be seen in the high proportion of TB patients testing positive for HIV who were treated with CPT (78%) and ART (41%) in 2006. These proportions represent a slight improvement from 2005 (**Figure 2.9 and Figure 2.10**). In absolute terms, the improvement in provision of CPT and ART is much more marked. In 2006, almost 146 586 HIV-positive TB patients were treated with CPT in 46 countries that collectively account for 75% of the global number of HIV-positive TB cases, and 66 601 were started on ART across 54 countries that account for 75% of the global number of HIV-positive TB cases. As with HIV testing, trends are somewhat distorted by the variation in the number of countries reporting data (see figures below bars in both **Figure 2.9 and Figure 2.10**). However, there has been a large increase in the number of patients benefiting from both treatment interventions since 2004. In Africa specifically, the

proportion of patients in whom HIV infection was diagnosed who are started on CPT reached 78% in 2006; the figure for ART was 41% (**Table 2.9**).

Intensified TB case-finding and provision of IPT among HIV-positive people

Screening for TB among HIV-positive people attending HIV care services grew from 194 718 people in 2005 to 314 394 people in 2006 (**Figure 2.11**). Among those screened, 84 713 were found to have TB; this number is equivalent to 12% of the 709 000 HIV-positive TB cases estimated to exist globally. This high proportion suggests that if screening for TB was increased beyond its currently low levels (only 0.9% of the estimated 33 million HIV-positive people were screened in 2006), TB case-finding would improve.

Provision of IPT remains at very low levels, with reported numbers treated with IPT reaching only 27 056 in 2006 – equivalent to less than 0.1% of the estimated 33 million people estimated to be infected with HIV globally (**Figure 2.11**). The low number of people being treated with IPT is inconsistent with policy establishment: while 84 countries reported the existence of an IPT policy, only 25 reported any provision of IPT. Numbers on IPT are also dominated by Botswana, which accounted for 70% of the total number of people reported to be on IPT globally in 2006.

Progress against Global Plan targets

The Global Plan describes the progress required to implement collaborative TB/HIV activities for each year 2006–2015, within the framework of the goal of universal access to ART by 2010. The milestones or targets included for each year in the Global Plan provide a benchmark against which progress in practice can be assessed. A comparison of Global Plan expectations with implementation reported by countries is shown in **Table 2.10**. This shows that, among the 171 countries considered in the Global Plan, 541 415 TB patients were tested for HIV compared with 1.6 million specified in the Global Plan. The proportions of TB patients tested for HIV were 20% and 47% respectively. A total of 146 581 HIV-positive TB patients were started on CPT in 2006, compared with the 500 000 specified in the Global Plan. In terms of the percentage of TB cases found to be HIV-positive and that were enrolled on CPT, the comparison is much more favourable: 86% of TB cases in whom HIV infection was diagnosed were started on CPT in 2006 based on country reports, compared with the target of 46% for 2006 in the Global Plan. For ART, 66 542 diagnosed HIV-positive TB cases were reported to have been enrolled in 2006, compared with a target of 220 000 in the Global Plan. As for CPT, the figures are more impressive in terms of the percentage of diagnosed HIV-positive cases started on ART; 41% according to country reports compared with 44% in the Global Plan. The bigger differences between the absolute numbers of people

FIGURE 2.10

Antiretroviral therapy for HIV-positive TB patients, 2003–2006. Numbers under bars represent the number of countries reporting data followed by the percentage of total estimated HIV-positive TB cases accounted for by reporting countries.

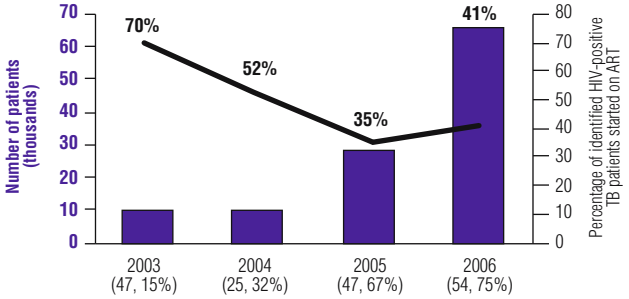


FIGURE 2.11

Intensified TB case finding, diagnosis of TB and IPT provision among HIV-positive people, 2006. Numbers above bars show the number of people receiving the intervention as a percentage of estimated HIV-positive people in reporting countries. Numbers under bars represent the number of countries reporting data followed by the percentage of total estimated HIV-positive TB cases accounted for by reporting countries.

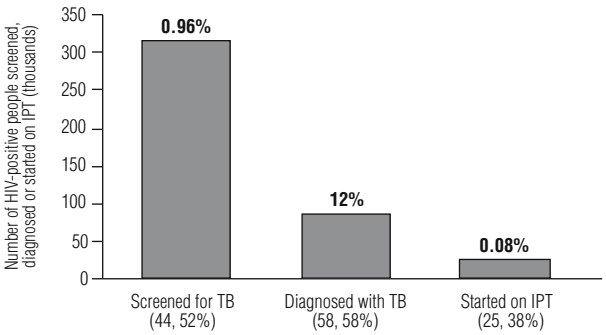


TABLE 2.10

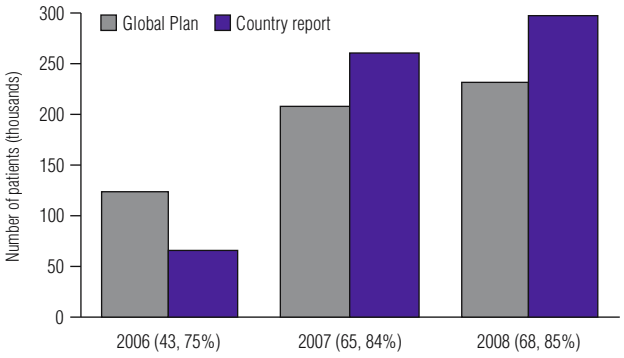
Collaborative TB/HIV activities, 2006: country reports compared with expectations given in *The Global Plan to Stop TB, 2006–2015*

	COUNTRY REPORTS AND LATEST ESTIMATES[a]	GLOBAL PLAN
	(MILLIONS OR PERCENTAGES)	
HIV-testing for TB patients, provision of CPT and ART		
Number of TB patients tested for HIV	0.5[b]	1.6
Total number of notified TB cases including new, re-treatment and other cases	3.6[c]	3.4
Proportion of all notified TB cases that were tested for HIV	20%[c,d]	47%
Number of diagnosed HIV-positive TB cases enrolled on CPT	0.2	0.5
Number of diagnosed HIV-positive TB cases	0.19	1.02
Proportion of all HIV-positive TB cases that enrolled on CPT	86%[e]	46%
Number of diagnosed HIV-positive TB cases enrolled on ART	0.07	0.22
Number of diagnosed HIV-positive TB cases eligible for ART	0.19	0.5
Proportion of all HIV-positive TB cases that enrolled on ART	41%[f]	44%
Intensified TB case-finding and IPT for people with HIV		
Number of HIV-positive people attending HIV services screened for TB	0.31	11
Number of HIV-positive people attending HIV services	7.3	18
Proportion of HIV-positive people attending HIV services that were screened for TB	8.5%[g]	61%
Number of eligible HIV-positive people offered IPT	0.03[h]	1.2
Estimated number of HIV-positive people eligible to receive IPT	28	30
Proportion of estimated number of HIV-positive people eligible for IPT that received IPT	0.3%[i]	4%

[a] Includes only those countries in the Global Plan, i.e. countries in sub-regions Central Europe and Established Market Economies are excluded here. Includes patients reported from DOTS and non-DOTS areas.
[b] Maximum number included for each country is the number of notified cases multiplied by the population coverage of collaborative TB/HIV activities anticipated by the Global Plan.
[c] The numbers of notified TB cases are weighted according to the population coverage of collaborative TB/HIV activities anticipated by the Global Plan.
[d] Only the 95 countries which provided both numerator and denominator are included in this percentage.
[e] Only the 43 countries which provided both numerator and denominator are included in this percentage.
[f] Only the 47 countries which provided both numerator are included in this percentage.
[g] Only the 37 countries which provided both numerator and denominator are included in this percentage.
[h] 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.
[i] Only the 17 countries which provided the numerator are included in the denominator of this percentage.

FIGURE 2.12

Antiretroviral therapy for HIV-positive TB patients: country reports compared to the Global Plan, 2006–2008.
Data from country reports are notified cases (2006) and projections (2007–2008). Numbers under bars represent the number of countries reporting data followed by the percentage of total estimated HIV-positive TB cases accounted for by reporting countries.



receiving CPT and ART compared with similar numbers for the percentage of diagnosed HIV-positive TB cases started on such treatment in both country reports and the Global Plan are attributable to the shortfall in HIV testing. For patients to be treated with either CPT or ART, they must first be diagnosed with HIV, which means that a much higher percentage of TB patients must be tested for HIV.

For ART specifically among TB/HIV interventions, the WHO data collection form requests countries to provide projections of the number of HIV-positive patients who will be started on ART in 2007 and 2008, as well as actual provision of ART in 2006. These data are compared with the Global Plan targets for ART in **Figure 2.12**. About one-third of the countries reported ART projections for 2007 and 2008. Nonetheless, among those countries that did report, anticipated progress is encouraging, with projected numbers higher than the Global Plan targets for those countries in 2007 and 2008.

Activity in HIV care services (intensified case-finding and IPT) is far from Global Plan targets (**Table 2.10**). The Global Plan target for 2006 was to screen 11 million HIV-positive people for TB; the actual figure reported was 314 211. IPT provision remains at very low levels, although, as noted above, Botswana is an exception.

Overall, implementation of TB/HIV interventions falls short of the Global Plan targets. Importantly, however, data from individual countries show that these

TABLE 2.11

Number of MDR-TB cases estimated, notified and expected to be treated, 27 global priority countries and WHO regions

	ESTIMATED CASES, 2006		NOTIFIED	EXPECTED TO BE TREATED	
	% OF ALL TB CASES WITH MDR-TB	NUMBER OF MDR-TB CASES	2006	2007	2008
1 China	8.3	130 548	2	165	388
2 India	4.9	110 132	21	100	450
3 Russian Federation	19	36 037	3 949	24 100	24 000
4 Pakistan	5.0	15 233	–	0	0
5 Bangladesh	4.0	14 583	–	50	150
6 South Africa	2.6	14 034	6 716	4 843	5 252
7 Ukraine	22	13 429	–	–	–
8 Indonesia	2.2	12 142	59	–	100
9 Philippines	4.6	11 848	403	170	340
10 Nigeria	2.3	11 171	–	0	500
11 Uzbekistan	24	9 829	83	60	395
12 DR Congo	2.8	7 044	1	–	–
13 Kazakhstan	25	6 608	4 117	–	–
14 Viet Nam	4.0	6 421	–	100	–
15 Ethiopia	1.9	5 825	–	50	50
16 Myanmar	4.8	4 251	666	75	75
17 Tajikistan	20	3 204	0	0	–
18 Azerbaijan	29	2 397	398	50	150
19 Republic of Moldova	27	2 035	1 040	290	–
20 Kyrgyzstan	18	1 368	336	–	–
21 Belarus	16	1 096	651	–	–
22 Georgia	12	652	266	155	225
23 Bulgaria	13	451	53	50	50
24 Lithuania	17	425	332	–	–
25 Armenia	14	381	215	30	–
26 Latvia	14	218	143	130	115
27 Estonia	20	128	52	67	–
Global priority countries	**5.6**	**421 490**	**19 503**	**30 485**	**32 240**
AFR	2.2	66 711	7 074	7 673	7 993
AMR	3.4	12 254	2 088	6 736	5 301
EMR	4.2	25 475	295	901	928
EUR	16	82 042	12 498	27 243	27 358
SEAR	4.3	149 615	767	2 587	3 004
WPR	6.9	153 042	631	1 397	1 643
Global	**4.8**	**489 139**	**23 353**	**46 537**	**46 227**

– Indicates information not provided.

targets are achievable if currently less well-performing countries emulate targets that have already been reached or exceeded in several countries.

2.3.2 Diagnosis and treatment of MDR-TB

The most recent estimates suggest that, globally, there were about 489 000 cases of MDR-TB in 2006. These cases are very unevenly spread, with 27 countries (of which 15 are in Eastern Europe) accounting for 86% of the total (**Table 2.11**). These 27 countries have been identified as priorities for improved diagnosis and management of MDR-TB at global level.

The Global Project on Anti-tuberculosis Drug Resistance Surveillance (DRS) continues to increase the number of countries from which a direct measure of the number of cases of MDR-TB is available. This allows estimates of the number of cases to be refined over time. By 2007, the project had collected data from 117 countries covering areas that contain more than 50% of global smear-positive TB cases. Recently, new data have become available from new areas of three HBCs (China, India, and the Russian Federation) and from three HBCs for the first time: Ethiopia, the Philippines and the United Republic of Tanzania. Furthermore, 33 countries reported information on resistance to second-line drugs among MDR-TB cases in surveys or through routine surveillance systems. Full details are available in the fourth global report on anti-TB drug resistance surveillance.[1]

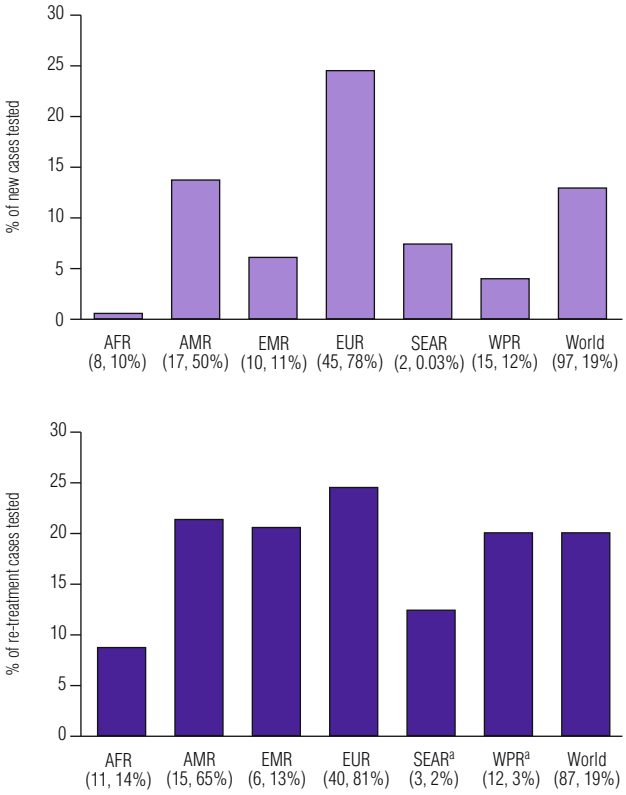
Diagnostic services

Diagnosis of MDR-TB depends on the extent to which DST services are available and used (see also section 2.2.3 above on Case detection through quality-assured bacteriology). In 2006, 118 732 diagnostic drug susceptibility tests were reported among 108 countries, with

[1] The WHO/IUATLD Global Project on Anti-tuberculosis Drug Resistance Surveillance. *Anti-tuberculosis drug resistance in the world. Fourth global report.* Geneva, World Health Organization, 2008 (WHO/HTM/TB/2008.394).

FIGURE 2.13

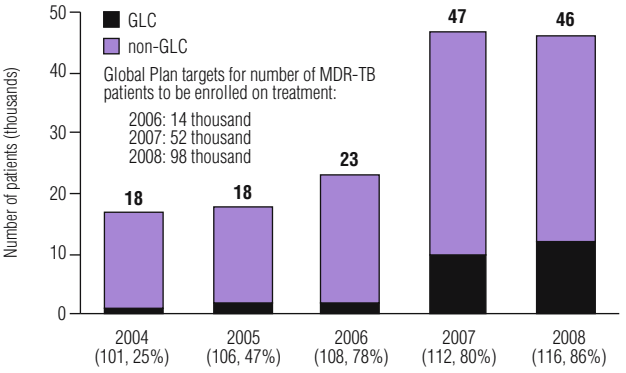
Diagnostic DST for new and re-treatment cases by WHO region, 2006. Numbers under bars represent the number of countries reporting data followed by the percentage of total estimated cases of MDR-TB accounted for by reporting countries.



[a] Data from India and China excluded because testing of only 26 (India) and 10 (China) re-treatment cases was reported.

FIGURE 2.14

Notified cases of MDR-TB (2004–2006) and projected patients to be treated (2007–2008). Numbers under bars represent the number of countries reporting data followed by the percentage of total estimated cases of MDR-TB accounted for by reporting countries.



74% of these tests conducted in the European Region. The proportion of new cases for whom DST was done was also highest in the European Region (24%), followed by the Region of the Americas at 14% (**Figure 2.13**). The percentage of the regional number of MDR-TB cases accounted for by reporting countries was also relatively high in these regions, particularly for the European Region. In other regions, the proportion of new cases for whom DST was done was low among reporting countries. Figures were higher for all regions for re-treatment cases, ranging from 9% in the African Region to 24% in the European Region.

Among those tested in 2006, 23 353 cases of MDR-TB were diagnosed, of which just over half were in Europe. A total of 2 032 cases (8.7% diagnosed cases) were reported from GLC projects. Among the 27 global priority countries, 19 503 cases were notified, which is only 4.6% of the estimated number of cases in these countries (**Table 2.11**).

Scaling-up management of MDR-TB

The small number of MDR-TB cases diagnosed compared with the number of cases that are estimated to exist shows that an enormous amount of work remains to be done to improve the availability and provision of diagnosis and treatment for MDR-TB.

For the 27 global priority countries, the latest status of progress in introducing and scaling-up treatment of patients with MDR-TB in mid-2007 is shown in **Table 2.12**. Six countries have conducted a survey of drug resistance, implemented a GLC-approved pilot project, developed national guidelines for the management of MDR-TB and conducted related training, have scaled-up or are in the process of scaling-up activities, and have fully integrated MDR-TB treatment within the NTP including reporting of data: China, the Democratic Republic of the Congo, Estonia, Kazakhstan, the Republic of Moldova and Uzbekistan. Besides these countries, four others have reported expansion of activities: Azerbaijan, Kyrgyzstan, the Russian Federation and South Africa. Among all countries, the biggest expansion that is projected in absolute terms is in the Russian Federation, which forecasts that the number of MDR-TB cases treated will reach 24 000 in 2008, compared with just under 4 000 notified cases in 2006 (**Table 2.11**). Elsewhere, the increase in treated cases anticipated by NTPs that report being in the process of scaling-up is small in absolute terms. China is a notable example: while it ranks first globally in terms of estimated cases (130 548), the number of patients projected to be treated in 2008 is 388 (up from 165 cases in 2007), which is only 0.3% of the estimated cases (**Table 2.11**). At the other end of the spectrum, no activities related to the management of MDR-TB have begun in Nigeria or Pakistan, and, besides a survey of drug resistance, no further activities were reported by Ethiopia (**Table 2.12**).

Across all countries, increased implementation of

TABLE 2.12

Management of drug-resistant TB, global priority countries and WHO regions, 2007

	DRUG RESISTANCE SURVEY CONDUCTED	APPLIED TO GLC	GLC-APPROVED PROJECTS PILOTED	NATIONAL GUIDELINES FOR MANAGEMENT OF DRUG-RESISTANT TB	TRAINING MATERIAL	TRAINING CONDUCTED	SCALING UP INITIATED	MANAGEMENT OF DRUG-RESISTANT TB FULLY INTEGRATED INTO ACTIVITIES OF NTP	MDR-TB DATA REPORTED
1 China	Y	Y	Y	Y	Y	Y	Y	Y	Y
2 India	Y	Y	Y	Y	Y	N	N	Y	Y
3 Russian Federation	Y	N	Y	N	N	Y	Y	Y	Y
4 Pakistan	N	N	N	N	N	N	N	N	–
5 Bangladesh	N	Y	Y	Y	N	N	N	N	–
6 South Africa	Y	N	N	Y	Y	Y	Y	Y	Y
7 Ukraine	Y	Y	Y	N	N	N	N	N	–
8 Indonesia	Y	Y	Y	N	N	N	N	N	Y
9 Philippines	Y	Y	Y	N	N	N	N	N	Y
10 Nigeria	N	N	N	N	N	N	N	N	–
11 Uzbekistan	Y	Y	Y	Y	Y	Y	Y	Y	Y
12 DR Congo	Y	Y	Y	Y	Y	Y	Y	Y	Y
13 Kazakhstan	Y	Y	Y	Y	Y	Y	Y	Y	Y
14 Viet Nam	Y	Y	Y	N	N	N	N	N	–
15 Ethiopia	Y	N	N	N	N	N	N	N	–
16 Myanmar	Y	N	N	N	N	N	N	N	Y
17 Tajikistan	N	N	N	N	N	Y	N	Y	–
18 Azerbaijan	Y	Y	Y	N	N	Y	Y	Y	Y
19 Republic of Moldova	Y	Y	Y	Y	Y	Y	Y	Y	Y
20 Kyrgyzstan	Y	Y	Y	N	N	N	Y	Y	Y
21 Belarus	Y	N	N	N	Y	Y	N	Y	Y
22 Georgia	Y	Y	Y	–	–	Y	–	Y	Y
23 Bulgaria	N	N	N	N	N	N	N	N	Y
24 Lithuania	Y	Y	–	–	–	–	–	–	Y
25 Armenia	Y	N	Y	N	N	Y	N	N	Y
26 Latvia	Y	Y	Y	N	Y	Y	N	Y	–
27 Estonia	Y	Y	Y	Y	Y	Y	Y	Y	–
Global priority countries[a]	**22**	**17**	**18**	**9**	**10**	**14**	**10**	**15**	**18**
AFR (46)[b]	19	10	5	15	8	7	5	16	14
AMR (44)	20	12	11	21	15	18	12	24	19
EMR (22)	11	5	4	9	5	4	4	13	12
EUR (53)	28	11	12	21	14	20	12	28	43
SEAR (12)	6	6	4	6	3	3	3	4	0
WPR (36)	17	4	5	8	4	6	3	10	14
Global (212)	**101**	**48**	**41**	**80**	**49**	**58**	**39**	**95**	**102**

– Indicates information not provided.
[a] The lower part of table shows the number of countries answering "yes" to each question.
[b] The number of countries in each region is shown in parentheses.

MDR-TB treatment was reported by 39 countries. Consistent with this, projections of the number of cases that would be diagnosed and treated globally in 2007 (46 537 cases) were much higher than the 23 353 cases notified in 2006 (**Figure 2.14**). Most of these cases are expected to be treated outside GLC projects, although the number enrolled for treatment in GLC projects is projected to increase more than five-fold by 2008, compared with 2005. Of all those cases notified in 2006 (within and outside GLC projects), it is not known what number were actually enrolled on treatment, and of those treated how many were treated according to WHO guidelines.[1] All that can be said for certain is that the 2032 patients who were enrolled on treatment in GLC projects were being treated according to WHO guidelines.

Role of the Green Light Committee

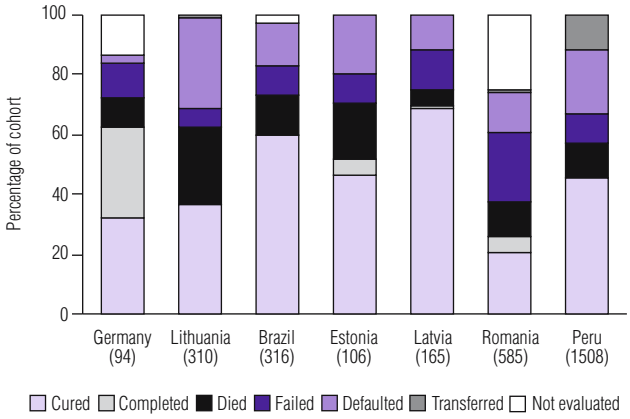
Although many cases of MDR-TB are notified outside GLC projects, the GLC has put in place specific mechanisms to promote more rapid expansion of MDR-TB diagnosis and treatment. These include building partnerships with major funding mechanisms such as the Global Fund and UNITAID, reshaping and streamlining GLC application processes during 2006 and 2007, and facilitating the development of WHO guidelines for the programmatic management of drug-resistant TB in 2006.

By the end of 2007, 67 projects in 52 countries had been approved by the GLC, such that these projects will have access to high-quality and competitively-priced drugs for a cumulative total of over 30 000 patients with MDR-TB. In 2006 specifically, the GLC reviewed and approved applications for a total of 12 604 patients – six times more than in 2005. In 2006–2007, treatment programmes for MDR-TB in 20 countries were newly-approved by the GLC: these countries were Armenia, Bangladesh, Belize,

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

FIGURE 2.15

MDR-TB treatment outcomes in seven countries, 2003 cohort. Numbers under bars are the number of patients in the cohort.



Burkina Faso, Cambodia, China, the Democratic Republic of the Congo, Ecuador, Guatemala, Guinea, Kazakhstan, Lesotho, Mongolia, Paraguay, Rwanda, Samoa, Viet Nam, Uganda, Ukraine and Uruguay. At then end of 2007, most GLC-approved countries were in the Region of the Americas (14 countries) and the European Region (13 countries), followed by the African Region (7 countries), the Western Pacific Region (7 countries), the South-East Asia Region (6 countries) and the Eastern Mediterranean Region (5 countries).

These enhanced efforts by the GLC, however, cover less than 5% of patients with drug-resistant TB worldwide. There is an urgent need for countries to substantially increase the provision of treatment for patients with MDR-TB that meets the standards established in WHO guidelines.

Treatment outcomes

Given that it takes 18–24 months to treat patients with MDR-TB, the most recent year for which treatment outcome data were requested by WHO in 2007 was 2003. While 50 countries reported data, the size of the cohorts was too small (less than 40 in 42 countries; 28 of these countries had cohorts of fewer than 10 patients) to allow any useful analysis. The seven countries with larger cohorts are shown in **Figure 2.15**. The best treatment success rate (70%) was in Latvia, which has a GLC-approved project. Treatment success rates were also relatively high in Brazil (60%) and Germany (63%), neither or which has a GLC-approved project. In contrast, outcomes were especially poor in two other countries without GLC projects: Lithuania and Romania (36% and 26% treatment success rates, respectively, and high death and treatment failure rates). To improve our understanding of treatment outcomes for patients with MDR-TB, more data from more countries, both GLC-approved and outside the GLC framework, are needed.

Progress against Global Plan targets

As with collaborative TB/HIV activities, the Global Plan sets out the progress required in provision of treatment for MDR-TB cases for each year 2006–2015. During 2007, the targets for the number of patients to be diagnosed and treated for MDR-TB were reviewed, and revised to make the targets for 2010 comparable to the goal of universal access to ART by 2010.[1] The principal 2010 targets for MDR-TB are: (i) that diagnostic DST should be offered to all previously treated and chronic TB cases as well as to 90% of new TB cases with a high risk of having MDR-TB (e.g. contacts of MDR-TB cases, those for whom treatment is failing after 3 months); and (ii) that all those in whom MDR-TB is diagnosed should be enrolled in GLC-approved or equivalent treatment programmes. Despite the progress that has been made in some countries documented above, the number of MDR-TB patients notified in 2006 and country projections of the number of MDR-TB patients to be treated in 2007 and 2008 fall far behind the expectations of the Global Plan (**Figures 2.14 and Figure 2.16**). In 2007, the Global Plan indicates that 52 000 MDR-TB patients should be diagnosed and treated, while reports from countries representing 80% of MDR-TB cases globally indicate a figure of 46 537. In 2008, the Global Plan indicates that 98 000 patients should be diagnosed and treated, while reports from countries representing 86% of MDR-TB cases globally indicate a figure of 46 227 (little different to 2007).

Differences between Global Plan expectations and country projections vary by region, as shown for 2007 in **Figure 2.16**. In the African Region, the Eastern Mediterranean Region and the Region of the Americas, country forecasts are higher than Global Plan expectations, with relatively large numbers of patients expected to be treated in Brazil and South Africa in particular (see also **Chapter 3**, where the high number of patients expected to be treated in South Africa is also reflected in budget data). However, in the three regions with the greatest number of MDR-TB cases (the European, South-East Asia and Western Pacific regions), meeting the expectations of the Global Plan will require substantial efforts to scale-up diagnosis and treatment, especially in China and India.

2.3.3 High-risk groups and special situations

Vulnerable populations such as prisoners, refugees and other high-risk groups are considered in NTP plans in 138 (68%) of 202 reporting countries. Among the 22 HBCs, 19 have included such populations in their plans, including prisoners (20 HBCs), refugees and displaced people (10 HBCs), slum dwellers (9 HBCs), cross-border populations (8 HBCs), migrant workers (5 HBCs) and ethnic minorities (8 HBCs). Other vulnerable groups such as the homeless, alcohol dependent individuals, tobacco

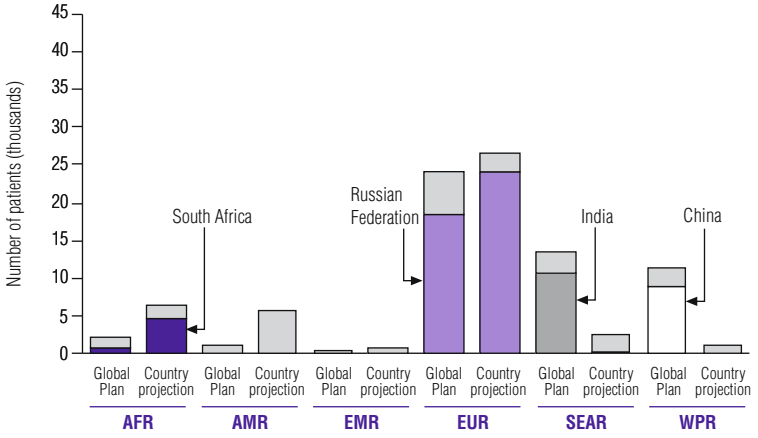
[1] *The Global MDR-TB and XDR-TB response plan 2007–2008.* Geneva, World Health Organization, 2007 (WHO/HTM/STB/2007.387).

smokers, injecting drug users and patients with diabetes have also been considered in a few HBCs.

It is noteworthy that major political instability notwithstanding, NTP structures in Iraq have been maintained at national and governorate levels. TB control services were provided whenever and wherever possible, depending on the security situation. Among other known troubled areas, TB control activities have been successfully implemented in collaboration with various international partners in secured areas of Afghanistan, the eastern region of the Democratic Republic of the Congo and in Somalia. In the earthquake-affected regions of Azad Kashmir in Pakistan, NTP services were re-established quickly and successfully in 2006.

FIGURE 2.16

Country projections of MDR/XDR-TB patients to be enrolled on treatment in 2007 compared with the Global Plan



2.4 Health system strengthening

Apart from PAL implementation and human resource development (HRD), questions about the strengthening of health systems were sent to HBCs only; findings in sections 2.4.1 and 2.4.3 below therefore refer only to HBCs.

2.4.1 Integration of TB control within primary health care

With a few exceptions, both TB diagnosis and TB treatment are fully integrated into the general health system. Laboratory services for TB diagnosis are integrated into general laboratory services in 15 of the 22 HBCs, and treatment is delivered through the general primary health care (PHC) network in all but two HBCs (China and the Russian Federation). General health-care staff are normally responsible for TB management in PHC settings, although seven HBCs have staff dedicated to TB control at PHC facilities such as clinics (Bangladesh, Brazil, China, Ethiopia, Mozambique, Myanmar and Nigeria). Distribution of anti-TB drugs is fully integrated into general drug distribution in 10 HBCs.

2.4.2 Human resource development

Optimum HRD for TB control requires at least seven components: (i) a recent HRD needs assessment; (ii) a comprehensive plan for HRD that addresses both training and staffing needs for all components of the Stop TB Strategy; (iii) up-to-date job descriptions; (iv) staff who are assigned to work on HRD at the national level; (v) inclusion of TB in the training curricula of doctors, nurses and laboratory technicians; (vi) training for existing staff at all levels of the health system; and (vii) systematic monitoring of recruitment and training needs, for example to account for staff turnover.

Only half of the HBCs have conducted a recent HRD needs assessment, and 13 HBCs reported having a comprehensive plan for HRD related to TB control (**Table 2.13**). Six HBCs are without comprehensive HRD plans or a recent HRD needs assessment: Cambodia, the Democratic Republic of the Congo, Mozambique, the Russian Federation, Uganda and Zimbabwe.

Among the HRD plans that do exist, several could be strengthened. Only 11 countries have considered staffing needs for all of the four following components of TB control: DOTS implementation, MDR-TB, collaborative TB/HIV activities and PPM (**Table 2.13**). Other plans address training needs but not staffing needs (e.g. Nigeria and the Philippines).

Job descriptions of staff involved in the implementation of the Stop TB Strategy were up-to-date or almost all up-to-date (in line with current policies and recommendations) in 17 HBCs; exceptions were the Russian Federation (none up-to-date), and the Democratic Republic of the Congo, Mozambique, Nigeria, and Zimbabwe (some up-to-date).

The number of staff assigned to HRD at national level remains limited. On the positive side, 15 of the 22 HBCs have a designated person for HRD at the central level of the NTP. However, a full-time member of staff was available in only four countries: Bangladesh, Brazil, China and South Africa. Staff working full-time on TB control are available at provincial (or equivalent) level in 20 HBCs. Monitoring of staff availability and turnover appears weak across HBCs. Only 10 HBCs provided at least some information about the availability of staff trained in TB control in primary health-care facilities.

Training related to TB control is included in the basic curricula of doctors in 18 HBCs, and in the curriculum of laboratory technicians in 15 HBCs. However, training of teaching staff in medical and nursing schools is available in only nine HBCs, and training for teachers of laboratory staff is being provided in just seven HBCs.

Among HBCs and other countries, around 87 reported having conducted a recent HRD needs assessment, and 90 countries reported having a comprehensive HRD plan (**Table 2.13**). The number of plans that considered staff-

TABLE 2.13

Human resource development (HRD), 2006

	HRD NEEDS ASSESSMENT	COMPREHENSIVE STRATEGIC HRD PLAN	HRD PLAN INCLUDES TRAINING NEEDS IN				HRD PLAN INCLUDES STAFFING NEEDS IN				JOB DESCRIPTIONS UP TO DATE
			DOTS	MANAGEMENT OF MDR-TB	COLLABORATIVE TB/HIV ACTIVITIES	PUBLIC–PRIVATE AND PUBLIC–PUBLIC MIX APPROACHES (PPM)	DOTS	MANAGEMENT OF MDR-TB	COLLABORATIVE TB/HIV ACTIVITIES	PUBLIC–PRIVATE AND PUBLIC–PUBLIC MIX APPROACHES (PPM)	
1 India	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	All
2 China	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	All
3 Indonesia	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Almost all
4 South Africa	Y	N	–	–	–	–	–	–	–	–	All
5 Nigeria	N	Y	Y	Y	Y	N	N	N	N	N	Some
6 Bangladesh	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	All
7 Ethiopia	Y	N	–	–	–	–	–	–	–	–	Almost all
8 Pakistan	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Almost all
9 Philippines	N	Y	Y	Y	Y	Y	N	N	N	N	Almost all
10 DR Congo	N	N	–	–	–	–	–	–	–	–	Some
11 Russian Federation	N	N	–	–	–	–	–	–	–	–	None
12 Viet Nam	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	All
13 Kenya	Y	N	–	–	–	–	–	–	–	–	Almost all
14 UR Tanzania	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Almost all
15 Uganda	N	N	–	–	–	–	–	–	–	–	All
16 Brazil	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	All
17 Mozambique	N	N	–	–	–	–	–	–	–	–	Some
18 Thailand	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Almost all
19 Myanmar	Y	Y	Y	N	Y	Y	Y	N	Y	Y	Almost all
20 Zimbabwe	N	N	–	–	–	–	–	–	–	–	Some
21 Cambodia	N	N	–	–	–	–	–	–	–	–	Almost all
22 Afghanistan	N	Y	Y	Y	Y	Y	–	Y	–	Y	All
High-burden countries[a]	**11**	**13**	**13**	**12**	**13**	**12**	**10**	**10**	**10**	**11**	**17**
AFR (46)[b]	18	20	20	17	18	14	16	14	12	8	22
AMR (44)	17	18	17	17	17	15	14	16	16	13	20
EMR (22)	13	16	15	13	11	12	14	14	11	12	14
EUR (53)	17	13	10	12	11	8	10	12	11	7	28
SEAR (11)	6	7	7	5	5	5	7	4	5	5	9
WPR (36)	16	16	15	14	16	12	15	10	14	10	24
Global (212)	**87**	**90**	**84**	**78**	**78**	**66**	**76**	**70**	**69**	**55**	**117**

– Indicates not applicable (no plan, or activity not implemented).
[a] Lower part of table shows the number of countries with affirmative answer (for last column, the number of countries where all or almost all job descriptions were up to date).
[b] The number of countries in each region is shown in parentheses.

ing and/or training needs for major components of TB control ranged from about 60 to 80 countries, depending on the component, while 117 countries reported having up-to-date or almost up-to-date job descriptions. In no region except the Eastern Mediterranean and the South East Asia did the number of countries reporting that a key component of HRD was in place exceed half of the number of countries in the region.

Overall, these data show that major strengthening of HRD for TB control is needed in many countries in all regions.

2.4.3 Links between planning for TB control and broader health or public sector planning initiatives and frameworks

Given the level of integration of TB control activities within primary health-care services described above, TB control requires a well-functioning health-care system including NTP participation in efforts to strengthen health systems. Contributing to health system strengthening is an explicit component of the national strategic plan for TB control in 20 of the 22 HBCs. Beyond this, five of the most important examples of national plans and frameworks to which plans for TB control should be aligned are national health development plans, poverty reduction strategy papers, national human resource plans for health, medium-term expenditure frameworks and sector-wide approaches (SWAps). Among HBCs that reported the existence of these plans and frameworks, the extent to which alignment of the national plan and budget for TB control was reported varied (**Figure 2.17**). The proportion of countries reporting alignment with medium-term expenditure frameworks and SWAps was high, but there is much scope to increase alignment with national plans for HRD as well as general plans for health-care development.

2.4.4 Practical Approach to Lung Health

PAL is included in the national plans of 73 countries including 10 HBCs. By the end of 2006, 26 countries including three HBCs had prepared detailed plans to develop and implement PAL activities. Of these, 24 had

established a national working group on PAL and 17 had produced national PAL guidelines. Seven countries were piloting or preparing for expansion, while eight countries were undertaking nationwide expansion of activities: Bolivia, Chile, El Salvador, Jordan, Kyrgyzstan, Morocco, South Africa and the Syrian Arab Republic. In 2007, five countries from the African Region including three HBCs (the Democratic Republic of the Congo, Ethiopia and Kenya) developed plans to initiate PAL implementation.

2.5 Engaging all care providers

2.5.1 Public–public and public–private mix approaches

Considerable progress has been made since the PPM initiative was launched by WHO in 2000. By 2007, 16 of the 22 HBCs had a focal person for PPM in the central NTP, 16 had undertaken a situational analysis for PPM implementation and 14 had developed national operational guidelines for PPM. The number of HBCs scaling up PPM interventions more than tripled between 2005 and 2007, from four to 14 countries.

Almost half of the HBCs have managed to involve all health institutions belonging to public sector health-care networks, such as public hospitals, medical college hospitals, army health facilities and prison health facilities (**Figure 2.18 and 2.19**). A large number of HBCs have also started to involve private practitioners, private hospitals and NGO health facilities in key activities such as referral of patients with TB symptoms, diagnosis according to programmatic guidelines and treatment with anti-TB drugs provided by the NTP (**Figures 2.18 and 2.19**). However, in most HBCs, only a small fraction of all eligible providers belonging to these categories has been involved to date.

Of the top five HBCs, three HBCs (Bangladesh, China and India) reported formal PPM activities in place in nearly 100% of their basic management units (BMUs). However, geographical coverage of formal PPM activities does not imply a high level of actual involvement or contribution to referral, diagnosis and treatment by non-NTP providers. To quantify the contribution of different providers to referral, diagnosis and treatment, PPM monitoring that is in line with existing WHO guidelines on recording and reporting for NTPs needs to be implemented. By 2007, only nine of the 22 HBCs had started to systematically record the source of referral and place of treatment of patients.

Among all countries, around 100 or more (depending on the category of provider) reported that all or some of the following types of provider were involved in referral and diagnosis: private practitioners, private hospitals, general public hospitals, medical colleges and prisons. Numbers were lower (mostly around 60 to 80 countries reporting the involvement of some or all providers) for

FIGURE 2.17

Alignment of NTP plans and budgets with other planning frameworks and initiatives, high-burden countries, 2006

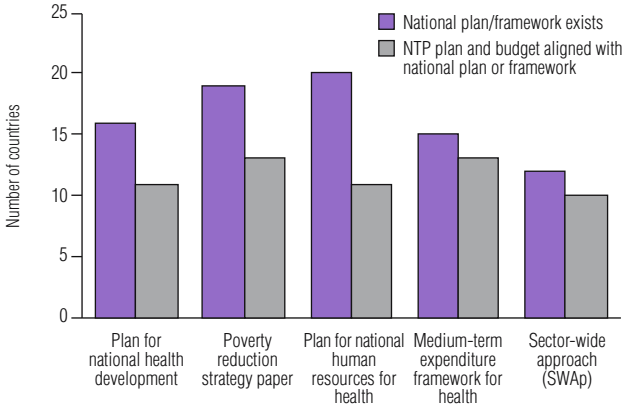


FIGURE 2.18

Engagement of different types of providers in referral of TB suspects, high-burden countries, 2006

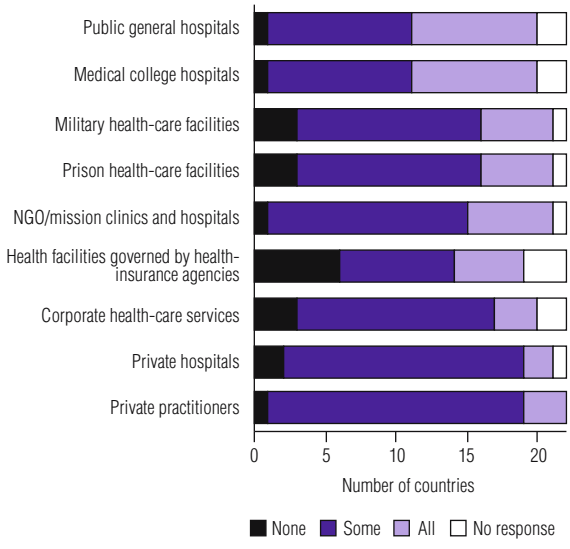
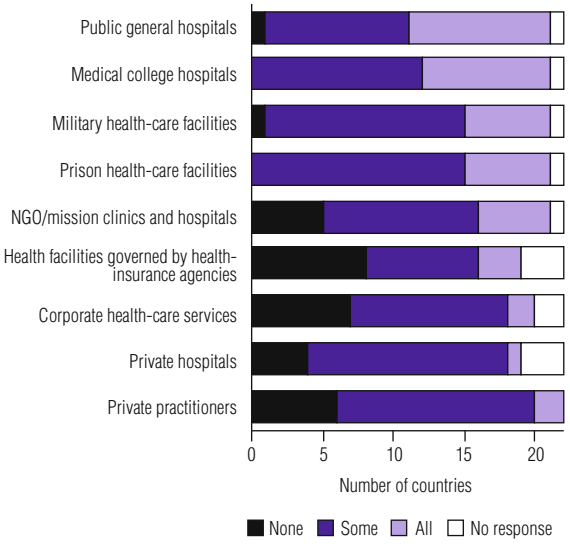


FIGURE 2.19

Engagement of different providers in free-of-charge TB treatment with recommended anti-TB drugs, high-burden countries, 2006



three categories: NGO and mission facilities, health and social insurance services, and the corporate sector. Figures were generally lower again for treatment. Around 70 countries reported that some or all providers in the following categories were involved in treatment: private practitioners, private hospitals, NGO and mission facilities, and health insurance services, although figures were higher for the involvement of medical colleges (100 countries) and general public hospitals (127 countries). Details of these data are not shown in this report, but are available upon request.

2.5.2 International Standards for Tuberculosis Care

The ISTC have been disseminated and used in seven HBCs and endorsed by national professional associations in six HBCs. Several HBCs have promoted and implemented the Standards in some settings: examples include Indonesia, India, Kenya, Thailand and the United Republic of Tanzania. Other HBCs including China, Kenya, Myanmar, Nigeria, Thailand and the United Republic of Tanzania have plans to either launch the ISTC nationally or to use them to target specific groups of care providers. Kenya plans to use the ISTC as a tool of accreditation. The ISTC have been particularly useful for convincing national professional societies and associations, as well as academic institutions, to support implementation of internationally recommended approaches to TB control.

2.6 Empowering people with TB, and communities

2.6.1 Advocacy, communication and social mobilization

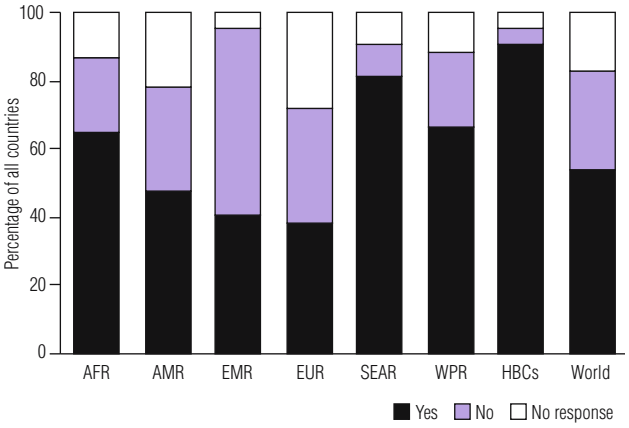
An ACSM strategy involves three distinct sets of activities: advocacy aimed at changing the behaviour of leaders or decision-makers, communication channelled to individuals and small groups, and social mobilization to secure support for efforts in TB control from civil society and the community as a whole. There has been progress in the effective implementation of ACSM activities at country level, often facilitated by grants from the Global Fund (grants for ACSM amounted to US$ 85 million in rounds 6 and 7). In general, however, progress remains uneven. Several HBCs have advanced in all three areas (advocacy, communication, and social mobilization), while 13 have conducted knowledge, attitudes and practice (KAP) surveys to better target their ACSM activities and 14 have involved patient-centred organizations or networks in advocacy and/or implementation of DOTS. Monitoring and evaluation of ACSM activities remains problematic, as countries continue to struggle to identify useful measures of implementation and impact.

Most HBCs still need to build local capacity to improve implementation of their ACSM strategy. For example, 20 of the 22 HBCs have requested assistance to refine their ACSM strategies in 2007–2008, and 17 have requested help to develop appropriate ACSM indicators.

Data collection in 2007 focused on the 22 HBCs and for this reason we do not provide information for other countries in this report.

FIGURE 2.20

Community participation in TB control, all countries, 2006.
Examples of community participation include identification and referral of TB suspects, and patient support. No response includes countries that did not report any data to WHO and countries that did not respond to questions on community participation in TB control.



2.6.2 Community participation in TB care

Among the 22 HBCs, 20 reported that there was community involvement in TB care (**Figure 2.20**). Only one (Ethiopia) stated that there was no involvement of communities in TB care, while one did not respond (Thailand). At regional level, community involvement was most common in the South-East Asia Region (82% of countries), followed by the Western Pacific Region (67% of countries) and the African Region (65% of countries). In the African Region, community involvement in TB care is recognized to be a key mechanism for expanding access to high-quality TB care as well as improving awareness and understanding of the disease. In the other three regions, community involvement was reported to exist in only around 40% of countries (**Figure 2.20**). This suggests that community involvement in TB care is not yet a strategic priority for many countries in these regions, even though in the Region of the Americas the level of community involvement in PHC services as a whole is high.

A better understanding of how communities are currently involved in TB control is required to make full use of their potential contribution. For example, despite the fact that 20 HBCs report community involvement in TB care, little is known about the specific roles or functions for which communities have taken responsibility.

2.6.3 Patients' Charter

The Patients' Charter provides the foundation for a human rights-based approach to the involvement of patients and communities in TB care and prevention. To

date, only four HBCs have used it. This probably reflects the fact that it was only published in 2006, and as such there has been limited time for its adoption and use.

2.7 Enabling and promoting research

A total of 49 countries including 19 HBCs reported that operational research activities were implemented in 2006. The countries with the largest programmes of operational research (in terms of the number of studies being done) were China and India. The most common topics were related to the following components of the Stop TB Strategy: DOTS (around 40 studies, with examples including how to improve diagnosis and patient care); TB/HIV, MDR-TB and other challenges (about 40 studies); and PPM (7 studies). Many countries also reported conducting surveys of drug resistance and prevalence of disease, as well as plans to conduct in-depth analysis of the impact of TB control using routine surveillance data (see also sections 2.2.6 and 2.3.2 above).

2.8 Summary

Implementation of the Stop TB Strategy varies among components and among countries. The first component and foundation of the strategy – DOTS – is the most widely implemented. It is also the component for which progress is closest to matching the expectations of the Global Plan. In 2006, 93% of the world's population lived in areas where DOTS was being implemented, and the global case detection rate was 61%. The treatment success target of 85% had almost been reached by the end of 2005. At the same time, there is much scope for improvement in the provision of laboratory culture and DST services, and, while impact measurement is advanced in some regions, it is at an early stage of development in others.

Besides DOTS implementation, diagnosis and treatment of MDR-TB and collaborative TB/HIV activities (both under component 2) are the other major parts of the Stop TB Strategy for which implementation can be best quantified. Although implementation still lags behind the Global Plan, there is clear evidence of major progress in the implementation of interventions such as HIV testing for TB patients and provision of CPT and ART to HIV-positive TB patients in the African Region. There is also progress in the diagnosis and treatment of MDR-TB, but here current and projected levels of implementation are far behind the Global Plan in the South-East Asia and Western Pacific regions, and within these regions in China and India in particular.

Among components 3–6, our understanding of implementation is more limited, because to date it is less well quantified. In the area of health system strengthening (component 3), considerable work on HRD is needed in many countries in all regions, although reported alignment with broader health sector planning frameworks as well as expansion of PAL to a larger number of countries are encouraging.

PPM and the ISTC (component 4) are being introduced and expanded in an increasing number of countries. However, the relative contribution of different providers to detection, referral or treatment of cases will remain unclear until the new routine recording and reporting forms recommended by WHO are more widely introduced.

ACSM (component 5) is still a new area for many countries and one where much more guidance and technical support are necessary. For this report, information on operational research (part of component 6) was comparatively superficial.

Overall, planning and implementation that covers all elements of the Stop TB Strategy and that is in line with the targets set in the Global Plan is already happening in some countries, but now needs to extend to many more.

CHAPTER 3

Financing TB control

Implementing the Stop TB Strategy at the scale required to achieve the MDG, Stop TB Partnership and World Health Assembly targets for global TB control (see also **Chapters 1 and 2**) requires accurate budgeting of the financial resources required, mobilization of the necessary funding and spending of available money such that TB control outcomes are improved. Analysis of budgets and funding for TB control was introduced into the annual WHO report on global TB control in 2002, and expenditures have been reported on since 2004.

In this report, we provide our latest assessment of financing for TB control. As with the previous two chapters, emphasis is given to the 22 HBCs, but analyses for all countries that have reported financial data are included. The chapter is structured in eight major sections, which are:

- *Data reported to WHO in 2007*. This section describes the number of countries that reported financial data and the share of the global number of TB cases accounted for by these countries.
- *NTP budgets, available funding and funding gaps*. This section analyses changes in NTP budgets in HBCs for the period 2002–2008, including presentation of budgets broken down by funding source and line item.
- *Total costs of TB control*. This section estimates the total costs of TB control, which include the resources used for diagnosis of TB and treatment of patients within the general health-care system (e.g. primary health-care staff and infrastructure) as well as the costs included in NTP budgets. Total costs in the years 2002–2008 are estimated for HBCs, and for all countries by WHO region in 2008.
- *Comparisons with the Global Plan*. In this section, total funding requirements for TB control based on country reports are compared with the total funding requirements estimated in the Global Plan. This is done for the period 2006–2008 for HBCs, and for 2008 for all countries.
- *Per patient costs and budgets*. Using the total budget and cost data provided in earlier sections of this chapter and forecasts of patients to be treated in 2008, this section provides a summary of per patient budgets and costs in each HBC in 2008.
- *Expenditures compared with available funding and changes in cases treated*. This section investigates the extent to which available funding was spent in 2006, as well as the relationship between changes in funding for TB control and changes in the number of new cases detected and treated in DOTS programmes.·
- *The Global Fund contribution to TB control*. With the Global Fund the largest single source of donor financing for TB control, this section includes the latest data on its contribution to funding for TB control.
- *How can funding gaps for TB control be closed?* This section discusses why funding gaps for TB control persist. It gives particular attention to the resources available from the Global Fund, and what is needed to close the gap between currently available funding and the funding needs set out in the Global Plan.

Further details about the financing of TB control in the 22 HBCs are provided in **Annex 1**.

3.1 Data reported to WHO in 2007

Financial data were received from 156 out of 212 (74%) countries and territories (**Table 3.1**), similar to the number that reported data in 2006.[1] Complete budget data for 2007 were provided by 94 countries (up from 87 for 2007 in last year's report), 90 countries provided complete budget data for 2008, and 80 provided complete expenditure data for 2006 (compared with 83 that provided complete expenditure data for 2005). The countries that provided financial reports accounted for 99% of the regional burden of TB in four WHO regions, with lower figures of 93% and 88% for the African and European regions respectively. Overall, countries that reported financial data account for 97% of the global burden of TB.

Data were received from all 22 HBCs (**Table 3.2**). Complete budget data for 2007 were provided by 20 countries (the exceptions were Thailand and the United Republic of Tanzania), and complete budget data for 2008 were provided by 21 countries (the exception was Thailand). It is now five years since the NTP in Thailand reported complete budget data, reflecting a decentralized system

[1] *Global tuberculosis control: surveillance, planning and financing*. Geneva, World Health Organization, 2007 (WHO/HTM/TB/2007.376).

TABLE 3.1

Budget, expenditure and utilization data received, all countries, 2008

	NUMBER OF COUNTRIES	FINANCIAL REPORTS RECEIVED	BUDGET 2007			BUDGET 2008			EXPENDITURE 2006			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	39	30	5	4	29	3	7	25	3	11	29	93
AMR	44	27	14	6	7	14	5	8	11	7	9	16	99
EMR	22	20	13	3	4	12	2	6	11	4	5	14	99
EUR	53	30	12	8	10	13	5	12	12	7	11	15	88
SEAR	11	10	8	2	0	8	1	1	8	1	1	6	99
WPR	36	30	17	5	8	14	8	8	13	4	13	17	99
Global	**212**	**156**	**94**	**29**	**33**	**90**	**24**	**42**	**80**	**26**	**50**	**97**	**97**

TABLE 3.2

Budget, expenditure and utilization data received, high-burden countries, 2008

	NUMBER OF COUNTRIES	FINANCIAL REPORTS RECEIVED	BUDGET 2007			BUDGET 2008			EXPENDITURE 2006		UTILIZATION OF HEALTH SERVICES
			COMPLETE	PARTIAL	NONE	COMPLETE	PARTIAL	NONE	COMPLETE	NONE	
AFR	9	9	8	1[a]	0	9	0	0	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**	**20**	**2**	**0**	**21**	**1**	**0**	**19**	**3**	**21**

[a] UR Tanzania.
[b] Mozambique and Uganda.
[c] Thailand.

in which financial data are not reported to or aggregated by the central unit of the NTP. For the past two years, the NTP in South Africa has demonstrated how this difficulty can be addressed. Until 2006, it also did not report financial data to WHO, as information was not reported to the central unit by any of the country's nine provinces. In 2006, the NTP manager sent the WHO data collection form to each of the country's nine provinces, allowing an aggregated report to be prepared. In 2007 this process was further strengthened, including via a planning and budgeting workshop at which provincial teams set out their plans and budget requirements for the period 2007–2011.

Complete expenditure data for 2006 were provided for 19 countries, with data missing for two African countries (Mozambique and Uganda) and Thailand. A total of 21 countries provided data on the utilization of health services and made projections of the number of patients who would be treated in 2007 and 2008.

Considerable clarification and verification of financial data by WHO are still required, but the quality of the data when first submitted continues to improve. This was especially the case for the African Region in 2007, probably facilitated by related work on planning and budgeting undertaken with 35 countries in the region in 2007 (see also section 3.4.3 below). Among HBCs, Brazil, the Democratic Republic of the Congo, Indonesia, Kenya, Myanmar and South Africa stood out as providing timely data that required almost no follow-up.

3.2 NTP budgets, available funding and funding gaps

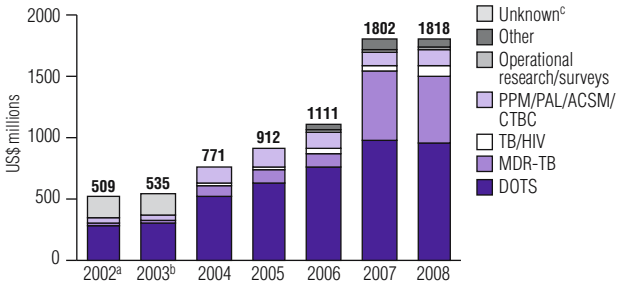
3.2.1 High-burden countries, 2002–2008

NTP budgets in 21 of the 22 HBCs have increased during the period 2002–2008, often by substantial amounts, but have stagnated in all but five countries (Brazil, Ethiopia, Mozambique, Nigeria and the United Republic of Tanzania) between 2007 and 2008 (**Figures 3.1 and Figure 3.2; Table 3.3; Annex 1**). There are insufficient data to make an assessment for Thailand. The total combined budget for the 22 HBCs in 2008 is US$ 1.8 billion, almost four times the US$ 509 million budgeted for in 2002, but just US$ 16 million higher than in 2007. The Russian Federation has by far the largest budget (US$ 722 million), followed by South Africa (US$ 352 million), China (US$ 225 million), India (US$ 67 million) and Brazil (US$ 64 million). These five countries account for 81% of the NTP budgets reported for 2008 by 21 HBCs. Three countries have budgets of around US$ 50 million (Indonesia, Nigeria and the United Republic of Tanzania), followed by Kenya with a budget of US$ 33 million. The remaining 13 HBCs have budgets of US$ 25 million or less in 2008.

In absolute terms, the budgetary increase in the Russian Federation far exceeds that in any other HBC, at US$ 560 million since 2002. The second largest increase is in South Africa (US$ 289 million), following comprehensive planning and budgeting for all components of the Stop TB Strategy during 2007, and likely more accu-

FIGURE 3.1

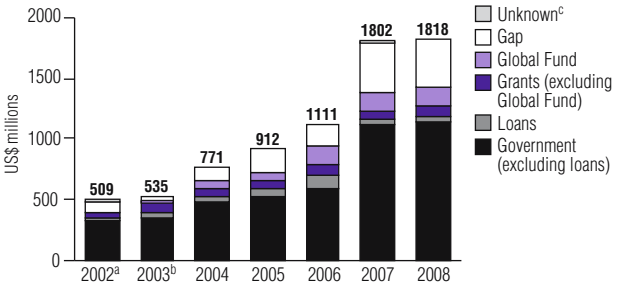
Total NTP budgets by line item, high-burden countries, 2002–2008



[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] "Unknown" applies to Afghanistan 2002–2004, Russian Federation 2002–2003 and Mozambique 2002–2003 as breakdown by line item not available.

FIGURE 3.2

Total NTP budgets by source of funding, high-burden countries, 2002–2008



[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] "Unknown" applies to Afghanistan 2004, DR Congo 2002, Nigeria 2002 and UR Tanzania 2007, as breakdown by funding source not available.

TABLE 3.3

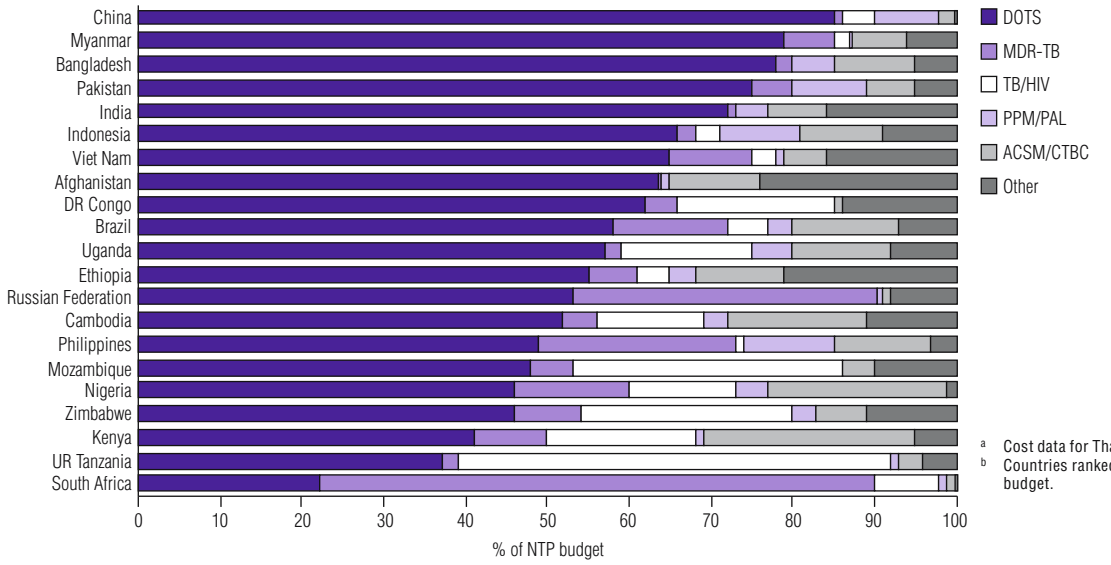
NTP budgets and available funding, high-burden countries, 2008

	TOTAL NTP BUDGET (US$ MILLIONS)	CHANGE SINCE 2002[a] (US$ MILLIONS)	CHANGE SINCE 2002 (%)	AVAILABLE FUNDING (US$ MILLIONS)				FUNDING GAP	CHANGE IN AVAILABLE FUNDING SINCE 2002 (US$ MILLIONS)				CHANGE IN FUNDING GAP SINCE 2002 (US$ MILLIONS)
				GOVERNMENT (EXCL. LOANS)	LOANS	GRANTS (EXCL. GLOBAL FUND)	GLOBAL FUND	(US$ MILLIONS)	GOVERNMENT (EXCL. LOANS)	LOANS	GRANTS (EXCL. GLOBAL FUND)	GLOBAL FUND	
1 India	67	31	86	7.7	31	8.3	20	0	1.4	6.7	2.8	20	0
2 China	225	127	130	139	13	0.7	20	53	86	13	-1.8	20	9.5
3 Indonesia	57	23	66	23	0	13	21	0	17	0	10	21	-25
4 South Africa	352	289	459	350	0	1.8	0	0	292	0	0.2	-3.6	0
5 Nigeria	49	37	290	5.8	0	2.2	11	30	3.9	0	-1.9	11	23
6 Bangladesh	17	10	149	3.0	0.6	0.9	13	0	-0.4	0	-2.6	13	0
7 Ethiopia	17	12	249	0.6	0	4.4	12	0	-0.5	0	0.6	12	0
8 Pakistan	25	19	359	10	0	0	6.2	8.3	7.1	0	-0.7	6.2	6.7
9 Philippines	18	1.9	11	8.2	0	0.1	8.0	2.0	-3.8	0	0.1	8.0	-2.4
10 DR Congo	21	10	98	1.6	0.8	5.7	7.9	4.6	0.6	0.8	0	7.9	0.9
11 Russian Federation	722	560	346	501	33	5.0	30	153	347	33	-2.6	30	153
12 Viet Nam	15	3.1	27	7.1	0	3.5	3.5	0.4	-1.6	-2	2.5	3.5	0.4
13 Kenya	33	28	538	1.6	0	12	5.6	15	0.02	0	9.1	5.6	13
14 UR Tanzania[b]	52	47	844	4.2	0	17	20	11	4.0	0	12	20	10
15 Uganda	13	8	150	0.5	0	0.5	3.7	8.4	0.4	-1.2	-0.1	3.7	5.1
16 Brazil	64	50	371	41	0	0	6.1	16	28	0	0	6.1	16
17 Mozambique	19	11	134	2.0	0	9.4	5.1	2.2	1.7	0	7.0	5.1	-3.1
18 Thailand[c]	8.8	–	–	5.6	0	0	1.4	1.8	–	–	–	–	–
19 Myanmar	14	11	384	1.0	0	2.6	0	10	0.6	0	2.4	0	7.7
20 Zimbabwe	6.4	4.7	279	1.4	0	1.7	1.9	1.4	1.3	0	0.1	1.9	1.4
21 Cambodia	9.0	4.7	109	0.6	0	1.5	2.2	4.8	-0.7	-0.7	0.3	2.2	3.6
22 Afghanistan	15	12	395	0.1	0	7.5	0.9	6.8	-0.2	0	6.2	0.9	5.3
High-burden countries	**1818**	**1299**	**249[d]**	**1116**	**78**	**97**	**200**	**328**	**784**	**50**	**44**	**195**	**227**

– 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] For US$ 23 million of the available funding the exact split between the Global Fund and grants from other donors is not known. This table assumes a 50/50 split.
[c] Data for Thailand are partial.
[d] Median value.

FIGURE 3.3

NTP budgets by line item, 21 high-burden countries,[a,b] 2008



[a] Cost data for Thailand not complete.
[b] Countries ranked according to DOTS budget.

rate budgeting for individual provinces than was possible in previous years. In both countries, large budgets for the diagnosis and treatment of MDR-TB are particularly striking (**Figure 3.3**). The Russian Federation and South Africa account for most of the amount that has been budgeted for MDR-TB across HBCs (US$ 506 million out of a total of US$543 million, equivalent to 93%).

In relative terms, the most striking budgetary increase is the 844% increase reported by the United Republic of Tanzania (**Figure 3.4a; Table 3.3**). This larger figure follows a planning and budgeting process that was completed in late 2007. The plan for 2008–2012 covers all elements of the Stop TB Strategy, is in line with Global Plan targets and includes a comprehensive assessment of the budget required for collaborative TB/HIV activities (both those funded and provided though the NTP and those funded and provided via the national AIDS control programme). This has brought the budget developed by the NTP to a level very comparable to that estimated in the Global Plan (see also section 3.4.1 below and **Annex 1**). If the budget for collaborative TB/HIV activities likely to be funded and managed by the national AIDS control programme is removed, the budget in the United Republic of Tanzania is approximately halved.

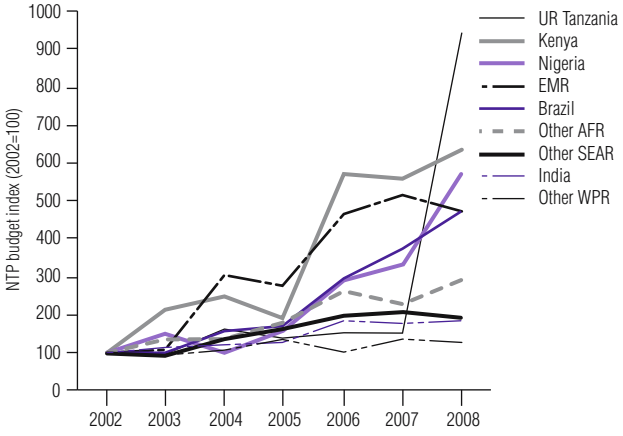
Other countries with large relative increases in their NTP budgets over the past seven years include Afghanistan, Brazil, Myanmar, Nigeria, Pakistan and South Africa. Countries with noticeably small increases in their budgets since 2002 are the Philippines and Viet Nam, reflecting the fact that both countries had already reached, or were close to achieving, the global targets for TB control in 2002.

DOTS accounted for easily the largest proportion of NTP budgets between 2002 and 2006, and in 2008 continues to account for much the largest share of the NTP budget in all of the 22 HBCs except the Russian Federa-

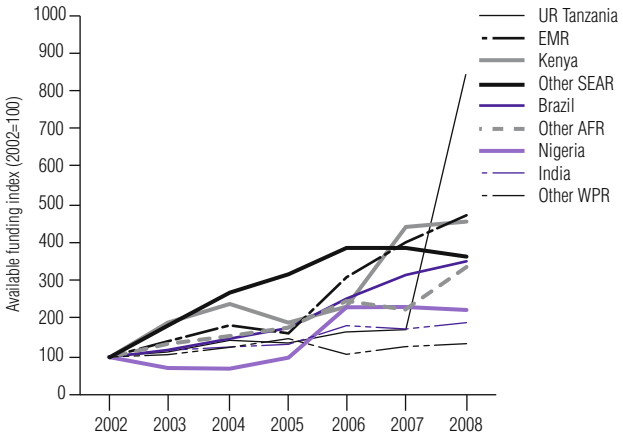
FIGURE 3.4

Trends in NTP budgets and funding, 19 high-burden countries,[a] 2002–2008

a. Total NTP budget



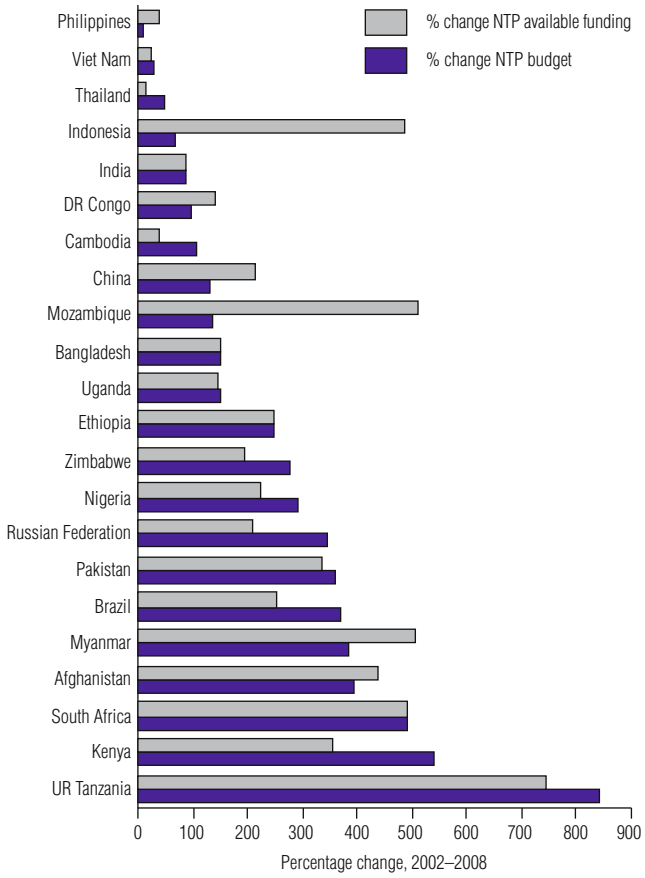
b. Available funding



[a] China, the Russian Federation and South Africa were excluded since patterns are clear from other figures and tables.

FIGURE 3.5

Changes in NTP budget and available funding, 21 high-burden countries,[a,b] 2002–2008



[a] Cost data for Thailand not complete.
[b] Countries ranked by percentage change in NTP budget.

tion, South Africa and the United Republic of Tanzania (**Figure 3.1; Figure 3.3**).[1] In contrast to earlier years, a much larger proportion (around 30%) of total NTP budgets across all HBCs is accounted for by diagnosis and treatment of MDR-TB in 2007 and 2008, with the Russian Federation and South Africa accounting for just over US$ 500 million of the total of US$ 540 million. Collaborative TB/HIV activities remain a comparatively small component of NTP budgets for the HBCs as a whole, but account for more than 50% of the budget reported by the NTP in the United Republic of Tanzania and for a relatively large proportion of the budgets reported by several other African countries including the Democratic Republic of the Congo, Kenya, Mozambique, Uganda and Zimbabwe (see also section 3.4.1 and **Annex 1**). High costs for collaborative TB/HIV activities in the United Republic of Tanzania follow a comprehensive costing analysis, as noted above.

The large budget increases described above have been accompanied by big improvements in available funding (**Figure 3.2, Figure 3.4b, Figure 3.5; Table 3.3**). For all HBCs, funding for NTP budgets has increased by just over US$ 1 billion since 2002, reaching US$ 1.4 billion of the US$ 1.8 billion needed in 2008. Funding has also increased in all individual HBCs, although the increases range from less than US$ 5 million in six countries (Cambodia, Myanmar, the Philippines, Uganda, Viet Nam and Zimbabwe) to around US$ 100 million in China, around US$ 300 million in South Africa and around US$ 400 million in the Russian Federation. As with NTP budgets, however, funding has stagnated between 2007 and 2008.

The extra US$ 1 billion of funding for NTPs in HBCs in 2008 (compared with 2002) has come mostly from HBC governments (including loans). This extra domestic funding amounts to US$ 0.8 billion (**Table 3.3**, columns 10–13) in total, an overall statistic that conceals the fact that most of the additional domestic funding has come from four countries only: Brazil, China, the Russian Federation and South Africa (an extra US$ 799 million including loans in 2008, compared with 2002). In other HBCs, increases in funding have come primarily from the Global Fund in 12 HBCs, from a combination of the Global Fund and grant funding in Indonesia, Kenya, Mozambique, and Pakistan, and mainly from donors other than the Global Fund in Afghanistan and Myanmar. Funding from the Global Fund in 2008 amounts to US$ 200 million compared with zero in 2002, and all HBCs except Myanmar have Global Fund grants. In relative terms, the most impressive improvements in funding overall (from all sources) have occurred in Indonesia, Mozambique, Myanmar, South Africa and the United Republic of Tanzania (**Figure 3.5**).

Among all HBCs, national governments will provide US$ 1194 million (66%) of the funding required by NTPs in 2008 and US$ 297 million (16%) will be funded by donor agencies (**Table 3.3**). This leaves a reported funding gap of US$ 328 million (18%). In absolute terms, the largest funding gaps are those reported by Brazil, China, Nigeria and the Russian Federation (US$ 252 million, or 77% of the total reported gap). Proportionally, the largest gaps are in Afghanistan, Cambodia, Kenya, Myanmar, Nigeria, Pakistan, the Russian Federation and Uganda (with gaps representing 31–73% of the required budget). Only five HBCs reported no funding gap, or a negligible funding gap: Bangladesh, Ethiopia, India, Indonesia and South Africa.

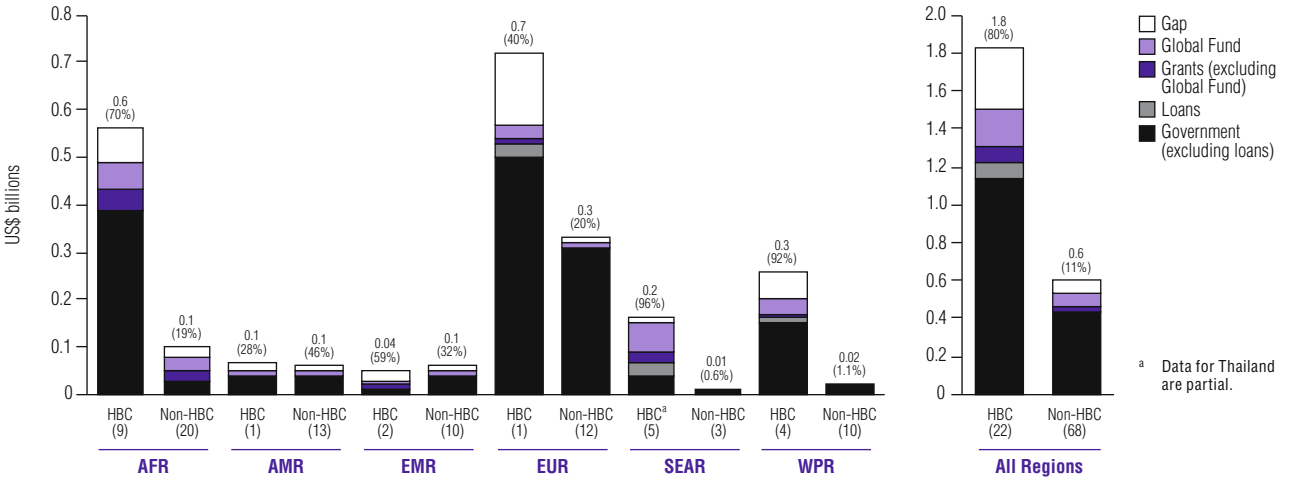
3.2.2 All countries by region, 2008

Data for all countries (in addition to the 22 HBCs) began to be collected in 2003 and were reported for the first time in 2004. There is variation in the set of countries that report complete data each year, making presentation of needs for all countries over time difficult. For this reason, **Figure 3.6** presents NTP budgets by source of funding for 2008 only. In 2008, 90 countries (22 HBCs and 68 other countries) submitted complete financial data. Globally, these countries account for 91% of TB cases (up from 90% in 2007); at regional level, they account for almost all TB cases in the African, Eastern Mediterranean, South-East

[1] See **Annex 2** for a definition of the budgetary line items included in the category DOTS.

FIGURE 3.6

Regional distribution of NTP budgets by source of funding, 22 high-burden countries and 68 non high-burden countries, 2008.
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 below the bars show the number of countries contributing to each bar.



Asia and Western Pacific regions (89–97% depending on the region), for 74% of the regional total in the Region of the Americas, and for 60% of the regional total in the European Region.

NTP budgets in 2008 in these 90 countries total US$ 2.4 billion, up from US$ 1.6 billion in 2007 for countries accounted for 91% of TB cases globally, with a funding gap of US$ 385 million (also higher than the US$ 307 million gap reported in 2007).

Budgetary funding gaps as a proportion of the total budget were similar for HBCs and non-HBCs in the Region of the Americas and the Eastern Mediterranean Region, and much lower or non-existent in non-HBCs in the European, South-East Asia and Western Pacific regions. It is only in the African Region that funding gaps represent a higher share of the budget required in non-HBCs. Overall, NTP budgets per TB case (estimated annual incidence) were higher for HBCs compared with non-HBCs in the African Region, the European Region and the Region of the Americas, and much lower for HBCs compared with non-HBCs in the Eastern Mediterranean, South-East Asia and Western Pacific regions.

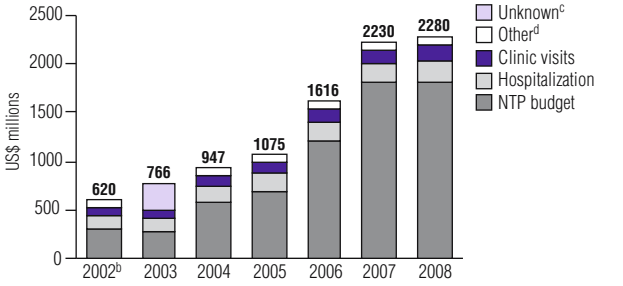
3.3 Total costs of TB control

3.3.1 High-burden countries, 2002–2008

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$ 2.3 billion in 2008, compared with US$ 0.6 billion in 2002 (**Figures 3.7–3.9; Table 3.4**). As with NTP budgets, the total cost of TB control is expected to stagnate between 2007 and 2008, except in five countries (Brazil, Ethiopia, Mozambique, Nigeria and the United Republic of Tanzania).

FIGURE 3.7

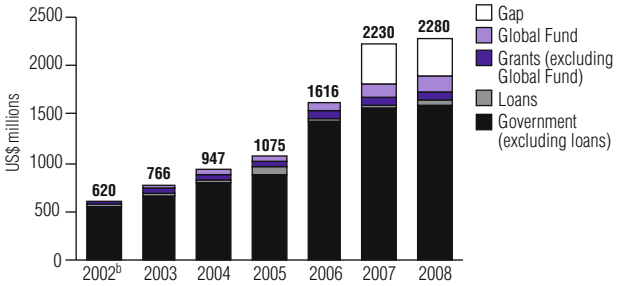
Total TB control costs by line item, high-burden countries,[a] 2002–2008



[a] Total TB control costs for 2002–2006 are based on expenditure data, whereas those for 2007–2008 are based on budget data.
[b] Estimates assume costs 2002 equal to costs 2003 for Afghanistan, Bangladesh, Mozambique, Nigeria, Uganda and Zimbabwe.
[c] "Unknown" applies to Russian Federation 2003 and Thailand 2002–2006.
[d] "Other" includes costs for hospitalization and fluorography in the Russian Federation not reflected in NTP budget or NTP expenditure data.

FIGURE 3.8

Total TB control costs by source of funding, high-burden countries,[a] 2002–2008



[a] Total TB control costs for 2002–2006 are based on expenditure data, whereas those for 2007–2008 are based on budget data.
[b] Estimates assume costs 2002 equal to costs 2003 for Afghanistan, Bangladesh, Mozambique, Nigeria, Uganda and Zimbabwe.

TABLE 3.4

Total TB control costs and available funding, high-burden countries, 2008

	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. GLOBAL FUND)	GLOBAL FUND		GOVERNMENT (EXCL. LOANS)	LOANS	GRANTS (EXCL. GLOBAL FUND)	GLOBAL FUND	
1 India	111	48	78	52	31	8.3	20	0	12	13	3.4	20	0
2 China	225	164	269	139	13	0.7	20	53	82	12	-2.6	20	53
3 Indonesia	62	41	199	28	0	13	21	0	9.2	0	11	21	0
4 South Africa	538	374	228	536	0	1.8	0	0	378	0	0.2	-3.6	0
5 Nigeria	80	70	717	36	0	2.2	11	30	30	0	-1.6	11	30
6 Bangladesh	24	13	129	9.3	0.6	0.9	13	0	2.5	0	-2.6	13	0
7 Ethiopia	29	21	304	12	0	4.4	12	0	9.1	0	0.6	12	0
8 Pakistan	28	23	465	13	0	0	6.2	8.3	10	0	-1.2	6.2	8.3
9 Philippines	28	6.2	28	18	0	0.1	8.0	2.0	-1.2	-2.2	-0.4	8.0	2.0
10 DR Congo	30	18	154	11	0.8	5.7	7.9	4.6	5.6	0.8	-0.4	7.9	4.6
11 Russian Federation	811	669	473	590	33	5.0	30	153	449	33	5.0	30	153
12 Viet Nam	25	6.7	36	18	0	3.5	3.5	0	1.5	-1.8	3.0	3.5	0.4
13 Kenya	35	30	555	3.3	0	12	5.6	15	0.5	0	9.1	5.6	15
14 UR Tanzania[b]	58	46	419	9.5	0	17	20	11	3.1	0	12	20	11
15 Uganda	14	11	386	1.1	0	0.5	3.7	8.4	0.1	-1.2	-0.1	3.7	8.4
16 Brazil	95	57	147	73	0	0	6.1	16	34	0	0	6.1	16
17 Mozambique	25	21	528	7.8	0	9.4	5.1	2.2	5.1	-0.8	9.1	5.1	2.2
18 Thailand[c]	8.8	–	–	5.6	0.0	0.0	1.4	1.8	–	–	–	–	–
19 Myanmar	15	12	403	2.8	0	2.6	0	10	0.6	0	1.7	0	10
20 Zimbabwe	11	5.5	92	6.3	0	1.7	1.9	1.4	2.0	0	0.1	1.9	1.4
21 Cambodia	11	6.5	133	3.0	0	1.5	2.2	4.8	0.2	-0.7	0	2.2	4.8
22 Afghanistan	17	15	942	1.4	0	7.5	0.9	6.8	1.1	0	6.2	0.9	6.8
High-burden countries	**2280**	**1660**	**269[d]**	**1578**	**78**	**97**	**200**	**328**	**1033**	**53**	**53**	**195**	**326**

– Indicates not available.

[a] TB control costs for 2007–2008 were estimated using budget data, whereas those for 2002–2006 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).

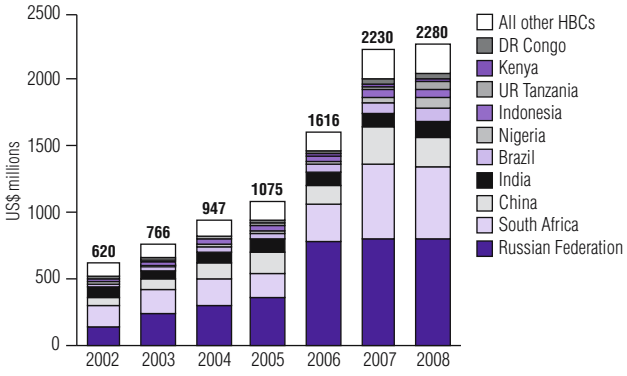
[b] For US$ 23 million of the available funding the exact split between the Global Fund and grants from other donors is not known. This table assumes a 50/50 split.

[c] Data for Thailand are partial.

[d] Median value.

FIGURE 3.9

Total TB control costs by country, high-burden countries,[a] 2002–2008



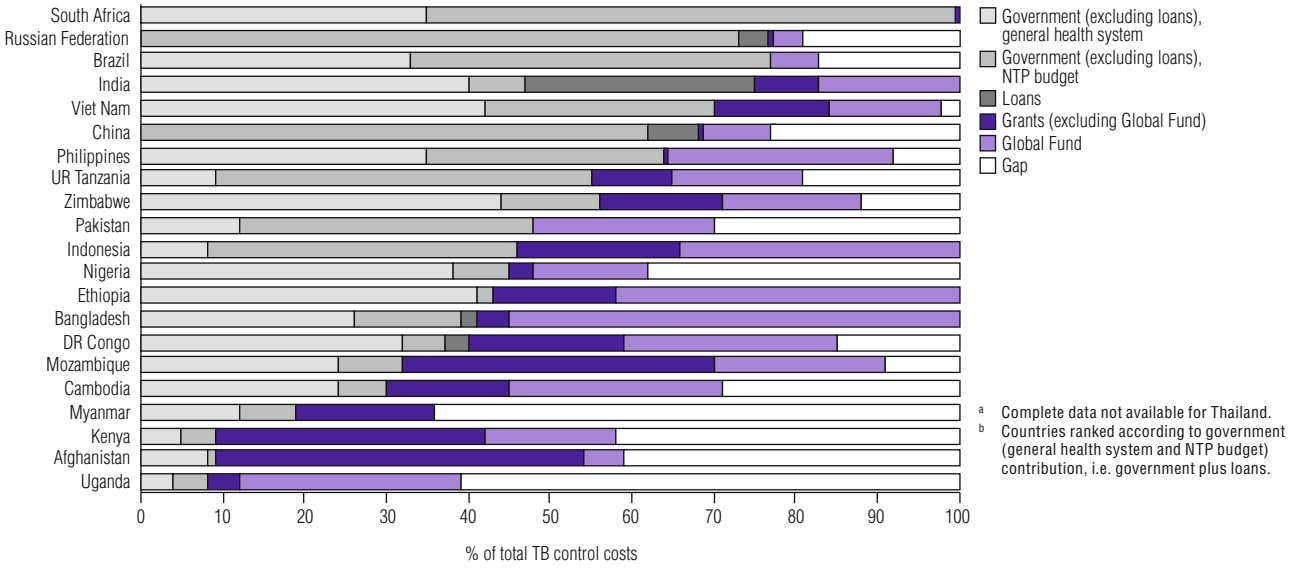
[a] Total TB control costs for 2002–2006 are based on expenditure data, whereas those for 2007–2008 are based on budget data.

Increases in projected costs during the period 2002–2008 arise because of the large increases in NTP budgets (described above) and, to a much lesser extent, 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 2008 are for the Russian Federation and South Africa, which together account for US$ 1.3 billion (59%) of the total of US$ 2.3 billion (**Figure 3.9; Table 3.4**). China (US$ 225 million), India (US$ 111 million), Brazil (US$ 95 million) and Nigeria (US$ 80 million) rank third to sixth. These six countries account for 82% of the total cost of TB control in the 22 HBCs in 2008. Of the remaining countries, 13 have costs of US$ 30 million or less in 2008, while three (Indonesia, Kenya, the United Republic of Tanzania) have costs in the range US$ 35 million to US$ 62 million (**Table 3.4**, column 2). The countries with by far the largest projected absolute increases in annual costs between 2002 and 2008 are the Russian Federation and South Africa, followed by China (**Figure 3.9; Table 3.4**).

In South Africa, there are two major reasons for the high cost of TB control anticipated in 2008. Firstly, the costs associated with general district hospital and specialized TB hospital infrastructure are relatively high, due to the number of beds (approximately 8000 across the country's nine provinces) as well as a unit price per bed-day that is higher in South Africa than in

FIGURE 3.10

Sources of funding for total TB control costs, 21 high-burden countries,[a,b] 2008



[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.

most other HBCs (around US$ 40 per day in TB hospitals to over US$ 100 in general district hospitals, reflecting the higher unit costs associated with a middle-income country). Secondly, there is a large budget for the diagnosis and treatment of MDR-TB (see also **Annex 2** and section 3.2 above). The largest components of the budget for MDR-TB in 2008 are renovation and construction of infrastructure in line with a new national policy of hospitalizing all patients with MDR-TB for at least six months, improvement of infection control in MDR-TB and XDR-TB units as well as in general district hospitals and provision of second-line anti-TB drugs for the enrolment of around 5000 patients on treatment.

High costs in the Russian Federation in 2008 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$ 267 million, with an estimated total of about 24 000 cases to be enrolled on treatment in 2008; see also **Figure 3.3 and Chapter 2**) and continued use of fluorography for mass population screening.

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 (see also **Annex 2**). This assumption, together with the implicit assumption that health systems have sufficient capacity to support the treatment of a growing numbers of patients in 2008,[1] means that the resources available for TB control are estimated to have increased from US$ 0.6 billion in 2002 to US$ 2.0 billion in 2008 (**Figure 3.8; Table 3.4**). For all HBCs, the estimated gap between the funding already available and the total cost of TB control is US$ 328 million in 2008, i.e. the NTP budget gap reported above.

The contribution by HBC governments to the total cost of TB control in 2008 is 73% on average, which is slightly larger than their contribution to NTP budgets but very similar to figures reported for earlier years in previous reports in this series. Also as in previous years, this high average figure conceals important variation among countries (**Figure 3.10**). Seven HBCs are dependent on grants to cover around 50% or more of the total costs of TB control (Afghanistan, Bangladesh, the Democratic Republic of the Congo, Ethiopia, Indonesia, Kenya and Mozambique), and a further six (Cambodia, Myanmar, Pakistan, Uganda, the United Republic of Tanzania and Zimbabwe) that are likely to rely on grant funding to a similar or greater extent to fill reported funding gaps.

The share of the total costs provided by HBC governments is closely related to average income levels (**Figure 3.11**), although the government contribution relative to income levels is comparatively high in the Democratic Republic of the Congo, Ethiopia, India, South Africa, Viet Nam and Zimbabwe, and comparatively low in Cambodia, Indonesia, Kenya, Uganda and the United Republic of Tanzania.

3.3.2 All countries, 2008

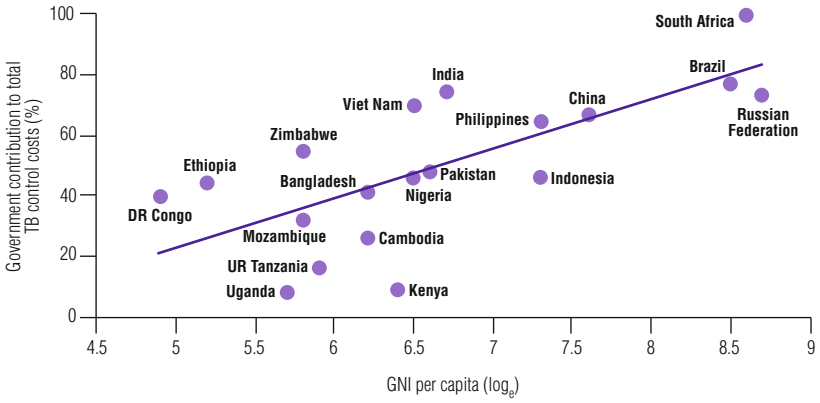
Total costs for 86 countries that submitted complete financial data to WHO, which account for 91% of TB cases globally and which were also included in the Global Plan, are shown for 2008 in **Figure 3.13**.[2] Overall, country reports indicate planned costs of US$ 3.1 billion in 2008, up from US$ 2.3 billion in 2007.

[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.

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

FIGURE 3.11

Government contribution (including loans) to total TB control costs by gross national income (GNI) per capita, 19 high-burden countries,[a] 2008



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

3.4 Comparisons with the Global Plan

The Global Plan sets out what needs to be done between 2006 and 2015 to achieve the MDG and related Stop TB Partnership targets for TB control (see also **Chapters 1 and 2**). To assess the extent to which planning and financing for TB control at country level are aligned with the Global Plan, the financial resources estimated to be required for TB control in the Global Plan can be compared with estimates that are based on the financial data reported by countries.

3.4.1 High-burden countries

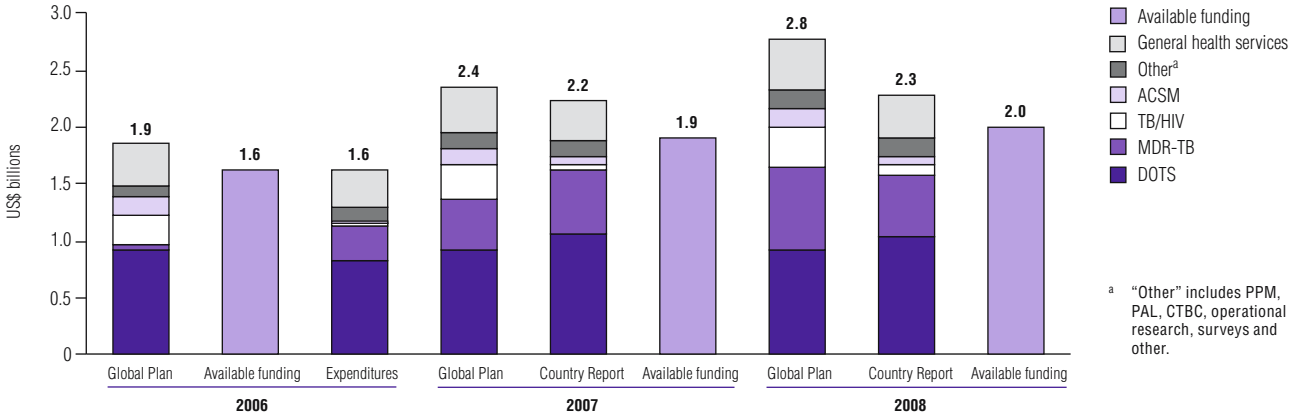
For the 22 HBCs as a whole, expenditures (2006), planned costs and available funding for 2006–2008 according to country reports are compared with those derived from the Global Plan in **Figure 3.12**.[1] In 2006, actual expenditures in HBCs were slightly lower than those estimated to be required in the Global Plan, particularly for collaborative TB/HIV activities and ACSM. Expenditures for DOTS and use of general health system resources for DOTS treatment were similar. These findings are in line with the progress in DOTS implementation, the shortfall in implementation of collaborative TB/HIV activities (e.g. HIV testing, CPT and ART for HIV-positive TB patients) and the need for guidance in implementation of ACSM discussed in **Chapter 2**.

In 2007 and 2008, planned costs based on country reports are higher than expenditures in 2006, mostly due to an increase in planned spending on DOTS implementation and MDR-TB treatment (almost entirely in the Russian Federation and South Africa). However, planned costs fall short of those estimated to be required in the Global Plan, with the gap widening between 2007 and 2008 from US$ 0.2 billion to US$ 0.5 billion. Moreover, the gap is bigger once the distortion caused by the high planned costs for MDR-TB treatment in just two countries is removed. If the "excess" costs for diagnosis and treatment of MDR-TB (compared with the Global Plan) in the Russian Federation and South Africa are excluded, then the gap between the financial resources estimated to be needed in country plans and the Global Plan reaches US$ 0.7 billion for the 22 HBCs in 2008. The shortfall in MDR-TB treatment applies in particular to China, India and Indonesia.

These aggregated comparisons conceal the fact that four HBCs have planned costs consistent with those detailed in the Global Plan in 2008: Afghanistan, Brazil, Kenya and the United Republic of Tanzania. In addition,

FIGURE 3.12

The Global Plan compared to planned costs, available funding and expenditures as reported by 22 high-burden countries, 2006–2008

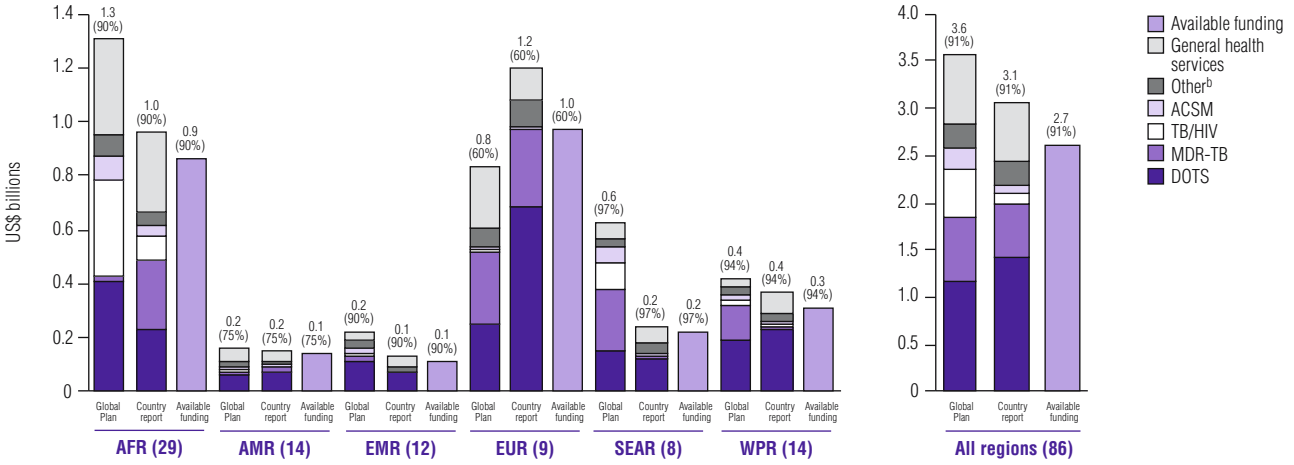


[a] "Other" includes PPM, PAL, CTBC, operational research, surveys and other.

[1] See **Annex 2** for explanation of how costs for individual countries were derived from the Global Plan.

FIGURE 3.13

Total TB control costs in 2008 in 22 high-burden countries and 64[a] other countries by region: country reports compared with the Global Plan. 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] The Netherlands, Serbia, Slovakia, and Switzerland are excluded because they were not included in the Global Plan.
[b] "Other" includes PPM, PAL, CTBC, operational research, surveys and other.

there are four countries in which the discrepancy is due to the mid-2007 revision of the MDR-TB component of the Global Plan to include much more ambitious targets.[1] With the exception of MDR-TB, country plans are consistent with the Global Plan in China, Myanmar, the Philippines and Viet Nam (see **Annex 1**).

As noted in **Chapter 2**, the Russian Federation and South Africa are unusual in having plans to treat more patients with MDR-TB in 2008 than the numbers anticipated by the Global MDR-TB and XDR-TB Response Plan. For collaborative TB/HIV activities, the shortfall is mainly in Cambodia, the Democratic Republic of the Congo, Ethiopia, India, Mozambique, Nigeria, Uganda and Zimbabwe. For ACSM, examples of countries with shortfalls include the Democratic Republic of the Congo, Ethiopia, India and Pakistan; exceptions with ACSM budgets comparable to or larger than those indicated in the Global Plan include Afghanistan, Brazil, Cambodia, Kenya and the Philippines. These country-by-country comparisons with the Global Plan are presented in **Annex 1**.

3.4.2 All countries

The financial data submitted to WHO allow total TB control costs for 2008 to be estimated for 86 of the 171 countries that were included in the Global Plan (22 HBCs and 64 other countries).[2] These 86 countries account for 91% of all new TB cases arising each year.[3] A regional comparison of costs and available funding based on (a) country reports and (b) the Global Plan is shown for these 86 countries in **Figure 3.13**.

Overall, country reports indicate planned costs of US$ 3.1 billion in 2008 (up from US$ 2.3 billion in 2007), compared with US$ 3.6 billion in the Global Plan. The main discrepancy evident from **Figure 3.13** is the Global Plan's higher estimate of the cost of collaborative TB/HIV activities, which the regional analysis shows is primarily due to differences with country reports in the African and (to a lesser extent) South-East Asia regions. As noted above, however, the apparent similarity between the Global Plan and country reports for MDR-TB when data are aggregated for all countries is misleading. As **Figure 3.13** makes clear, costs for MDR-TB treatment based on country reports fall far short of Global Plan expectations in the South-East Asia and Western Pacific regions, by about US$ 350 million in 2008. Within these regions, as also illustrated in **Chapter 2**, the shortfall is primarily in China and India The funding gap reported by countries amounts to US$ 385 million in 2008, but the gap is US$ 0.9 billion if the available funding of US$ 2.7 billion is compared with the US$ 3.6 billion requirement included in the Global Plan. The total funding gap further increases to US$1.2 billion once the distortion caused by unusually high planned costs and funding for MDR-TB treatment in the Russian Federation and South Africa is removed.

3.4.3 Implications of differences between country reports and the Global Plan

The differences between the Global Plan and country reports highlighted above suggest that country planning, budgeting and financing is lagging behind the Global Plan for three major components of the Stop TB Strategy: collaborative TB/HIV activities, diagnosis and treatment of MDR-TB, and ACSM.

For collaborative TB/HIV activities, the difference between the Global Plan and country reports is exaggerated. The data presented in **Chapter 2 and Annex 1** show

[1] *The Global MDR-TB and XDR-TB response plan 2007–2008*. Geneva, World Health Organization, 2007 (WHO/HTM/STB/2007.387).
[2] Four of the 90 countries that reported complete data were not considered in the Global Plan cost estimates.
[3] All of the 171 countries included in the Global Plan accounted for 98% of TB cases globally in 2004.

that although implementation of collaborative TB/HIV activities lags behind the Global Plan (consistent with the data presented in **Figure 3.12 and Figure 3.13**), there are a few countries in which implementation in 2006 and plans for 2007–2008 are well aligned, as also noted in this chapter. Some of the shortfall in the budgets reported by countries is attributable to only partial inclusion of the costs of collaborative TB/HIV activities in NTP budgets. For example, budgeting for all TB/HIV activities in the United Republic of Tanzania led to estimates for 2008 that are almost the same as those in the Global Plan, in contrast to previous years when the TB/HIV budget reported by the NTP was much lower. In Kenya, implementation is in line with the Global Plan, but the NTP budget does not include the costs of activities funded by the national AIDS control programme or the cost of activities that are funded via NGOs. In India, the only TB/HIV-related costs included in the NTP budget are the costs of HIV testing for TB patients, which is a relatively inexpensive intervention; it is not known to what extent other activities are budgeted for and funded by the national AIDS control programme. More comprehensive assessments of the kind recently undertaken for the United Republic of Tanzania are needed to enable a more accurate assessment of the real gap between the Global Plan and country plans, and the associated funding requirements.

The shortfall in budgets for diagnosis and treatment of MDR-TB clearly mirror the shortfall in implementation and planning described in **Chapter 2**. The reporting of budgets for ACSM that are relatively small as well as different from those included in the Global Plan is consistent with the reality that ACSM represents new territory for most NTPs, and that it is a component of the Stop TB Strategy for which NTPs state that guidance is needed (see **Chapter 2**).

WHO has developed a planning and budgeting tool that is designed to help countries to align their plans and budgets with the expectations set out in the Global Plan, as well as to produce more accurate country-specific estimates of the financial resources that are required.[1] While the development of the tool was primarily motivated by a recognized need to assist countries to plan and budget in line with the Global Plan and the Stop TB Strategy, it is also intended to help with planning and budgeting for TB control in general. In 2007, 35 countries in the African Region were introduced to the tool through workshops and country missions, and several have used it to complete the task of setting out plans and budgets for a five-year period, starting in either 2007 or 2008. The countries that are most advanced include the Democratic Republic of the Congo, Gabon, Kenya, Malawi, Nigeria, South Africa, the United Republic of Tanzania and Zambia; progress has also been made in Ethiopia, Mozambique and Uganda. Outside Africa, the tool has been used in Afghanistan, Brazil, Indonesia and Uzbekistan, and will be introduced in all countries in the South-East Asia Region in 2008.

Review of finalized plans and budgets will increasingly inform and improve our comparisons of funding requirements reported by countries and those included in the Global Plan (e.g. as has been possible for Kenya, South Africa and the United Republic of Tanzania this year). For the 2009 report, this will include actual revision of the Global Plan estimates where appropriate, using up-to-date and country-specific data.

3.5 Budgets and costs per patient

Budgets and costs per patient in HBCs are shown in **Table 3.5**. The budget for first-line anti-TB drugs per patient is lowest in India (US$ 14) and Zimbabwe (US$ 12), and highest in Brazil (US$ 77), Mozambique (US$ 63) and the Russian Federation (US$ 286). In most countries, the budget is in the range US$ 20–40.

The budget per patient, including all line items, also varies. Three countries have budgets below US$ 100 per patient (Ethiopia, India and Zimbabwe). A total of six countries have budgets in the range US$ 100–200 per patient, five are in the range US$ 200–300 and three are in the range US$ 300–550.[2] The Russian Federation and South Africa are the only two countries with a budget exceeding US$ 1000 per patient (for reasons discussed in section 3.3.1), but budgets are also relatively high in Brazil and the United Republic of Tanzania. Brazil is a middle-income country, and comparatively high costs are expected; the high cost in the United Republic of Tanzania reflects the inclusion, for the first time, of the budget for the full range of collaborative TB/HIV activities, even when some of those activities are funded and provided by the national AIDS control programme (see also sections 3.2.1 and 3.3.2).

In 2008, the total cost per patient treated is estimated at under US$ 100 in only one country: India. It is in the range US$ 100–300 in 12 countries (as in 2007), and US$ 300–500 in three countries (also as in 2007). Five countries have much higher costs: Brazil, Mozambique, the Russian Federation, South Africa and the United Republic of Tanzania. As noted above, three of these countries are middle-income countries with generally higher prices for the inputs needed for TB control, while the Russian Federation and South Africa have large budgets for MDR-TB treatment as well as maintenance or upgrading of hospital infrastructure. Costs of US$ 774 in the United Republic of Tanzania and US$ 685 in Mozambique are due mainly to comprehensive budgeting for collaborative TB/HIV activities (see also sections 3.2.1 and 3.3.2 and **Annex 1**).

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

[1] See http://www.who.int/tb/dots/planning_budgeting_tool/en/index.html

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

TABLE 3.5

Total TB control costs and NTP budgets per patient, high-burden countries, 2008

	2008 (US$)			CHANGES SINCE 2002, (FACTOR[a])		
	FIRST-LINE DRUGS BUDGET	NTP BUDGET	TOTAL COST	FIRST-LINE DRUGS BUDGET	NTP BUDGET	TOTAL COST
1 India	14	50	84	1.4	1.5	1.4
2 China	26	236	236	1.5	1.8	1.8
3 Indonesia	51	213	232	1.6	1.8	1.7
4 South Africa	55	1254	1917	0.9	4.3	2.5
5 Nigeria	30	258	419	0.6	1.8	21
6 Bangladesh	16	105	143	0.8	1.3	3.8
7 Ethiopia	19	70	119	0.7	1.6	1.9
8 Pakistan	31	119	135	0.5	2.6	1.4
9 Philippines	31	149	231	0.7	1.2	1.2
10 DR Congo	20	186	274	0.6	2.0	1.6
11 Russian Federation	286	5739	6389	4.6	4.6	5.8
12 Viet Nam	18	165	284	0.5	1.9	1.5
13 Kenya	33	301	319	0.9	5.8	4.8
14 UR Tanzania	21	703	774	0.5	8.6	4.2
15 Uganda	43	208	217	0.8	4.5	3.2
16 Brazil	77	748	1118	1.7	4.5	2.4
17 Mozambique	63	522	685	2.7	6.7	4.5
18 Thailand	–	–	–	–	–	–
19 Myanmar	28	100	114	1.6	4.8	2.1
20 Zimbabwe	12	92	163	0.4	3.2	1.6
21 Cambodia	19	243	308	0.5	1.8	1.5
22 Afghanistan	30	432	469	0.4	1.4	4.0
High-burden countries (median value)	**30**	**213**	**274**	**0.8**	**2.0**	**2.1**

– Indicates not available.
[a] Calculated as 2007 value divided by 2002 value.

the cost per patient treated is low relative to income levels, while in the Democratic Republic of the 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 200% per patient for budgets and of 210% for total costs (though the median for first-line drugs shows a decrease of 20% since 2002).

3.6 Expenditures compared with available funding and changes in cases treated

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 mobilize resources can be assessed by comparing available funding with budgets, and the ability to use financial resources can be assessed by comparing expenditures with available funding (**Table 3.6; Figure 3.14**). There were seven countries in which the NTP spent 80–100% of the funds available to them (Afghanistan, Brazil, Cambodia, China, the Democratic Republic of the Congo, the Philippines and Viet Nam) and three where expenditures exceeded the level of funding reported prospectively to WHO in 2006 (Kenya, Pakistan and South Africa).[1] India spent 75% of the available funds, and Ethiopia spent 71%. The remaining six countries that reported expenditure data spent between 61% (Indonesia) and 69% (Myanmar) of the available funds. The data reported by the NTP in the United Republic of Tanzania indicate that only 24% of the available funding was spent; it seems likely that this is a problem with the expenditure report. No assessment could be made for Mozambique, Thailand and Uganda, as no expenditure data were reported; for these two African countries, as with the United Republic of Tanzania, reporting expenditure data to WHO has been a recurring problem. When country data are aggregated by region (**Figure 3.14**), the ability to mobilize and then spend financial resources in 2006 was best in the Region of the Americas, the European Region and the Western Pacific Region, and worst in the African Region (considering five countries that reported data, excluding South Africa where the magnitude of the budget and expenditures makes patterns in other countries hard to detect).

The ability to translate spending into improved case-finding can be assessed by comparing changes in expenditures 2003–2006 with changes in the number of patients treated 2003–2006 (**Figure 3.15**; 2006 is the most recent year for which both case notification and expenditure data are available). Of the 19 HBCs for which data were available, all of the 14 countries that increased spending between 2003 and 2006 also increased the number of new cases that were detected and treated in DOTS programmes (a similar pattern applied for new

[1] This explains why the value of expenditures in 2006 as a percentage of the available funding prospectively reported in 2006 (final column of Table 3.6) is above 100.

TABLE 3.6

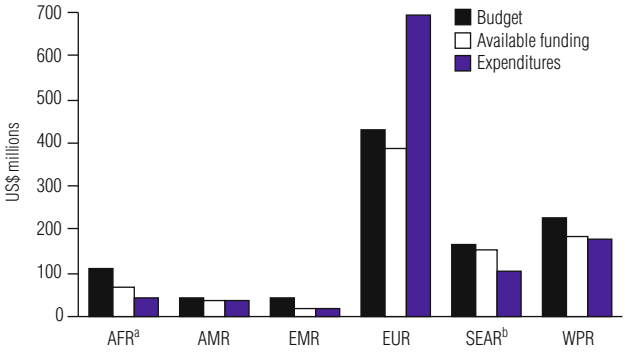
Budget, available funding and expenditures (US$ millions), high-burden countries, 2006

	BUDGET	AVAILABLE FUNDING[a]	EXPEND ITURES[b]	AVAILABLE FUNDING AS % OF NTP BUDGET	EXPENDITURES AS % OF AVAILABLE FUNDING[c]
1 India	66	66	50	100	75
2 China	194	156	149	80	96
3 Indonesia	57	57	35	100	61
4 South Africa	78	78	112	100	143
5 Nigeria	25	20	13	79	65
6 Bangladesh	22	22	14	100	64
7 Ethiopia	6.4	6.4	4.5	100	71
8 Pakistan	21	13	13	61	104
9 Philippines	17	13	12	77	96
10 DR Congo	26	12	9.3	44	80
11 Russian Federation	428	385	694	90	180
12 Viet Nam	10	10	10	100	98
13 Kenya	30	10	11	32	114
14 UR Tanzania	8.1	7.7	1.8	95	24
15 Uganda	10	5.7	–	57	–
16 Brazil	40	34	34	85	99
17 Mozambique	12	9.3	–	76	–
18 Thailand[d]	4.3	4.3	–	100	–
19 Myanmar	17	7.4	5.1	44	69
20 Zimbabwe	13	11	10.6	80	100
21 Cambodia	7.0	4.7	4.3	67	91
22 Afghanistan	19	3.5	2.8	19	80
High-burden countries	**1111**	**934**	**1184**	**77[e]**	**90[e]**

– Indicates not available.
[a] Based on budget data, reported prospectively in 2006.
[b] Based on actual expenditures reported in 2007.
[c] Figures can be above 100% when additional funds were mobilized after budget data were reported in 2006.
[d] Data for Thailand are partial.
[e] Average values.

FIGURE 3.14

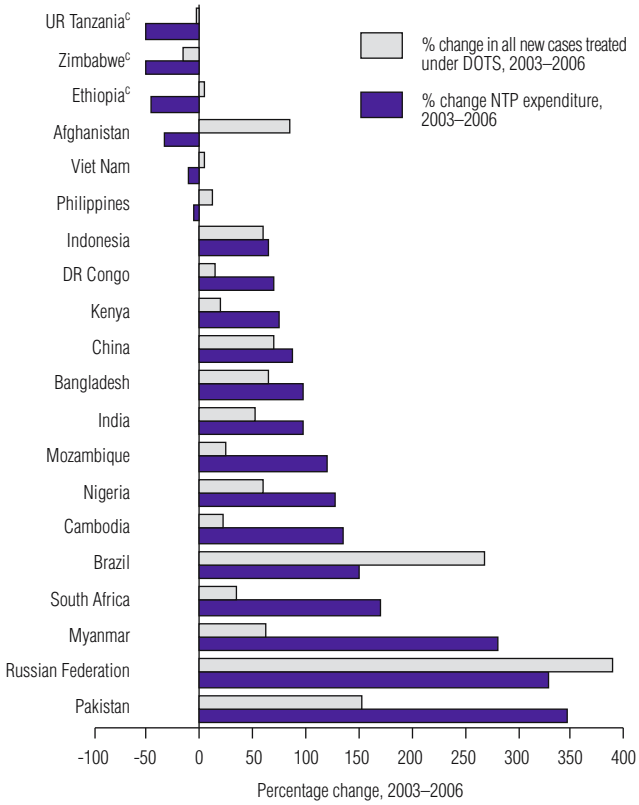
Budget, available funding and expenditures by WHO region, 19 high-burden countries,[a] 2006



[a] Expenditure data not available for Mozambique and Uganda. Data for South Africa not included.
[b] Data are partial for Thailand.

FIGURE 3.15

Change in NTP expenditure and change in all types of patients treated under DOTS, 20 high-burden countries, [a,b] 2003–2006



[a] Expenditure data are not available for Thailand and Uganda. Comparison for Kenya is with expenditure 2004 and for South Africa is with expenditure 2005. Comparison for Mozambique is expenditure 2005 with expenditure 2002.
[b] Countries ranked by percentage change in NTP expenditure.
[c] Expenditure data for Ethiopia, UR Tanzania and Zimbabwe appear incomplete.

smear-positive cases specifically; data not shown). However, the relationship was variable. In Brazil and the Russian Federation, the increase in the number of patients treated under DOTS exceeded 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 an almost one-to-one relationship between increased expenditures and increased notifications of new cases under DOTS in Indonesia, and the percentage increase in cases treated under DOTS was more than 70% of the percentage increase in expenditures in Bangladesh and China. At the other end of the spectrum, six countries reported lower expenditures in 2006 compared with 2003 (Afghanistan, Ethiopia, the Philippines, the United Republic of Tanzania, Viet Nam and Zimbabwe), of which two reported a small decrease in the number of cases treated (the United Republic of Tanzania and Zimbabwe), one reported a large increase in the number of cases treated (Afghanistan), and two reported small changes in the number of cases treated (the Philippines and Viet Nam). While the data are plausible for the Philippines and Viet Nam (small changes in both cases and expenditures are unsurprising in countries that have achieved targets for case detection and treatment success rates), it seems likely that expenditures have been underreported in the other four countries. This is consistent with the considerable difficulty in providing expenditure data to WHO that have been observed for these four countries over the past five years.

3.7 Global Fund financing

3.7.1 High-burden countries

The Global Fund is the single most important source of external financing in HBCs, with 11 countries (Bangladesh, Cambodia, the Democratic the Congo, Ethiopia, India, Indonesia, Mozambique, Pakistan, the Philippines, Uganda and Zimbabwe) relying on it to fund more than 25% of their NTP budgets. Only one HBC (Myanmar) lacks a Global Fund grant. After seven rounds of proposals, the total value of approved proposals in the HBCs is US$ 1.4 billion and the amounts in the Phase 1 grant agreements (i.e. the grants that cover the first two years of the proposal) total US$ 547 million (data not shown).

By the end of 2007, US$ 502 million had been disbursed. Across all grants and countries, the actual disbursement rate is very similar to the expected rate,[1] though there is variation among countries with disbursements higher than those expected in 30 out of 53 grants and less than expected in 23 (data not shown). Countries for which disbursements are particularly low in relation to the expected disbursement of funds include Bangladesh (for one of the two principal recipients in round 5), Brazil (for one of the principal recipients in round 5), India (rounds 3 and 4), Indonesia (round 5, possibly linked to a temporary cessation of funding in 2007) and Kenya (round 2). 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, which is in line with Global Fund expectations that it takes about one year to prepare and finalize the Phase 1 grant agreement and related documentation once proposals are approved by the Board. Once grant agreements are signed, disbursements are usually made within two months.

3.7.2 All countries

In seven funding rounds between 2002 and 2007, the Global Fund approved proposals worth a total of US$ 2.5 billion for TB control in 108 countries, out of total commitments for HIV, TB and malaria of around US$ 10 billion.[2] The African Region has the single largest share, at 37% (**Figure 3.16**), which is higher than its share of the global burden of TB (31%). 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 share of total funding approved for the Eastern Mediterranean Region and the European Region (13% and 11% respectively) is double these regions' share of the global burden of TB (6% and 5%), while the share of funding for the Region of the Americans is in line with its 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 3.17**), but fell in round 7.[3] The approval rate for TB proposals submitted to the Global Fund was 50% in round 5 and 64% in round 6, up from 37–40% in rounds 1–4, but fell to 51% in round 7.

3.8 Why do funding gaps for TB control persist?

The 22 HBCs have reported a combined funding gap of US$ 328 million for 2008, while the funding gap reported for 90 countries (the 22 HBCs plus 68 other countries) amounts to US$ 385 million. In the context of the Global Fund having issued seven calls for proposals since 2002 resulting in funding commitments of over US$ 10 billion for HIV, malaria and TB control programmes, it may seem surprising that funding gaps for TB control persist.

TB proposals submitted to the Global Fund must

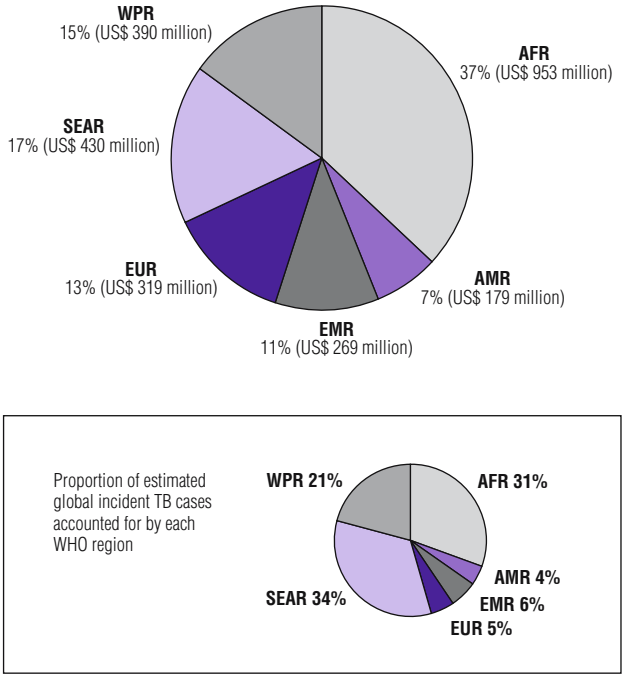
[1] The expected rate assumes that disbursements should be spread evenly over the two- or five-year period of the grant agreement following the programme start date.

[2] The Global Fund has committed US$ 10 billion in rounds 1–7; in round 7, US$ 1.1 billion was committed for a two-year period. See www.theglobalfund.org/en/media_center/press/pr_071112.asp

[3] Calculated as the number of proposals approved divided by the number of proposals reviewed by the Global Fund's Technical Review Panel.

FIGURE 3.16

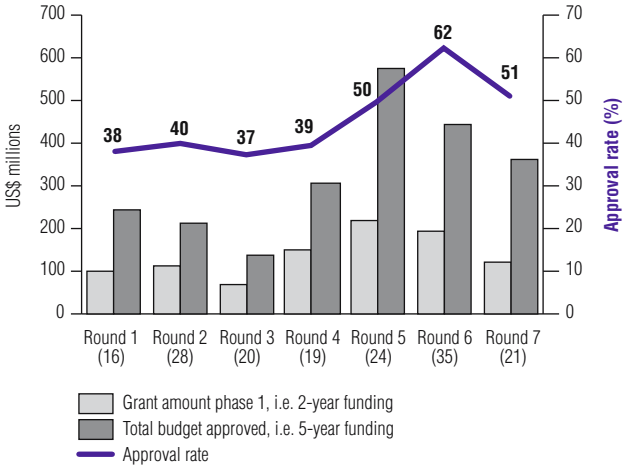
Global Fund funding for TB control by WHO region, as of end 2007[a]



[a] Refers to the total budgets approved in rounds 1–7.

FIGURE 3.17

Global Fund financing and proposal approval rate by round. Numbers under bars show the number of TB proposals approved in each round.



first be approved by its Technical Review Panel, and the number of proposals that can be approved for funding by the Board is limited by the total financial resources available. The US$ 2.4 billion committed thus far for TB control (see section 3.7) represents about one quarter of total commitments to date; if funds were split evenly among AIDS, TB and malaria, this would increase to US$ 3.3 billion. The Fund began to disburse funds in 2003, and current commitments extend to 2012; funds committed to date thus equate to approximately US$ 240 million per year, with a theoretical maximum of around US$ 330 million per year. This simple analysis demonstrates that even if TB control programmes were to increase their share of Global Fund commitments to 33%, the total reported funding gap of US$ 385 million would not be eliminated, although it could be reduced by about US$ 100 million. Excluding funding gaps in four middle-income countries with more domestic resources (Brazil, China, the Russian Federation and South Africa), the gaps reported by countries fall to about US$ 100 million among HBCs, and to about US$ 60 million in other countries. In this context, filling funding gaps via the Global Fund appears more feasible, but depends on (i) the submission of high-quality and sufficiently ambitious proposals including well-justified budgets, (ii) the criteria used by the Global Fund to define countries eligible to apply for funding and (iii) the criteria used to allocate funds among the three diseases. In round 7, there was a decrease in funding for TB control proposals, and a decrease in the proportion of proposals that were approved compared with the peak in round 6. The relative success of round 6 followed the organization of a series of proposal development workshops by the Stop TB Department in WHO; to maximize resource mobilization for TB control programmes in future rounds, this level of assistance with proposal preparation may be needed in future.

If gaps reported by countries are difficult to fill via the Global Fund, then closing the additional gap that will open up if all countries plan in line with the Global Plan via the Global Fund appears unrealistic. Filling funding gaps in the years up to the MDG target year of 2015 therefore depends on domestic resource mobilization and/or external resource mobilization from donors other than the Global Fund.

Increasing domestic financing for TB control would mean a major shift from trends during the period 2002–2008, when almost all of the increase in domestic funding among the 22 HBCs was accounted for by Brazil, China, the Russian Federation and South Africa. Two ways to assess the extent to which countries can mobilize more domestic funds are (i) to compare the percentage of funding currently being provided from domestic sources with a country's national income (measured as GNI per capita) to see if there are differences between countries with similar income levels and (ii) to compare costs and funding gaps per capita with total government health

TABLE 3.7

Financial indicators, high-burden countries, 2008

	NTP BUDGET PER CAPITA (US$)	TOTAL TB CONTROL COSTS PER CAPITA (US$)	FUNDING GAP PER CAPITA (US$)	GENERAL GOVERNMENT EXPENDITURE ON HEALTH PER CAPITA (US$)[a]	TOTAL EXPENDITURE ON HEALTH PER CAPITA (US$)[a]	GENERAL GOVERNMENT HEALTH SPENDING USED FOR TB CONTROL (%)	TB GAP AS PERCENTAGE OF GENERAL GOVERNMENT HEALTH SPENDING (%)
1 India	0.1	0.1	0	5.4	31	1.9	0
2 China	0.2	0.2	0.04	27	70	0.6	0.2
3 Indonesia	0.2	0.3	0	11	33	2.5	0
4 South Africa	7.4	11	0	158	390	7.2	0
5 Nigeria	0.4	0.6	0.2	7.0	23	8.9	3.3
6 Bangladesh	0.1	0.2	0	3.8	14	4.5	0
7 Ethiopia	0.2	0.3	0	2.9	5.6	13	0
8 Pakistan	0.1	0.2	0.05	2.7	14	6.7	2.0
9 Philippines	0.2	0.3	0.02	14	36	2.4	0.2
10 DR Congo	0.3	0.5	0.1	1.3	4.7	42	6.3
11 Russian Federation	5.1	5.7	1.1	150	245	3.7	0.7
12 Viet Nam	0.2	0.3	0.005	8.1	30	3.7	0.1
13 Kenya	0.9	1.0	0.4	8.6	20	12	5.1
14 UR Tanzania	1.3	1.4	0.3	5.2	12	29	5.5
15 Uganda	0.4	0.4	0.3	6.2	19	7.9	4.9
16 Brazil	0.3	0.5	0.1	157	290	0.3	0.1
17 Mozambique	0.9	1.2	0.1	8.4	12	15	1.4
18 Thailand[b]	0.1	0.1	–	57	88	0.2	–
19 Myanmar	0.3	0.3	0.2	0.6	4.5	51	33
20 Zimbabwe	0.5	0.9	0.1	13	27	7.1	0.9
21 Cambodia	0.6	0.8	0.3	6.1	24	14	5.6
22 Afghanistan	0.5	0.5	0.2	2.3	14	25	10
High-burden countries (mean value)	**0.9**	**1.2**	**0.2**	**30**	**64**	**12**	**3.8**

– Indicates not available.
[a] Latest data available are for 2004. Columns 6 and 7 will be overestimates if government health expenditure has increased since 2004.
[b] Data for Thailand are partial.

expenditure per capita (**Table 3.7**). Comparing countries with similar income levels and a similar TB burden suggests that there is scope for increasing domestic funding in several countries including Indonesia (compared with the Philippines), Pakistan (compared with India) and Kenya (compared with Mozambique). Comparing costs and funding gaps per capita with government health expenditure suggests that the countries with the most capacity to fund TB control from domestic resources are Brazil and China, followed by India, the Philippines, Indonesia and the Russian Federation. The countries with the least capacity to increase funding from domestic sources include the African countries (except South Africa), Afghanistan, Cambodia and Myanmar.

Besides grant funding from the Global Fund, the President's Emergency Plan for AIDS Relief is a major source of donor funding, at least for collaborative TB/HIV activities, for most of the African HBCs as well as Viet Nam. With billions of dollars available through this plan, it is important that collaborative TB/HIV activities and related aspects of TB control (e.g. laboratory strengthening) are supported as much as possible – for example, as in happening in Kenya. UNITAID[1] is also a relatively new source of donor funding for TB diagnostics and anti-TB drugs.

Overall, the importance of increasing both donor and domestic funding for TB control is highlighted in a recent publication.[2] This included an analysis of funding needs according to the Global Plan for least-developed, low-income, lower middle-income and upper middle-income countries separately. Combined with benchmarks for domestic contributions to funding for health care used by the Commission on Macroeconomics and Health,[3] this analysis suggested that domestic funding could increase to about US$ 5 billion per year by 2010 and that donor funding would need to increase to about US$ 1 billion per year (compared with approximately US$ 300 million in 2008).

3.9 Summary

The financial data reported to WHO in 2007 are the most complete since financial monitoring was initiated in 2002, with 90 countries that collectively account for 91% of the world's estimated TB cases providing the entire budget and funding data that were requested. Expenditure data continue to be more challenging to report, but 80 countries (77% of total cases globally) submitted a complete report.

NTP budgets in HBCs amount to US$ 1.8 billion in 2008, up from US$ 0.5 billion in 2002; NTP budgets for the 90 countries reporting complete data total US$ 2.3

[1] http://www.unitaid.eu/
[2] Floyd K, Pantoja A. Financial resources required for TB control to achieve global targets set for 2015. *Bulletin of the World Health Organization*, 2008 [in press].
[3] *Macroeconomics and health: investing in health for economic development. Report of the Commission on Macroeconomics and Health*. Geneva, World Health Organization, 2001:166–167.

billion in 2008. In HBCs, budgets are generally equivalent to about US$ 100–300 per patient treated, but range from below US$ 100 in India to above US$ 1000 in the Russian Federation and South Africa. DOTS accounts for the largest single share of NTP budgets in almost all countries, but budgets for the diagnosis and treatment of MDR-TB have become strikingly large in absolute and relative terms in the Russian Federation and South Africa. In several African countries as well as Cambodia, collaborative TB/HIV activities account for a comparatively high proportion of the NTP budget.

With a few exceptions, NTP budgets do not include the costs associated with using general health system resources such as staff and infrastructure for TB control. When these costs are added to NTP budgets, we estimate that the total cost of TB control in HBCs will reach US$ 2.3 billion in 2008 (up from US$ 0.6 billion in 2002), and US$ 3.1 billion across the 90 reporting countries. Costs per patient treated are generally in the range US$ 100–400, and below US$ 100 only in India.

For the 22 HBCs, NTP budgets and our estimates of the total costs of TB control have stagnated between 2007 and 2008 in all but five countries, four of which are in Africa. This trend is worrying, because it suggests that the deceleration in progress towards the case detection and treatment success targets highlighted in **Chapter 1** could persist into 2008.

Sustaining a trend evident since 2002, funding for TB control continues to grow, mainly from domestic financing in Brazil, China, the Russian Federation and South Africa and from Global Fund grants in other countries. Across HBCs in 2008, governments will cover 73% of the total costs of TB control and grants will cover 13% (including US$ 200 million from the Global Fund, out of total grant funding of US$ 297 million). For all countries, the figures are 75% and 12% respectively. Despite increases in funding, countries have reported funding gaps for 2008 that total US$ 328 million among HBCs (14% of total costs) and US$ 385 million across all reporting countries (13% of total costs). Only five HBCs reported that they had no funding gap for 2008.

Gaps reported by countries for 2007 and 2008 would be larger still if country plans and assessments of funding requirements were fully aligned with the Global Plan. In 2008, the gap between the total available funding based on country reports and the total funding requirements laid out in the Global Plan is US$ 0.8 billion in HBCs and US$ 0.9 billion across all 90 reporting countries. The discrepancy is mostly due to higher budgets for MDR-TB (South-East Asia and Western Pacific regions), collaborative TB/HIV activities (African and South-East Asia regions) and ACSM (all regions) in the Global Plan. These differences expressed in financial terms are consistent with results for the implementation and planning of interventions presented in **Chapter 2**.

More positively, there are several examples of countries with plans and budgets that are well aligned with the Global Plan, as well as a few that were well-aligned before the mid-2007 upward revision of targets for the treatment of MDR-TB. Many countries in Africa including all of the HBCs in the region have embarked upon, and in some cases completed, the development of medium-term plans and budgets using a WHO planning and budgeting tool that is designed to help countries to plan and budget in line with the Global Plan. Completion of this work as well as the development of country-owned plans and budgets based on Global Plan targets in further countries are now crucial and should form the basis for intensified efforts to mobilize the necessary resources from both domestic and donor sources.

Conclusions

This concluding section of the report highlights key findings from **Chapters 1, 2 and 3**, as well as common themes across all chapters.

The data and analysis presented in **Chapter 1** show that TB remains a major cause of illness and death worldwide, especially in Asia and Africa. Globally, there were an estimated 9.2 million new cases and 1.7 million deaths from TB in 2006, including 0.7 million cases and 0.2 million deaths in HIV-positive people. Population growth means that these numbers are higher than in 2005. More positively, and confirming a finding first reported in 2007, the data also show that the number of new cases per capita appears to have been falling globally since 2003, and in all six WHO regions except the European Region where rates are approximately stable. If this trend is sustained, MDG 6 Target 6.C, to halt and reverse the incidence of TB, will be achieved well before the target date of 2015. Four regions are also on track to halve prevalence and death rates by 2015 compared with a baseline of 1990, in line with targets set by the Stop TB Partnership. Africa and Europe are not on track to reach these targets, following large increases in the incidence of TB during the 1990s. At current rates of progress, these regions could prevent the targets being achieved globally.

The Stop TB Strategy is WHO's recommended approach to reducing the burden of TB in line with global targets, and the Stop TB Partnership's Global Plan has set out the scale at which the strategy needs to be implemented to achieve global targets. To date, **Chapter 2** shows that progress with implementation of the six components of the strategy is mixed.

- *DOTS expansion and enhancement*. This is the component for which progress is best. Globally, the percentage of estimated new cases of smear-positive TB that were detected in DOTS programmes reached 61% in 2006, compared with the global target of at least 70%. The rate of treatment success for smear-positive cases detected in DOTS programmes improved to 84.7% in 2005, just below the target of 85%.
- *Addressing TB/HIV, MDR-TB and other challenges*. There has been considerable progress in the African Region with the provision of TB/HIV interventions such as HIV testing for all TB patients and co-trimoxazole preventive therapy (CPT) and antiretroviral therapy (ART) for HIV-positive TB patients. However, planning for treatment of patients with MDR-TB falls far short of Global Plan targets in the European, South-East Asia and Western Pacific regions.
- *Contributing to health system strengthening*. Diagnosis of TB and treatment of patients are fully integrated into general health services in most countries. Links with general health sector or development planning frameworks are variable, but consistency with sector-wide approaches was comparatively good among reporting countries. The Practical Approach to Lung Health is being piloted or expanded nationwide in 15 countries, and is included in the plans of 72 countries. Many countries lack comprehensive plans for human resource development or a recent assessment of staffing needs.
- *Engaging all care providers*. Among the 22 HBCs that collectively account for 80% of TB cases globally, 14 are scaling up public–private and public–public mix approaches to involve the full range of care providers in TB control, and seven have used the International Standards for Tuberculosis Care to facilitate this process.
- *Empowering TB patients, and communities*. Several HBCs are implementing ACSM activities, and 13 have conducted KAP surveys. Nonetheless, many countries state that they need much more guidance and technical assistance in this area.
- *Promoting research*. Operational research activities were reported by 49 countries including 19 HBCs.

The data and analysis presented in **Chapter 3**, on financing for TB control, show that the funding available for TB control in 2008 reached US$ 3.3 billion across 90 countries (with 91% of global cases) that reported data. This is up from less than US$ 1 billion in 2002. Nonetheless, funding gaps totalling US$ 385 million in 2008 were reported by the 90 reporting countries, and only five of the 22 HBCs reported no funding gap. The gap between the funding reported to be available by countries and the funding requirements estimated to be needed for the same countries in the Global Plan is larger still: US$ 1 billion. This is mainly due to the higher funding requirements for collaborative TB/HIV activities, management of MDR-TB and ACSM in the Global Plan, compared with country reports. This finding is in line with the implementation and planning deficits described in **Chapter 2**.

Most of the funding deficit is for collaborative TB/HIV activities, management of MDR-TB and ACSM. Another example of consistency between the data included in **Chapter 2** and **Chapter 3** is the diagnosis and treatment of MDR-TB in the Russian Federation and South Africa. These two countries account for a large share of the patients with MDR-TB who are projected to be started on treatment in 2008, in line with fact that these two countries account for 93% of the total budgets for management of MDR-TB reported by HBCs.

Overall, there are several signs that global progress in TB control is slowing and that there are parts of the world where much more needs to be done to achieve the global targets that have been set. Progress in case detection decelerated globally in 2006 and began to stall in China and India. The percentage of estimated cases being detected in DOTS programmes in the African region remains low, at 46%. Incidence rates are falling slowly compared with the decline of 5–10% per year that is theoretically feasible. Budgets stagnated between 2007 and 2008 in all but five of the 22 HBCs. Renewed effort to increase the rate of progress in global TB control in line with the expectations of the Global Plan, backed up by intensified resource mobilization from domestic and international donors, is required.

ANNEX 1

Profiles of high-burden countries

COUNTRY PROFILE

Afghanistan

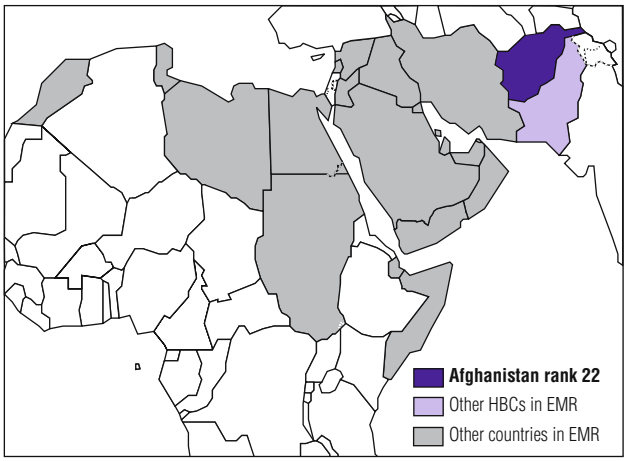
Despite political instability and limited resources, the NTP of Afghanistan has managed to provide high-quality TB treatment to greater numbers of patients each year for the past decade. Funding has increased, but significant gaps remain. Case detection within DOTS areas was nearly 70% in 2006; full DOTS coverage coupled with the planned collaboration with private providers and expansion of recently introduced community-based TB care should improve the overall rate of case detection.

SURVEILLANCE AND EPIDEMIOLOGY, 2006

Population (thousands)[a]	26 088
Estimates of epidemiological burden[1]	
Incidence (all cases/100 000 pop/yr)	161
Trend in incidence rate (%/yr, 2005–2006)[2]	**-4.2**
Incidence (ss+/100 000 pop/yr)	73
Prevalence (all cases/100 000 pop)[2]	**231**
Mortality (deaths/100 000 pop/yr)[2]	**32**
Of new TB cases, % HIV+[b]	*0.0*
Of new TB cases, % MDR-TB[c]	*3.4*
Of previously treated TB cases, % MDR-TB[c]	*37*
Surveillance and DOTS implementation	
Notification rate (new and relapse/100 000 pop/yr)	98
Notification rate (new ss+/100 000 pop/yr)	48
DOTS case detection rate (new ss+, %)	**66**
DOTS treatment success (new ss+, 2005 cohort, %)	**90**
Of new pulmonary cases notified under DOTS, % ss+	65
Of new cases notified under DOTS, % extrapulmonary	21
Of new ss+ cases notified under DOTS, % in women	68
Of sub-national reports expected, % received at next reporting level[d]	95
Laboratory services[3]	
Number of laboratories performing smear microscopy	500
Number of laboratories performing culture	1
Number of laboratories performing DST	1
Of laboratories performing smear microscopy, % covered by EQA	100
Management of MDR-TB	
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	
National policy of counselling and testing TB patients for HIV?	No policy
National surveillance system for HIV-infection in TB patients?	Yes
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	–

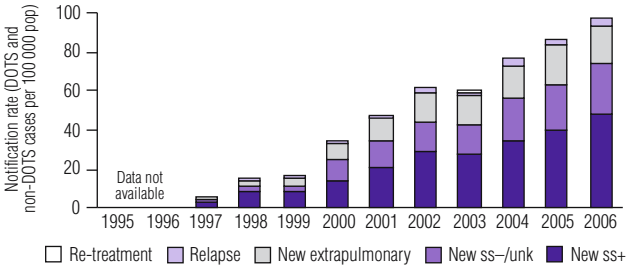
WHO Eastern Mediterranean Region (EMR)

Rank based on estimated number of incident cases (all forms) in 2006



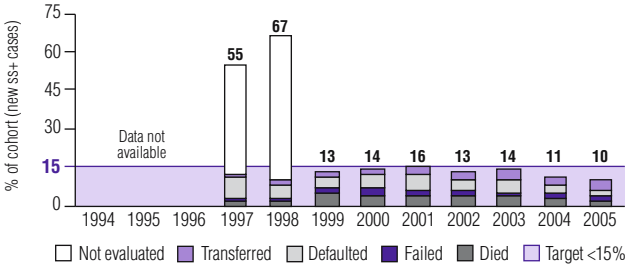
Case notifications

Steady increases in ss+ and ss– notifications over the last few years as DOTS coverage has increased



Unfavourable treatment outcomes, DOTS

Cohort treatment success rates have been consistently close to or above target since 1999



DOTS expansion and enhancement	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
DOTS coverage (%)	–	–	12	11	14	15	12	38	53	68	81	97
DOTS notification rate (new and relapse/100 000 pop)	–	–	6.6	16	16	34	47	62	60	76	87	98
DOTS notification rate (new ss+/100 000 pop)	–	–	3.2	9.2	8.3	14	22	29	28	34	40	48
DOTS case detection rate (all new cases, %)	–	–	2.8	6.7	7.3	16	23	30	31	42	50	58
DOTS case detection rate (new ss+, %)	–	–	3.1	9.3	8.6	15	24	33	34	44	52	66
Case detection rate within DOTS areas (new ss+, %)[e]	–	–	26	85	64	99	198	88	63	64	65	68
DOTS treatment success (new ss+, %)	–	–	45	33	87	86	84	87	86	89	90	–
DOTS re-treatment success (ss+, %)	–	–	–	78	84	78	–	–	–	–	89	–

IMPLEMENTING THE STOP TB STRATEGY[1]

DOTS EXPANSION AND ENHANCEMENT

Political commitment, standardized treatment, and monitoring and evaluation system

Achievements

- Increased number of DOTS centres providing TB diagnosis and treatment from 537 to 803
- Trained more than 2275 doctors, nurses and laboratory technicians on TB diagnosis and treatment following NTP policies
- Strengthened supervision by training health workers, increasing number of supervisory visits and supplying more vehicles for visits
- Produced 2nd annual report of NTP activities

Planned activities

- Strengthen managerial capacity at provincial and district levels
- Improve collaboration and coordination with the various partners involved in TB control

Quality-assured bacteriology

Achievements

- Commenced preparation for DRS in 2007
- Piloted EQA in Balkh and Kabul provinces, resulting in improved technical performance of sputum smear microscopy in these provinces
- Developed EQA guidelines for the whole country
- Developed laboratory recording and reporting system
- Provided initial training in microscopy to more than 400 laboratory technicians
- Recruited and trained 30 laboratory supervisors in EQA assessment at central, regional and provincial levels

Planned activities

- Establish NRL
- Implement EQA countrywide
- Establish effective laboratory supervision system
- Train 4 key NTP staff in culture and DST

Drug supply and management system

Achievements

- Signed agreement between NTP and GDF for procurement of anti-TB drugs (4.5 million dollars) for the next 3 years
- Trained 400 pharmacists in drug management and logistics

Planned activities

- Introduce routine checking of drug stocks in each province
- Train additional pharmacists on drug management/logistic system of NTP

TB/HIV, MDR-TB AND OTHER CHALLENGES

Collaborative TB/HIV activities

Achievements

- Appointed TB/HIV focal point
- Formed TB/HIV working group
- Established sentinel surveillance of HIV infection among TB patients
- Finalized TB/HIV policy, strategy and operational guidelines

Planned activities

- Pilot provision of HIV counselling and testing to TB patients in Pul-cherkhi Jail, among injecting drug users in Kabul and based at the National TB Institute (covering a population of 60 000 people)

Diagnosis and treatment of multidrug-resistant TB

Achievements

- No activities undertaken given absence of reference laboratory

Planned activities

- Ensure adequate supply of second-line drugs
- Establish information system on chronic TB cases
- Begin DST in NRL in 2008

High-risk groups and special situations

Achievements

- None reported

Planned activities

- Establish cross-border collaboration to ensure effective treatment and notification of TB in Afghani migrants

HEALTH SYSTEM STRENGTHENING, INCLUDING HUMAN RESOURCE DEVELOPMENT

Achievements

- Assessed burden of respiratory conditions in primary health-care settings

Planned activities

- Improve integration of TB control activities within ongoing process of primary health-care service development

[1] Unless otherwise specified, achievements are for financial year 2006; planned activities are for financial year 2007.

ENGAGING ALL CARE PROVIDERS

Achievements

- Recruited national PPM officer
- Conducted situation analysis for PPM
- Established national PPM taskforce committee
- Developed operational plan to begin PPM initiatives

Planned activities

- Develop PPM national guidelines
- Develop training modules for private practitioners and private pharmacies
- Launch PPM pilot in Kabul and Balkh provinces

EMPOWERING PEOPLE WITH TB, AND COMMUNITIES

Advocacy, communication and social mobilization

Achievements

- Conducted media campaign on TB control (TV and radio)
- Developed and disseminated IEC packages (posters, brochures, cups and leaflets)

Planned activities

- Develop guide for journalists explaining terminology used in TB control
- Organize advocacy events for World TB day

Community participation in TB care

Achievements

- Organized 35 community events in each quarter for awareness at central and regional levels
- Implemented IEC for patient empowerment and community involvement
- Trained 74 community health workers on community-based DOTS
- Held TB partnership workshop for BPHS implementers

Planned activities

- Organize community events for awareness at all levels
- Hold community events for World TB day
- Train trainers for community health workers

Patients' Charter

Achievements

The Patients' Charter was published in 2006 and was therefore not available for use in countries until then.

Planned activities

- None reported

RESEARCH, INCLUDING SPECIAL SURVEYS AND IMPACT MEASUREMENT

Achievements

- Conducted study on magnitude and determinants of non-compliance with treatment among TB patients in Kabul
- Conducted study on role of private pharmacies in treatment of TB in the central region of Afghanistan

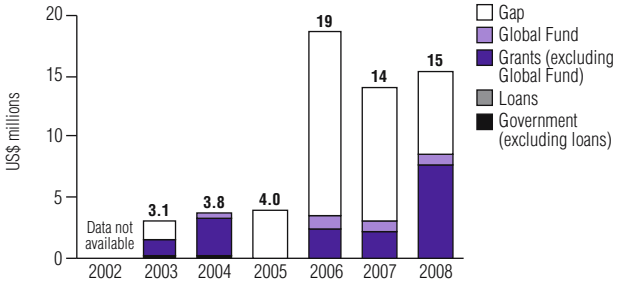
Planned activities

- Conduct study to identify all TB cases detected in the health system in Afghanistan
- Establish impact of active case-finding among household contacts of TB patients on case detection rate in Afghanistan
- Indirectly estimate TB burden by determining extent of under-reporting in the health system

FINANCING THE STOP TB STRATEGY

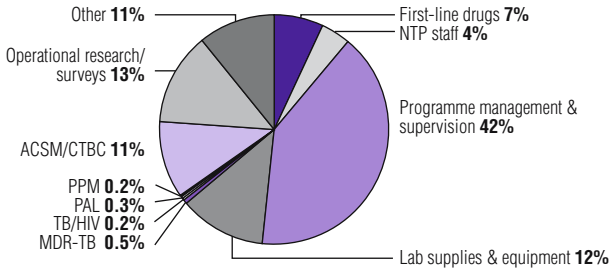
NTP budget by source of funding

Increased budget requirement in 2006–2008 reflects plan to strengthen TB control throughout the country; increased funding from donors other than the Global Fund in 2008, but large funding gaps persist



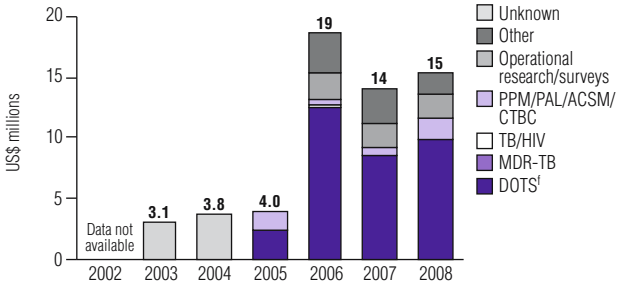
NTP budget by line item, 2008

Largest component of budget for DOTS (62%) and, unusually among HBCs, operational research/surveys (13%)



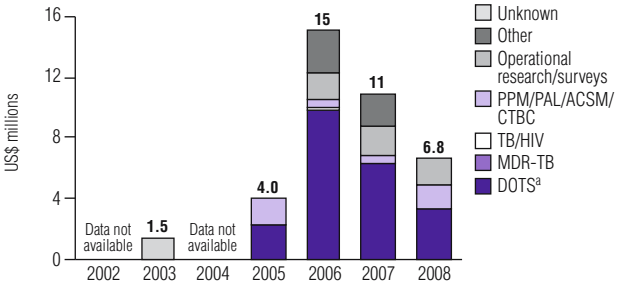
NTP budget by line item

Increased budget for community involvement in TB control as well as for laboratories, specifically for establishing a NRL in 2008



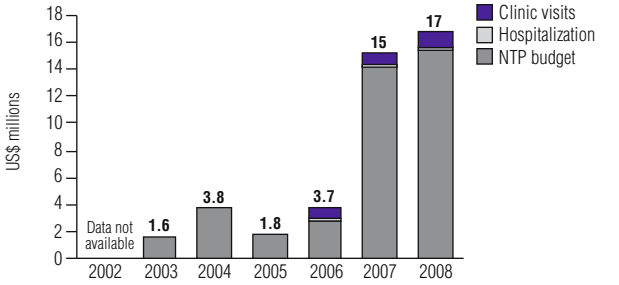
NTP funding gap by line item

Funding gaps within DOTS component mainly for laboratory supplies and equipment (2007) and routine programme management and supervision activities (2008). Funding gap has decreased since 2006 but remains large relative to total budget



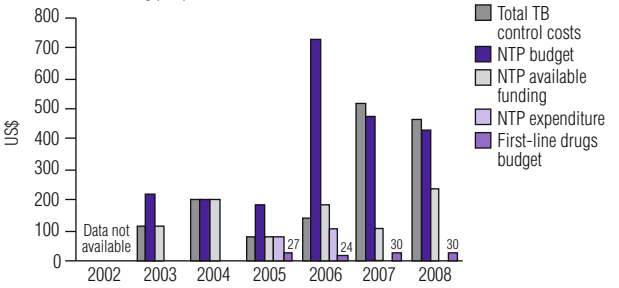
Total TB control costs by line item[4]

Costs for clinic visits based on 71 outpatient visits per new ss+ TB patient during treatment and 68 outpatient visits per new ss–/extrapulmonary patient



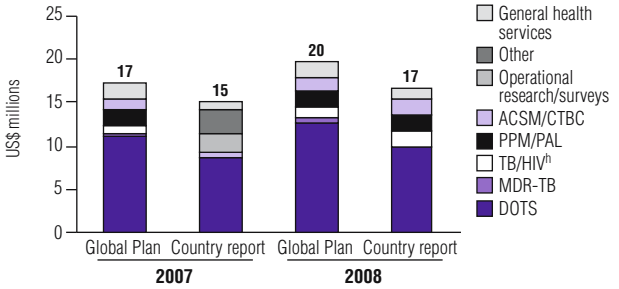
Per patient costs, budgets and expenditures[5]

Increased expenditure per patient in 2006; high costs and budget per patient compared with available funding per patient



Comparison of country report and Global Plan:[g] total TB control costs, 2007–2008

Country report similar to Global Plan; cost for DOTS higher in Global Plan due to higher forecast of patients to be treated



NTP budget and funding gap by Stop TB Strategy component

	2007		2008	
(US$ millions)	BUDGET	GAP	BUDGET	GAP
DOTS expansion and enhancement	8.7	6.3	9.8	3.3
TB/HIV, MDR-TB and other challenges	0	0	0	0
Health system strengthening	0	0	0	0
Engage all care providers	0	0	0.01	0.1
People with TB, and communities	0.6	0.6	0.05	0.05
Research	0.02	0.02	0.03	1.9
Other	2.8	2.1	1.6	0

Financial indicators for TB

Government contribution to NTP budget (including loans)	0.9%	0.8%
Government contribution to total cost TB control (including loans)	7.9%	8.7%
NTP budget funded	22%	56%
Per capita health financial indicators (US$)		
NTP budget per capita	0.4	0.5
Total costs for TB control per capita	0.5	0.5
Funding gap per capita	0.3	0.2
Government health expenditure per capita (2004)	2.3	
Total health expenditure per capita (2004)	14	

SOURCES, METHODS AND ABBREVIATIONS

[a–h] Please see footnotes page 169.

1 Incidence, prevalence and mortality estimates include patients infected with HIV. TB burden originally estimated for 1997, assuming an annual risk of TB infection of 3% based on 1982 national tuberculin survey and other available data, but incidence estimate revised in 2005 assuming ss+ case detection rate of approximately 50%.

2 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 614/100 000 pop and mortality 70/100 000 pop/yr.

3 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.

4 Total TB control costs for 2003–2004 are based on available funding, whereas those for 2005–2006 are based on expenditure, and those for 2007–2008 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.

5 NTP available funding for 2005–2006 is based on the amount of funding actually received, using retrospective data; available funding for 2003–2004 and 2007–2008 is based on prospectively reported budget data, and estimated as the total budget minus any reported funding gap.

– 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

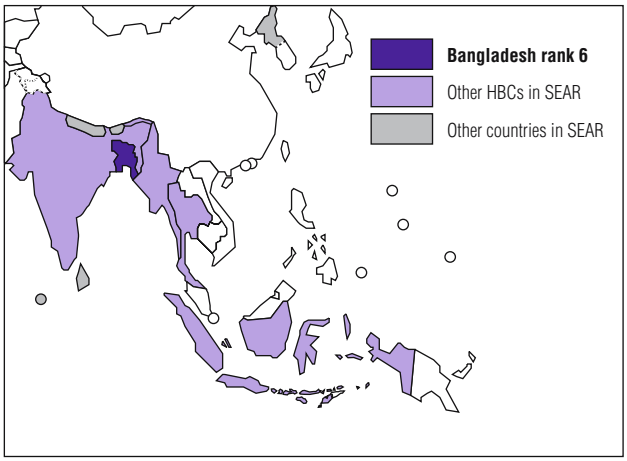
The treatment success and case detection rates in Bangladesh continue to improve, although the case detection target of 70% had not yet been met in 2006; the proportion of smear-negative cases receiving treatment is estimated to be even lower. Collaboration with the private sector is increasing, which may help to improve case-finding. Preparation is under way for the introduction in 2007 of collaborative TB/HIV activities and of the management of MDR-TB.

SURVEILLANCE AND EPIDEMIOLOGY, 2006

Population (thousands)[a]	155 991
Estimates of epidemiological burden[1]	
Incidence (all cases/100 000 pop/yr)	225
Trend in incidence rate (%/yr, 2005–2006)[2]	-1.0
Incidence (ss+/100 000 pop/yr)	101
Prevalence (all cases/100 000 pop)[2]	**391**
Mortality (deaths/100 000 pop/yr)[2]	**45**
Of new TB cases, % HIV+[b]	*0.0*
Of new TB cases, % MDR-TB[c]	*3.6*
Of previously treated TB cases, % MDR-TB[c]	*19*
Surveillance and DOTS implementation	
Notification rate (new and relapse/100 000 pop/yr)	93
Notification rate (new ss+/100 000 pop/yr)	65
DOTS case detection rate (new ss+, %)	**65**
DOTS treatment success (new ss+ cases, 2005 cohort, %)	**92**
Of new pulmonary cases notified under DOTS, % ss+	81
Of new cases notified under DOTS, % extrapulmonary	10
Of new ss+ cases notified under DOTS, % in women	33
Of sub-national reports expected, % received at next reporting level[d]	100
Laboratory services[3]	
Number of laboratories performing smear microscopy	687
Number of laboratories performing culture	3
Number of laboratories performing DST	0
Of laboratories performing smear microscopy, % covered by EQA	99
Management of MDR-TB	
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	
National policy of counselling and testing TB patients for HIV?	–
National surveillance system for HIV-infection in TB patients?	Yes
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	–

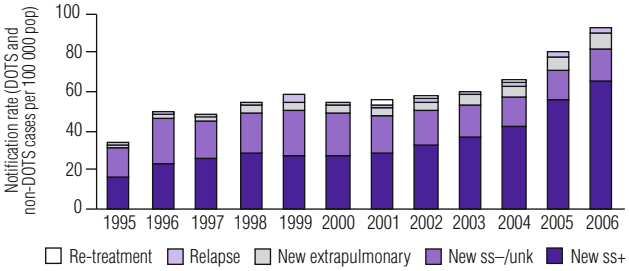
WHO South-East Asia Region (SEAR)

Rank based on estimated number of incident cases (all forms) in 2006



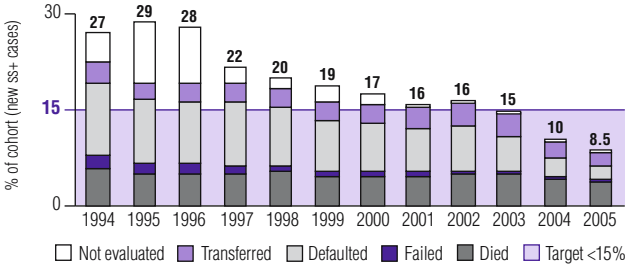
Case notifications

Continued sharp increase in ss+ notifications; high proportion of cases ss+; extra-pulmonary notification rate increasing



Unfavourable treatment outcomes, DOTS

Treatment success rate above target for third consecutive year; default rates significantly lower for last two cohorts than in previous years



DOTS expansion and enhancement	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
DOTS coverage (%)	41	65	80	90	90	92	95	95	99	99	99	100
DOTS notification rate (new and relapse/100 000 pop)	11	24	31	39	52	43	45	50	60	65	80	93
DOTS notification rate (new ss+/100 000 pop)	7.2	15	20	25	25	26	27	32	36	42	55	65
DOTS case detection rate (all new cases, %)	4.2	9.5	12	16	21	17	18	20	25	28	34	40
DOTS case detection rate (new ss+, %)	6.4	14	18	23	23	24	26	30	35	40	54	65
Case detection rate within DOTS areas (new ss+, %)[e]	16	21	22	25	26	26	27	32	35	41	55	65
DOTS treatment success (new ss+, %)	71	72	78	80	81	83	84	84	85	90	92	–
DOTS re-treatment success (ss+, %)	75	57	58	74	72	76	–	69	73	81	80	–

IMPLEMENTING THE STOP TB STRATEGY[1]

DOTS EXPANSION AND ENHANCEMENT

Political commitment, standardized treatment, and monitoring and evaluation system

Achievements

- Developed strategic plan for 2006–2010, which was approved by national government
- Strengthened supervision and monitoring activities through establishment of network of national, divisional and district-level supervisors and appointment of new supervisors at sub-district level
- Produced 6th annual report of NTP activities

Planned activities

- Further strengthen supervision and monitoring system through collaboration with NGOs and WHO
- Revise national guidelines to incorporate guidelines for management of childhood TB

Quality-assured bacteriology

Achievements

- Increased number of microscopy centres included in EQA from 28 in 2005 to 33 out of 687 in 2006
- Initiated process of establishing NRL for culture and DST
- Conducted "training of trainers" for laboratory supervisors on EQA and AFB microscopy

Planned activities

- Establish an NRL for culture and DST
- Establish regional TB reference laboratories
- Continue to scale up EQA
- Further strengthen laboratory supervision through training and staff development

Drug supply and management system

Achievements

- Developed GDF drug procurement policy and plan

Planned activities

- Introduce drug management software
- Establish an effective drug procurement system for new category I and category II regimens

TB/HIV, MDR-TB AND OTHER CHALLENGES

Collaborative TB/HIV activities

Achievements

- Developed mechanism for coordination between NTP and NAP
- Conducted 2nd survey of HIV prevalence in TB patients
- Signed agreement with Asharaloo, an NGO working with HIV-positive people, for provision of ART for TB patients

Planned activities

- Initiate collaboration between NTP and NAP
- Implement planned collaborative TB/HIV activities
- Address human resource development issues surrounding TB/HIV through advocacy and training

Diagnosis and treatment of multidrug-resistant TB

Achievements

- Received GLC approval for project to treat MDR-TB patients
- Established MDR-TB coordination committee, clinical management and social support committee and laboratory working group
- Held workshop to finalize operational guidelines for management of MDR-TB
- Damien Foundation disseminated results of hospital-based MDR-TB pilot project

Planned activities

- Obtain accreditation of NRL through proficiency testing
- Initiate GLC-approved project to manage MDR-TB (50 TB patients to be treated in first year)
- Conduct in-country "training of trainers" for management of MDR-TB management
- Implement MDR-TB projects at National Institute of Diseases of Chest and Hospitals, Dhaka

High-risk groups and special situations

Achievements

- Set up health centres for prisons in collaboration with NGOs in Dhaka, Chittagong and Gazipur
- Set up additional service points and adjusted clinic hours for TB patients in order to increase access to TB diagnosis and treatment in a number of big cities, and for the armed forces and police

Planned activities

- Conduct assessment of TB and address special needs for TB control in refugee camps
- Expand DOTS for prisoners to all districts
- Provide DOTS to refugee camps at Cox Bazaar in collaboration with UNHCR and BRAC

HEALTH SYSTEM STRENGTHENING, INCLUDING HUMAN RESOURCE DEVELOPMENT

Achievements

- Collaborated with ministries of education, justice and defence, the NAP, NGOs and professional associations in planning for TB control

Planned activities

- Initiate use of X-ray services in all chest disease clinics
- Strengthen laboratory capacity for diagnosing smear-negative, extrapulmonary and childhood TB

ENGAGING ALL CARE PROVIDERS

Achievements

- Disseminated PPM guidelines
- Implemented PPM activities in all districts, with central planning
- Scaled up PPM in workplaces and metropolitan cities

Planned activities

- Develop and distribute PPM training materials, and conduct "training of trainers"
- Develop and distribute advocacy material to private providers

[1] Unless otherwise specified, achievements are for financial year 2006; planned activities are for financial year 2007.

EMPOWERING PEOPLE WITH TB, AND COMMUNITIES

Advocacy, communication and social mobilization

Achievements

- Developed draft ACSM operational guidelines
- Initiated development of ACSM strategy

Planned activities

- Organize meeting of stakeholders to finalize ACSM operational guidelines
- Begin implementation of ACSM operational guidelines

Community participation in TB care

Achievements

- Organized DOTS committee meetings in collaboration with community leaders
- Developed a mechanism to involve community health volunteers (shasthya shebikas, village doctors, cured patients) in building awareness of TB, referral of suspects, motivation and advocacy for uninterrupted treatment and treatment supervision
- Established TB DOTS clubs consisting of cured patients at different levels (26% of TB suspects referred for diagnosis came from these clubs in 2006)

Planned activities

- Strengthen TB DOTS clubs through provision of government support and involvement of senior religious leaders (these clubs are currently being run by NGOs)
- Further involve community outreach centres in DOTS activities
- Train and mobilize health assistants (government paid employees at sub-district level of which there are around 2200 at peripheral level) for involvement in TB control

Patients' Charter

Achievements

The Patients' Charter was published in 2006 and was therefore not available for use in countries until then.

Planned activities

- Distribute the Patients' Charter as part of ACSM strategy

RESEARCH, INCLUDING SPECIAL SURVEYS AND IMPACT MEASUREMENT

Achievements

- Established research committee within NTP
- Began preparation for national surveys of disease prevalence and infection
- Partner NGOs undertook and published various studies

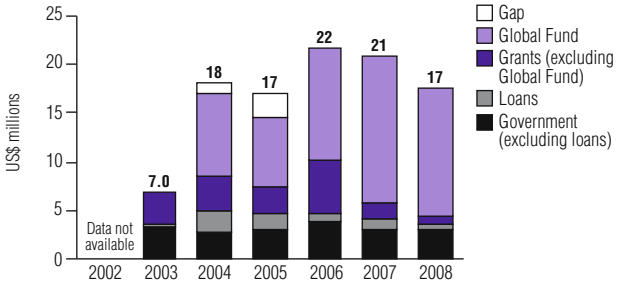
Planned activities

- Carry out national survey of prevalence of disease and of infections
- Initiate preparations for DRS

FINANCING THE STOP TB STRATEGY

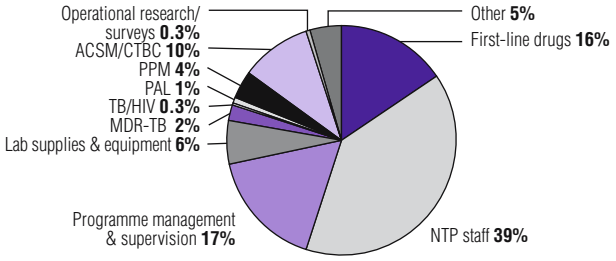
NTP budget by source of funding

Decreasing budget for TB control since 2006, despite increase in projected number of patients to be treated; funding now mostly from the Global Fund



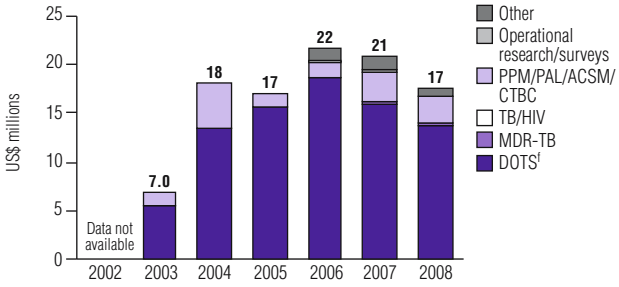
NTP budget by line item, 2008

DOTS expansion and enhancement (component 1 of Stop TB Strategy) accounts for largest share of the NTP budget (78%)



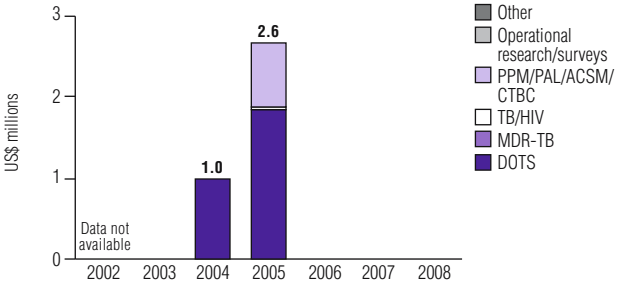
NTP budget by line item

Decreasing budget for DOTS, mainly due to reduced budget for routine programme management and supervision activities



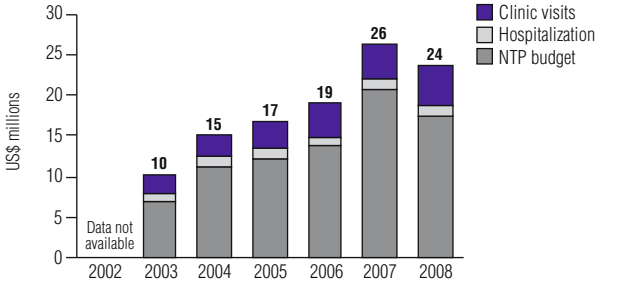
NTP funding gap by line item

Funding gaps reported only for 2004–2005, for DOTS and initiatives to increase case detection and treatment success; grants from Global Fund have been used to eliminate funding gaps



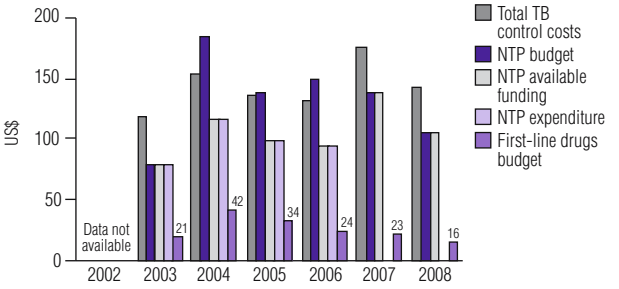
Total TB control costs by line item[4]

Hospitalization costs are for 696 dedicated TB beds, costs for clinic visits based on 27 visits per patient during treatment; NTP budget accounts for the largest share of TB control costs



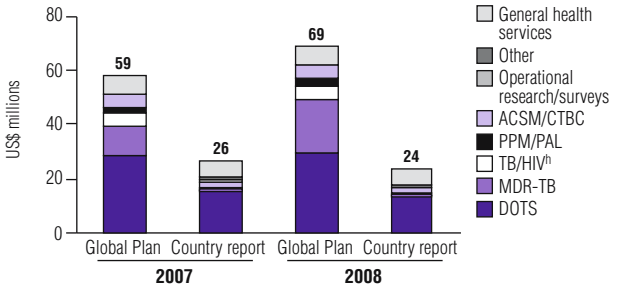
Per patient costs, budgets and expenditures[5]

Decreased budget and expenditure per patient as number of patients treated or projected to be treated increases and budgets/expenditures decrease



Comparison of country report and Global Plan:[g] total TB control costs, 2007–2008

Country report not in line with Global Plan: costs for DOTS component decreasing in country report; targets for MDR-TB patients to be treated in Global MDR/XDR Response Plan much higher than scaling-up planned by NTP



NTP budget and funding gap by Stop TB Strategy component

	2007		2008	
(US$ millions)	BUDGET	GAP	BUDGET	GAP
DOTS expansion and enhancement	16	0	14	0
TB/HIV, MDR-TB and other challenges	0.3	0	0.4	0
Health system strengthening	0.2	0	0.2	0
Engage all care providers	0.9	0	0.6	0
People with TB, and communities	2.0	0	1.8	0
Research	0.2	0	0.1	0
Other	1.2	0	0.8	0

Financial indicators for TB

Government contribution to NTP budget (including loans)	21%	20%
Government contribution to total cost TB control (including loans)	38%	41%
NTP budget funded	100%	100%
Per capita health financial indicators (US$)		
NTP budget per capita	0.1	0.1
Total costs for TB control per capita	0.2	0.2
Funding gap per capita	0	0
Government health expenditure per capita (2004)	3.8	
Total health expenditure per capita (2004)	14	

SOURCES, METHODS AND ABBREVIATIONS

[a–h] Please see footnotes page 169.

1 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.

2 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 621/100 000 pop and mortality 74/100 000 pop/yr.

3 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.

4 Total TB control costs for 2002–2006 are based on expenditure, whereas those for 2007–2008 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.

5 NTP available funding for 2004–2006 is based on the amount of funding actually received, using retrospective data; available funding for 2002–2003 and 2007–2008 is based on prospectively reported budget data, and estimated as the total budget minus any reported funding gap.

– 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

Control of TB in Brazil is well funded and is integrated into the general health-care system, with primary health care increasingly decentralized through the Unified Health System. The various health information systems of the Ministry of Health's programmes (including death registrations) are increasingly well integrated, with access to cross-linked individual patient data at central level. This allows for detailed analyses both of programme performance and of burden and impact. Plans to computerize the information system of the laboratories will increase further the range of possible applications of the data. Nonetheless, late reporting and the time taken to resolve duplicate entries mean that treatment outcomes were not available for 4% of the 2005 cohort. Brazil was the first high-burden country to offer ART to all HIV-positive TB patients, and treatment for MDR-TB patients is expanding (400 patients treated in 2006, with 1000 expected in 2007).

SURVEILLANCE AND EPIDEMIOLOGY, 2006

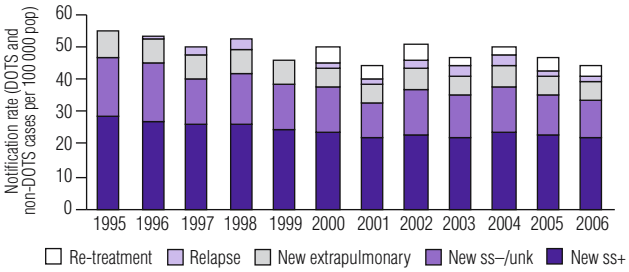
Population (thousands)[a]	189 323
TB burden, 2006 estimates[1]	
Incidence (all cases/100 000 pop/yr)	50
Trend in incidence rate (%/yr, 2005–2006)[2]	**-3.3**
Incidence (ss+/100 000 pop/yr)	31
Prevalence (all cases/100 000 pop)[2]	**55**
Mortality (deaths/100 000 pop/yr)[2]	**4.0**
Of new TB cases, % HIV+[b]	12
Of new TB cases, % MDR-TB (1996)[c]	0.9
Of previously treated TB cases, % MDR-TB (1996)[c]	5.4
Surveillance and DOTS implementation	
Notification rate (new and relapse/100 000 pop/yr)	41
Notification rate (new ss+/100 000 pop/yr)	22
DOTS case detection rate (new ss+, %)	**55**
DOTS treatment success (new ss+ cases, 2005 cohort, %)	**77**
Of new pulmonary cases notified under DOTS, % ss+	65
Of new cases notified under DOTS, % extrapulmonary	14
Of new ss+ cases notified under DOTS, % in women	33
Of sub-national reports expected, % received at next reporting level[d]	100
Laboratory services[3]	
Number of laboratories performing smear microscopy	4,044
Number of laboratories performing culture	193
Number of laboratories performing DST	38
Of laboratories performing smear microscopy, % covered by EQA	52
Management of MDR-TB	
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	
National policy of counselling and testing TB patients for HIV?	Yes (to all patients)
National surveillance system for HIV-infection in TB patients?	Yes
Of TB patients (new and re-treatment) notified, % tested for HIV	65
Of TB patients tested for HIV, % HIV+	15
Of HIV+ TB patients detected, % receiving CPT	86
Of HIV+ TB patients detected, % receiving ART	80

WHO Region of the Americas (AMR)

Rank based on estimated number of incident cases (all forms) in 2006

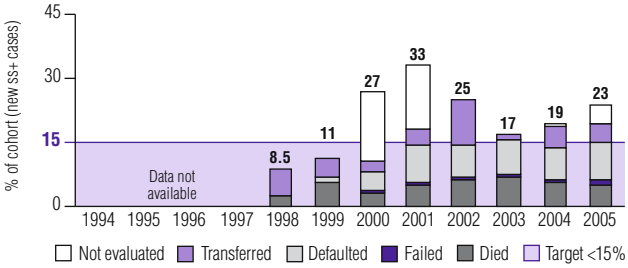
Case notifications

Notifications declining pre-2000, then approximately constant; assumed to reflect declining incidence coupled with improved case-finding over past several years



Unfavourable treatment outcomes, DOTS

Treatment success rate for 2005 cohort lower than for 2004 cohort and below target; outcomes reported for almost all registered patients; only about half of successfully treated cases confirmed cured in last 5 cohorts



DOTS expansion and enhancement	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
DOTS coverage (%)	–	0.0	0.0	3.0	7.0	7.0	32	25	34	52	68	86
DOTS notification rate (new and relapse/100 000 pop)	–	–	–	2.4	2.4	3.1	4.3	4.9	9.1	24	28	32
DOTS notification rate (new ss+/100 000 pop)	–	–	–	1.3	1.2	2.3	2.3	2.7	5.0	12	14	17
DOTS case detection rate (all new cases, %)	–	0.0	0.0	3.8	3.8	4.9	6.4	8.3	15	43	52	62
DOTS case detection rate (new ss+, %)	–	–	–	3.2	3.1	5.9	6.3	7.6	14	37	43	55
Case detection rate within DOTS areas (new ss+, %)[e]	–	–	–	106	44	84	20	30	43	70	64	64
DOTS treatment success (new ss+, %)	–	–	–	91	89	73	67	75	83	81	77	–
DOTS re-treatment success (ss+, %)	–	–	–	–	–	43	47	60	64	51	47	–

IMPLEMENTING THE STOP TB STRATEGY[1]

DOTS EXPANSION AND ENHANCEMENT

Political commitment, standardized treatment, and monitoring and evaluation system

Achievements

- Strengthened information systems to improve quality through periodic review of system and training of new staff, and updating recording and reporting forms
- Produced 4th annual report of NTP activities

Planned activities

- Implement the Global Fund round 5 proposal in 11 large metropolitan areas
- Accelerate the implementation of National Plan 2004–2007 with the goal of reaching full DOTS coverage in 315 priority municipalities
- Conduct quarterly macroregional cycles of monitoring and evaluation with states and priority cities included in the 2004–2007 plan
- Continue strengthening information system

Quality-assured bacteriology

Achievements

- Strengthened laboratory network through development and implementation of broad training plan and introduction of culture in all states
- Organized workshop on laboratory monitoring data
- Conducted courses for training of laboratory staff in sputum smear microscopy

Planned activities

- Implement culture in laboratories in border areas and in major cities
- Develop and implement a computerized system for the laboratory network
- Introduce EQA in all laboratories (for smear, culture and DST)

Drug supply and management system

Achievements

- Planned for procurement of drugs for 2007–2008 in collaboration with MoH

Planned activities

- Plan for procurement of drugs for 2008–2009 in collaboration with the MoH
- Introduce quality control of anti-TB drugs distributed within the Unified Health System (SUS, Sistema Unico de Saúde)

TB/HIV, MDR-TB AND OTHER CHALLENGES

Collaborative TB/HIV activities

Achievements

- Developed National Collaborative TB/HIV Action Plan
- Applied experiences from NAP in mobilization and patient participation in collaborative TB/HIV activities
- Provided ART to all HIV-infected TB patients

Planned activities

- Ensure timely detection and quality treatment for people living with TB and HIV/AIDS through workshops, training, counselling, rapid HIV tests for people with TB and chemoprophylaxis
- Produce manuals, folders and posters on TB/HIV
- Strengthen and mobilize civil society to participate in collaborative TB/HIV activities

Diagnosis and treatment of multidrug-resistant TB

Achievements

- Developed and launched information system for monitoring drug resistance at national level
- Trained doctors and specialists in preparation for decentralization of management of MDR-TB cases to state level

Planned activities

- Assess use of information system for monitoring of drug resistance at national level
- Decentralize MDR-TB case management to the states

High-risk groups and special situations

Achievements

- In collaboration with the National Foundation of Indigenous Health, implemented activities to improve access to TB control services for indigenous populations, primarily by establishing these services in health centres near settlements of indigenous people

Planned activities

- Further strengthen TB control services for indigenous populations

HEALTH SYSTEM STRENGTHENING, INCLUDING HUMAN RESOURCE DEVELOPMENT

Achievements

- Involved sector-wide and intersectoral collaboration in planning for TB control
- Improved access to TB care resulting from Decentralization of the Basic Health Care Programme (PACS) and Family Health Care Programme (PSF), which is incorporated into these programmes
- Incorporated TB control as a priority into the management agreement of the SUS
- Developed a plan for PAL adaptation and implementation

Planned activities

- Speed up the decentralization of TB diagnosis and treatment to primary care settings
- Continue strengthening of the National Epidemiological Information System and monitoring and evaluation
- Strengthen the laboratory network and expand coverage of quality control
- Develop PAL guidelines and initiate PAL activities in pilot sites

[1] Unless otherwise specified, achievements are for financial year 2006; planned activities are for financial year 2007.

ENGAGING ALL CARE PROVIDERS

Achievements

- All providers, public and private, report all TB cases to NTP, and drugs are supplied for all TB patients, free of charge
- Conducted pilot PPM activities in São Paulo to improve collaboration between NTP and other providers

Planned activities

- Strengthen TB case referral in the SUS and delivery of first-line and second-line drugs to all patients

EMPOWERING PEOPLE WITH TB, AND COMMUNITIES

Advocacy, communication and social mobilization

Achievements

- All metropolitan areas covered by the Global Fund Project (11 biggest metropolitan areas of the country) have ACSM activities, including production of IEC materials and organization of workshops with civil society partners
- Membership of STOP TB Brazil increased to 54 partners
- Mobilized government and civil society to fight TB at national, regional and local levels
- Created 3 TB NGO fora at state level
- Organized large-scale television and radio education campaigns

Planned activities

- Organize television and radio campaigns
- Fund state "Day of Awareness and Mobilization in the Struggle against TB" in Rio de Janeiro

Community participation in TB care

Achievements

- Celebrated World TB Day in most municipalities

Planned activities

- Involve community health agents in contact investigation and treatment supervision
- Form "GAEXPA" (group of people affected with TB in the municipality of Rio de Janeiro)

Patients' Charter

Achievements

- Discussed dissemination of Patients' Charter at NGO meetings in Rio de Janeiro and Sao Paulo, but the charter has not yet been translated and printed

Planned activities

- Translate and distribute the Patients' Charter

RESEARCH, INCLUDING SPECIAL SURVEYS AND IMPACT MEASUREMENT

Achievements

- Conducted national DRS and survey of prevalence of HIV infection in TB patients (2005–2007)
- Research network for TB, REDE-TB ("NETWORK-TB"), consisting more than 40 institutions, carried out clinical, operational and epidemiological research, in the area of new technologies for drugs, diagnostic methods and especially a large survey in vaccine
- Organized workshop with participants from NTP, MoH , University of Rio de Janeiro and WHO to revise the estimates of TB incidence using analysis of routinely collected TB data from SINAN (National Disease Information System) and death registrations in SIM

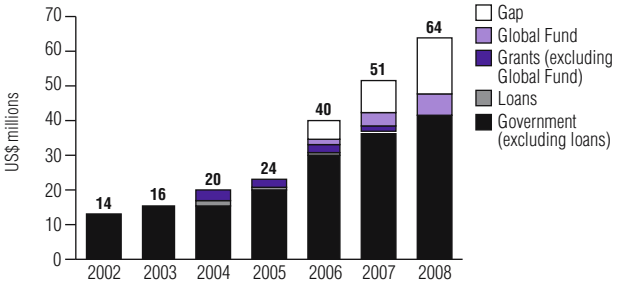
Planned activities

- Continue broad programme of research by REDE-TB
- Several states and some of the larger metropolitan regions are developing operational research programmes
- Continue to analyse available data to improve understanding of TB epidemiology and control in Brazil

FINANCING THE STOP TB STRATEGY

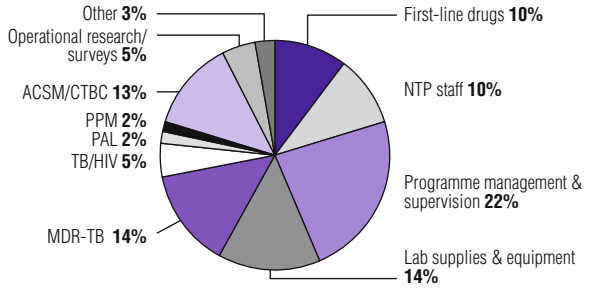
NTP budget by source of funding

Increased political commitment to control TB reflected in increased NTP budget and increased funding from the government



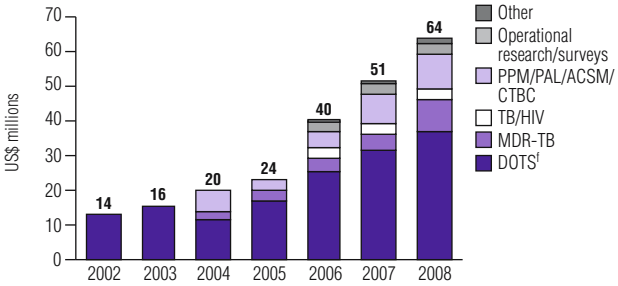
NTP budget by line item, 2008

Most of the budget is for components 1, 2 and 5 of the Stop TB Strategy: DOTS (58%), MDR-TB and TB/HIV (19%) and ACSM/CTBC (13%)



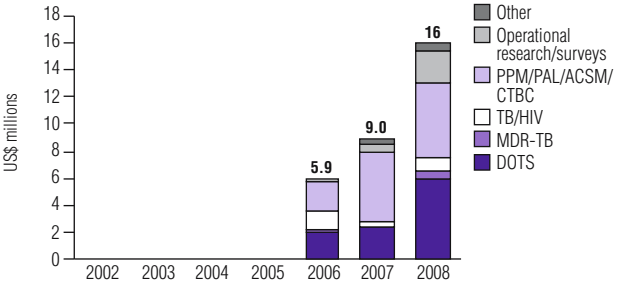
NTP budget by line item

Increased budget for DOTS includes recruitment of additional staff, more municipalities with evaluation meetings, training for TB coordinators and laboratory technicians, and increased number of laboratories with capacity for culture and DST



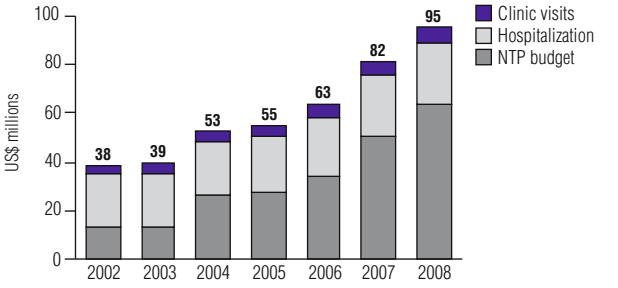
NTP funding gap by line item

Large funding gap for ACSM; funding gap within DOTS component mainly for laboratory supplies and equipment



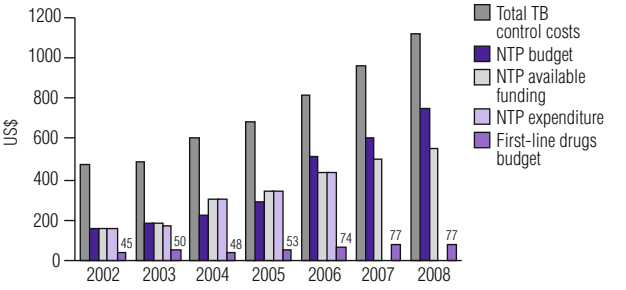
Total TB control costs by line item[4]

Hospitalization costs are for 2500 dedicated TB beds; costs for clinic visits based on 56 outpatient visits per new ss+ patient during treatment and 6 outpatient visits per new ss–/extrapulmonary patient



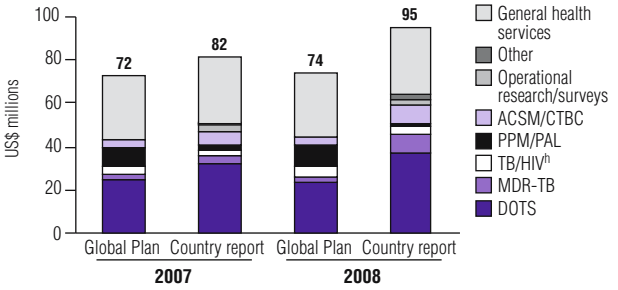
Per patient costs, budgets and expenditures[5]

Increasing costs, budget and expenditure per patient as TB control is broadened in line with the Stop TB Strategy



Comparison of country report and Global Plan:[g] total TB control costs, 2007–2008

Country report ahead of Global Plan in all components, except PPM/PAL; expected number of TB patients to be treated 2007–2008 higher in country report



NTP budget and funding gap by Stop TB Strategy component

	2007		2008	
(US$ millions)	BUDGET	GAP	BUDGET	GAP
DOTS expansion and enhancement	32	2.4	37	6.0
TB/HIV, MDR-TB and other challenges	7.1	0.4	12	1.5
Health system strengthening	1.0	1.0	1.0	1.0
Engage all care providers	1.0	0.7	1.0	1.0
People with TB, and communities	6.6	3.2	8.1	3.5
Research	2.9	0.7	2.9	2.4
Other	0.7	0.4	1.8	0.7

Financial indicators for TB

Government contribution to NTP budget (including loans)	73% / 65%
Government contribution to total cost TB control (including loans)	83% / 77%
NTP budget funded	82% / 75%
Per capita health financial indicators (US$)	
NTP budget per capita	0.3 / 0.3
Total costs for TB control per capita	0.4 / 0.5
Funding gap per capita	0.05 / 0.1
Government health expenditure per capita (2004)	157
Total health expenditure per capita (2004)	290

SOURCES, METHODS AND ABBREVIATIONS

[a–h] Please see footnotes page 169.

1 Incidence, prevalence and mortality estimates include TB cases in HIV-positive people. Estimates revised in 2007 based on TB mortality data from vital registration system cross-linked with communicable disease registry data.

2 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 127/100 000 pop and mortality 7/100 000 pop/yr.

3 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.

4 Total TB control costs for 2002–2006 are based on expenditure, whereas those for 2007–2008 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.

5 NTP available funding for 2004–2006 is based on the amount of funding actually received, using retrospective data; available funding for 2002–2003 and 2007–2008 is based on prospectively reported budget data, and estimated as the total budget minus any reported funding gap.

– 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

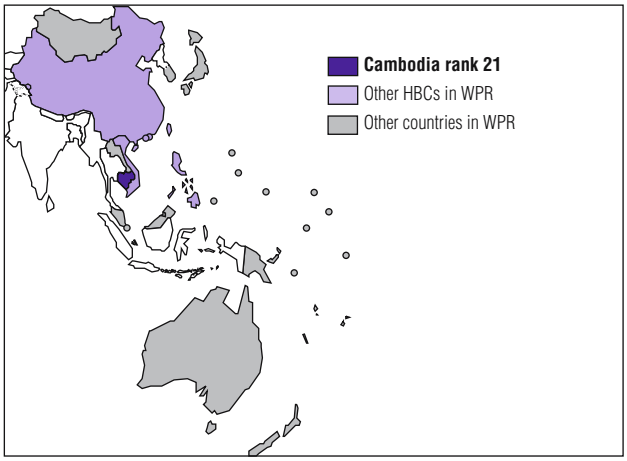
Cambodia has reported high treatment success rates for the last decade. In 2006, notifications of new cases fell for the first time since 1995. It is not yet possible to say whether this is a result of declining incidence or an indication of problems with case-finding. The use of community members to refer suspects for diagnosis and to supervise treatment, and collaboration with the private sector, are likely to improve case-finding. Collaborative TB/HIV activities are being introduced in more districts each year as collaboration between the NTP and national AIDS control programme improves. The treatment of MDR-TB has begun on a small scale; in order to treat more patients the NTP will need to ensure that culture and DST are available and of high quality. The budget for TB control has increased since 2004, but funding has decreased slightly, resulting in large gaps for 2006–2008.

SURVEILLANCE AND EPIDEMIOLOGY, 2006

Population (thousands)[a]	14 197
Estimates of epidemiological burden[1]	
Incidence (all cases/100 000 pop/yr)	500
Trend in incidence rate (%/yr, 2005–2006)[2]	**-1.0**
Incidence (ss+/100 000 pop/yr)	220
Prevalence (all cases/100 000 pop)[2]	**665**
Mortality (deaths/100 000 pop/yr)[2]	**92**
Of new TB cases, % HIV+[b]	9.6
Of new TB cases, % MDR-TB (2005)[c]	0.0
Of previously treated TB cases, % MDR-TB (2005)[c]	3.1
Surveillance and DOTS implementation	
Notification rate (new and relapse/100 000 pop/yr)	244
Notification rate (new ss+/100 000 pop/yr)	136
DOTS case detection rate (new ss+, %)	**62**
DOTS treatment success (new ss+ cases, 2005 cohort, %)	**93**
Of new pulmonary cases notified under DOTS, % ss+	74
Of new cases notified under DOTS, % extrapulmonary	23
Of new ss+ cases notified under DOTS, % in women	49
Of sub-national reports expected, % received at next reporting level[d]	100
Laboratory services[3]	
Number of laboratories performing smear microscopy	186
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	
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	
National policy of counselling and testing TB patients for HIV?	Yes (to all patients)
National surveillance system for HIV-infection in TB patients?	Yes
Of TB patients (new and re-treatment) notified, % tested for HIV	10
Of TB patients tested for HIV, % HIV+	9.6
Of HIV+ TB patients detected, % receiving CPT	70
Of HIV+ TB patients detected, % receiving ART	35

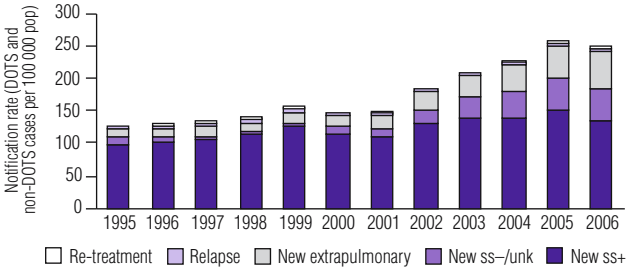
WHO Western Pacific Region (WPR)

Rank based on estimated number of incident cases (all forms) in 2006



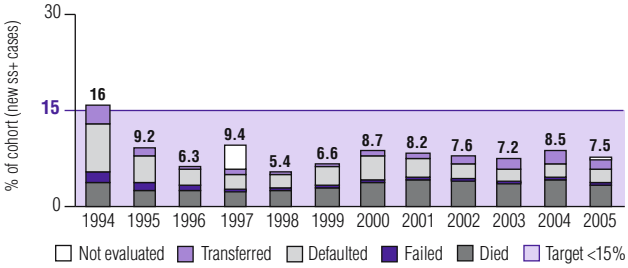
Case notifications

Decline of about 10% in ss+ notification rate compared with 2005, while extrapulmonary notification rate increased by 10%



Unfavourable treatment outcomes, DOTS

Treatment success rates have been consistently high for more than 10 years



DOTS expansion and enhancement	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
DOTS coverage (%)	60	80	88	100	100	99	100	100	100	100	100	100
DOTS notification rate (new and relapse/100 000 pop)	128	102	130	138	154	148	147	186	209	225	255	244
DOTS notification rate (new ss+/100 000 pop)	97	83	106	113	126	116	110	130	140	138	150	136
DOTS case detection rate (all new cases, %)	22	18	23	24	28	27	27	35	40	43	49	48
DOTS case detection rate (new ss+, %)	40	34	45	48	54	50	48	57	62	62	68	62
Case detection rate within DOTS areas (new ss+, %)[e]	67	43	51	48	54	51	48	57	62	62	68	62
DOTS treatment success (new ss+, %)	91	94	91	95	93	91	92	92	93	91	93	–
DOTS re-treatment success (ss+, %)	85	89	90	91	90	90	92	89	87	86	81	–

IMPLEMENTING THE STOP TB STRATEGY[1]

DOTS EXPANSION AND ENHANCEMENT

Political commitment, standardized treatment, and monitoring and evaluation system

Achievements

- Developed policy documents and 5-year plan
- Completed external programme review in 2006
- Conducted training and organized supervision to support the progressive decentralization of TB control activities to the operational district level
- Produced 13th annual report of activities of NTP

Planned activities

- Hold quarterly monitoring and evaluation workshops with provincial and operational district stakeholders to analyse and evaluate programme performance

Quality-assured bacteriology

Achievements

- Established DST capacity required for 2nd DRS
- Decentralized (quarterly-based) EQA to provincial level
- Improved quality of supervision by developing standardized checklist for laboratory activities
- Trained at least one member of staff from each of the 186 microscopy units in AFB microscopy, trained staff from all 3 culture units in culture, and trained NRL staff in DST

Planned activities

- Improve quality of smear preparation in health centres and community DOTS services
- Continue expansion of quarterly-based EQA at provincial level
- Revise laboratory guidelines and training modules
- Improve quality of DST

Drug supply and management system

Achievements

- Improved capacity for forecasting and procurement of first-line drugs

Planned activities

- Apply to GDF for paediatric formulations
- Develop national procurement system for anti-TB drugs through GDF prequalified manufacturers
- Train central-level staff to manage second-line anti-TB drugs, which are not currently available through the NTP

TB/HIV, MDR-TB AND OTHER CHALLENGES

Collaborative TB/HIV activities

Achievements

- Trained staff in 28 out of 77 operational districts in collaborative TB/HIV activities and strengthened supervision of those activities
- Organized meetings with stakeholders in the area of HIV to improve referral of HIV patients for diagnosis and treatment of TB

Planned activities

- Train staff on collaborative TB/HIV activities in remaining operational districts and conduct refresher TB/HIV training in operational districts where staff have already been trained
- Strengthen supervision in TB/HIV sites and organize a national TB/HIV workshop

Diagnosis and treatment of multidrug-resistant TB

Achievements

- Received GLC approval to launch small-scale project to detect and treat MDR-TB in clinical trial setting

Planned activities

- Develop an MDR-TB working group, chaired by CENAT (NTP)
- Subject to Global Fund round 7 application approval, apply to GLC for approval of MDR-TB component
- Increase culture capacity of laboratory network; introduction of liquid culture planned for mid 2008

High-risk groups and special situations

Achievements

- Intensified case-finding in prisons in Phnom Penh
- Implemented, in collaboration with the NGO, "Vor Ort" projects aimed at increasing TB awareness and case-finding in ethnic minorities in Rattanakiri Province

Planned activities

- Conduct national assessment of TB in prisons and implement pilot interventions in 3 prisons in 2008 with TBCAP funding

HEALTH SYSTEM STRENGTHENING, INCLUDING HUMAN RESOURCE DEVELOPMENT

Achievements

- Planning for TB control involved cross-sectoral and intersectoral collaboration
- Aligned NTP budget and plan with poverty reduction strategy paper and SWAp

Planned activities

- Align national strategic plan for TB laboratories with national policy on laboratories
- Implement activities listed in Global Fund round 5 plan: contribute to Strategic Health Plan 2008–2010, participate in development of peer review procedures, assess implementation of key operational planning and monitoring and evaluation processes, and strengthen management of procurement and distribution systems

[1] Unless otherwise specified, achievements are for financial year 2006; planned activities are for financial year 2007.

ENGAGING ALL CARE PROVIDERS

Achievements

- Successfully implemented PPM pilot projects with private practitioners and pharmacies in collaboration with a number of NGOs in 5 out of 24 provinces in 2006 (11 provinces in 2007)

Planned activities

- Translate and adapt ISTC to Khmer
- Draft PPM operational guidelines
- Organize annual workshop to review achievements and challenges of PPM pilot projects

EMPOWERING PEOPLE WITH TB, AND COMMUNITIES

Advocacy, communication and social mobilization

Achievements

- Organized World TB Day activities at central, provincial and operational district levels
- Distributed TB leaflets at health centres

Planned activities

- Organize World TB Day celebrations at central, provincial and operational district levels
- Organize education activities in schools and communities
- Publish information leaflets for health centre staff

Community participation in TB care

Achievements

- Community members (generally volunteers) supervised treatment of patients living far from health centres, and referred suspects and contacts for diagnosis in 379 out of 947 health centres (located in 28 operational districts); volunteers receive one day of training, and meet monthly at health centres

Planned activities

- Organize refresher training for community volunteers, to increase case detection, referral and contact investigation
- Expand use of community volunteers to over half of health centres, with Global Fund support for training

Patients' Charter

Achievements

The Patients' Charter was published in 2006 and was therefore not available for use in countries until then.

Planned activities

- Translate and adapt the Patients' Charter to Khmer

RESEARCH, INCLUDING SPECIAL SURVEYS AND IMPACT MEASUREMENT

Achievements

- Conducted national DRS (protocol designed, samples collected; results will be available in August 2008)

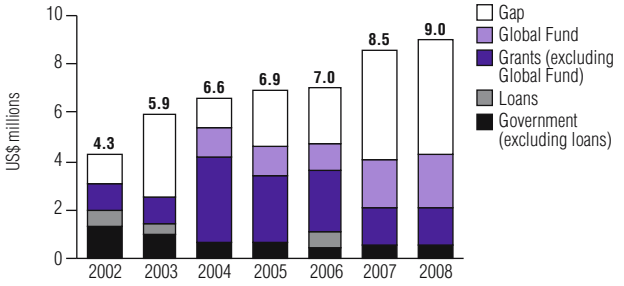
Planned activities

- Conduct 3rd national survey of HIV seroprevalence among TB patients
- Conduct operational research on TB diagnosis (X-ray and sputum smear preparation)

FINANCING THE STOP TB STRATEGY

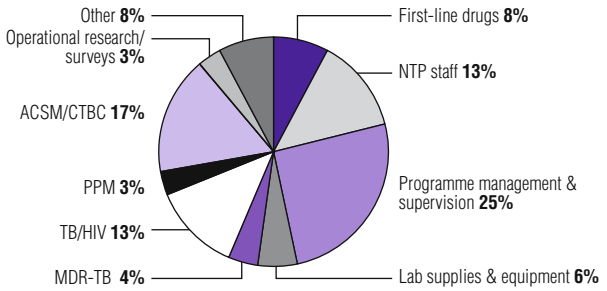
NTP budget by source of funding

Budget increased in 2007 and 2008 compared with previous years; increased funding from Global Fund in 2007–2008, but increasing funding gaps



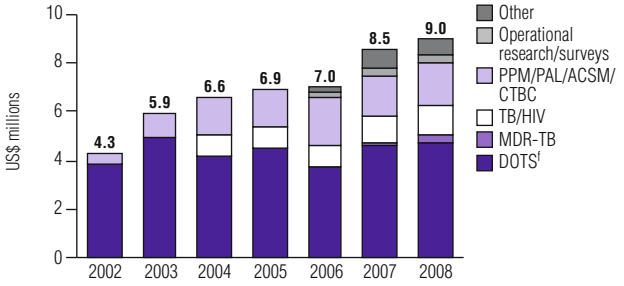
NTP budget by line item, 2008

DOTS (52%) and ACSM/CTBC (17%) account for the largest share of the NTP budget



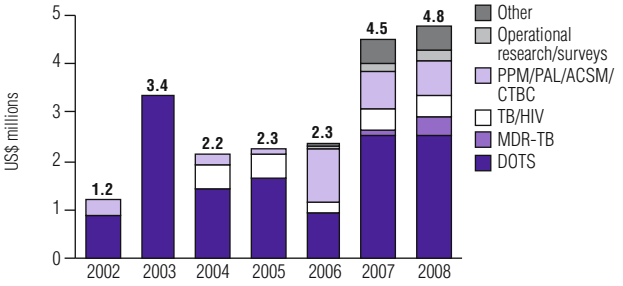
NTP budget by line item

Increased budget for ACSM/CTBC, collaborative TB/HIV activities and operational research since 2006; new funding needs for MDR-TB in 2008



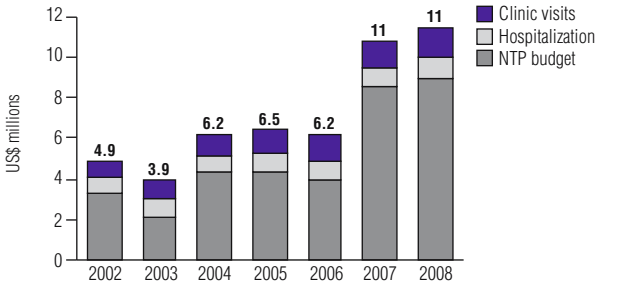
NTP funding gap by line item

Large funding gaps since 2006 for ACSM; funding gap within DOTS component mainly for routine programme management and supervision activities



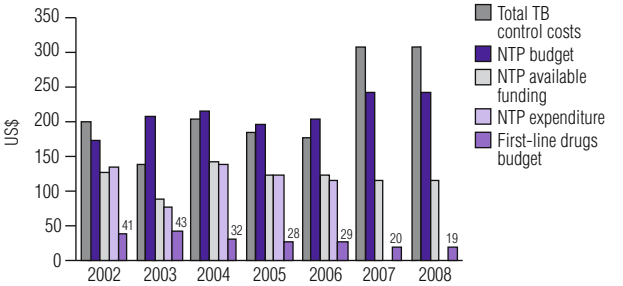
Total TB control costs by line item[4]

Hospitalization costs are for 1200 dedicated TB beds, costs for clinic visits cover an estimated 64 outpatient visits per patient during treatment



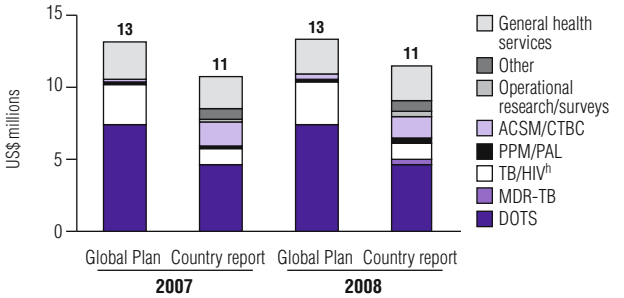
Per patient costs, budgets and expenditures[5]

Increasing cost per patient, but stable budget and available funding per patient



Comparison of country report and Global Plan:[g] total TB control costs, 2007–2008

Global Plan costs for DOTS higher than country plan cost for DOTS due to higher estimated number of ss–/extrapulmonary patients to be treated; country plan for MDR-TB ahead of the expectations of Global Plan



NTP budget and funding gap by Stop TB Strategy component

	2007		2008	
(US$ millions)	BUDGET	GAP	BUDGET	GAP
DOTS expansion and enhancement	4.6	2.5	4.7	2.5
TB/HIV, MDR-TB and other challenges	1.2	0.5	1.5	0.8
Health system strengthening	0	0	0	0
Engage all care providers	0.2	0.1	0.3	0.2
People with TB, and communities	1.5	0.6	1.5	0.5
Research	0.3	0.2	0.3	0.2
Other	0.7	0.5	0.7	0.5

Financial indicators for TB

Government contribution to NTP budget (including loans)	7.2%	6.8%
Government contribution to total cost TB control (including loans)	27%	26%
NTP budget funded	47%	47%
Per capita health financial indicators (US$)		
NTP budget per capita	0.6	0.6
Total costs for TB control per capita	0.7	0.8
Funding gap per capita	0.3	0.3
Government health expenditure per capita (2004)	6.1	
Total health expenditure per capita (2004)	24	

SOURCES, METHODS AND ABBREVIATIONS

[a–h] Please see footnotes page 169.

1 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 year as in other countries in Western Pacific Region.

2 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 915/100 000 pop and mortality 119/100 000 pop/yr.

3 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.

4 Total TB control costs for 2002–2006 are based on expenditure, whereas those for 2007–2008 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.

5 NTP available funding for 2004–2006 is based on the amount of funding actually received, using retrospective data; available funding for 2002–2003 and 2007–2008 is based on prospectively reported budget data, and estimated as the total budget minus any reported funding gap.

– 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

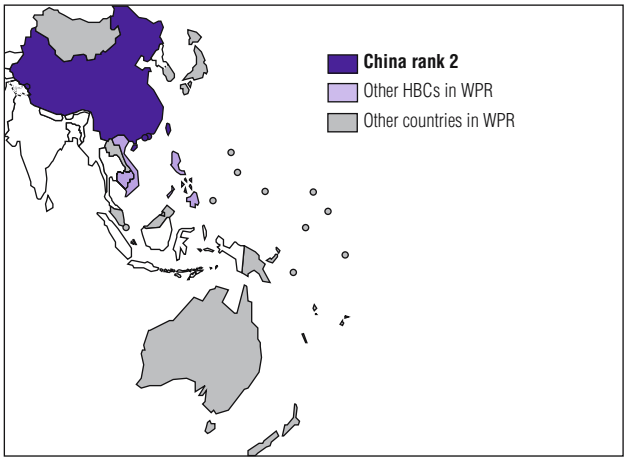
Having reached the global targets for case detection and treatment success for the second consecutive year, the Chinese NTP is now working to improve access to high-quality TB care for all people with TB, including those with TB/HIV, those with MDR-TB and unofficial internal migrants (the "floating populations"). Activities funded by the Global Fund round 5 grant will begin to address these challenges in selected counties. While the NTP has a comprehensive human resource development plan based on a needs assessment, information about human resources at sub-national levels is not available centrally. Nonetheless, the NTP identifies a shortage of trained staff as one of the challenges to implementing the Stop TB Strategy. The relationship between TB dispensaries run by the NTP and general hospitals continues to be problematic, and pilot projects are under way to improve collaboration.

SURVEILLANCE AND EPIDEMIOLOGY, 2006

Population (thousands)[a]	1 320 864
Estimates of epidemiological burden[1]	
Incidence (all cases/100 000 pop/yr)	99
Trend in incidence rate (%/yr, 2005–2006)[2]	**-1.0**
Incidence (ss+/100 000 pop/yr)	45
Prevalence (all cases/100 000 pop)[2]	**201**
Mortality (deaths/100 000 pop/yr)[2]	**15**
Of new TB cases, % HIV+[b]	*0.3*
Of new TB cases, % MDR-TB[c]	*5.0*
Of previously treated TB cases, % MDR-TB[c]	*26*
Surveillance and DOTS implementation	
Notification rate (new and relapse/100 000 pop/yr)	71
Notification rate (new ss+/100 000 pop/yr)	35
DOTS case detection rate (new ss+, %)	**79**
DOTS treatment success (new ss+ cases, 2005 cohort, %)	**94**
Of new pulmonary cases notified under DOTS, % ss+	55
Of new cases notified under DOTS, % extrapulmonary	4.3
Of new ss+ cases notified under DOTS, % in women	30
Of sub-national reports expected, % received at next reporting level[d]	100
Laboratory services[3]	
Number of laboratories performing smear microscopy	3 010
Number of laboratories performing culture	360
Number of laboratories performing DST	90
Of laboratories performing smear microscopy, % covered by EQA	92
Management of MDR-TB	
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	20
Collaborative TB/HIV activities	
National policy of counselling and testing TB patients for HIV?	Yes (for specific groups)
National surveillance system for HIV-infection in TB patients?	No
Of TB patients (new and re-treatment) notified, % tested for HIV	0.1
Of TB patients tested for HIV, % HIV+	1.3
Of HIV+ TB patients detected, % receiving CPT	144
Of HIV+ TB patients detected, % receiving ART	333

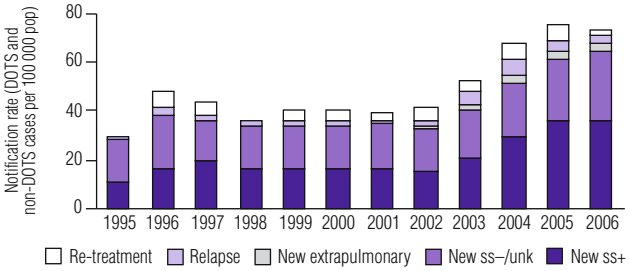
WHO Western Pacific Region (WPR)

Rank based on estimated number of incident cases (all forms) in 2006



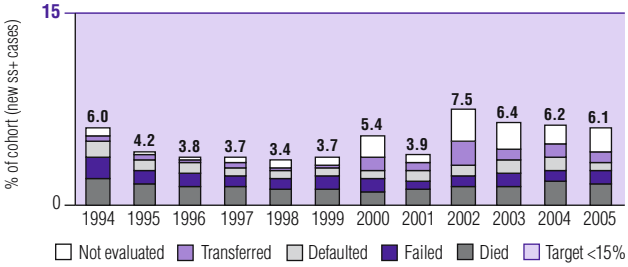
Case notifications

With the second year of full DOTS coverage, the overall notification rate is fairly steady, although the ss– notification rate has increased and re-treatment notification rate decreased



Unfavourable treatment outcomes, DOTS

Reported treatment success rate remains very high



DOTS expansion and enhancement	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
DOTS coverage (%)	49	60	64	64	64	68	68	78	91	96	100	100
DOTS notification rate (new and relapse/100 000 pop)	13	21	24	27	27	27	28	30	43	58	68	71
DOTS notification rate (new ss+/100 000 pop)	7.5	14	16	16	14	15	14	14	20	29	36	35
DOTS case detection rate (all new cases, %)	11	18	21	24	24	24	25	27	37	52	64	68
DOTS case detection rate (new ss+, %)	15	29	32	32	30	31	31	30	43	64	80	79
Case detection rate within DOTS areas (new ss+, %)[e]	31	47	50	50	46	45	45	39	47	66	80	79
DOTS treatment success (new ss+, %)	96	96	96	97	96	95	96	93	94	94	94	–
DOTS re-treatment success (ss+, %)	92	94	–	95	95	89	93	88	89	89	90	–

IMPLEMENTING THE STOP TB STRATEGY[1]

DOTS EXPANSION AND ENHANCEMENT

Political commitment, standardized treatment, and monitoring and evaluation system

Achievements

- MoH issued National TB Prevention and Control Implementation Plan 2006–2010, and conducted mid-term evaluation of National TB Control Plan in 2006
- State Council convened nationwide video conference on TB control in June, 2006, presented by local government
- Secured increased funding from central government
- Launched Global Fund round 5 project on 12 October 2006 focusing on MDR-TB, TB/HIV and TB control among "floating populations"
- Produced 25th annual report of NTP activities

Planned activities

- Further strengthen political commitment and increase funding from each level of government, especially central level
- Optimize web-based reporting system of TB, and improve routine recording and reporting at peripheral level

Quality-assured bacteriology

Achievements

- Revised the EQA manual for microscopy
- Conducted training of trainers in provincial laboratories

Planned activities

- Print and distribute posters for SOP for microscopy, quality of staining and microscopy manuals
- Draft biosafety manual for TB laboratories
- Introduce central supply of laboratory reagents

Drug supply and management system

Achievements

- Pilot tested SOP for anti-TB drug management of 9 TB facilities in Henan Province

Planned activities

- Evaluate pilot implementation of SOP anti-TB drug management of 9 TB facilities in Henan Province
- Scale up introduction of SOP in 18 prefectures of 6 additional provinces
- Finalize SOP manual and develop associated training material

TB/HIV, MDR-TB AND OTHER CHALLENGES

Collaborative TB/HIV activities

Achievements

- Developed national guidelines on collaborative TB/HIV activities
- Pilot tested the TB/HIV guidelines in 6 counties in 4 provinces
- Launched Global Fund round 5 project addressing TB/HIV in 67 counties in 14 provinces

Planned activities

- Scale up Global Fund round 5 project addressing TB/HIV to cover 134 counties in 14 provinces
- Introduce HIV surveillance among TB patients in 134 counties of 14 provinces covered by Global Fund round 5 project

Diagnosis and treatment of multidrug-resistant TB

Achievements

- Developed implementation plan for pilot project on programmatic management of MDR-TB

Planned activities

- Develop national framework for prevention and control of MDR-TB in China
- Implement programmatic management of MDR-TB in Guangdong and Hubei province, with support from Global Fund round 5 project

High-risk groups and special situations

Achievements

- Successfully applied to Global Fund for support for projects to improve TB control among floating populations

Planned activities

- Implement planned activities outlined in Global Fund round 5 project among floating populations: provide TB diagnosis and treatment free of charge; introduce enablers such as free transport and living subsidy; develop national TB database for floating populations

HEALTH SYSTEM STRENGTHENING, INCLUDING HUMAN RESOURCE DEVELOPMENT

Achievements

- Planning for TB control involved sector-wide and inter-sectoral collaboration
- Developed policy for national collaboration between general hospitals and TB dispensaries
- Implemented pilot project with focus on creating links between general hospitals and TB dispensaries
- Trained staff in communicable disease control at national and provincial levels

Planned activities

- Continue training staff (including 12–15 key provincial-level staff members) to train trainers, to produce training material and to evaluate training of health staff
- Pilot test human resource development planning in selected provinces

[1] Unless otherwise specified, achievements are for financial year 2006; planned activities are for financial year 2007.

ENGAGING ALL CARE PROVIDERS

Achievements

- Introduced formal PPM activities nationwide
- MoH developed and distributed series of documents on regulation of reporting and referral systems for hospitals
- Developed standard training material on referral and tracing at central level
- Developed and implemented as pilot projects 3 new modules on PPM, including referring and defaulter tracing, designation of collaborating hospitals, and collaboration between TB hospitals and TB dispensaries

Planned activities

- Further develop current policy of collaboration, including strengthening of monitoring and supervision systems and optimizing recording and reporting systems
- Develop and promote use of standard training material for reporting, referral and tracing of TB patients
- Promote use of ISTC among general hospitals
- Expand PPM pilot initiatives in general hospitals
- Engage hospitals in public health programmes and promote cooperation among health service delivery institutions

EMPOWERING PEOPLE WITH TB, AND COMMUNITIES

Advocacy, communication and social mobilization

Achievements

- Implemented ACSM activities in all 2681 districts and counties
- Used mass media campaigns and conducted other special activities on World TB Day
- Developed toolkit for junior- and primary-school children
- Conducted health education activities in villages in collaboration with Women's Federation

Planned activities

- Develop ACSM action plan based on WHO framework to address community involvement
- Update toolkit developed for schoolchildren
- Strengthen cooperation between various sectors, such as media and NGOs

Community participation in TB care

Achievements

- Involved communities in TB control in all 2681 districts and counties
- Mobilized and trained village doctors and members of Women's Federation at village level
- Health education activities (one-to-one basis) focusing on TB conducted by village doctors and members of Women's Federation at village level
- Established referral system between village doctors, doctors at community health service centres and NTP

Planned activities

- Improve community awareness of TB issues by strengthening mass media communication
- Engage TB patients and their families in TB control by expanding health education activities to them
- Improve efficacy of health promotion activities conducted by village doctors and members of Women's Federation

Patients' Charter

Achievements

The Patients' Charter was published in 2006 and was therefore not available for use in countries until then.

Planned activities

- Adopt the main content of the Patients' Charter into the ongoing revision of TB control regulations

RESEARCH, INCLUDING SPECIAL SURVEYS AND IMPACT MEASUREMENT

Achievements

- Completed preparations for national baseline DRS survey; developed a DRS plan for all provinces
- Carried out 20 operational research projects

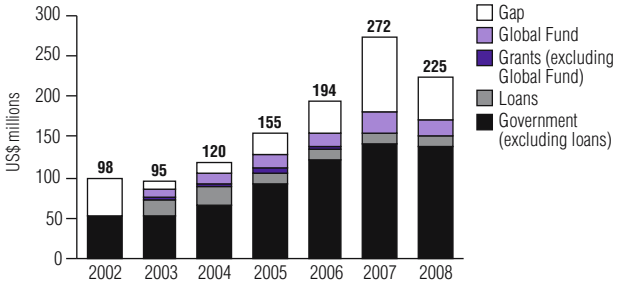
Planned activities

- Conduct DRS in 7 provinces
- Analyse trends in prevalent strains (molecular epidemiological study)
- Conduct training on operational research
- Carry out monitoring visits of approved operational research projects
- Hold workshop to share results of operational research projects

FINANCING THE STOP TB STRATEGY

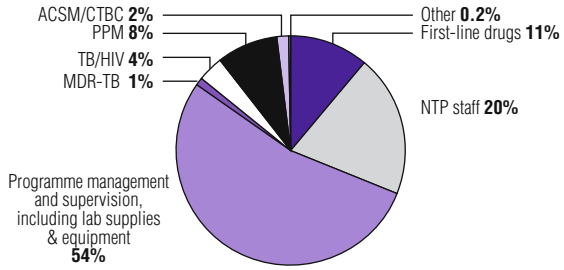
NTP budget by source of funding

Continued increase in NTP budget and funding up to 2007, but reduction in both in 2008; most financing is from domestic sources



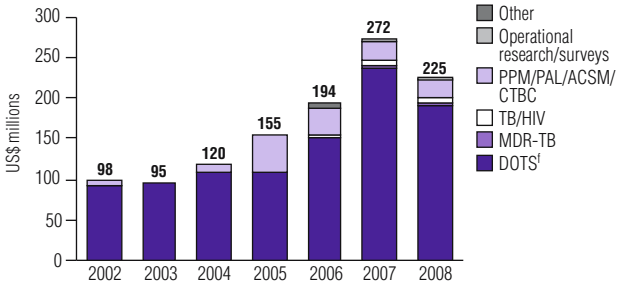
NTP budget by line item, 2008

85% of budget is for component 1 of the Stop TB Strategy (DOTS expansion and enhancement); budget for MDR-TB is small – plans for treatment cover less than 1% of estimated MDR-TB cases



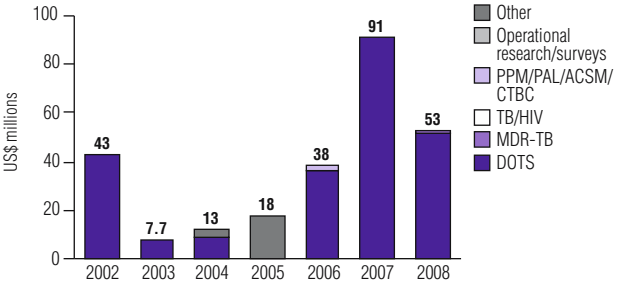
NTP budget by line item

Large increase in budget in 2007 to allow for purchase of essential equipment and vehicles; budget in all years mostly for DOTS; budget for MDR-TB includes US$ 1153 per patient for second-line drugs



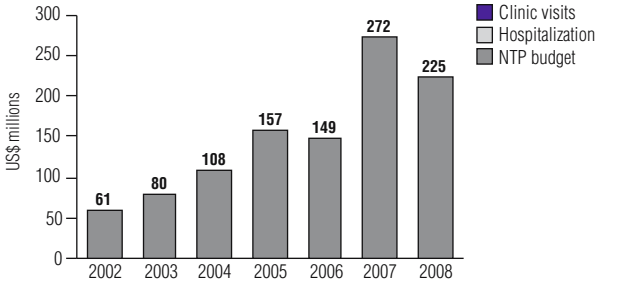
NTP funding gap by line item

Funding gaps are for DOTS component of Stop TB Strategy, and within this mainly for routine programme management and supervision activities, and laboratory supplies and equipment



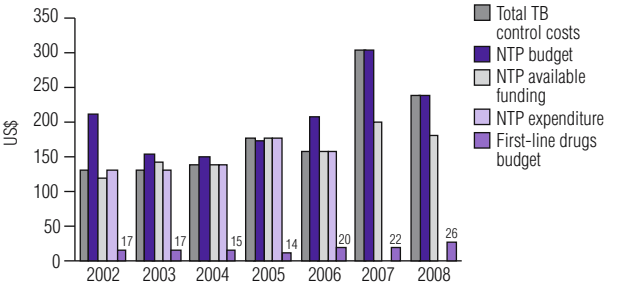
Total TB control costs by line item[4]

All costs for TB control are included in the NTP budget



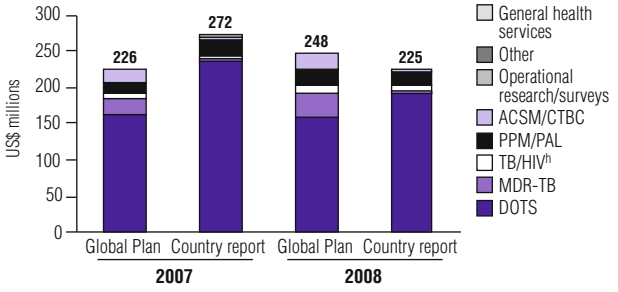
Per patient costs, budgets and expenditures[5,6]

Increasing budget per patient with peak in 2007 due to purchase of capital items such as vehicles and equipment in that year



Comparison of country report and Global Plan:[9] total TB control costs, 2007–2008

Country report is ahead of Global Plan expectations for DOTS, but far behind for MDR-TB and ACSM; Global Plan targets for patients to be treated for MDR-TB are from the Global MDR/XDR Response Plan



NTP budget and funding gap by Stop TB Strategy component

	2007		2008	
(US$ millions)	BUDGET	GAP	BUDGET	GAP
DOTS expansion and enhancement	238	91	191	52
TB/HIV, MDR-TB and other challenges	7.4	0	11	0.5
Health system strengthening	0	0	0	0
Engage all care providers	19	0	19	0
People with TB, and communities	5.8	0	4.2	0
Research	1.0	0	0	0
Other	0.5	0	0.5	0

Financial indicators for TB

Government contribution to NTP budget (including loans)	56%	67%
Government contribution to total cost TB control (including loans)	56%	67%
NTP budget funded	66%	77%
Per capita health financial indicators (US$)		
NTP budget per capita	0.2	0.2
Total costs for TB control per capita	0.2	0.2
Funding gap per capita	0.07	0.04
Government health expenditure per capita (2004)	27	
Total health expenditure per capita (2004)	70	

SOURCES, METHODS AND ABBREVIATIONS

[a–h] Please see footnotes page 169.

1 Incidence, prevalence and mortality estimates include patients infected with HIV. Incidence rate of ss+ cases 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 year).

2 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 322/100 000 pop and mortality 24/100 000 pop/yr.

3 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 31 provinces.

4 Total TB control costs for 2002–2006 are based on expenditure, whereas those for 2007–2008 are based on budgets.

5 Estimates of expenditure are based on received funding.

6 NTP available funding for 2004–2006 is based on the amount of funding actually received, using retrospective data; available funding for 2002–2003 and 2007–2008 is based on prospectively reported budget data, and estimated as the total budget minus any reported funding gap.

– 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

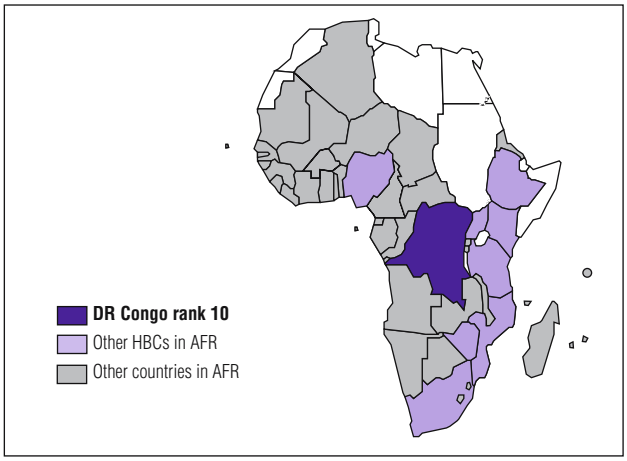
Despite a small increase in the number of clinics providing TB diagnosis and treatment, fewer cases of TB were notified by the Democratic Republic of the Congo in 2006 than in 2005. The reasons for this are unclear – it is possible that the incidence of TB has started to decline but, if so, it is likely that the epidemiology of HIV is part of the explanation. While treatment outcomes for smear-positive patients are good compared with other African countries, very few smear-negative cases are reported, suggesting problems with diagnosis. Coordination with the national AIDS control programme continues to be problematic, and fewer than 2% of TB patients were tested for HIV in 2006. However, the absorptive capacity of the NTP appears to be good, so it is likely that increased funding available in 2007 and 2008 will resolve at least some of these problems.

SURVEILLANCE AND EPIDEMIOLOGY, 2006

Population (thousands)[a]	60 644
Estimates of epidemiological burden[1]	
Incidence (all cases/100 000 pop/yr)	392
Trend in incidence rate (%/yr, 2005–2006)[2]	**-1.3**
Incidence (ss+/100 000 pop/yr)	173
Prevalence (all cases/100 000 pop)[2]	**647**
Mortality (deaths/100 000 pop/yr)[2]	**84**
Of new TB cases, % HIV+[b]	*9.2*
Of new TB cases, % MDR-TB[c]	*2.4*
Of previously treated TB cases, % MDR-TB[c]	*9.1*
Surveillance and DOTS implementation	
Notification rate (new and relapse/100 000 pop/yr)	158
Notification rate (new ss+/100 000 pop/yr)	105
DOTS case detection rate (new ss+, %)	**61**
DOTS treatment success (new ss+ cases, 2005 cohort, %)	**85**
Of new pulmonary cases notified under DOTS, % ss+	86
Of new cases notified under DOTS, % extrapulmonary	20
Of new ss+ cases notified under DOTS, % in women	47
Of sub-national reports expected, % received at next reporting level[d]	100
Laboratory services[3]	
Number of laboratories performing smear microscopy	1 069
Number of laboratories performing culture	1
Number of laboratories performing DST	1
Of laboratories performing smear microscopy, % covered by EQA	100
Management of MDR-TB	
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	1.3
Of re-treatment cases receiving DST, % MDR-TB	1.3
Collaborative TB/HIV activities	
National policy of counselling and testing TB patients for HIV?	Yes (for specific groups)
National surveillance system for HIV-infection in TB patients?	No
Of TB patients (new and re-treatment) notified, % tested for HIV	1
Of TB patients tested for HIV, % HIV+	14
Of HIV+ TB patients detected, % receiving CPT	90
Of HIV+ TB patients detected, % receiving ART	54

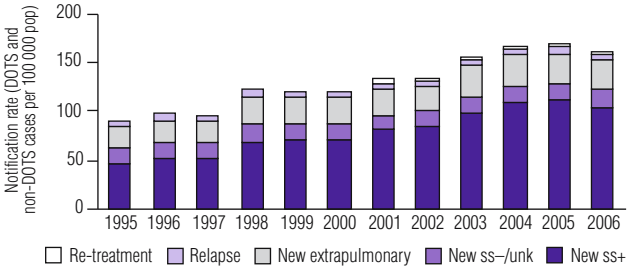
WHO Africa Region (AFR)

Rank based on estimated number of incident cases (all forms) in 2006



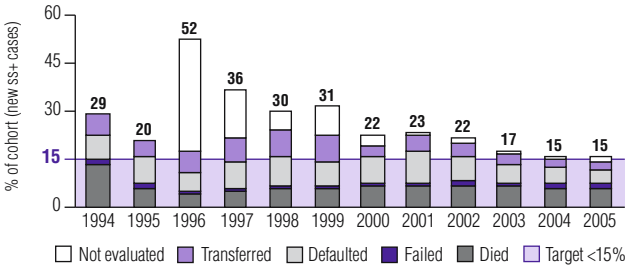
Case notifications

Notifications increased as DOTS coverage expanded, but have now stabilized under full coverage; high ss+ proportion suggests possible under-detection of ss- cases



Unfavourable treatment outcomes, DOTS

Steady improvement in treatment success rates over past 10 years; close to target for second consecutive year



DOTS expansion and enhancement	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
DOTS coverage (%)	47	51	60	60	62	70	70	70	75	75	100	100
DOTS notification rate (new and relapse/100 000 pop)	84	99	94	121	120	120	128	132	153	164	165	158
DOTS notification rate (new ss+/100 000 pop)	42	52	52	69	71	71	81	83	97	109	111	105
DOTS case detection rate (all new cases, %)	33	36	33	40	37	34	34	33	37	39	40	39
DOTS case detection rate (new ss+, %)	41	47	44	54	51	48	50	49	55	61	63	61
Case detection rate within DOTS areas (new ss+, %)[e]	86	91	73	90	82	68	72	70	73	82	63	61
DOTS treatment success (new ss+, %)	80	48	64	70	69	78	77	78	83	85	85	–
DOTS re-treatment success (ss+, %)	72	33	46	31	67	–	–	67	72	71	74	–

IMPLEMENTING THE STOP TB STRATEGY[1]

DOTS EXPANSION AND ENHANCEMENT

Political commitment, standardized treatment, and monitoring and evaluation system

Achievements

- Increased number of primary health-care centres offering TB diagnosis and treatment from 1041 to 1069

Planned activities

- Disseminate quality control guidelines and directives for care of TB patients and associated data collection tools

Quality-assured bacteriology

Achievements

- Supplied intermediate and peripheral-level laboratories with materials, reagents and new microscopes
- Revised quality control and supervision guidelines

Planned activities

- Establish laboratories for culture in 2 cities (Kisangani and Lubumbashi); train staff in culture and DST
- Improve management of quality control data

Drug supply and management system

Achievements

- Prepared Global Fund round 6 proposal for strengthening drug management

Planned activities

- Rebuild second warehouse (in eastern part of the country)
- Distribute drugs equitably and effectively
- Provide adequate information regarding use of drugs

TB/HIV, MDR-TB AND OTHER CHALLENGES

Collaborative TB/HIV activities

Achievements

- Implemented collaborative TB/HIV activities in 21 sites in 2 provinces
- Advocated for establishment of a TB/HIV committee
- Trained coordinators (doctors) at provincial level in collaborative TB/HIV activities
- Developed an expansion plan for collaborative TB/HIV activities

Planned activities

- Initiate collaborative TB/HIV activities in at least 125 primary health-care centres
- Train TB providers in HIV counselling and testing and in provision of ART
- Revitalize TB/HIV steering committee

Diagnosis and treatment of multidrug-resistant TB

Achievements

- Revised MDR-TB guidelines
- Prepared and submitted proposal to GLC for an MDR-TB project to treat 1100 patients over a 5-year period
- Trained health-care providers in Kinshasa in management of MDR-TB

Planned activities

- Conduct training and refresher training for health-care providers in management of MDR-TB

High-risk groups and special situations

Achievements

- Provided TB diagnosis and treatment in war-affected areas in east of country (Ituri and Masisi): distributed drugs and provided protection and equipment for staff with assistance from United Nations Mission in the Democratic Republic of the Congo (MONUC)

Planned activities

- None reported

HEALTH SYSTEM STRENGTHENING, INCLUDING HUMAN RESOURCE DEVELOPMENT

Achievements

- Provided finance for central health office and motivated staff of primary health-care clinics
- Conducted preliminary assessment to adapt PAL and developed plan for PAL implementation

Planned activities

- Donate motorcycles and bicycles to zonal health offices
- Develop PAL guidelines and implement PAL activities in pilot sites

ENGAGING ALL CARE PROVIDERS

Achievements

- Conducted situation analysis for PPM
- Identified private health-care facilities, faith-based organizations and companies for collaboration in PPM activities

Planned activities

- Develop PPM guidelines
- Provide anti-TB drugs and laboratory supplies to collaborating providers

[1] Unless otherwise specified, achievements are for financial year 2006; planned activities are for financial year 2007.

EMPOWERING PEOPLE WITH TB, AND COMMUNITIES

Advocacy, communication and social mobilization

Achievements

- Organized World TB Day events
- Updated social mobilization guidelines

Planned activities

- Organize World TB Day events
- Update messages on TB and develop tools for communication
- Develop advocacy guide

Community participation in TB care

Achievements

- Trained members of community-based organizations to provide support to TB patients, including treatment supervision for bedridden patients, in 200 out of 515 zones
- Encouraged community participation in World TB Day celebrations

Planned activities

- Increase number of zones where members of community-based organizations are trained in patient support

Patients' Charter

Achievements

- Distributed Patients' Charter to all 23 provinces

Planned activities

- Translate Patients' Charter into 4 national languages
- Request inclusion of Patients' Charter when country places order through GDF
- Distribute Patients' Charter in all 1069 primary health-care centres

RESEARCH, INCLUDING SPECIAL SURVEYS AND IMPACT MEASUREMENT

Achievements

- Completed KAP study for TB
- Conducted study of rifampicin resistance in failure cases in Kinshasa

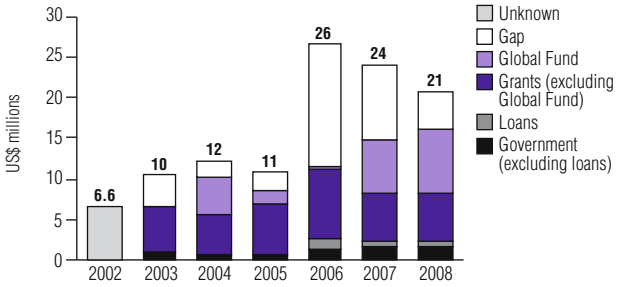
Planned activities

- Conduct seroprevalence study among new TB cases in Kinshasa city
- Evaluate effect on case-finding of "missed opportunities": failure to investigate TB in people presenting at health-care services

FINANCING THE STOP TB STRATEGY

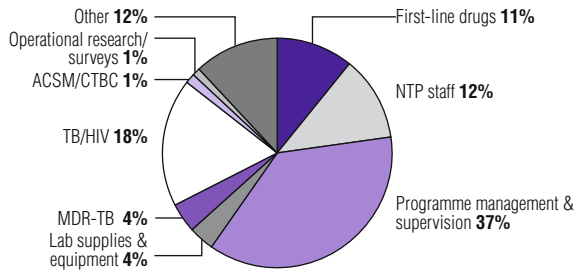
NTP budget by source of funding

Increased funding from the Global Fund and decreased funding gap since 2006



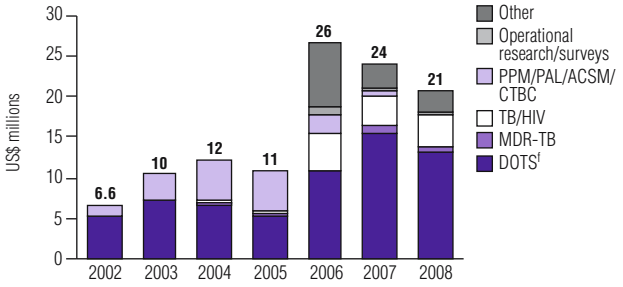
NTP budget by line item, 2008

Largest shares of the budget are for component 1 of the Stop TB Strategy (DOTS expansion and enhancement: 65%) and for collaborative TB/HIV activities (18%)



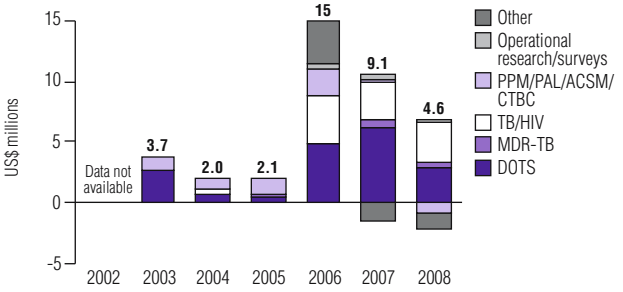
NTP budget by line item

Stable budget for collaborative TB/HIV activities since 2006; increased budget for DOTS in 2007 mainly for routine programme and supervision activities



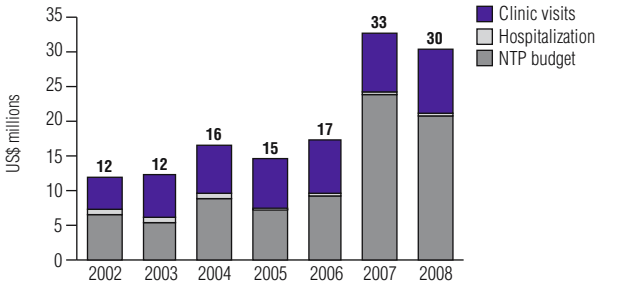
NTP funding gap by line item

Funding gap within DOTS mainly for routine programme management and supervision activities; about 80% of funding needs for TB/HIV remain unfunded; surplus for "Other"



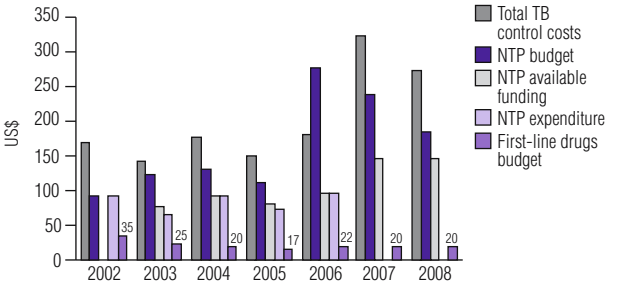
Total TB control costs by line item[4]

Cost of clinic visits based on 76 visits for new patients during treatment



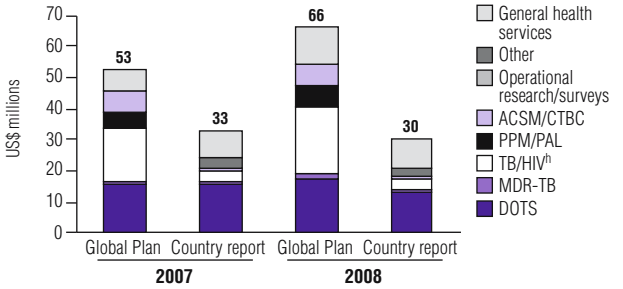
Per patient costs, budgets and expenditures[5]

Increased costs per patient with peak in 2007; increased expenditure per patient which is similar to available funding suggesting good absorption capacity



Comparison of country report and Global Plan:[g] total TB control costs, 2007–2008

Like other African HBCs, main difference between Global Plan and country report is TB/HIV and ACSM/CTBC



NTP budget and funding gap by Stop TB Strategy component

	2007		2008	
(US$ millions)	BUDGET	GAP	BUDGET	GAP
DOTS expansion and enhancement	16	6.2	13	2.9
TB/HIV, MDR-TB and other challenges	4.5	3.7	4.6	3.7
Health system strengthening	0	0	0	0
Engage all care providers	0	0	0	0
People with TB, and communities	0.5	0.3	0.3	-0.7
Research	0.4	0.3	0.3	0.1
Other	2.9	-1.3	2.4	-1.5

Financial indicators for TB

Government contribution to NTP budget (including loans)	10%	12%
Government contribution to total cost TB control (including loans)	34%	40%
NTP budget funded	62%	78%
Per capita health financial indicators (US$)		
NTP budget per capita	0.4	0.3
Total costs for TB control per capita	0.5	0.5
Funding gap per capita	0.1	0.1
Government health expenditure per capita (2004)	1.3	
Total health expenditure per capita (2004)	4.7	

SOURCES, METHODS AND ABBREVIATIONS

[a–h] Please see footnotes page 169.

1 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 combined). 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.

2 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 35/100 000 pop/yr.

3 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.

4 Total TB control costs for 2002–2006 are based on expenditure, whereas those for 2007–2008 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.

5 NTP available funding for 2004–2006 is based on the amount of funding actually received, using retrospective data; available funding for 2002–2003 and 2007–2008 is based on prospectively reported budget data, and estimated as the total budget minus any reported funding gap.

– 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

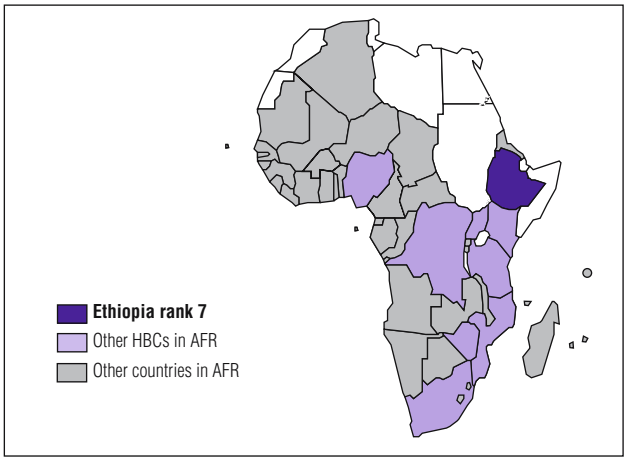
The Ethiopian Ministry of Health has declared the ambitious target of increasing case detection to 60% in 2007. The expansion of the network of general health-care facilities will help with this goal, as will plans to increase the involvement of Health Extension Workers in identification and referral of TB suspects, and to continue the scale up of collaboration with private health clinics. Intensified case-finding among HIV patients would also contribute. However, numerous challenges face the NTP, including retaining skilled staff, adequately supervising the activities of the programme and improving the relationship with the laboratories. The treatment success rate is low, partly as a result of poor reporting. The integration of TB recording and reporting into a multi-disease information system, unless carefully managed, is likely to result in a further deterioration in the quality of routinely collected data.

SURVEILLANCE AND EPIDEMIOLOGY, 2006

Population (thousands)[a]	81 021
Estimates of epidemiological burden[1]	
Incidence (all cases/100 000 pop/yr)	379
Trend in incidence rate (%/yr, 2005–2006)[2]	**-1.3**
Incidence (ss+/100 000 pop/yr)	168
Prevalence (all cases/100 000 pop)[2]	**643**
Mortality (deaths/100 000 pop/yr)[2]	**84**
Of new TB cases, % HIV+[b]	*6.3*
Of new TB cases, % MDR-TB (2005)[c]	1.6
Of previously treated TB cases, % MDR-TB (2005)[c]	12
Surveillance and DOTS implementation	
Notification rate (new and relapse/100 000 pop/yr)	151
Notification rate (new ss+/100 000 pop/yr)	45
DOTS case detection rate (new ss+, %)	**27**
DOTS treatment success (new ss+ cases, 2005 cohort, %)	**78**
Of new pulmonary cases notified under DOTS, % ss+	48
Of new cases notified under DOTS, % extrapulmonary	36
Of new ss+ cases notified under DOTS, % in women	45
Of sub-national reports expected, % received at next reporting level[d]	100
Laboratory services[3]	
Number of laboratories performing smear microscopy	713
Number of laboratories performing culture	1
Number of laboratories performing DST	1
Of laboratories performing smear microscopy, % covered by EQA	0
Management of MDR-TB	
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	
National policy of counselling and testing TB patients for HIV?	Yes (to all patients)
National surveillance system for HIV-infection in TB patients?	Yes
Of TB patients (new and re-treatment) notified, % tested for HIV	2.6
Of TB patients tested for HIV, % HIV+	40
Of HIV+ TB patients detected, % receiving CPT	86
Of HIV+ TB patients detected, % receiving ART	27

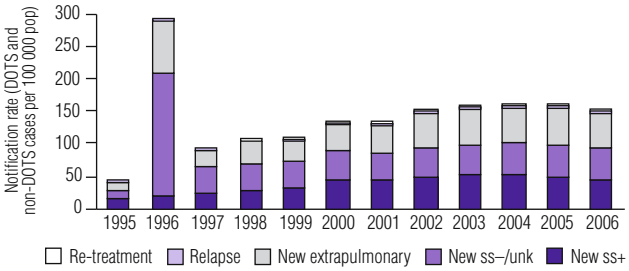
WHO Africa Region (AFR)

Rank based on estimated number of incident cases (all forms) in 2006



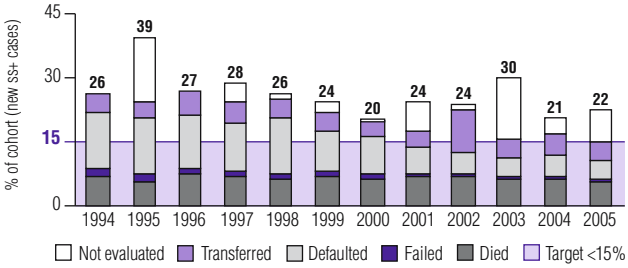
Case notifications

Notifications equally spread among ss+, ss– and extrapulmonary, suggesting underutilization of microscopy for diagnosis, and possible over-diagnosis of extrapulmonary cases



Unfavourable treatment outcomes, DOTS

Treatment success rate remains below target; treatment outcomes not reported for 7% of 2005 cohort



DOTS expansion and enhancement	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
DOTS coverage (%)	39	39	48	64	63	85	70	95	95	70	90	100
DOTS notification rate (new and relapse/100 000 pop)	43	67	92	106	107	131	133	151	157	160	157	151
DOTS notification rate (new ss+/100 000 pop)	15	21	25	29	32	44	46	50	53	54	49	45
DOTS case detection rate (all new cases, %)	19	27	35	37	35	40	37	40	40	40	40	39
DOTS case detection rate (new ss+, %)	15	20	22	23	24	30	30	30	31	31	29	27
Case detection rate within DOTS areas (new ss+, %)[e]	38	51	45	36	38	36	43	32	33	45	32	27
DOTS treatment success (new ss+, %)	61	73	72	74	76	80	76	76	70	79	78	–
DOTS re-treatment success (ss+, %)	79	71	69	60	74	71	64	60	60	54	56	–

IMPLEMENTING THE STOP TB STRATEGY[1]

DOTS EXPANSION AND ENHANCEMENT

Political commitment, standardized treatment, and monitoring and evaluation system

Achievements

- Received approval for Global Fund round 6 proposal for TB control activities
- Finalized 2007–2010 Strategic Plan for TB Control with participation and agreement of all stakeholders
- Revised standard regimen for Category III
- Developed monitoring and evaluation plan for NTP
- Recruited data manager, but planned move to integrated health information system poses challenges
- Produced annual report of NTP activities

Planned activities

- Improve case detection through identification of TB suspects by health extension workers (HEWs), through collaboration with private health clinics and expansion of the network of general health clinics
- Update, disseminate and implement the new manual for management of TB and leprosy
- Conduct Global Fund 5-year assessment surveys

Quality-assured bacteriology

Achievements

- Set up EQA system for sputum microscopy
- Revised AFB microscopy and EQA manual
- Conducted training of peripheral-level laboratory staff in all regions

Planned activities

- Strengthen EQA system for sputum microscopy
- Establish 6 regional reference laboratories with culture and DST facilities
- Open 120 new TB diagnostic facilities with AFB microscopy
- Recruit and equip national laboratory consultants for six regions in order to strengthen the EQA system

Drug supply and management system

Achievements

- Developed plan for procurement of drugs and management of supplies

Planned activities

- Obtain paediatric anti-TB formulations from GDF

TB/HIV, MDR-TB AND OTHER CHALLENGES

Collaborative TB/HIV activities

Achievements

- Established functional TB/HIV Advisory Council and TB/HIV Technical Working Group
- Updated national guidelines on implementation of collaborative TB/HIV activities
- Trained over 800 health staff on collaborative TB/HIV activities
- Pilot collaborative TB/HIV activities expanded to more than 330 health facilities, 98 of which are hospitals
- Drafted comprehensive TB/HIV plan of action involving most stakeholders

Planned activities

- Improve monitoring and reporting of TB/HIV activities at all levels
- Reinforce human resources for collaborative TB/HIV activities
- Develop and implement guidelines on infection control in main hospitals

Diagnosis and treatment of multidrug-resistant TB

Achievements

- MDR-TB addressed and granted approval in the round 6 Global Fund proposal
- Developed MDR-TB control plan
- Established functional MDR-TB technical advisory group

Planned activities

- Develop guidelines for MDR-TB management and treatment
- Procure second-line TB drugs for 100 patients in the first year
- Set up MDR-TB treatment centre in Addis Ababa (St Peter's Hospital)
- Provide necessary MDR-TB training to health workers and health managers

High-risk groups and special situations

Achievements

- Included specific targets in the strategic plan

Planned activities

- None described

Health system strengthening, including human resource development

Achievements

- Trained over 900 health-care workers and public health managers in diagnosis and treatment of TB and leprosy
- Supplied office and transport equipment for the regional health bureaux
- Developed plan for PAL adaptation and implementation

Planned activities

- Strengthen diagnostic facilities through provision of X-ray machines, fluorescence microscopes, culture and DST equipment and vehicles for regional laboratories
- Standardize training material on TB and on TB/HIV
- Develop specific training material on TB for physicians

[1] Unless otherwise specified, achievements are for financial year 2006; planned activities are for financial year 2007.

ENGAGING ALL CARE PROVIDERS

Achievements

- Published guidelines for management of TB in private health facilities
- Pilot tested PPM projects in 21 private health facilities; NTP provided training and anti-TB drugs

Planned activities

- Expand PPM to 100 private health facilities in 3 regions
- Initiate collaborative TB/HIV activities in all PPM facilities
- Supervise PPM activities and assess their performance

EMPOWERING PEOPLE WITH TB, AND COMMUNITIES

Advocacy, communication and social mobilization

Achievements

- Broadcast radio and TV messages aimed at improving health-seeking behaviour of people with TB
- Developed and disseminated posters and flyers to the general public and to community workers

Planned activities

- Develop and disseminate posters and flyers on TB awareness for the general public

Community participation in TB care

Achievements

- Sensitized community health extension workers (HEWs) on identification and referral of TB suspects
- Conducted sensitization workshops for community leaders on community TB control

Planned activities

- Develop training curriculum and modules for HEWs
- Train and supervise all HEWs to educate and mobilize the community for identification and referral of TB suspects
- Develop and disseminate reference materials for health extension workers

Patients' Charter

Achievements

The Patients' Charter was published in 2006 and was therefore not available for use in countries until then.

Planned activities

- None reported

RESEARCH, INCLUDING SPECIAL SURVEYS AND IMPACT MEASUREMENT

Achievements

- Conducted studies on variations of sputum smear microscopy techniques and diagnosis of extrapulmonary TB (lymph nodes)

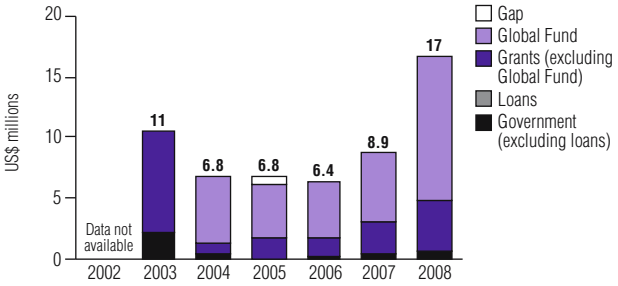
Planned activities

- Study health-seeking behaviour, gender disparities and contact tracing

FINANCING THE STOP TB STRATEGY

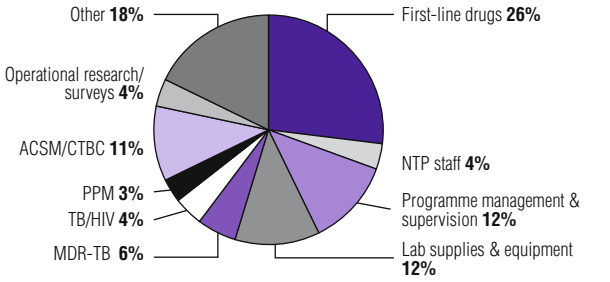
NTP budget by source of funding

Substantial increase in budget and external funding in 2008, mainly from the Global Fund and other donors



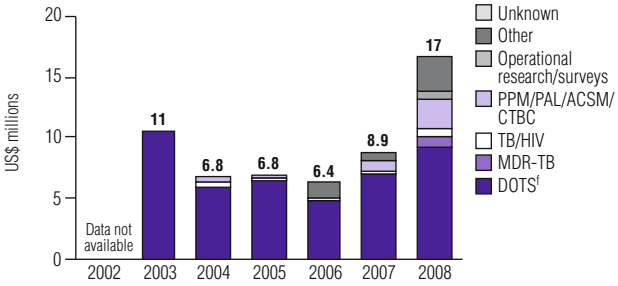
NTP budget by line item, 2008

Budget has been developed for almost all interventions of the Stop TB Strategy; DOTS (55%) is the largest single component of the budget, followed by ACSM/CTBC (11%)



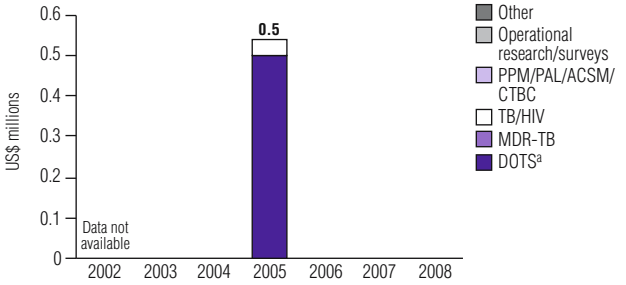
NTP budget by line item

Increased budget in 2008 for DOTS component mainly for laboratory supplies and equipment



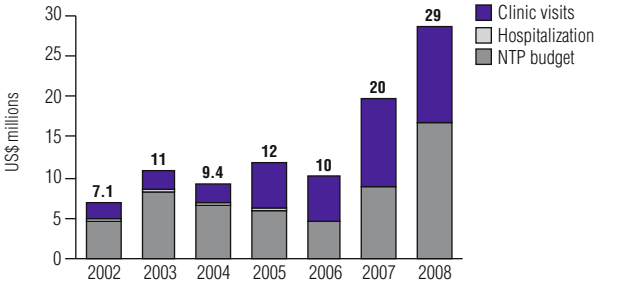
NTP funding gap by line item

Funding gap reported only in 2005



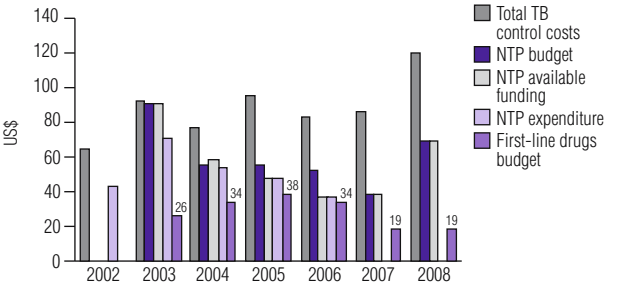
Total TB control costs by line item[4]

Costs for clinic visits based on 66 outpatient visits per new TB patient to health facilities during treatment



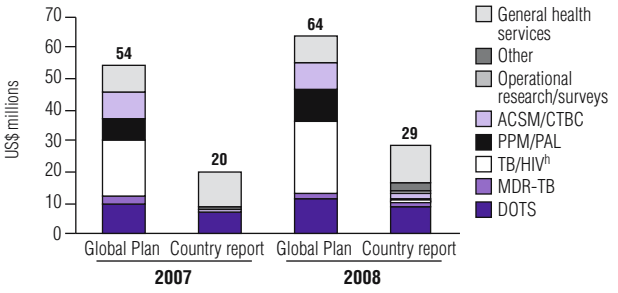
Per patient costs, budgets and expenditures[5]

Increased costs and budget per patient as TB control activities broadened in line with Stop TB Strategy; expenditures similar to available funding showing good absorption capacity



Comparison of country report and Global Plan:[g] total TB control costs, 2007–2008

Country reports similar to Global Plan for the DOTS component; much higher budget for TB/HIV, PPM and ACSM in Global Plan



NTP budget and funding gap by Stop TB Strategy component

	2007		2008	
(US$ millions)	BUDGET	GAP	BUDGET	GAP
DOTS expansion and enhancement	6.9	0	9.2	0
TB/HIV, MDR-TB and other challenges	0.3	0	1.7	0
Health system strengthening	0	0	0	0
Engage all care providers	0	0	0.5	0
People with TB, and communities	0.9	0	1.8	0
Research	0	0	0.6	0
Other	0.8	0	3.0	0

Financial indicators for TB

Government contribution to NTP budget (including loans)	7%	0%
Government contribution to total cost TB control (including loans)	58%	0%
NTP budget funded	100%	0%
Per capita health financial indicators (US$)		
NTP budget per capita	0.2	0.2
Total costs for TB control per capita	0.2	0.3
Funding gap per capita	0	0
Government health expenditure per capita (2004)	2.9	
Total health expenditure per capita (2004)	5.6	

SOURCES, METHODS AND ABBREVIATIONS

[a–h] Please see footnotes page 169.

1 Incidence, prevalence and mortality estimates include patients infected with HIV. Incidence based on assumption of 50% 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.

2 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 308/100 000 pop and mortality 37/100 000 pop/yr.

3 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.

4 Total TB control costs for 2002–2006 are based on expenditure, whereas those for 2007–2008 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.

5 NTP available funding for 2004–2006 is based on the amount of funding actually received, using retrospective data; available funding for 2002–2003 and 2007–2008 is based on prospectively reported budget data, and estimated as the total budget minus any reported funding gap.

– 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.

India

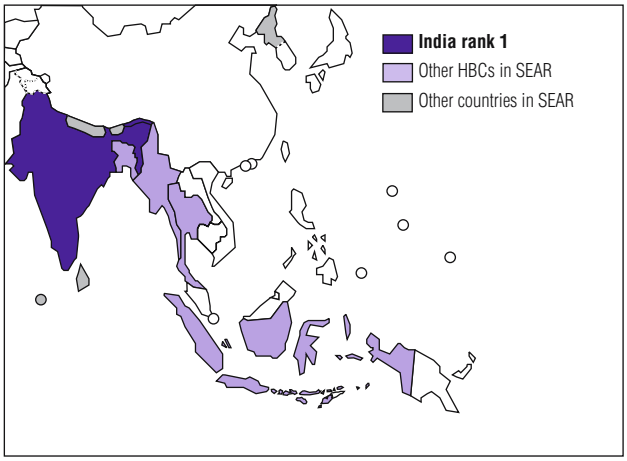
In reaching 100% DOTS coverage, the Revised National Tuberculosis Control Programme (RNTCP, hereafter NTP) of India has begun to operate in parts of the country that are particularly challenging. It remains to be seen if the Stop TB Strategy can be implemented as successfully in these districts as it has been in the rest of India. The introduction of MDR-TB treatment as part of routine programme activities will succeed only if the planned sub-national reference laboratories function properly, and if a reliable supply of high-quality second-line drugs is available. Plans to expand collaborative TB/HIV activities nationally will need to reflect the local variations in HIV epidemiology. Assessing the impact of TB control in India will require careful analysis of the extensive and detailed data that are routinely collected by the NTP, in addition to recent and planned surveys of the prevalence of infection and of disease.

SURVEILLANCE AND EPIDEMIOLOGY, 2006

Population (thousands)[a]	1 151 751
Estimates of epidemiological burden[1]	
Incidence (all cases/100 000 pop/yr)	168
Trend in incidence rate (%/yr, 2005–2006)[2]	**0.0**
Incidence (ss+/100 000 pop/yr)	75
Prevalence (all cases/100 000 pop)[2]	**299**
Mortality (deaths/100 000 pop/yr)[2]	**28**
Of new TB cases, % HIV+[b]	*1.2*
Of new TB cases, % MDR-TB[c]	*2.8*
Of previously treated TB cases, % MDR-TB[c]	*17*
Surveillance and DOTS implementation	
Notification rate (new and relapse/100 000 pop/yr)	107
Notification rate (new ss+/100 000 pop/yr)[3]	48
DOTS case detection rate (new ss+, %)[3]	**64**
DOTS treatment success (new ss+ cases, 2005 cohort, %)	**86**
Of new pulmonary cases notified under DOTS, % ss+	58
Of new cases notified under DOTS, % extrapulmonary	16
Of new ss+ cases notified under DOTS, % in women	31
Of sub-national reports expected, % received at next reporting level[d]	100
Laboratory services[4]	
Number of laboratories performing smear microscopy	11 968
Number of laboratories performing culture	8
Number of laboratories performing DST	8
Of laboratories performing smear microscopy, % covered by EQA	79
Management of MDR-TB	
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	81
Collaborative TB/HIV activities	
National policy of counselling and testing TB patients for HIV?	Yes (for specific groups)
National surveillance system for HIV-infection in TB patients?	No
Of TB patients (new and re-treatment) notified, % tested for HIV	4
Of TB patients tested for HIV, % HIV+	15
Of HIV+ TB patients detected, % receiving CPT	–
Of HIV+ TB patients detected, % receiving ART	–

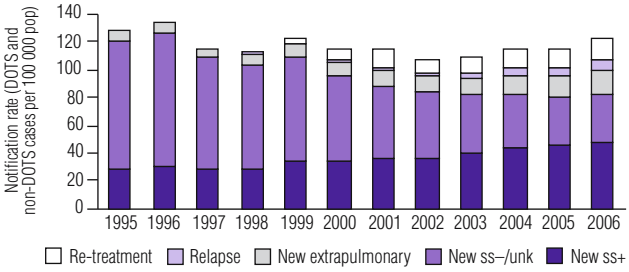
WHO South-East Asia Region (SEAR)

Rank based on estimated number of incident cases (all forms) in 2006



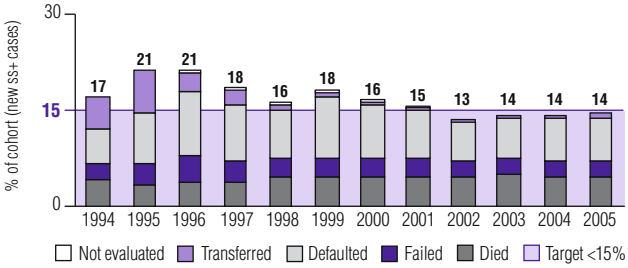
Case notifications

Notification rates of most case types increasing slightly; falling only for ss– pulmonary cases



Unfavourable treatment outcomes, DOTS

Treatment success rate target reached for 2001 cohort, but relatively unchanged since



DOTS expansion and enhancement	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
DOTS coverage (%)	1.5	2.0	2.3	9.0	14	30	45	52	67	84	91	100
DOTS notification rate (new and relapse/100 000 pop)	0.5	1.6	1.8	2.9	12	20	38	51	73	94	101	107
DOTS notification rate (new ss+/100 000 pop)	0.2	0.6	0.8	1.2	5.2	9.1	17	23	33	42	45	48
DOTS case detection rate (all new cases, %)	0.3	0.9	1.0	1.6	6.5	11	22	28	41	53	56	59
DOTS case detection rate (new ss+, %)	0.3	0.8	1.0	1.6	6.8	12	23	30	43	55	59	64
Case detection rate within DOTS areas (new ss+, %)[e]	19	42	45	18	51	40	51	58	64	66	65	64
DOTS treatment success (new ss+, %)	79	79	82	84	82	84	85	87	86	86	86	–
DOTS re-treatment success (ss+, %)	70	67	65	72	69	71	69	72	70	73	71	–

IMPLEMENTING THE STOP TB STRATEGY[1]

DOTS EXPANSION AND ENHANCEMENT

Political commitment, standardized treatment, and monitoring and evaluation system

Achievements

- Expanded DOTS to the entire country (628 districts) in March 2006
- Secured long-term funding for TB activities under the World Bank credit agreement
- Received approval for the Global Fund round 6 proposal for TB control activities
- Hosted 3-yearly external evaluation (joint monitoring mission) in October 2006
- Produced 7th annual report of NTP activities

Planned activities

All planned activities reported for 2007 are described under the headings below.

Quality-assured bacteriology

Achievements

- Implemented full range of EQA activities for sputum microscopy in nearly 80% of peripheral microscopy units

Planned activities

- Scale up the full range of EQA activities to 100% of microscopy centres

Drug supply and management system

Achievements

- Procured and introduced paediatric patient-wise boxes, with assistance from GDF and DFID

Planned activities

- Provide training in drug logistics to national-level master trainers, and to national- and state-level officials involved in drug management

TB/HIV, MDR-TB AND OTHER CHALLENGES

Collaborative TB/HIV activities

Achievements

- Established cross-referral mechanisms in 14 states; implemented intensified TB case-finding in integrated counselling and testing centres; and introduced selective referral of TB patients for voluntary HIV counselling and testing
- Scaled up periodic HIV survey in TB patients to 15 districts with differing HIV levels in women attending antenatal clinics

Planned activities

- Expand intensified TB case-finding in VCT centres, ART centres, and care and support centres countrywide
- Implement VCT for TB patients (selective in all states, to all TB patients in high HIV-prevalence settings)
- Strengthen collaborations countrywide at state and district levels via frequent meetings and reviews by coordination committees
- Pilot test the following: decentralized delivery of CPT through NTP; implementation of "shared confidentiality" of HIV status within the health-care system in order to improve coordination of TB and HIV care; and routine offer of voluntary HIV testing and counselling to all TB patients in 2 districts

Diagnosis and treatment of multidrug-resistant TB

Achievements

- Developed and published national guidelines for treatment of MDR-TB
- Completed DRS in the states of Gujarat and Maharashtra, and initiated in Andhra Pradesh
- Supplied culture and DST equipment to intermediate reference laboratories in 13 states; started accreditation process for these laboratories

Planned activities

- Launch management of MDR-TB in Gujarat and Maharashtra: MDR-TB suspects identified and DST carried out in March 2007, first cohort of patients began treatment in August 2007
- Introduce management of MDR-TB in 4 more states: Andhra Pradesh, Delhi, Haryana and Kerala
- Complete accreditation of 13 out of 18 intermediate reference laboratories
- Promote the rational use of second-line anti-TB drugs by all health-care providers

High-risk groups and special situations

Achievements

- Initiated national guidelines for TB diagnosis and treatment among long-term and short-term prisoners
- Implemented specific action plan for TB control in tribal population
- NGOs and support groups collaborated with NTP to improve access to DOT for refugees, displaced people, migrant workers, immigrants, homeless people, and individuals dependent on alcoholic and drugs
- Introduced PPM activities in urban areas, including slums

Planned activities

- Implement tribal action plans at district level: increase human resources, expand network of diagnostic centres, provide incentives to patients for travel to diagnostic centres

[1] Unless otherwise specified, achievements are for financial year 2006; planned activities are for financial year 2007.

HEALTH SYSTEM STRENGTHENING, INCLUDING HUMAN RESOURCE DEVELOPMENT

Achievements

- Planning for TB control involved sector-wide and intersectoral collaboration, including close involvement of the NTP in planning the ongoing primary health-care reform by the National Rural Health Mission (NRHM)

Planned activities

- Continue active engagement with NRHM to support its elements for health system strengthening, while ensuring that essential TB control functions are protected and that an acceptable level of infrastructure, facilities and services at all levels in the NTP are maintained as per the Indian Public Health Standards formulated by the NRHM
- NTP will continue to provide human resources to fill critical gaps in the health system (e.g. laboratory technicians) and to provide additional sub-district level TB supervisors to maintain the supervision for and monitoring of the programme

ENGAGING ALL CARE PROVIDERS

Achievements

- Adopted ISTC in order to improve the standards of TB management across all sectors of health-care in India; ISTC now included in the NTP training module for private practitioners
- Continued scale up of PPM activities, including provision of anti-TB drugs free of charge to selected collaborating non-NTP providers; PPM now in place in almost all districts
- Formed national professional coalition of chest physicians', paediatricians' and family physicians' associations in 2007

Planned activities

- Revise PPM guidelines for NGOs and private practitioners
- Develop guidelines for further involvement of the Employee State Insurance and Railways health facilities in TB control
- Work with the Indian Medical Association to increase the number of private practitioners collaborating with the NTP

EMPOWERING PEOPLE WITH TB, AND COMMUNITIES

Advocacy, communication and social mobilization

Achievements

- Undertook mass media activities in collaboration with national telecast network and with other disease control programmes
- Developed and implemented, in all states and districts, needs-based ACSM activities for patients and communities, health-care providers and decision-makers
- Strengthened capacity of NTP staff in states and districts to plan and implement locally relevant ACSM activities, including local training, and participatory approaches adapted to the social and cultural context

Planned activities

- Hire a media agency at the national level to undertake electronic media activities, develop new material for use in targeted audiences such as private providers, and prepare material for use in medical colleges, for enhancing patient–provider interaction and to support and involve community groups
- Develop IEC baseline document to guide future capacity-enhancing interventions
- Encourage states and districts to develop ACSM activities focusing on tribal and other hard-to-reach populations

Community participation in TB care

Achievements

- Involved communities in TB control activities in all districts, and self-help groups, cured TB patients, folk media and traditional healers in TB care and control activities
- Organized more than 30 000 community meetings and nearly 40 000 patient–provider meetings on TB control

Planned activities

- Enhance community involvement through community meetings, and collaboration with groups such as self-help groups, youth organizations, schoolchildren, local NGOs, faith-based organizations and Panchayat Raj Institutions
- Involve community volunteers and cured TB patients to provide motivation and support for TB patients
- Initiate TB care in the community

Patients' Charter

Achievements

The Patients' charter was published in 2006 and was therefore not available for use in countries until then.

Planned activities

- Print and widely disseminate the Patients' Charter among providers and patients
- Inform professional organizations and state governments about the Patients' Charter, and encourage its adoption
- Display the Patients' Charter in local languages at all major health-care facilities

RESEARCH, INCLUDING SPECIAL SURVEYS AND IMPACT MEASUREMENT

Achievements

- Initiated broad programme of operational research projects into strategies to improve access to diagnosis; methods of diagnosis, including diagnosis in children; efficacy of treatment regimens; TB diagnosis and control in remote settings; health-seeking behaviour; cost-effectiveness of PPM; and factors associated with default and relapse

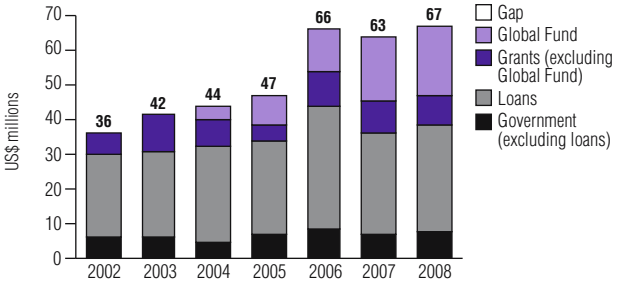
Planned activities

- Start subnational TB disease prevalence surveys at six sites, in addition to ongoing surveys at the TB Research Centre, Chennai
- Conduct second national ARTI survey
- Revise the operational research priorities of the programme and increase operational research activities in collaboration with medical colleges

FINANCING THE STOP TB STRATEGY

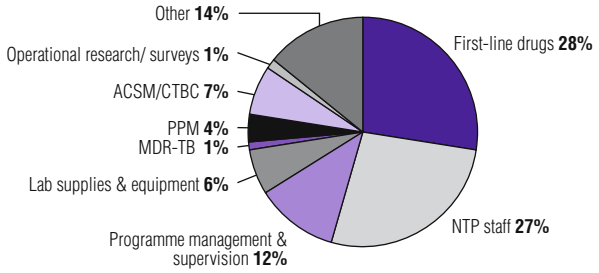
NTP budget by source of funding

Large increase in budget after 2005, which has been fully funded mainly by increasing funding from a World Bank loan and the Global Fund



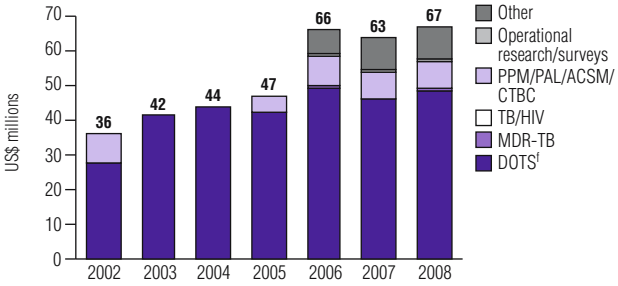
NTP budget by line item, 2008

65% of the budget is for component 1 of the Stop TB Strategy (DOTS expansion and enhancement); the budget for MDR-TB is small – plans for treatment of MDR-TB cover less than 1% of estimated cases



NTP budget by line item

DOTS continues to be a dominant component of the NTP budget, although amounts for other elements of the Stop TB Strategy, particularly PPM, have increased since 2005

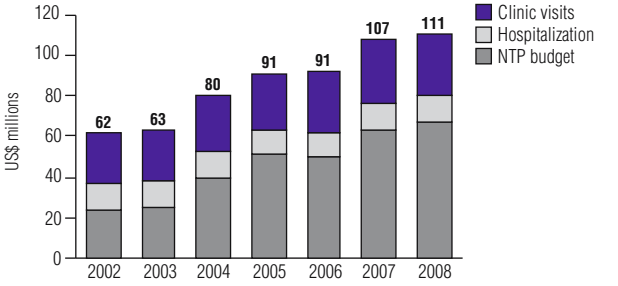


NTP funding gap by line item

No funding gaps have been reported for TB control since 2002

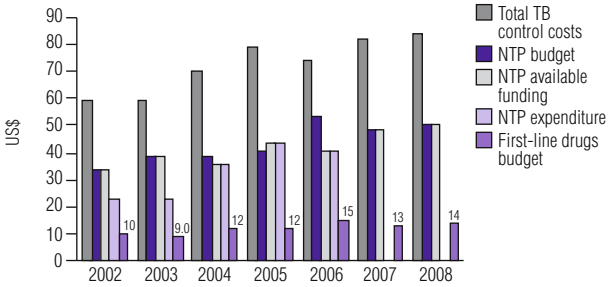
Total TB control costs by line item[5]

Hospitalization costs are for 11 750 dedicated TB beds, costs for clinic visits based on 75% patients using health facilities for DOT



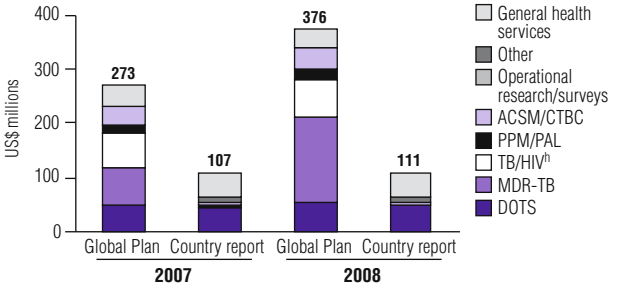
Per patient costs, budgets and expenditures[6]

Increasing cost per patient since 2002 as newer elements of TB control are introduced, but India remains the country with the lowest cost per patient treated among all HBCs



Comparison of country report and Global Plan:[g] total TB control costs, 2007–2008

Targets for MDR-TB patients to be treated in Global MDR/XDR Response Plan much higher than scaling up planned by NTP; NTP budget for TB/HIV small since most activities funded through HIV budgets; ACSM estimates in Global Plan used evidence from outside India



NTP budget and funding gap by Stop TB Strategy component

	2007		2008	
(US$ millions)	BUDGET	GAP	BUDGET	GAP
DOTS expansion and enhancement	46	0	48	0
TB/HIV, MDR-TB and other challenges	0.05	0	0.7	0
Health system strengthening	0	0	0	0
Engage all care providers	3.1	0	2.7	0
People with TB, and communities	4.6	0	4.6	0
Research	1.0	0	0.9	0
Other	9.0	0	9.5	0

Financial indicators for TB

Government contribution to NTP budget (including loans)	56%	58%
Government contribution to total cost TB control (including loans)	74%	74%
NTP budget funded	100%	100%
Per capita health financial indicators (US$)		
NTP budget per capita	0.1	0.1
Total costs for TB control per capita	0.1	0.1
Funding gap per capita	0	0
Government health expenditure per capita (2004)	5.4	
Total health expenditure per capita (2004)	31	

SOURCES, METHODS AND ABBREVIATIONS

[a–h] Please see footnotes page 169.

1 Incidence, prevalence and mortality estimates include patients infected with HIV. Estimate of ss+ 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 ss+ 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.

2 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 568/100 000 pop and mortality 42/100 000 pop/yr.

3 The population estimate used by the NTP is lower than that used here and gives a notification rate for new smear-positive cases of 50 per 100 000 population, and a smear-positive case detection rate of 66%.

4 For routine diagnosis, there should be at least one laboratory providing smear microscopy per 100 000 population. By 2009, the RNTCP 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.

5 Total TB control costs for 2002–2006 are based on expenditure, whereas those for 2007–2008 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.

6 NTP available funding for 2004–2006 is based on the amount of funding actually received, using retrospective data; available funding for 2002–2003 and 2007–2008 is based on prospectively reported budget data, and estimated as the total budget minus any reported funding gap.

– 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.

COUNTRY PROFILE

Indonesia

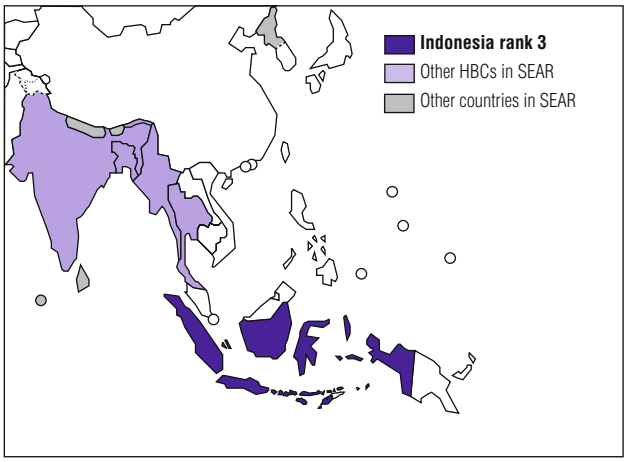
The case detection rate in Indonesia exceeded 70% for the first time in 2006; collaboration with private health-care providers and non-NTP public providers, in conjunction with community-based TB care, has probably contributed to the increase in case-finding. Treatment outcomes were reported for nearly all new smear-positive patients registered in 2005, with the highest treatment success rate yet reported by Indonesia. As more providers participate in TB care, the NTP will need to work to ensure that treatment outcomes continue to be reported for all patients. The treatment of MDR-TB patients has begun and is included in the fully funded budget for 2007–2008.

SURVEILLANCE AND EPIDEMIOLOGY, 2006

Population (thousands)[a]	228 864
Estimates of epidemiological burden[1]	
Incidence (all cases/100 000 pop/yr)	234
Trend in incidence rate (%/yr, 2005–2006)[2]	**-2.4**
Incidence (ss+/100 000 pop/yr)	105
Prevalence (all cases/100 000 pop)[2]	**253**
Mortality (deaths/100 000 pop/yr)[2]	**38**
Of new TB cases, % HIV+[b]	*0.6*
Of new TB cases, % MDR-TB (2004)[c]	2.0
Of previously treated TB cases, % MDR-TB[c]	*19*
Surveillance and DOTS implementation	
Notification rate (new and relapse/100 000 pop/yr)	121
Notification rate (new ss+/100 000 pop/yr)	77
DOTS case detection rate (new ss+, %)	**73**
DOTS treatment success (new ss+, 2005 cohort, %)	**91**
Of new pulmonary cases notified under DOTS, % ss+	66
Of new cases notified under DOTS, % extrapulmonary	2.6
Of new ss+ cases notified under DOTS, % in women	41
Of sub-national reports expected, % received at next reporting level[d]	98
Laboratory services[3]	
Number of laboratories performing smear microscopy	4 855
Number of laboratories performing culture	41
Number of laboratories performing DST	11
Of laboratories performing smear microscopy, % covered by EQA	100
Management of MDR-TB	
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	
National policy of counselling and testing TB patients for HIV?	No policy
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	–

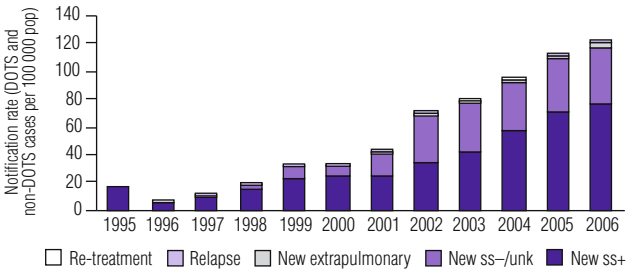
WHO South-East Asia Region (SEAR)

Rank based on estimated number of incident cases (all forms) in 2006



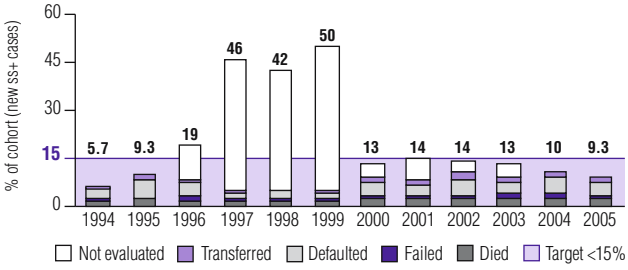
Case notifications

Dramatic increase in case notifications over the past 10 years



Unfavourable treatment outcomes, DOTS

Treatment success rate target originally reached with 2000 cohort and outcomes have improved since. Outcomes reported for nearly all new ss+ patients registered for treatment in 2005



DOTS expansion and enhancement	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
DOTS coverage (%)	6.0	14	28	80	90	98	98	98	98	98	98	98
DOTS notification rate (new and relapse/100 000 pop)	1.8	7.3	11	20	33	32	43	71	79	94	113	121
DOTS notification rate (new ss+/100 000 pop)	1.8	5.9	9.6	16	24	24	25	35	42	58	70	77
DOTS case detection rate (all new cases, %)	0.6	2.4	3.7	6.7	12	12	16	27	31	38	46	51
DOTS case detection rate (new ss+, %)	1.3	4.4	7.4	12	19	20	21	30	37	52	65	73
Case detection rate within DOTS areas (new ss+, %)[e]	21	32	26	15	21	20	22	31	38	54	67	74
DOTS treatment success (new ss+, %)	91	81	54	58	50	87	86	86	87	90	91	–
DOTS re-treatment success (ss+, %)	32	–	–	73	70	72	83	78	78	82	78	–

IMPLEMENTING THE STOP TB STRATEGY[1]

DOTS EXPANSION AND ENHANCEMENT

Political commitment, standardized treatment, and monitoring and evaluation system

Achievements

- Produced NTP strategic plan for 2006–2010
- Developed and began implementation of electronic TB reporting and recording system
- Piloted registration of TB patients at health services units in order to improve quality of surveillance
- Initiated TB/HIV implementation by conducting a national TB/HIV symposium
- Began rapid involvement of hospital DOTS linkage including endorsement of ISTC and PCTC
- Produced annual report of NTP activities

Planned activities

- Implement electronic TB recording and reporting system nationwide

Quality-assured bacteriology

Achievements

- Developed guidelines for EQA and TB laboratory management biosafety
- Prepared for first DRS in Central Java Province
- Conducted EQA of 3 laboratories for culture and DST

Planned activities

- Begin preparation for establishment of regional reference laboratory and 7 new provincial laboratories
- Implement and update LQAS in 3 pilot sites
- Complete testing of samples from 1st DRS
- Develop culture and DST guidelines (based on WHO guidelines)

Drug supply and management system

Achievements

- Began training on management of anti-TB drug supplies

Planned activities

- Improve drug management, planning, distribution, procurement and quality control
- Roll out drug management/logistics training for staff at all levels
- Procure paediatric FDCs and establish procurement of second-line anti-TB drugs

TB/HIV, MDR-TB AND OTHER CHALLENGES

Collaborative TB/HIV activities

Achievements

- Pilot tested implementation of collaborative TB/HIV activities in health-care centres in 6 provinces

Planned activities

- Finalize national policy on collaborative TB/HIV activities in Indonesian and in English
- Review and revitalize national TB/HIV working group
- Implement collaborative TB/HIV activities in ARV referral hospitals
- Update guidelines on diagnosis and treatment of TB in HIV-positive people
- Develop TB/HIV surveillance system

Diagnosis and treatment of multidrug-resistant TB

Achievements

- Completed preparation for GLC assessment
- Established working group on management of MDR-TB

Planned activities

- Apply to GLC and prepare for management of MDR-TB
- Develop guidelines for management of MDR-TB

High-risk groups and special situations

Achievements

- Included specific activities for prison populations, such as collaborative TB/HIV activities, in NTP plan for TB control

Planned activities

- Establish special TB control initiatives for hard-to-reach areas (e.g. Papua)
- Formalize TB control activities in prisons through memorandum of understanding with Ministry of Justice
- Develop guidelines for TB control in the workplace
- Develop specific plan for urban TB control

HEALTH SYSTEM STRENGTHENING, INCLUDING HUMAN RESOURCE DEVELOPMENT

Achievements

- Planning for TB control involved sector-wide and intersectoral collaboration
- Strengthened management capacity at provincial and district levels through provincial DOTS teams
- Advocated for increased health budget (inclusive of TB) from parliament

Planned activities

- Develop networks and partnerships with other stakeholders
- Strengthen managerial capacities of staff by conducting leadership and management training courses
- Introduce and pilot test PAL initiatives, including tobacco use cessation activities

[1] Unless otherwise specified, achievements are for financial year 2006; planned activities are for financial year 2007.

ENGAGING ALL CARE PROVIDERS

Achievements

- Adapted ISTC for professional organizations
- Implemented formal PPM activities in 235 districts/municipalities
- Developed TB control curricula for medical schools
- Collaborated with professional organizations in order to standardize TB diagnosis and treatment
- Established linkages and partnerships with professional societies and NGOs

Planned activities

- Include ISTC in training materials for hospitals and private practitioners
- Standardize diagnosis and treatment of TB by non-NTP providers using ISTC
- Strengthen provision of TB services for diagnosis and treatment in hospitals
- Initiate TB control in private/NGO clinics and in prisons
- Promote ISTC to professional organizations and societies
- Organize workshop on Stop TB Strategy for professional organizations

EMPOWERING PEOPLE WITH TB, AND COMMUNITIES

Advocacy, communication and social mobilization

Achievements

- Developed and began pilot testing ACSM guidelines and training modules
- Developed toolkit for health-care providers
- Prepared for national TB awareness campaign

Planned activities

- Develop advocacy materials for stakeholders
- Launch year-long national TB awareness media campaign
- Finalize training module and guidelines for ACSM based on results of 2006 pilot project

Community participation in TB care

Achievements

- Organized and supported working group on community-based TB care
- Completed review of community-based TB care in West Nusa Tenggara, Lampung, Padang and Jakarta provinces

Planned activities

- Continue to support working group activities
- Develop indicators and tools for community participation in TB control
- Pilot test village TB posts
- Expand community participation initiative

Patients' Charter

Achievements

- Officially endorsed and launched Charter on World TB Day
- Distributed 200 copies of Charter to partners

Planned activities

- Support development of patient groups for improving their involvement in TB Control

RESEARCH, INCLUDING SPECIAL SURVEYS AND IMPACT MEASUREMENT

Achievements

- Conducted HIV seroprevalence survey among TB patients in Yogyakarta Province (in collaboration with Gadjah Mada University, Yogyakarta)
- Carried out infection survey in West Sumatera (in collaboration with University of Indonesia)
- Conducted feasibility study for establishment of sentinel sites for surveillance of TB mortality (NIHRD), including testing of verbal autopsy questionnaires
- Assessed implementation of DOTS in hospitals, and potential introduction of management of MDR-TB in hospitals
- Adapted WHO planning and budgeting tool for use at provincial and district levels

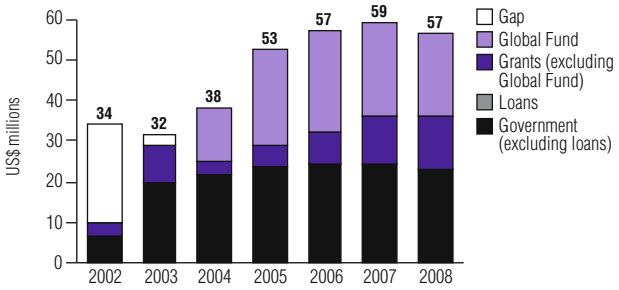
Planned activities

- Conduct infection survey in Central Java and East Nusa Tenggara (in collaboration with University of Indonesia)
- Establish sentinel sites for surveillance of TB mortality (NIHRD) in 4 provinces
- Conduct cost evaluation analysis of PPM activities in Yogyakarta
- Conduct study of TB financing at district level in 7 districts
- Pilot test use of WHO planning and budgeting tool at provincial and district levels
- Expand study of HIV seroprevalence in TB patients to 5 provinces (Papua, West Java, EastJava, Riau Island and Jakarta)
- Hold workshops on operational research in 4 provinces

FINANCING THE STOP TB STRATEGY

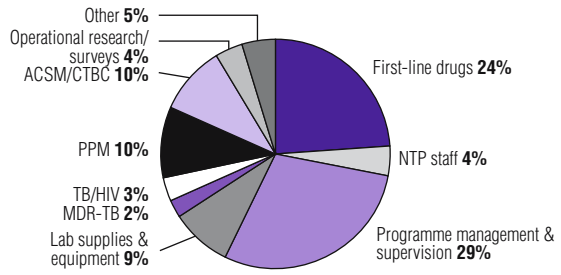
NTP budget by source of funding

Budget for TB control fully funded since 2004; important increase in funding from grants, both from Global Fund and other donors



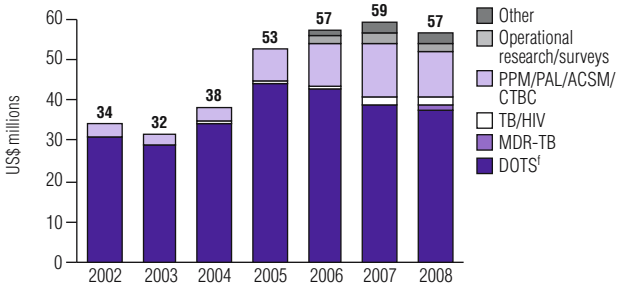
NTP budget by line item, 2008

DOTS expansion and enhancement (66%) and PPM (10%) account for the highest share of the NTP budget; the share for MDR-TB is low – plans for treatment of MDR-TB cover less than 1% of estimated cases



NTP budget by line item

Increased budget for PPM and ACSM since 2006; first year of budget for second-line drugs for 100 MDR-TB patients

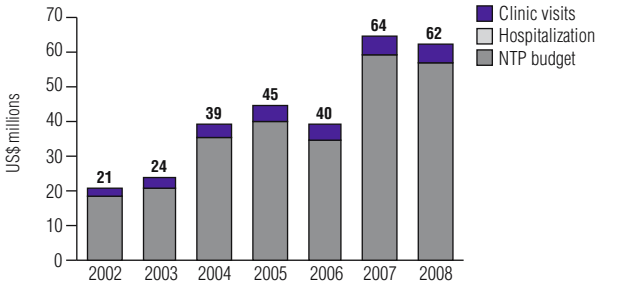


NTP funding gap by line item

Breakdown of funding gap in 2002 and 2003 by line item not available; no funding gaps have been reported since 2004

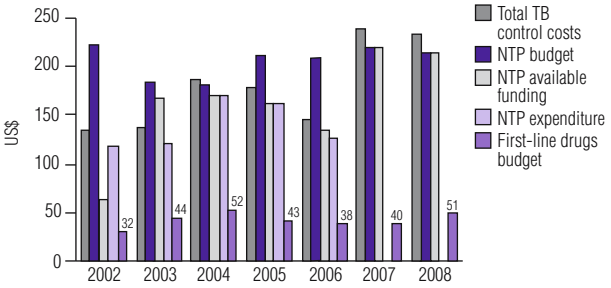
Total TB control costs by line item[4]

NTP budget accounts for biggest share of TB control costs; no costs for hospitalization are estimated and on average each new TB patient visits a health facility 16 times during treatment



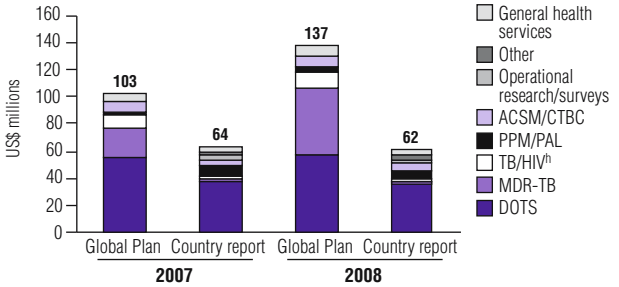
Per patient costs, budgets and expenditures[5]

NTP expenditures per patient in 2006 lowest since 2004



Comparison of country report and Global Plan:[g] total TB control costs, 2007–2008

Costs based on country report lower than costs in Global Plan because (i) targets for MDR-TB patients to be treated in Global MDR/XDR Response Plan much higher than plans of NTP and (ii) estimated number of new TB patients to be treated higher in Global Plan compared to country report



NTP budget and funding gap by Stop TB Strategy component

	2007		2008	
(US$ millions)	BUDGET	GAP	BUDGET	GAP
DOTS expansion and enhancement	39	0	37	0
TB/HIV, MDR-TB and other challenges	2.5	0	3.3	0
Health system strengthening	0	0	0	0
Engage all care providers	8.2	0	5.6	0
People with TB, and communities	4.7	0	5.5	0
Research	2.7	0	2.3	0
Other	2.4	0	2.6	0

Financial indicators for TB

Government contribution to NTP budget (including loans)	41%	41%
Government contribution to total cost of TB control (including loans)	45%	46%
NTP budget funded	100%	100%
Per capita health financial indicators (US$)		
NTP budget per capita	0.3	0.2
Total costs for TB control per capita	0.3	0.3
Funding gap per capita	0	0
Government health expenditure per capita (2004)	11	
Total health expenditure per capita (2004)	33	

SOURCES, METHODS AND ABBREVIATIONS

[a–h] Please see footnotes page 169.

1 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.

2 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 438/100 000 pop and mortality 90/100 000 pop/yr.

3 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 30 states.

4 Total TB control costs for 2002–2006 are based on expenditure, whereas those for 2007–2008 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.

5 NTP available funding for 2004–2006 is based on the amount of funding actually received, using retrospective data; available funding for 2002–2003 and 2007–2008 is based on prospectively reported budget data, and estimated as the total budget minus any reported funding gap.

– 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

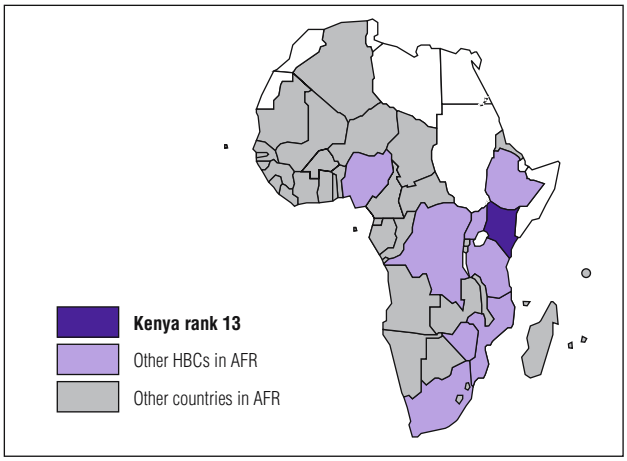
A reassessment of the case detection rate in Kenya suggests that it is higher than was previously estimated, and that the 70% target was probably met in 2006. Treatment success rates, however, are below target, due in part to high default rates. Collaborative TB/HIV activities are now in place across the country, despite constraints in terms of financing, staffing and infrastructure. These constraints will also affect the planned introduction of programmatic management of MDR-TB, and the scaling up of community-based TB care and PPM initiatives. Funding for TB control in 2007 was almost double that in 2006, but a significant gap remains. Improving the infrastructure of laboratories and their performance will be essential to improving the standards of diagnosis for all TB cases, both drug sensitive and drug resistant.

SURVEILLANCE AND EPIDEMIOLOGY, 2006

Population (thousands)[a]	36 553
Estimates of epidemiological burden[1]	
Incidence (all cases/100 000 pop/yr)	384
Trend in incidence rate (%/yr, 2005–2006)[2]	**-9.2**
Incidence (ss+/100 000 pop/yr)	153
Prevalence (all cases/100 000 pop)[2]	**334**
Mortality (deaths/100 000 pop/yr)[2]	**72**
Of new TB cases, % HIV+[b]	52
Of new TB cases, % MDR-TB (1995)[c]	0.0
Of previously treated TB cases, % MDR-TB (1995)[c]	0.0
Surveillance and DOTS implementation	
Notification rate (new and relapse/100 000 pop/yr)	296
Notification rate (new ss+/100 000 pop/yr)	107
DOTS case detection rate (new ss+, %)	**70**
DOTS treatment success (new ss+, 2005 cohort, %)	82
Of new pulmonary cases notified under DOTS, % ss+	45
Of new cases notified under DOTS, % extrapulmonary	17
Of new ss+ cases notified under DOTS, % in women	43
Of sub-national reports expected, % received at next reporting level[d]	100
Laboratory services[3]	
Number of laboratories performing smear microscopy	770
Number of laboratories performing culture	2
Number of laboratories performing DST	2
Of laboratories performing smear microscopy, % covered by EQA	52
Management of MDR-TB	
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	10
Of re-treatment cases receiving DST, % MDR-TB	8.5
Collaborative TB/HIV activities	
National policy of counselling and testing TB patients for HIV?	Yes (to all patients)
National surveillance system for HIV-infection in TB patients?	Yes
Of TB patients (new and re-treatment) notified, % tested for HIV	60
Of TB patients tested for HIV, % HIV+	52
Of HIV+ TB patients detected, % receiving CPT	141
Of HIV+ TB patients detected, % receiving ART	43

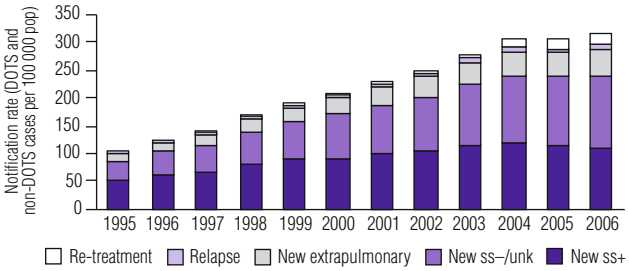
WHO Africa Region (AFR)

Rank based on estimated number of incident cases (all forms) in 2006



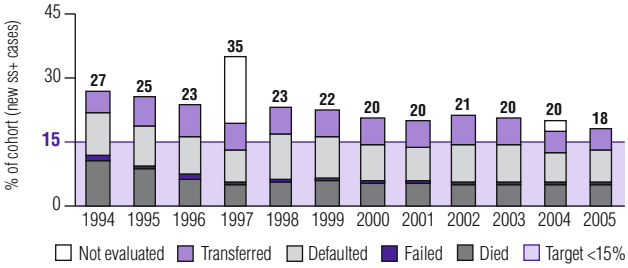
Case notifications

Notifications increased steadily over many years of full DOTS coverage, stabilizing in the past 3 years with an increase in reported re-treatment cases



Unfavourable treatment outcomes, DOTS

Treatment success rate still below target, but higher than in other high-HIV prevalence settings in Africa; reducing default rate could help in achieving target



DOTS expansion and enhancement	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
DOTS coverage (%)	15	100	100	100	100	100	100	100	100	100	100	100
DOTS notification rate (new and relapse/100 000 pop)	103	124	137	165	188	186	228	244	271	290	288	296
DOTS notification rate (new ss+/100 000 pop)	51	60	66	81	89	84	98	104	113	119	113	107
DOTS case detection rate (all new cases, %)	43	45	43	45	46	43	52	54	58	61	66	75
DOTS case detection rate (new ss+, %)	57	58	54	59	58	51	59	61	63	66	68	70
Case detection rate within DOTS areas (new ss+, %)[e]	377	58	54	59	58	51	59	61	63	66	68	70
DOTS treatment success (new ss+, %)	75	77	65	77	78	80	80	79	80	80	82	–
DOTS re-treatment success (ss+, %)	72	59	55	64	73	76	77	77	75	76	77	–

IMPLEMENTING THE STOP TB STRATEGY[1]

DOTS EXPANSION AND ENHANCEMENT

Political commitment, standardized treatment, and monitoring and evaluation system

Achievements

- NTP established as separate division within Ministry of Health, ensuring greater visibility of programme
- Finalized plan for monitoring and evaluating programme performance, based on national strategic plan and including management of MDR-TB
- Organized national award ceremony for best performing facilities, districts and provinces, attended by the Permanent Secretary for Health
- Produced 27th annual report of activities of NTP

Planned activities

All planned activities reported for 2007 are described under the headings below.

Quality-assured bacteriology

Achievements

- Trained 570 laboratory personnel in EQA
- Enabled NRL to increase supervision of provincial microscopy centres by providing per diems, vehicles and additional staff
- Introduced EQA in all 8 provinces
- Established culture centres at Moi Teaching and Referral Hospital and at Homa Bay Hospital in 2007
- Renovated infrastructure in 13 diagnostic centres

Planned activities

- Continue strengthening the NRL through recruitment of additional staff
- Renovate and equip the NRL to level 3 when earmarked funds are released
- Introduce rapid diagnosis of MDR-TB using molecular diagnostic techniques

Drug supply and management system

Achievements

- Appointed pharmacist to manage anti-TB drug supply and distribution
- Implemented the logistics management information system (LMIS) in Eastern South Province
- Introduced 6-month regimen in 1 out of 12 regions
- NTP pharmacist participated in the development of pharmacovigilance guidelines

Planned activities

- Roll out the LMIS to the rest of the country with on-the-job training; formal training planned for 2008
- Introduce anti-TB paediatric dispersible formulations; meeting on paediatric anti-TB drugs to be held in January 2008, involving Measure Evaluation and University of Turin
- Introduce 6-month regimen in remaining 11 regions
- Begin post-marketing surveillance of anti-TB drugs

TB/HIV, MDR-TB AND OTHER CHALLENGES

Collaborative TB/HIV activities

Achievements

- Established good working relationship with NAP, including some shared funding
- Scaled up collaborative TB/HIV activities to whole country, including prisons; offered HIV testing to all TB patients; referred HIV-positive patients to HIV care centres
- Trained health-care workers at service delivery points to ensure comprehensive care for TB/HIV patients

Planned activities

- Collaborate with the NAP to ensure that all HIV patients are screened for TB before initiation of treatment
- Improve TB infection control in hospitals by effective triage of patients, and in prisons by screening new inmates then isolating TB suspects
- Pilot provision of ART in TB clinics

Diagnosis and treatment of multidrug-resistant TB

Achievements

- Developed national guidelines for the management of MDR-TB (printed December 2007)
- Increased staff of NRL from 3 to 5 and purchased equipment for DST
- Trained 5 MDR-TB core group members in Latvia, 3 MDR-TB staff trained by WHO office in Dar es Salaam and 30 staff trained in-country
- Introduced policy of routine DST for re-treatment cases nationwide

Planned activities

- Distribute MDR-TB guidelines
- Begin treating 40 MDR-TB patients as outpatients of Kenyatta National Hospital; delivery of second-line drugs expected for January 2008
- Introduce treatment of MDR-TB in 3 additional hospitals
- Construct isolation facilities for MDR-TB treatment at Kenyatta National Hospital and in Kisumu, Nakuru, Eldoret and Mombasa

High-risk groups and special situations

Achievements

- Pilot tested screening of prisoners for TB on admission

Planned activities

- Introduce routine screening of prisoners for TB on admission

HEALTH SYSTEM STRENGTHENING, INCLUDING HUMAN RESOURCE DEVELOPMENT

Achievements

- Collaborated with Ministry of Justice and with NGOs in the process of planning for TB control
- Provided microscopes and slides to laboratories, which are used for other diseases as well as for TB
- Trained over 500 laboratory staff on AFB microscopy, improving motivation of those staff

Planned activities

- Hire 100 laboratory technicians, 40 nurses and 15 clinical officers using Global Fund money
- Renovate and replace broken equipment in TB clinics and laboratories in general health facilities
- Provide integrated support and supervision at all levels of the health system

[1] Unless otherwise specified, achievements are for financial year 2006; planned activities are for financial year 2007.

- Renovated 20 high-volume facilities, the majority in TB laboratories
- Deployed 3 additional staff at central unit
- Strengthened use of TB supervision tool at all levels
- Pilot use of human resource quantification tool for collaborative TB/HIV activities
- Introduce PAL in 2009

ENGAGING ALL CARE PROVIDERS

Achievements

- Carried out PPM activities in 31 of 136 districts
- Conducted situation analysis for PPM, developed PPM operational guidelines and training material and trained private health-care providers in management of TB
- ISTC formally endorsed by the Kenya Medical Association and by Kenya Clinical Officers Association
- Introduced the ISTC to all care providers and training institutions

Planned activities

- Train additional non-NTP health-care providers in order to expand PPM activities
- Provide anti-TB drugs free of charge to selected collaborating non-NTP health-care providers
- Sensitize pharmacists and more private practitioners on TB to encourage referral of TB suspects for diagnosis
- Introduce accreditation system for health-care facilities offering TB care in line with ISTC

EMPOWERING PEOPLE WITH TB, AND COMMUNITIES

Advocacy, communication and social mobilization

Achievements

- Developed and disseminated the communication strategy, and drafted advocacy strategy
- Commemorated World TB Day
- Conducted training for employers on TB control in the workplace
- Trained groups on use of "Magnet Theatre" (initiative of PATH)
- Broadcast TB control messages through radio, TV and quarterly newspaper advertisements
- Sensitized provincial and district public health officers on ASCM in 90% of the country
- Developed and printed IEC materials

Planned activities

- Use case histories to communicate positive messages about the availability of effective treatment for TB
- Continue broadcasting TB control messages through various media
- Continue sensitization of community leaders
- Initiate school health education programmes with a module on TB control
- Continue Magnet Theatre training
- Finalize, print and disseminate the advocacy strategy
- Review existing IEC materials and develop new ones
- Finalize the community sensitization manual

Community participation in TB care

Achievements

- Increased number of districts implementing community-based DOTS to 37 by December 2007
- Printed community-based DOTS materials and developed recording and reporting tools for community health workers
- Held meetings with community leaders in 31 out of 136 districts; individuals were selected for training as community health-care workers following these meetings
- Enhanced community participation in development of annual plans which are used to guide NTP activities and funding

Planned activities

- Scale up community-based DOTS activities to 10 more districts
- Revise, print and distribute materials to the new districts implementing community-based DOTS

Patients' Charter

Achievements

The Patients' Charter was published in 2006 and was therefore not available for use in countries until then.

- Developed and began distributing general patients' charter, covering many of the issues contained in the Patients' charter for tuberculosis care

Planned activities

- Print and disseminate flyers on the *Patients' charter for tuberculosis care*

RESEARCH, INCLUDING SPECIAL SURVEYS AND IMPACT MEASUREMENT

Achievements

- Conducted study on dispensing practices in the private sector
- Carried out study on commodity management in community-based DOTS initiatives

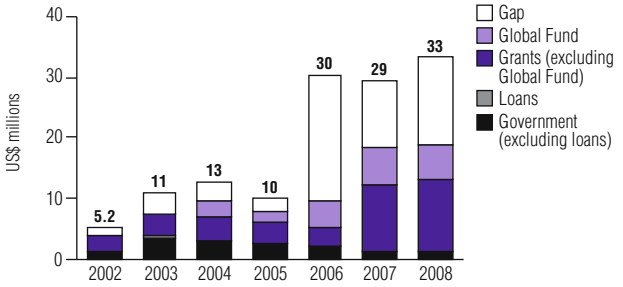
Planned activities

- Conduct survey on MDR-TB among smear-positive cases, establish sentinel sites for routine surveillance of drug resistance among new TB cases and conduct a rapid assessment of XDR-TB among identified and suspected MDR-TB cases (training completed in 2007)
- Identify private providers (nurses, medical assistants and traditional healers) providing or willing to provide free-of-charge treatment in collaboration with the NTP
- Study the micro- and macro-economic impact of TB
- Conduct annual surveys of impact of ACSM activities
- Support testing of data quality assessment tool in 24 districts
- Examine the role of the private sector in provision of TB diagnosis and treatment in Nairobi

FINANCING THE STOP TB STRATEGY

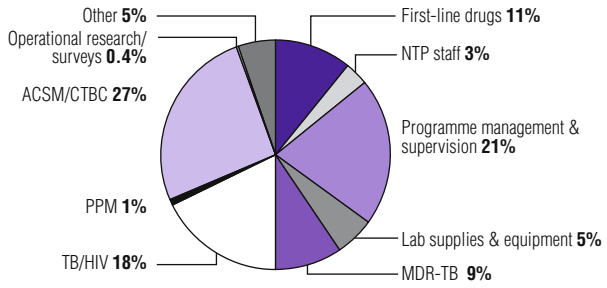
NTP budget by source of funding

NTP has developed plan and budget for 2006–2010 that covers all elements of the Stop TB Strategy and that is in line with or ahead of Global Plan targets; budget requirement is now much higher than previous years and while funding has grown, large funding gaps remain



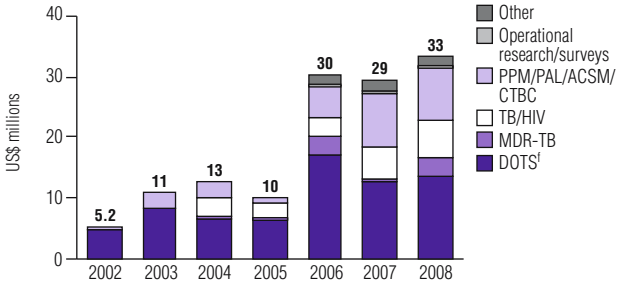
NTP budget by line item, 2008

The largest components of the budget are DOTS (40%) and ACSM including community TB care



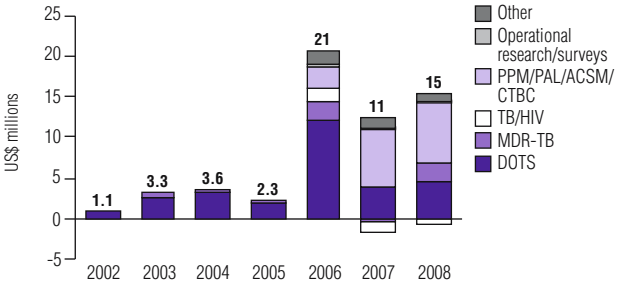
NTP budget by line item

Increased budget for collaborative TB/HIV activities, MDR-TB and ACSM in 2007–2008; MDR-TB budget 2008 mainly for the construction of an infection control facility



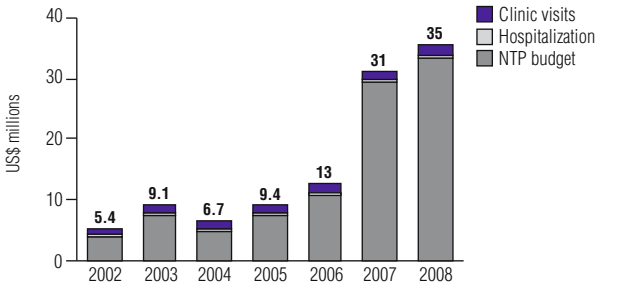
NTP funding gap by line item

Large funding gap for ACSM; funding gap within DOTS component mainly for first-line drugs and routine programme management and supervision activities



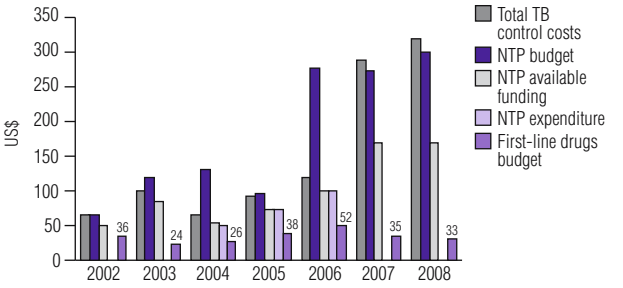
Total TB control costs by line item[4]

NTP accounts for the largest share of total TB control costs



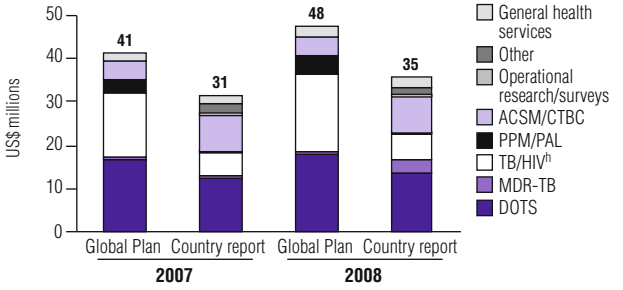
Per patient costs, budgets and expenditures[5]

Budget per patient much higher since 2006 and available funding per patient much higher in 2007 and 2008 compared with previous years



Comparison of country report and Global Plan:[g] total TB control costs, 2007–2008

ACSM country plan ahead of Global Plan; TB/HIV activities implemented at scale of Global Plan but some of these costs not part of NTP budget, which explains lower amounts for TB/HIV in the country report



NTP budget and funding gap by Stop TB Strategy component

	2007		2008	
(US$ millions)	BUDGET	GAP	BUDGET	GAP
DOTS expansion and enhancement	13	4.0	14	4.5
TB/HIV, MDR-TB and other challenges	5.9	-1.5	9.1	1.7
Health system strengthening	0	0	0	0
Engage all care providers	0.3	0.01	0.3	0.01
People with TB, and communities	8.2	6.9	8.6	7.3
Research	0.4	0.3	0.1	0.02
Other	1.9	1.2	1.8	1.0

Financial indicators for TB

Government contribution to NTP budget (including loans)	4.3%	4.7%
Government contribution to total cost TB control (including loans)	10%	10%
NTP budget funded	63%	56%
Per capita health financial indicators (US$)		
NTP budget per capita	0.8	0.9
Total costs for TB control per capita	0.9	1.0
Funding gap per capita	0.3	0.4
Government health expenditure per capita (2004)	8.6	
Total health expenditure per capita (2004)	20	

SOURCES, METHODS AND ABBREVIATIONS

[a–h] Please see footnotes page 169.

1 Incidence, prevalence and mortality estimates include patients infected with HIV. Estimates revised based on assessment of ss+ and ss– notifications and an assumption of improved case detection since 2000 following stabilization of HIV prevalence and expansion of NTP.

2 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 133/100 000 pop and mortality 29/100 000 pop/yr.

3 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.

4 Total TB control costs for 2002–2003 are based on available funding, whereas those for 2004–2006 are based on expenditure, and those for 2007–2008 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.

5 NTP available funding for 2004–2006 is based on the amount of funding actually received, using retrospective data; available funding for 2002–2003 and 2007–2008 is based on prospectively reported budget data, and estimated as the total budget minus any reported funding gap.

– 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

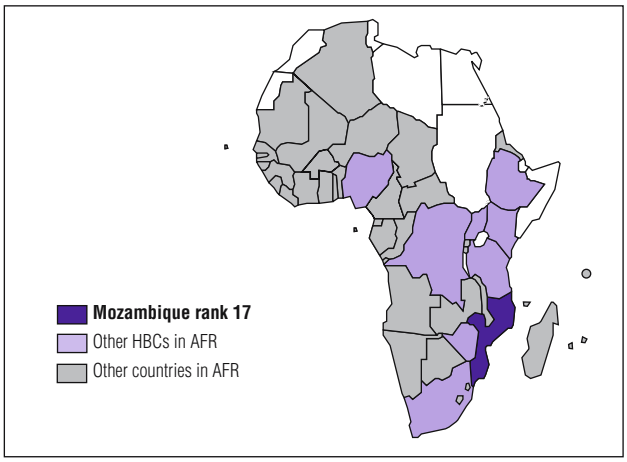
The national tuberculosis control programme is a priority programme of the Mozambique Ministry of Health. However, shortage of skilled human resources, and slow disbursement and absorption of funds continue to be obstacles to the progress of the NTP in Mozambique. While all districts are implementing DOTS, access to primary health care is poor, which may explain the low case detection rate, and high death rate among patients on treatment. Nonetheless, collaborative TB/HIV activities are now in place, and management of MDR-TB is being introduced, following WHO recommendations.

SURVEILLANCE AND EPIDEMIOLOGY, 2006

Population (thousands)[a]	20 971
Estimates of epidemiological burden[1]	
Incidence (all cases/100 000 pop/yr)	443
Trend in incidence rate (%/yr, 2005–2006)[2]	**-1.4**
Incidence (ss+/100 000 pop/yr)	186
Prevalence (all cases/100 000 pop)[2]	**624**
Mortality (deaths/100 000 pop/yr)[2]	**117**
Of new TB cases, % HIV+[b]	*30*
Of new TB cases, % MDR-TB (1999)[c]	3.5
Of previously treated TB cases, % MDR-TB (1999)[c]	3.3
Surveillance and DOTS implementation	
Notification rate (new and relapse/100 000 pop/yr)	168
Notification rate (new ss+/100 000 pop/yr)	87
DOTS case detection rate (new ss+, %)	**47**
DOTS treatment success (new ss+, 2005 cohort, %)	**79**
Of new pulmonary cases notified under DOTS, % ss+	63
Of new cases notified under DOTS, % extrapulmonary	15
Of new ss+ cases notified under DOTS, % in women	–
Of sub-national reports expected, % received at next reporting level[d]	100
Laboratory services[3]	
Number of laboratories performing smear microscopy	250
Number of laboratories performing culture	1
Number of laboratories performing DST	1
Of laboratories performing smear microscopy, % covered by EQA	4
Management of MDR-TB	
Of new cases notified, % receiving DST at start of treatment	0.2
Of new cases receiving DST at start of treatment, % MDR-TB	100
Of re-treatment cases notified, % receiving DST	8.2
Of re-treatment cases receiving DST, % MDR-TB	33
Collaborative TB/HIV activities	
National policy of counselling and testing TB patients for HIV?	Yes (to all patients)
National surveillance system for HIV-infection in TB patients?	Yes
Of TB patients (new and re-treatment) notified, % tested for HIV	24
Of TB patients tested for HIV, % HIV+	70
Of HIV+ TB patients detected, % receiving CPT	17
Of HIV+ TB patients detected, % receiving ART	46

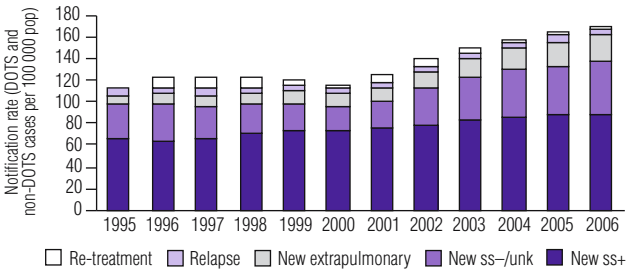
WHO Africa Region (AFR)

Rank based on estimated number of incident cases (all forms) in 2006



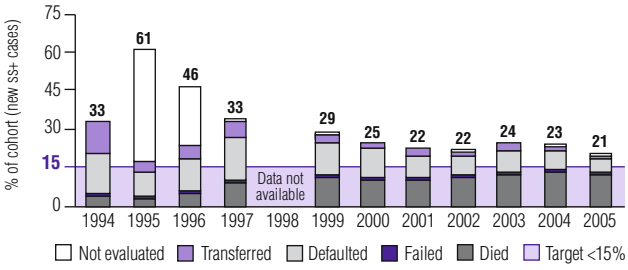
Case notifications

Gradual increase in notifications over past 5 years



Unfavourable treatment outcomes, DOTS

Reported death rate continues to be high, but treatment success has increased since 2004 cohort



DOTS expansion and enhancement	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
DOTS coverage (%)	97	100	84	95	–	100	100	100	100	100	100	100
DOTS notification rate (new and relapse/100 000 pop)	112	112	112	114	–	116	118	134	146	155	162	168
DOTS notification rate (new ss+/100 000 pop)	66	64	66	70	–	73	75	80	82	85	87	87
DOTS case detection rate (all new cases, %)	40	38	35	33	–	28	27	29	31	33	35	36
DOTS case detection rate (new ss+, %)	57	52	50	49	–	45	43	43	43	44	46	47
Case detection rate within DOTS areas (new ss+, %)[e]	59	52	59	52	–	45	43	43	43	44	46	47
DOTS treatment success (new ss+, %)	39	54	67	–	71	75	78	78	76	77	79	–
DOTS re-treatment success (ss+, %)	–	70	64	–	71	71	68	67	68	–	70	–

IMPLEMENTING THE STOP TB STRATEGY[1]

DOTS EXPANSION AND ENHANCEMENT

Political commitment, standardized treatment, and monitoring and evaluation system

Achievements

- Developed national strategy and training materials for introduction of community-based DOTS
- Published new manual on management of paediatric TB
- Produced annual report of NTP activities

Planned activities

- Finalize the National Strategic Plan for TB Control 2008–2012
- Disseminate paediatric TB manual and begin implementation of recommendations, including training of doctors (to be continued in 2008)

Quality-assured bacteriology

Achievements

- Commenced preparation for the DRS
- Conducted refresher laboratory training for 80 laboratory technicians in 4 out of 10 provinces
- Recruited 2 laboratory technicians and 2 biologists

Planned activities

- Start drug resistance survey in February 2007, to be completed by April 2008
- Perform evaluation for renovation of reference laboratories in regional hospitals in Beira and Nampula
- Conduct situation analysis for renovation of NRL in Maputo
- Recruit 2 additional biologists

Drug supply and management system

Achievements

- Established quality control measures for non-GDF first-line anti-TB drugs

Planned activities

- Recruit pharmacist (part time) to support the NTP and to improve drug management
- Train staff in drug management and supervision
- Create technical working group (including WHO, National Drug Store and Regulatory Department of the MoH) to strengthen drug management by establishing buffer stocks at all levels, and revise TB manual to include use of FDCs and of rifampicin in the continuation phase of categories I and III regimens

TB/HIV, MDR-TB AND OTHER CHALLENGES

Collaborative TB/HIV activities

Achievements

- Trained 22 TB supervisors/deputy supervisors in voluntary HIV counselling and testing for all TB patients, in CPT for TB/HIV patients and in referring these patients to public centres for access to ART
- Created a national TB/HIV task force including all TB, TB/HIV, MoH and partners supporting the TB control programme. Monthly meetings of the task force focus on planning, monitoring and evaluation, supervision, training and coordination of all TB/HIV activities. The task force was notably involved in drafting the round 7 grant proposal of the Global Fund and the finalizing the strategic plan
- Developed TB/HIV IEC materials and updated the TB/HIV module for clinicians
- Formulated a matrix to monitor HIV prevalence among TB patients
- Trained 237 TB health workers in all provinces including on HIV counselling and testing

Planned activities

- In coordination with NAP, identify one TB/HIV coordinator for the NAP and one (full-time) for the NTP
- In collaboration with MoH, ensure inclusion of TB in NAP plan
- Expand implementation of regular TB screening and provision of IPT in HIV-positive people, to be expanded to all provinces in 2008
- Revise and update TB/HIV monitoring and evaluation forms

Diagnosis and treatment of multidrug-resistant TB

Achievements

- Appointed a national MDR-TB focal point and 22 MDR-TB provincial focal points, following two training courses in management of MDR-TB
- Developed a national MDR-TB/XDR-TB operational plan
- Undertook two national MDR-TB training courses for 42 clinicians
- Initiated treatment for 70 MDR-TB patients
- Trained 42 clinicians (38 doctors and 4 medical technicians) in the management of MDR-TB patients

Planned activities

- Computerize data for ongoing DRS as well as laboratory data on MDR-TB/XDR-TB
- Conduct DRS and introduce new data collection system
- Continue training for clinicians and other health professionals in programmatic management of MDR-TB/XDR-TB
- Reinforce ongoing infection control measures by identifying more patient isolation wards at provincial level (at least 4 beds per provincial hospital) and distribute N95 respirators to all MDR-TB health facilities
- Apply to GLC for approval of projects planned for 2008–2009
- Train at least 100 health professionals (including doctors and nurses) in management of MDR-TB patients

[1] Unless otherwise specified, achievements are for financial year 2006; planned activities are for financial year 2007.

High-risk groups and special situations

Achievements

- Addressed TB control in situations of political unrest and following natural disasters

Planned activities

- Disseminate new manual and train staff in management of paediatric TB
- Begin introduction of TB screening in national prison population and among other vulnerable groups

HEALTH SYSTEM STRENGTHENING, INCLUDING HUMAN RESOURCE DEVELOPMENT

Achievements

- Distributed 45 microscopes to districts, to be used by other disease programmes including those for STIs, leprosy, malaria and HIV/AIDS
- Began renovation of the reference laboratory in the Beira provincial hospital; this laboratory serves the province and the central region not only for TB but also for diagnosis of other diseases
- Trained 11 medical coordinators responsible for malaria, HIV, STIs, leprosy and TB at provincial level (within framework designed to integrate services in order to maximize the use of the existing human resources)
- Trained 22 clinicians on infection control in 11 provincial hospitals

Planned activities

- Further integrate training on TB control into general health system
- Purchase new microscopes for use by all programmes (TB, HIV, malaria, leprosy)
- With the support of NGOs, send two biologists for training (microbiology, bacteriology and other laboratory related areas) in Brazil
- Purchase 800 bicycles for use by community volunteers who, in addition to participating in community-based DOTS, work on leprosy, malaria and HIV/AIDS related activities

ENGAGING ALL CARE PROVIDERS

Achievements

- Conducted situation analysis for PPM

Planned activities

- Revise/update agreement on national policy for provision of TB services (diagnostics, treatment, etc.) with the private sector

EMPOWERING PEOPLE WITH TB, AND COMMUNITIES

Advocacy, communication and social mobilization

Achievements

- All districts carried out ACSM activities
- Updated the leaflet on 10 causal factors for TB
- Produced ACSM materials on DOTS and on TB/HIV and distributed these to all levels
- Appointed an assistant (nurse) to support the central unit in ACSM

Planned activities

- Produce a small integrated manual on health education and test it at provincial level in coordination with IEC department
- Make preparations for KAP study to be done in 2008
- Mobilize media (radio and TV) to disseminate information, educate population and raise awareness about TB on World TB Day and other occasions
- Identify IEC indicators and start collecting this information, which will be useful for improving programme performance and also for the KAP study to be done in 2008

Community participation in TB care

Achievements

- Performed a baseline assessment (during supervisory visits) on the existing conditions to reinforce community involvement
- Shared experiences with various NGOs in order to develop national strategy on community activities
- Developed the community-based DOTS strategy, with clear description of roles of volunteers, traditional healers and other stakeholders, and produced a variety of materials including the manual on community-based DOTS for health workers, the TB/HIV manual for community volunteers and the TB/HIV manual for family members of patients and others

Planned activities

- Introduce DOTS in the community followed by "training of trainers" for the 22 TB provincial supervisors/deputy supervisors and for members of NGOs
- Extract lessons learnt from the Manica project on the referral of suspects from traditional healers and expand it to other provinces

Patients' Charter

Achievements

The Patients' Charter was published in 2006 and was therefore not available for use in countries until then.

Planned activities

- None reported

RESEARCH, INCLUDING SPECIAL SURVEYS AND IMPACT MEASUREMENT

Achievements

- None reported

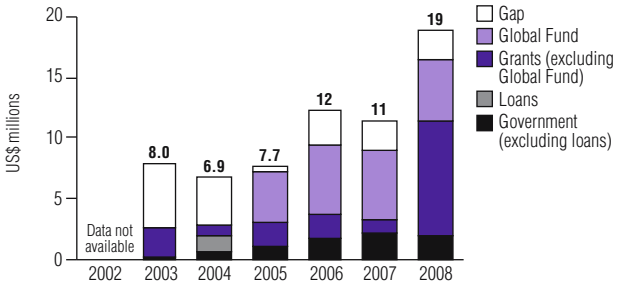
Planned activities

- Carry out national DRS
- Conduct clinical trial on therapeutic efficacy and clinical safety of the nevirapine versus the standard efavirenz-based ART in HIV-positive TB patients
- Perform rapid survey of XDR-TB among confirmed MDR-TB cases in collaboration with WHO in 2008

FINANCING THE STOP TB STRATEGY

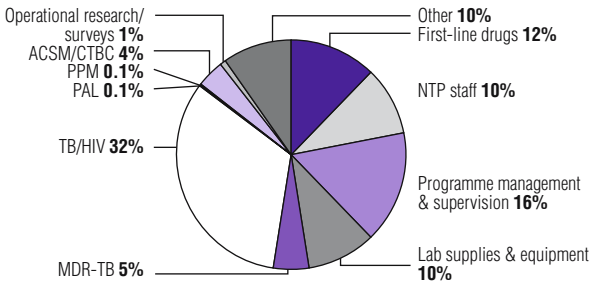
NTP budget by source of funding

NTP has developed plan and budget for 2008–2012 covering all elements of the Stop TB Strategy and that is in line with Global Plan targets; funding needs and funding gaps have been reassessed: budget requirements now higher than in previous years and increased funding from successful application to Global Fund in round 7



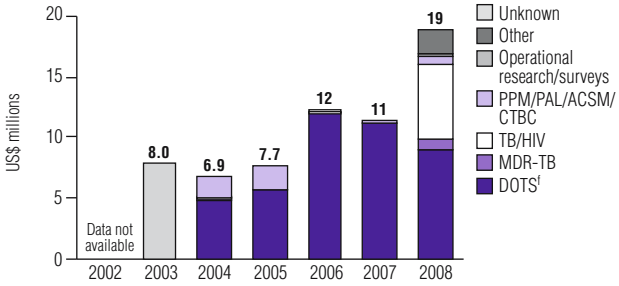
NTP budget by line item, 2008

The largest components of the budget are DOTS (42%) and collaborative TB/HIV activities (32%); the TB/HIV budget includes costs of activities funded via the NAP



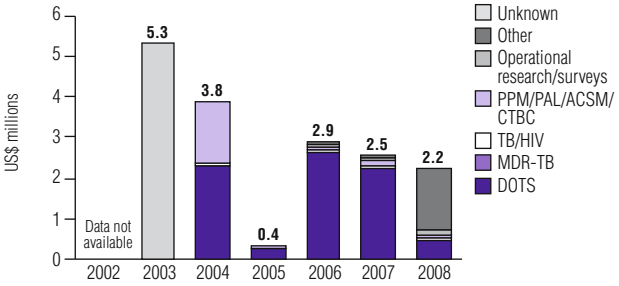
NTP budget by line item

Re-assessment of needs in line with the Stop TB Strategy in 2008; "Other" includes patient support and international technical assistance



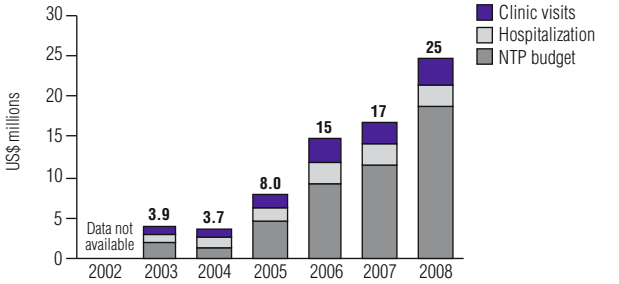
NTP funding gap by line item

Funding gap within DOTS mainly for routine programme management and supervision activities in 2007; funding gap within "Other" in 2008 is mainly for patient support



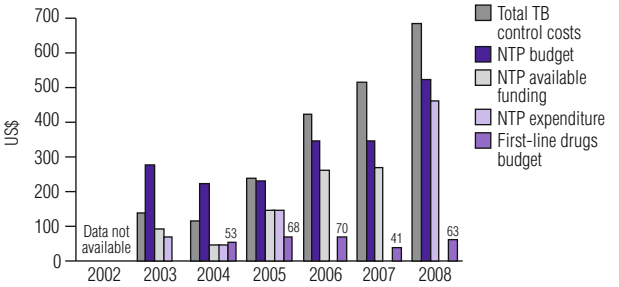
Total TB control costs by line item[4]

Hospitalization costs 2006–2008 based on revised estimate of 2258 dedicated TB beds in the country; outpatient costs based on 90 visits to a health facility per new TB patient during treatment



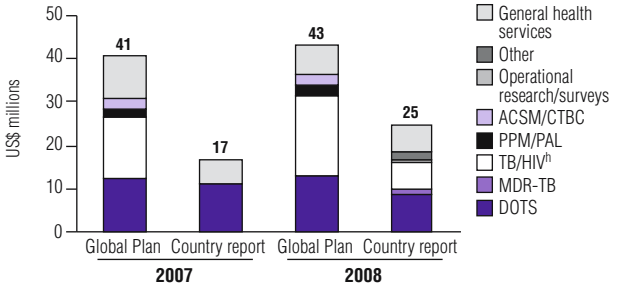
Per patient costs, budgets and expenditures[5]

Increased budget and cost per patient as TB control activities are broadened in line with the Stop TB Strategy



Comparison of country report and Global Plan:[g] total TB control costs, 2007–2008

DOTS component similar in country report and Global Plan; country plan for TB/HIV component in 2008 reflects activities to be conducted by NAP as well as the NTP



NTP budget and funding gap by Stop TB Strategy component

	2007		2008	
(US$ millions)	BUDGET	GAP	BUDGET	GAP
DOTS expansion and enhancement	11	2.3	8.9	0.5
TB/HIV, MDR-TB and other challenges	0.1	0.1	7.1	0.1
Health system strengthening	0.02	0.02	0.02	0.02
Engage all care providers	0.02	0.02	0.02	0.01
People with TB, and communities	0.1	0.1	0.7	0.02
Research	0.1	0.1	0.2	0.1
Other	0.1	0.1	1.8	1.5

Financial indicators for TB

Government contribution to NTP budget (including loans)	20%	11%
Government contribution to total cost of TB control (including loans)	45%	32%
NTP budget funded	78%	88%
Per capita health financial indicators (US$)		
NTP budget per capita	0.6	0.9
Total costs for TB control per capita	0.8	1.2
Funding gap per capita	0.1	0.1
Government health expenditure per capita (2004)	8.4	
Total health expenditure per capita (2004)	12	

SOURCES, METHODS AND ABBREVIATIONS

[a–h] Please see footnotes page 169.

1 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.

2 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 298/100 000 pop and mortality 36/100 000 pop/yr.

3 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.

4 Total TB control costs for 2003–2005 are based on expenditure, whereas those for 2006 are based on available funding, and those for 2007–2008 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.

5 NTP available funding for 2004–2005 is based on the amount of funding actually received, using retrospective data; available funding for 2002–2003 and 2006–2008 is based on prospectively reported budget data, and estimated as the total budget minus any reported funding gap.

– 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

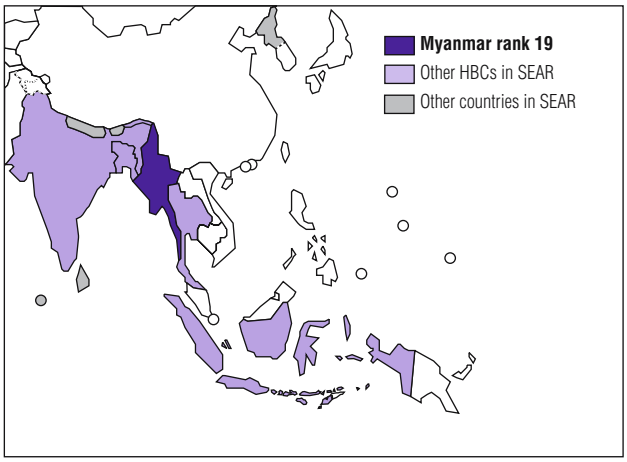
Each year since 1999 the NTP of Myanmar has detected more TB cases, with improving treatment success rates since 2003. High notification rates, coupled with preliminary results of a disease prevalence survey in Yangon, suggest that the burden of TB is probably higher than currently estimated. Slightly less than half of the 2006 TB control budget was funded, and funding gaps for 2007 and 2008 are larger still. The absence of a secure supply of first-line drugs poses a serious threat to the work of the NTP, the possible consequences of which include increasing drug resistance and loss of public confidence in TB control services.

SURVEILLANCE AND EPIDEMIOLOGY, 2006

Population (thousands)[a]	48 379
Estimates of epidemiological burden[1]	
Incidence (all cases/100 000 pop/yr)	171
Trend in incidence rate (%/yr, 2005–2006)[2]	**0.0**
Incidence (ss+/100 000 pop/yr)	76
Prevalence (all cases/100 000 pop)[2]	**169**
Mortality (deaths/100 000 pop/yr)[2]	**13**
Of new TB cases, % HIV+[b]	*2.6*
Of new TB cases, % MDR-TB (2003)[c]	4.0
Of previously treated TB cases, % MDR-TB (2003)[c]	16
Surveillance and DOTS implementation	
Notification rate (new and relapse/100 000 pop/yr)	253
Notification rate (new ss+/100 000 pop/yr)	83
DOTS case detection rate (new ss+, %)	**109**
DOTS treatment success (new ss+, 2005 cohort, %)	**85**
Of new pulmonary cases notified under DOTS, % ss+	48
Of new cases notified under DOTS, % extrapulmonary	29
Of new ss+ cases notified under DOTS, % in women	34
Of sub-national reports expected, % received at next reporting level[d]	94
Laboratory services[3]	
Number of laboratories performing smear microscopy	391
Number of laboratories performing culture	2
Number of laboratories performing DST	1
Of laboratories performing smear microscopy, % covered by EQA	13
Management of MDR-TB	
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	9.4
Of re-treatment cases receiving DST, % MDR-TB	77
Collaborative TB/HIV activities	
National policy of counselling and testing TB patients for HIV?	Yes (to all patients)
National surveillance system for HIV-infection in TB patients?	Yes
Of TB patients (new and re-treatment) notified, % tested for HIV	2
Of TB patients tested for HIV, % HIV+	24
Of HIV+ TB patients detected, % receiving CPT	76
Of HIV+ TB patients detected, % receiving ART	44

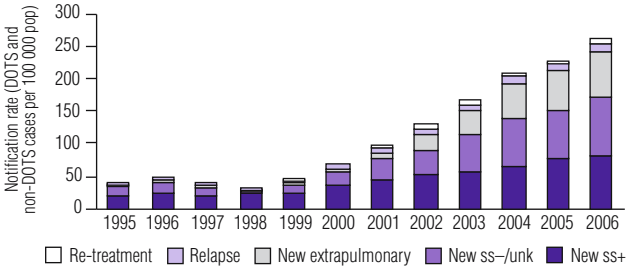
WHO South-East Asia Region (SEAR)

Rank based on estimated number of incident cases (all forms) in 2006



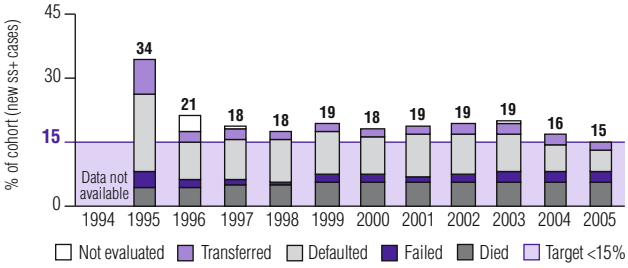
Case notifications

Notifications continue to increase, suggesting that incidence may be higher than currently estimated



Unfavourable treatment outcomes, DOTS

Treatment success target achieved for first time with 2005 cohort



DOTS expansion and enhancement	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
DOTS coverage (%)	–	59	60	60	64	77	84	88	95	95	95	95
DOTS notification rate (new and relapse/100 000 pop)	–	46	36	33	43	67	89	122	161	203	223	253
DOTS notification rate (new ss+/100 000 pop)	–	20	20	22	25	38	45	52	58	66	76	83
DOTS case detection rate (all new cases, %)	–	24	19	17	23	36	48	67	88	113	125	142
DOTS case detection rate (new ss+, %)	–	26	27	29	33	49	58	68	76	86	100	109
Case detection rate within DOTS areas (new ss+, %)[e]	–	45	44	49	52	64	70	77	80	91	105	115
DOTS treatment success (new ss+, %)	66	79	82	82	81	82	81	81	81	84	85	–
DOTS re-treatment success (ss+, %)	64	78	74	76	71	74	74	75	70	74	73	–

IMPLEMENTING THE STOP TB STRATEGY[1]

DOTS EXPANSION AND ENHANCEMENT

Political commitment, standardized treatment, and monitoring and evaluation system

Achievements

- Published national guidelines on management of paediatric TB and clinical pocket manual on paediatric TB
- Intensified supervision, monitoring and evaluation at all levels through increased funding for these activities
- Conducted quarterly evaluation meetings at township level
- Hosted 2-yearly external review in January 2007
- Produced 14th annual report of activities of NTP

Planned activities

- Conduct training course on management of TB for health facility staff in all states/divisions
- Continue supervision, monitoring and quarterly evaluation meetings with support from Three Diseases Fund

Quality-assured bacteriology

Achievements

- Drafted guidelines on EQA for AFB microscopy
- Established sputum collection points in 10 sites in Ayeyarwaddy, Mandalay, Sagaing and Yangon divisions

Planned activities

- Expand culture and DST at Mandalay laboratory
- Gradually expand EQA system from Yangon and Mandalay divisions to other states/divisions
- Decentralize sputum microscopy centres to station hospital units, and arrange sputum collection points for rural health centres, particularly in townships with where case-finding is low

Drug supply and management system

Achievements

- Published SOPs for management of drugs and supplies
- Trained health-care staff on pre-packed patient kits; introduced these kits in 38 townships
- Received GDF approval of 3-year grant for first-line anti-TB drugs, including paediatric formulations

Planned activities

- Proactively mobilize resources to ensure first-line anti-TB drug supply beyond GDF support in 2008
- Develop monitoring system on drug management at all levels to ensure uninterrupted supply and stocks
- Train all health staff on SOPs for management of drugs and supplies
- Improve infrastructure and civil works for better storage of drugs
- NTP to cover all costs associated with distribution of drugs and consumables to townships, including transport of staff where necessary

TB/HIV, MDR-TB AND OTHER CHALLENGES

Collaborative TB/HIV activities

Achievements

- Implemented collaborative TV/HIV activities in 7 townships in 2005 and 2006; 11 in 2007
- Introduced provider-initiated HIV counselling and testing in 3 TB clinics
- Included TB patients as subgroup for HIV sentinel surveillance by NAP; 150 TB patients tested from each of 10 sites

Planned activities

- Develop national guidelines and training materials on TB/HIV
- Pilot test provision of IPT to HIV-positive people
- Scale up collaborative TB/HIV activities, beginning with counselling and testing, and CPT at TB clinics, followed by ART
- Strengthen joint monitoring, supervision and evaluation of collaborative TB/HIV activities

Diagnosis and treatment of multidrug-resistant TB

Achievements

- Successfully applied to GLC for second-line anti-TB drugs for start up of MDR-TB programme (NTP/MSF-Holland)
- Received approval for national framework for management of drug-resistant TB

Planned activities

- Study patterns of susceptibility to first- and second-line anti-TB drugs in Category II failures in order to determine most appropriate regimen for treatment of MDR-TB
- Develop MDR-TB training materials and implement training in Yangon and Mandalay divisions
- Launch GLC-approved MDR-TB management programmes in Yangon and Mandalay divisions; 75 patients to be treated in 2008

High-risk groups and special situations

Achievements

- Conducted TB prevention and control activities among cross-border populations in 16 townships along the Myanmar–Thai border; activities included case-finding, DOT, cross-referral, exchange of information and health education activities
- Provided, through township TB centres, TB diagnosis and treatment for prisoners
- Provided food to patients receiving community-based home care (severely ill patients)

Planned activities

- Conduct KAP survey and DRS in border townships, in coordination with the TB cluster in Thailand

[1] Unless otherwise specified, achievements are for financial year 2006; planned activities are for financial year 2007.

HEALTH SYSTEM STRENGTHENING, INCLUDING HUMAN RESOURCE DEVELOPMENT

Achievements

- Involved broad range of partners from health and other sectors in planning for TB control
- In townships where no NTP laboratory exists, trained laboratory technicians in general laboratories of township hospitals to perform smear microscopy
- Distributed binocular microscopes to townships
- Trained basic health staff on TB control management
- Equipped X-ray facilities in 13 state/divisional TB centres
- Conducted training-of-trainers courses on TB management: "Management of TB at district level" and "Management of TB for health facility staff"
- Provided training-of-trainers courses for central, state and divisional staff on data management and analysis
- Drafted training manuals for diagnosis and treatment of TB, collaborative TB/HIV activities and management of MDR-TB
- Began partial implementation of PAL in 4 teaching hospitals in Yangon

Planned activities

- Use 3 Disease Fund to address general health system weaknesses. Activities to include: capital investments to strengthen infrastructure, communication and transportation; establishment of mobile teams for outreach in remote areas; planning, budgeting and management training for township medical officers to improve management of public health interventions across TB, HIV, malaria and other programmes; strengthening Myanmar Medical Association supervision capacity at central level and establishment of divisional-level public health coordinator from Myanmar Medical Association
- Decentralize TB control activities from townships to station hospital units and rural health centres
- Establish health centre in Kayah State
- Continue training of basic health-care staff

ENGAGING ALL CARE PROVIDERS

Achievements

- Scaled up PPM activities to 81 townships
- Established Central Coordinating Committee for PPM with all partners
- Drafted PPM guidelines and training modules
- Initiated public–public mix with 4 major hospitals in Yangon Division
- Held annual evaluation workshop on public–private and public–public mix initiatives

Planned activities

- Evaluate and scale up public–public mix activities
- Conduct national workshop on ISTC and initiate implementation
- Standardize PPM recording and reporting practices to include case-finding and treatment outcome data from different providers
- Jointly supervise, with Myanmar Medical Association, PPM activities

EMPOWERING PEOPLE WITH TB, AND COMMUNITIES

Advocacy, communication and social mobilization

Achievements

- Carried out ACSM activities in 176 out of 325 townships
- Organized World TB Day commemoration activities and health talks at health centres for general public
- Broadcast TB messages using TV spots

Planned activities

- Identify and develop messages and targeted materials
- Develop ACSM strategy and activities

Community participation in TB care

Achievements

- Community members participated in TB care in 311 out of 325 townships
- Developed guide for community supporters (treatment observers)
- Implemented community-based Fidelis project "Reaching the unreached" in hilly regions of Sagaing Division
- Advocated for TB control to local authorities, leading to the organization of over 7000 health education sessions

Planned activities

- Strengthen collaboration with local NGOs
- Scale up advocacy to local authorities, teachers and religious leaders
- Evaluate Fidelis project for replication in other states/divisions with funding from 3DF
- Develop policy on volunteer involvement in TB control
- Encourage TB patients to get involved in TB control
- Form a network of people living with TB

Patients' Charter

Achievements

The Patients' Charter was published in 2006 and was therefore not available for use in countries until then.

Planned activities

- None reported

RESEARCH, INCLUDING SPECIAL SURVEYS AND IMPACT MEASUREMENT

Achievements

- Carried out prevalence of disease survey in Yangon Division and pilot tested survey in Mandalay Division
- Included KAP questionnaires in Yangon and Mandalay TB prevalence surveys
- Conducted 2nd DRS
- Screened factory workers for TB in Yangon, Mandalay and Magway divisions
- Conducted study on involvement of general practitioners in TB control

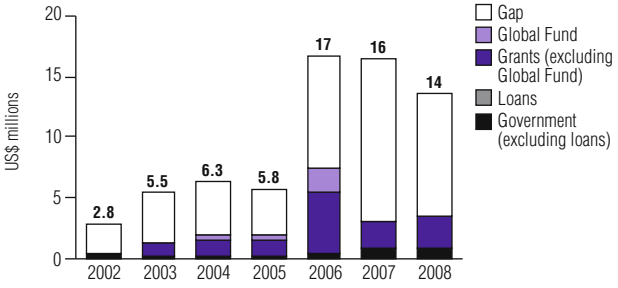
Planned activities

- Conduct national TB prevalence survey
- Carry out national KAP survey
- Conduct DRS at Myanmar–Thailand border area
- Study provision of IPT to HIV-positive people at pilot site for collaborative TB/HIV activities
- Carry out operational research on IPT for children aged under 4 years
- Investigate factors associated with non-compliance among new pulmonary TB patients

FINANCING THE STOP TB STRATEGY

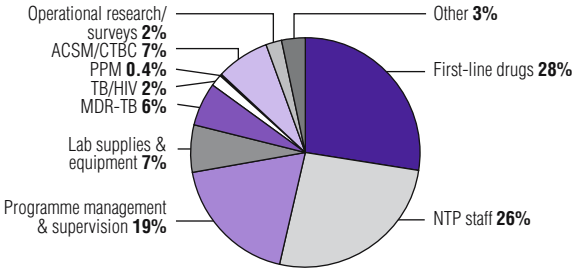
NTP budget by source of funding

Funding situation critical in Myanmar: most of budget requirements not funded



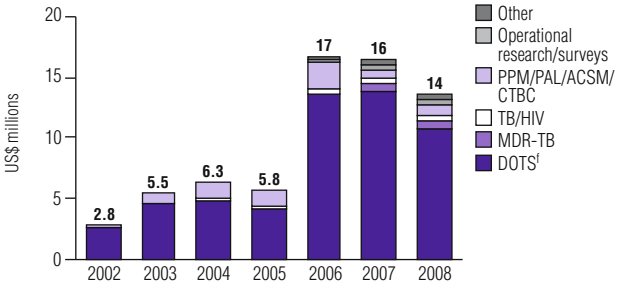
NTP budget by line item, 2008

Of the total NTP budget, 80% is for component 1 of the Stop TB Strategy (DOTS expansion and enhancement)



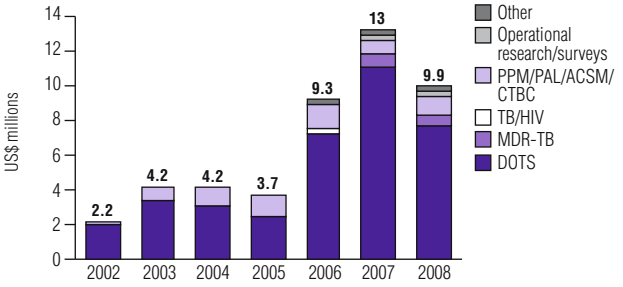
NTP budget by line item

Decreased budget in 2008 mainly because buffer stock of first-line drugs included in 2007 budget; increased budget for MDR-TB



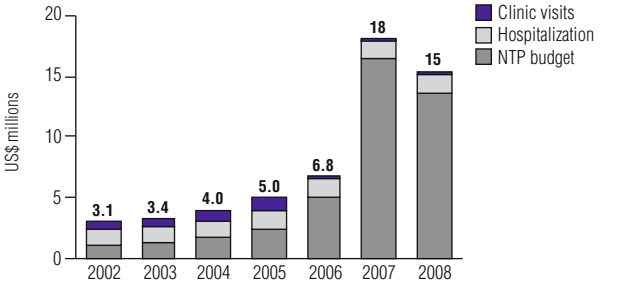
NTP funding gap by line item

70% of first-line drugs budget unfunded in 2007–2008; funding gaps mainly for DOTS and initiatives to increase case detection



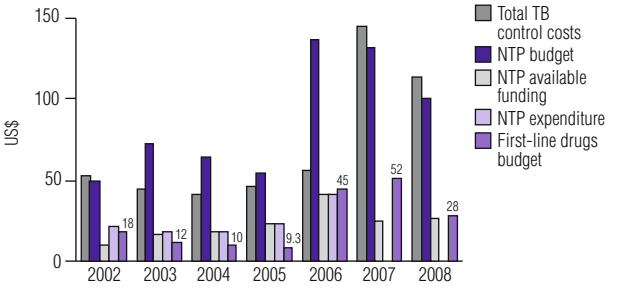
Total TB control costs by line item[4]

Hospitalization costs are for 1500 dedicated TB beds; costs for clinic visits based on 28 outpatient clinic visits during TB treatment for 2002–2005 and 3 visits for 2006–2008, which reflects more reliance on community-based DOT



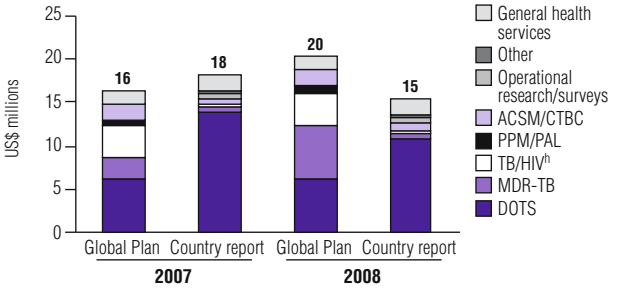
Per patient costs, budgets and expenditures[5]

Increased expenditures per patient since 2002, indicating good absorption capacity; high first-line drugs budget per patient 2006–2007 reflects planned purchase of buffer stock



Comparison of country report and Global Plan:[g] total TB control costs, 2007–2008

DOTS component lower in Global Plan because projections of patients to be treated lower than country forecasts; targets for MDR-TB patients to be treated in Global MDR/XDR Response Plan much higher than scaling-up planned by NTP



NTP budget and funding gap by Stop TB Strategy component

	2007		2008	
(US$ millions)	BUDGET	GAP	BUDGET	GAP
DOTS expansion and enhancement	14	11	11	7.7
TB/HIV, MDR-TB and other challenges	1.0	0.8	1.0	0.6
Health system strengthening	0	0	0	0
Engage all care providers	0.05	0.03	0.05	0.02
People with TB, and communities	0.7	0.7	1.0	1.0
Research	0.4	0.3	0.3	0.3
Other	0.4	0.3	0.4	0.3

Financial indicators for TB

Government contribution to NTP budget (including loans)	5.9%	7.4%
Government contribution to total cost of TB control (including loans)	15%	18%
NTP budget funded	19%	27%
Per capita health financial indicators (US$)		
NTP budget per capita	0.3	0.3
Total costs for TB control per capita	0.4	0.3
Funding gap per capita	0.3	0.2
Government health expenditure per capita (2004)	0.6	
Total health expenditure per capita (2004)	4.5	

SOURCES, METHODS AND ABBREVIATIONS

[a–h] Please see footnotes page 169.

1 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 declining with growing proportion of cases treated.

2 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 411/100 000 pop and mortality 50/100 000 pop/yr.

3 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.

4 Total TB control costs for 2002–2006 are based on expenditure, whereas those for 2007–2008 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.

5 NTP available funding for 2004–2006 is based on the amount of funding actually received, using retrospective data; available funding for 2002–2003 and 2007–2008 is based on prospectively reported budget data, and estimated as the total budget minus any reported funding gap.

– 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

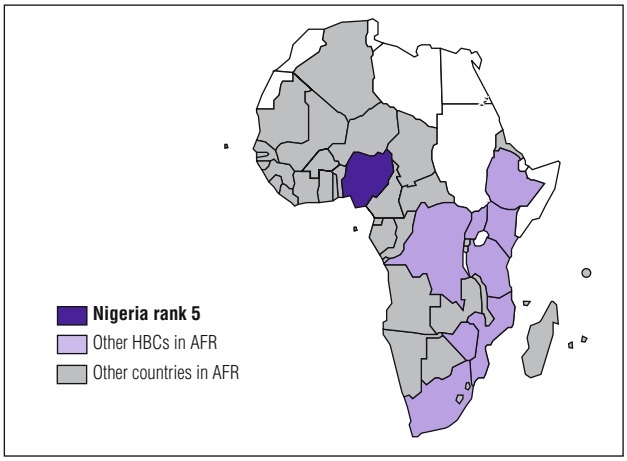
As DOTS has become available to an increasing proportion of the population, the case notification rate in Nigeria has increased. However, the case detection rate, even within DOTS areas, is still well below target. A planned prevalence survey, combined with increasingly well managed routinely collected surveillance data, will help determine more precisely how many people with TB go untreated in Nigeria. Treatment outcomes in Nigeria are typical of countries in Africa: many patients die while on treatment or are reported as having defaulted (the latter may include patients who have actually died). The planned expansion of activities targeted at HIV-positive TB patients is likely to lead to improved treatment outcomes, if the necessary funds can be raised. Large funding gaps exist, and there have been delays in the release of funding.

SURVEILLANCE AND EPIDEMIOLOGY, 2006

Population (thousands)[a]	144 720
Estimates of epidemiological burden[1]	
Incidence (all cases/100 000 pop/yr)	311
Trend in incidence rate (%/yr, 2005–2006)[2]	**-1.3**
Incidence (ss+/100 000 pop/yr)	137
Prevalence (all cases/100 000 pop)[2]	**616**
Mortality (deaths/100 000 pop/yr)[2]	**81**
Of new TB cases, % HIV+[b]	*9.6*
Of new TB cases, % MDR-TB[c]	*1.9*
Of previously treated TB cases, % MDR-TB[c]	*9.3*
Surveillance and DOTS implementation	
Notification rate (new and relapse/100 000 pop/yr)	49
Notification rate (new ss+/100 000 pop/yr)	28
DOTS case detection rate (new ss+, %)	**20**
DOTS treatment success (new ss+, 2005 cohort, %)	**75**
Of new pulmonary cases notified under DOTS, % ss+	61
Of new cases notified under DOTS, % extrapulmonary	4
Of new ss+ cases notified under DOTS, % in women	40
Of sub-national reports expected, % received at next reporting level[d]	100
Laboratory services[3]	
Number of laboratories performing smear microscopy	694
Number of laboratories performing culture	0
Number of laboratories performing DST	0
Of laboratories performing smear microscopy, % covered by EQA	60
Management of MDR-TB	
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	
National policy of counselling and testing TB patients for HIV?	Yes (to all patients)
National surveillance system for HIV-infection in TB patients?	Yes
Of TB patients (new and re-treatment) notified, % tested for HIV	10
Of TB patients tested for HIV, % HIV+	21
Of HIV+ TB patients detected, % receiving CPT	–
Of HIV+ TB patients detected, % receiving ART	–

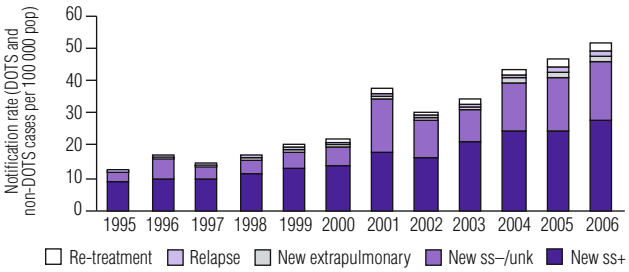
WHO Africa Region (AFR)

Rank based on estimated number of incident cases (all forms) in 2006



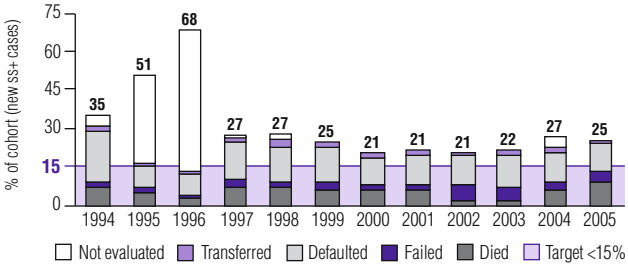
Case notifications

Notifications continue to increase alongside expanding DOTS coverage



Unfavourable treatment outcomes, DOTS

Treatment success rate remains below the target; increase in reported deaths may be result of improved reporting; default rate continues to be high



DOTS expansion and enhancement	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
DOTS coverage (%)	47	30	40	45	45	47	55	55	60	65	65	75
DOTS notification rate (new and relapse/100 000 pop)	12	13	14	17	20	21	23	23	33	41	44	49
DOTS notification rate (new ss+/100 000 pop)	8.7	9.5	9.8	11	13	14	15	15	21	24	25	28
DOTS case detection rate (all new cases, %)	6.5	8.3	6.5	7.1	7.5	7.5	7.8	7.1	10	13	14	15
DOTS case detection rate (new ss+, %)	11	11	10	11	12	12	12	11	15	17	18	20
Case detection rate within DOTS areas (new ss+, %)[e]	22	36	26	24	27	25	21	20	25	27	27	27
DOTS treatment success (new ss+, %)	49	32	73	73	75	79	79	79	78	73	75	–
DOTS re-treatment success (ss+, %)	–	71	–	–	74	71	71	73	–	73	–	–

IMPLEMENTING THE STOP TB STRATEGY[1]

DOTS EXPANSION AND ENHANCEMENT

Political commitment, standardized treatment, and monitoring and evaluation system

Achievements

- Adopted DOTS in 102 additional local government areas (LGAs) in 17 states (2 health facilities per LGA), bringing the total number of DOTS LGAs to 701
- Provided 50 additional motorcycles to states to strengthen supervision and defaulter tracing at LGA level

Planned activities

- Expand DOTS to cover all 774 LGAs (100%) and TB/HIV activities to 50 additional LGAs within the country in 2008

Quality-assured bacteriology

Achievements

- Expanded AFB diagnostic services to 102 additional LGAs
- Identified 2 national and 6 zonal reference laboratories

Planned activities

- Equip 2 NRL and 6 zonal reference laboratories
- NRL to supervise activities of zonal reference laboratories, which in turn will provide EQA of peripheral laboratories
- Supranational laboratory in South Africa to provide EQA for DST in NRL

Drug supply and management system

Achievements

- Computerized central medical store at Oshodi and developed quarterly maintenance system
- Identified 6 zonal drug stores
- Deployed 2 pharmacists and a logistician to NTP from federal MoH

Planned activities

- Equip 6 zonal drug stores

TB/HIV, MDR-TB AND OTHER CHALLENGES

Collaborative TB/HIV activities

Achievements

- Set up functional TB/HIV working groups at national level and in 6 states (Adamawa, Benue, Ebonyi, Rivers, Sokoto and Ogun)
- Trained 72 general health workers (GHWs) from 36 DOTS centres on HIV counselling, 36 microscopy staff on HIV testing and 108 staff (from 6 ART centres, 36 DOTS centres and 6 community support groups) on the implementation of collaborative TB/HIV activities
- Produced national strategic framework for implementation of collaborative TB/HIV activities
- Commenced HIV counselling and testing for TB suspects and patients
- Trained 44 LGA health educators in TB and collaborative TB/HIV activities
- Trained 25 GHWs from ART facilities to diagnose and treat TB in line with NTP guidelines
- Trained 120 GHWs from 30 additional DOTS centres in 6 states to implement collaborative TB/HIV activities

Planned activities

- Expand collaborative TB/HIV activities to 6 additional states and ensure continuous functioning of collaborative activities at national level and in 6 states already implementing them
- Train DOTS providers from additional 36 DOTS centres as HIV counsellors
- Begin offering IPT in selected health facilities

Diagnosis and treatment of multidrug-resistant TB

Achievements

- Established national MDR-TB committee to support MoH in coordinating MDR-TB activities in Nigeria, planning for DRS, finalizing and distributing guidelines for management of MDR-TB, and establishing national and zonal reference laboratories
- Developed draft national guidelines for management of MDR-TB
- Identified 2 national and 6 zonal reference laboratories

Planned activities

- Finalize and distribute national guidelines for management of MDR-TB

High-risk groups and special situations

Achievements

- Introduced DOTS in 26 military and 7 prisons hospitals; trained 116 health-care staff in these hospitals
- Established DOTS centre within refugee camp in Oru, Ogun State

Planned activities

- Train 90 GHWs from prisons service and armed forces to provide DOTS services

[1] Unless otherwise specified, achievements are for financial year 2006; planned activities are for financial year 2007.

HEALTH SYSTEM STRENGTHENING, INCLUDING HUMAN RESOURCE DEVELOPMENT

Achievements

- Reviewed curricula of nursing schools, health technology schools and medical colleges to include current TB control strategies
- Planning for TB control involved sector-wide and inter-sectoral collaboration

Planned activities

- Renovate and computerize central medical store
- Equip 38 computers with accessories to strengthen monitoring and evaluation and health information management system at state level

ENGAGING ALL CARE PROVIDERS

Achievements

- Implemented formal PPM activities in 54 of 774 LGAs
- Completed situation analyses and advocacy visits on PPM in 6 states
- Developed national guidelines on PPM activities
- Trained private-for-profit providers in 6 states
- Trained 578 GHWs from 202 private health-care facilities, including mission hospitals, in diagnosis and treatment of TB in line with NTP guidelines

Planned activities

- Expand PPM activities to 15 private health-care facilities per state in 12 states
- Train staff from private for-profit health providers on DOTS implementation
- Promote use of ISTC among private-for-profit health-care providers in TB control
- Set up national PPM steering committee

EMPOWERING PEOPLE WITH TB, AND COMMUNITIES

Advocacy, communication and social mobilization

Achievements

- Implemented ACSM strategy at state and national levels
- Aired jingles on TB control on radio and television at national and state levels
- Developed advocacy kits on TB/HIV
- Organized advocacy visits to policy-makers at state and national levels
- Celebrated World TB Day
- Established functional advocacy committees at state and LGA levels
- Engaged 50 civil society organizations in social mobilization
- Trained 25 journalists on TB/HIV reporting
- Provided sensitization and orientation training on TB and TB/HIV for 2403 community and religious leaders and 2113 youth leaders

Planned activities

- Broadcast TB and TB/HIV messages and documentaries on TV and radio
- Organize community mobilization activities at LGA level

Community participation in TB care

Achievements

- Carried out situation analysis and advocacy visits on community participation in TB care in 6 states (Adamawa, Benue, Delta, Ebonyi, Kebbi and Ogun)
- Identified 24 communities in 12 LGAs for implementation of community-based TB care
- Trained members of 6 HIV community support groups from 6 states (Adamawa, Benue, Ebonyi, Ogun, Rivers and Sokoto) in referral and treatment support for HIV-positive TB patients
- Developed national guidelines for community participation in TB care
- Held national consensus meetings on community involvement in TB care

Planned activities

- Involve treatment supporters and community volunteers in 15 states in providing treatment support, identification of suspects, community education and social mobilization
- Develop national training curriculum for community volunteers and treatment supporters

Patients' Charter

Achievements

The Patients' Charter was published in 2006 and was therefore not available for use in countries until then.

Planned activities

- Adopt Patients' Charter, with input from all stakeholders

RESEARCH, INCLUDING SPECIAL SURVEYS AND IMPACT MEASUREMENT

Achievements

- Drafted protocol for national prevalence of disease survey
- Drafted protocol for survey of prevalence of HIV among TB patients for use during 2008 national survey among ANC attendees and high-risk groups

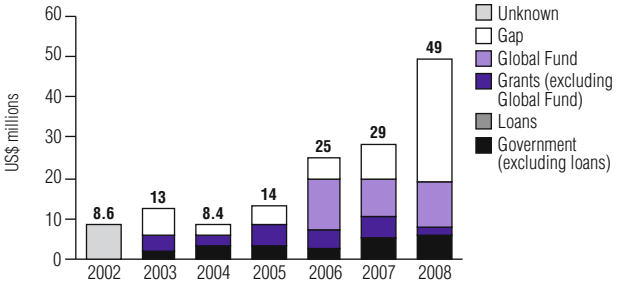
Planned activities

- Conduct national DRS
- Carry out national infection survey and prevalence of disease survey
- Conduct operational research in 5 states on programme-related issues, including health-seeking behaviour of people with TB

FINANCING THE STOP TB STRATEGY

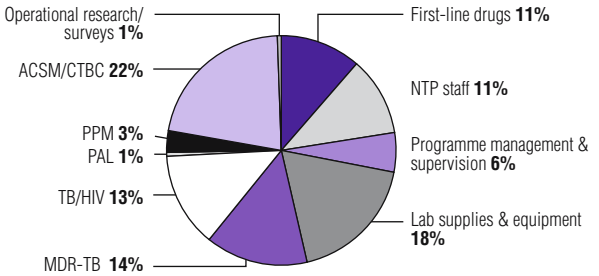
NTP budget by source of funding

Substantial increase in budget requirement for 2008 compared with previous years, with large funding gap



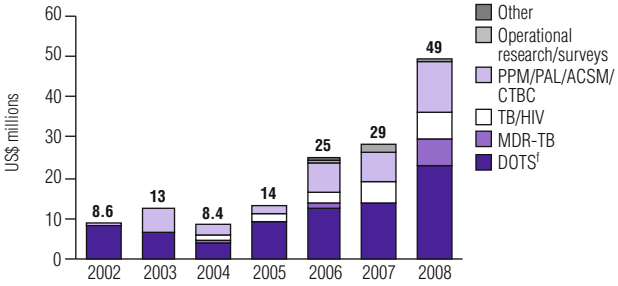
NTP budget by line item, 2008

The largest components of the budget are DOTS (46%) and ACSM/CTBC (22%)



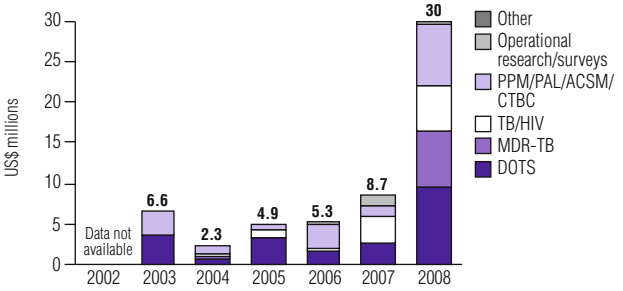
NTP budget by line item

Increased budget for DOTS mainly for laboratory supplies and equipment, reflecting planned DOTS expansion; large investments for TB/HIV and ACSM from 2006 onwards, and for MDR-TB in 2008



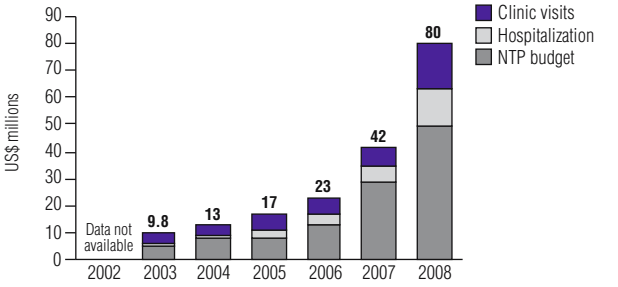
NTP funding gap by line item

Big increase in funding gap for 2008 compared with previous years; funding gap within DOTS component mainly for laboratory supplies and equipment



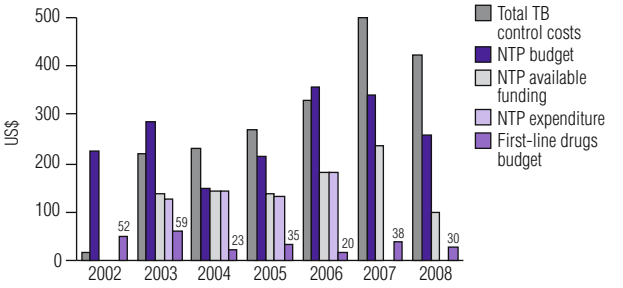
Total TB control costs by line item[4]

Hospitalization costs assume 20% of new ss+ patients and 30% of new ss–/ extrapulmonary patients are hospitalized for an average of 56 days (2005–2008); larger costs in 2008 due to large increase in expected number of patients to be treated



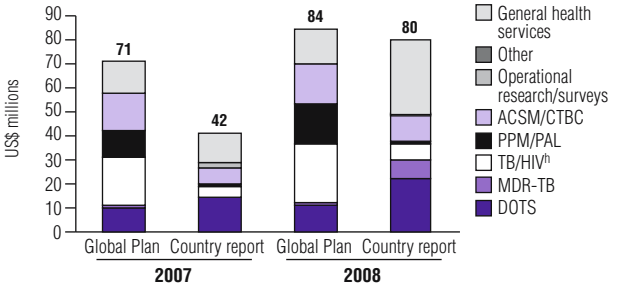
Per patient costs, budgets and expenditures[5]

Increased expenditures per patient; available funding similar to expenditures reflecting good absorption capacity



Comparison of country report and Global Plan:[g] total TB control costs, 2007–2008

Budget for DOTS component higher in country plan compared with Global Plan, because of higher expected number of patients to be treated; targets for MDR-TB patients to be treated in Global MDR/XDR Response Plan much higher than scaling up planned by NTP



NTP budget and funding gap by Stop TB Strategy component

	2007		2008	
(US$ millions)	BUDGET	GAP	BUDGET	GAP
DOTS expansion and enhancement	14	2.6	23	9.5
TB/HIV, MDR-TB and other challenges	4.6	3.2	13.6	12.4
Health system strengthening	0.2	0.2	0.3	0.3
Engage all care providers	1.6	0.9	1.4	0.7
People with TB, and communities	6.0	0.5	11	6.5
Research	2.0	1.3	0.3	0.3
Other	0	0	0	0

Financial indicators for TB

Government contribution to NTP budget (including loans)	20%	12%
Government contribution to total cost of TB control (including loans)	45%	46%
NTP budget funded	69%	39%
Per capita health financial indicators (US$)		
NTP budget per capita	0.2	0.4
Total costs for TB control per capita	0.3	0.6
Funding gap per capita	0.1	0.2
Government health expenditure per capita (2004)	7.0	
Total health expenditure per capita (2004)	23	

SOURCES, METHODS AND ABBREVIATIONS

[a–h] Please see footnotes page 169.

1 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.

2 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 279/100 000 pop and mortality 32/100 000 pop/yr.

3 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.

4 Total TB control costs for 2003–2006 are based on expenditure, whereas those for 2007–2008 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.

5 NTP available funding for 2004–2006 is based on the amount of funding actually received, using retrospective data; available funding for 2003 and 2007–2008 is based on prospectively reported budget data, and estimated as the total budget minus any reported funding gap.

– 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.

COUNTRY PROFILE

Pakistan

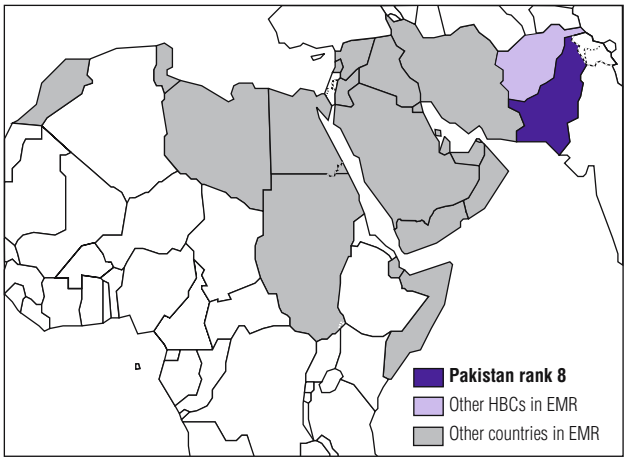
Case notifications have continued to increase in Pakistan, where full DOTS coverage was reached in 2005. It is likely that initiatives to involve private practitioners, along with the use of community volunteers to identify and refer TB suspects, and increased efforts to inform the general public about TB, have all contributed to this improvement in case-finding. The proportion of patients defaulting has decreased steadily over the past 8 years, bringing the treatment success rate close to the target of 85%. The number of districts where laboratories are subject to external quality did not increase from 2005 to 2006, but plans are under way to increase coverage in 2007. In Pakistan, as in several other high-burden countries, lack of technical expertise in MDR-TB and TB/HIV is identified as one of the challenges in broadening the activities of the NTP beyond basic DOTS.

SURVEILLANCE AND EPIDEMIOLOGY, 2006

Population (thousands)[a]	160 943
Estimates of epidemiological burden[1]	
Incidence (all cases/100 000 pop/yr)	181
Trend in incidence rate (%/yr, 2005–2006)[2]	0.0
Incidence (ss+/100 000 pop/yr)	82
Prevalence (all cases/100 000 pop)[2]	**263**
Mortality (deaths/100 000 pop/yr)[2]	**34**
Of new TB cases, % HIV+[b]	*0.3*
Of new TB cases, % MDR-TB[c]	*3.4*
Of previously treated TB cases, % MDR-TB[c]	*36*
Surveillance and DOTS implementation	
Notification rate (new and relapse/100 000 pop/yr)	110
Notification rate (new ss+/100 000 pop/yr)	41
DOTS case detection rate (new ss+, %)	**50**
DOTS treatment success (new ss+, 2005 cohort, %)	**83**
Of new pulmonary cases notified under DOTS, % ss+	44
Of new cases notified under DOTS, % extrapulmonary	15
Of new ss+ cases notified under DOTS, % in women	48
Of sub-national reports expected, % received at next reporting level[d]	100
Laboratory services[3]	
Number of laboratories performing smear microscopy	982
Number of laboratories performing culture	3
Number of laboratories performing DST	1
Of laboratories performing smear microscopy, % covered by EQA	32
Management of MDR-TB	
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	
National policy of counselling and testing TB patients for HIV?	No policy
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	–

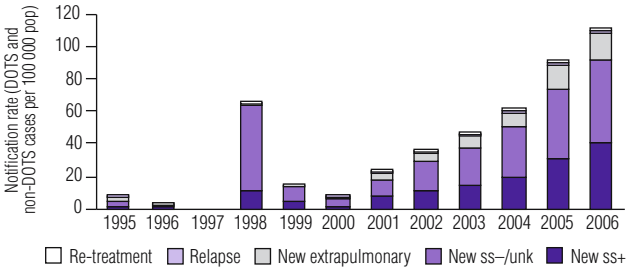
WHO Eastern Mediterranean Region (EMR)

Rank based on estimated number of incident cases (all forms) in 2006



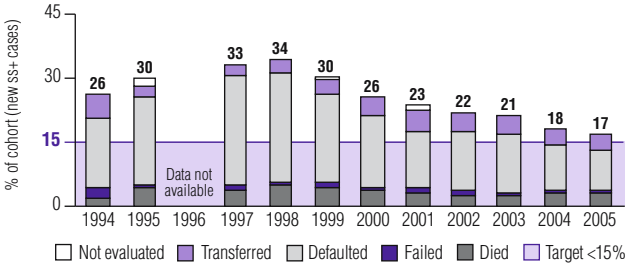
Case notifications

Notifications continue to increase even after reaching 100% DOTS coverage in 2005



Unfavourable treatment outcomes, DOTS

Treatment success remains below global target largely because of default rate that is still nearly 10%, though declining



DOTS expansion and enhancement	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
DOTS coverage (%)	2.0	8.0	–	8.0	8.0	9.0	24	44	66	79	100	100
DOTS notification rate (new and relapse/100 000 pop)	2.8	3.3	–	6.9	3.3	7.7	12	32	46	61	90	110
DOTS notification rate (new ss+/100 000 pop)	0.8	1.4	–	3.0	1.6	2.3	4.3	10	14	20	31	41
DOTS case detection rate (all new cases, %)	1.5	1.8	–	3.6	1.7	4.1	6.3	17	25	33	49	59
DOTS case detection rate (new ss+, %)	1.0	1.7	–	3.7	2.0	2.8	5.2	13	17	25	38	50
Case detection rate within DOTS areas (new ss+, %)[e]	51	22	–	46	25	31	22	29	26	32	38	50
DOTS treatment success (new ss+, %)	70	–	67	66	70	75	77	78	79	82	83	–
DOTS re-treatment success (ss+, %)	70	–	57	92	75	54	–	76	65	78	76	–

IMPLEMENTING THE STOP TB STRATEGY[1]

DOTS EXPANSION AND ENHANCEMENT

Political commitment, standardized treatment, and monitoring and evaluation system

Achievements

- Strengthened monitoring and supervision system through quarterly surveillance meetings and appointment of national programme officers
- Trained staff in data management and analysis
- Initiated web-based reporting for laboratories, including EQA data (district-level data for 40 districts entered on-line at provincial reference laboratories)
- Published annual report of NTP activities
- Analysed subnational data

Planned activities

- Revise national guidelines to bring them in line with the Stop TB Strategy
- Continue strengthening managerial capacities of staff at provincial and district levels
- Strengthen collaboration and coordination capacities with partners involved in TB control
- Closely monitor implementation of action plans of federal and provincial governments, WHO/JRM workplan and Global Fund round 6 activities workplan
- Develop technical capacities at provincial level to ensure appropriate and relevant analysis of routinely collected data

Quality-assured bacteriology

Achievements

- Implemented EQA in 40 out of 134 districts, covering 318 diagnostic centres and a population of 48 million people
- Established intermediate-level laboratories in above-mentioned 40 districts
- Initiated web-based reporting for laboratories, including EQA data (district-level data for 40 districts entered on-line at provincial reference laboratories)

Planned activities

- Expand EQA sputum smear microscopy to an additional 40 districts
- Strengthen and build technical capacity of reference laboratories for standardized culture and DST

Drug supply and management system

Achievements

- Carried out drug management study in selected districts of Punjab and North-West Frontier Province
- Introduced patient-wise boxes in one district of Punjab
- Held coordination meeting on development of national guidelines for drug management

Planned activities

- Prepare procurement plan for anti-TB drugs
- Develop national policy and national guidelines for drug management
- Train provincial TB control programme managers, district TB coordinators, provincial staff responsible for drug management, and storekeepers at district and provincial levels in drug management in line with national guidelines

TB/HIV, MDR-TB AND OTHER CHALLENGES

Collaborative TB/HIV activities

Achievements

- None mentioned, but both NTP and NAP had person responsible for collaborative TB/HIV activities

Planned activities

- Launch activities outlined in Global Fund round 6 grant
- Establish steering committee for collaborative TB/HIV activities
- Develop national guidelines on collaborative TB/HIV activities and conduct training on their implementation
- Establish sentinel surveillance for HIV infection among TB patients
- Begin implementation of collaborative TB/HIV activities

Diagnosis and treatment of multidrug-resistant TB

Achievements

- Established 3 laboratories with capacity for culture and DST
- Provided culture and DST services to patients failing Category II treatment

Planned activities

- Establish national steering committee for DST
- Develop guidelines for management of drug-resistant TB
- Develop guidelines for culture and DST
- Establish routine monitoring system for chronic TB cases and analyse data collected through this system
- Implement management of MDR-TB on pilot scale (200 patients per year)

High-risk groups and special situations

Achievements

- Provided TB control in earthquake-affected areas

Planned activities

- Adapt and develop strategy to make TB control services accessible to populations living in poor neighbourhoods of big cities
- Collaborate and coordinate with NGOs and NTP of Afghanistan in order to provide TB control services to refugees

[1] Unless otherwise specified, achievements are for financial year 2006; planned activities are for financial year 2007.

HEALTH SYSTEM STRENGTHENING, INCLUDING HUMAN RESOURCE DEVELOPMENT

Achievements

- Involved broad range of partners from health and other sectors in planning for TB control
- Rehabilitated health services in earthquake-affected areas
- Scaled up PPM initiatives, creating linkages between private and public health sectors

Planned activities

- Strengthen human resource capacities for more effective implementation of Stop TB strategy
- Strengthen training capacities at provincial and district levels

ENGAGING ALL CARE PROVIDERS

Achievements

- Appointed full-time focal person for PPM activities
- Conducted situation analysis and pilot projects on PPM
- Established formal PPM activities in 50 of 134 districts
- Developed guidelines on TB management for medical practitioners working outside public health clinics
- Included tertiary care hospitals in Lahore and Karachi in PPM activities, resulting in increased case-finding
- NTP represented by NGOs in several PPM initiatives
- Continued the GreenstarTB control franchise (branded as "Goodlife") involving private practitioners in 5 major urban areas

Planned activities

- Develop operational plan for implementing and scaling up PPM activities
- Document PPM experiences in country
- Develop national operational guidelines for PPM
- Expand PPM activities in line with operational plan

EMPOWERING PEOPLE WITH TB, AND COMMUNITIES

Advocacy, communication and social mobilization

Achievements

- Implemented ACSM activities in 57 of 134 districts targeting general public, TB suspects and patients, health-care providers, and policy-makers and planners
- Communicated messages about TB control using television, radio and print media
- Initiated social mobilization activities through NGOs, religious groups, local media and community health workers
- Promoted advocacy efforts at provincial and district levels

Planned activities

- Strengthen ACSM strategy and NTP, provincial TB control programmes and partner capacity to carry out evidence-based ACSM activities
- Continue using mass media, including television, radio and print, to create TB awareness
- Pursue social mobilization and district level advocacy through NGOs, local media, religious groups and community health workers in 57 districts

Community participation in TB care

Achievements

- Involved community health workers, including "lady health workers", in identifying and referring TB suspects and in patient support in 79 of 134 districts
- Provided community-based treatment support through NGOs in 20 districts
- Generated mass public awareness through community events organized by NGOs

Planned activities

- Mobilize community-based NGOs to refer TB suspects to health facilities in 55 districts
- Maintain community events organized by NGOs
- Continue training community health workers and involving them in identification and referral of TB suspects to health facilities

Patients' Charter

Achievements

The Patients' Charter was published in 2006 and was therefore not available for use in countries until then.

Planned activities

- Adapt and translate Charter into national and local languages
- Display Charter at NTP, provincial TB control programme and district health management offices
- Promote Charter through NTP activities, provincial TB programmes and partner NGOs

RESEARCH, INCLUDING SPECIAL SURVEYS AND IMPACT MEASUREMENT

Achievements

- Conducted KAP survey
- Carried out study on gender disparity among TB suspects
- Conducted cross-sectional survey of HIV prevalence among TB patients diagnosed
- Completed research project to identify ways of collaboration between NTP and NAP and identify challenges in implementation
- Completed research project to assess acceptability of HIV diagnostic testing in TB patients
- Supported attendance of 2 participants from Pakistan in scientific writing skills workshop organized by WHO office for the Eastern Mediterranean Region to develop manuscripts originating from completed operational research projects
- Submitted 2 proposals for possible funding

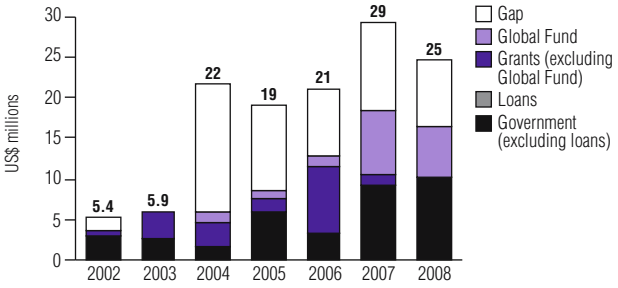
Planned activities

- Evaluate extent of underreporting by non-NTP providers
- Participate in or hold workshops on research methods, proposal development and scientific writing
- Track respiratory patients entitled for TB assessment in PHC settings
- Conduct prevalence of TB infection and disease surveys

FINANCING THE STOP TB STRATEGY

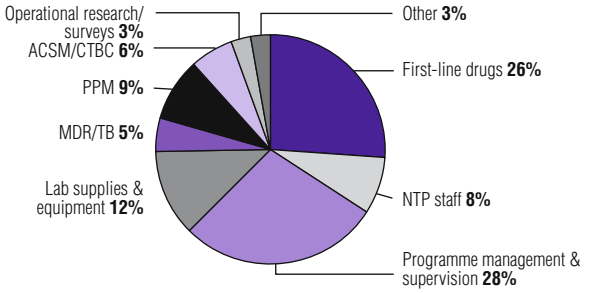
NTP budget by source of funding

Increased funding from the government, showing increased political commitment for TB control, and from the Global Fund 2007–2008 after successful Round 6 application



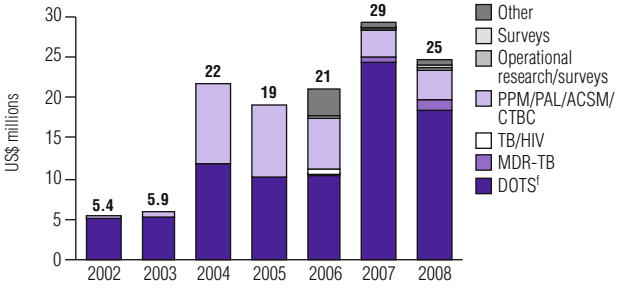
NTP budget by line item, 2008

Of the total budget, 75% is for DOTS implementation



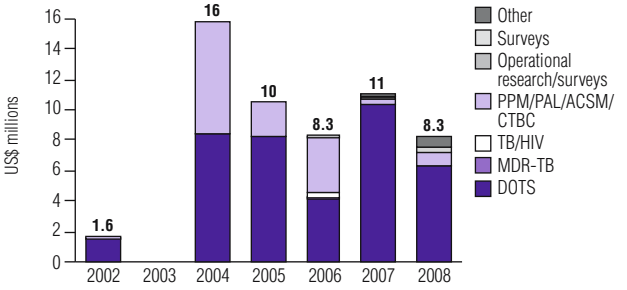
NTP budget by line item

Large increase in budget for DOTS in 2007, especially for first-line drugs, recruitment of additional staff and additional supervision activities



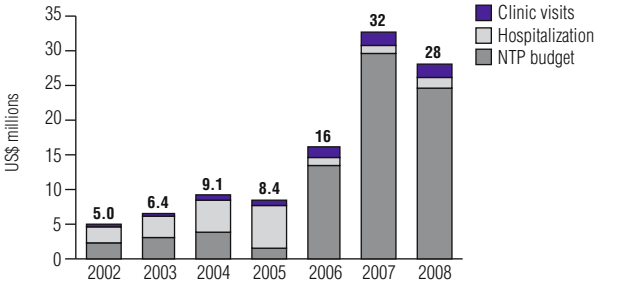
NTP funding gap by line item

Funding gap within DOTS mainly for first-line drugs: 80% of first-line drug budget not funded in 2007 and 50% of first-line drug budget not funded in 2008



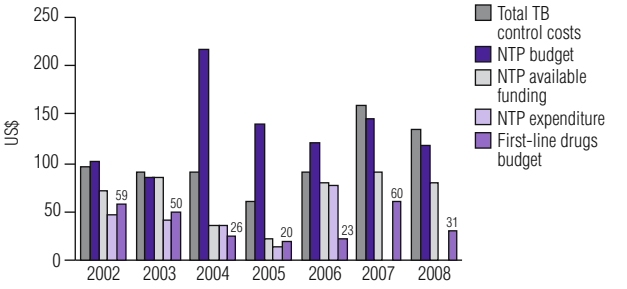
Total TB control costs by line item[4]

Lower use of hospitalization as DOTS expands; hospitalization costs based on estimate that 12–36%(2002–2005) and 3% (2006–2008) of new TB patients are hospitalized for an average of 45 days (2002–2008)



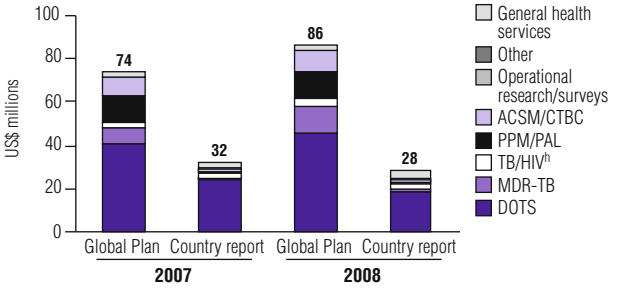
Per patient costs, budgets and expenditures[5]

Increasing expenditures per patient, suggesting improvement in absorption capacity; large budget for first-line drugs per patient in 2007



Comparison of country report and Global Plan:[g] total TB control costs, 2007–2008

Costs based on country report lower than anticipated by Global Plan, even though expected number of patients to be treated is higher in country report; Global Plan allows budget for DOTS to increase in line with expected number of patients



NTP budget and funding gap by Stop TB Strategy component

	2007		2008	
(US$ millions)	BUDGET	GAP	BUDGET	GAP
DOTS expansion and enhancement	24	10	18	6.4
TB/HIV, MDR-TB and other challenges	0.6	0	1.2	0
Health system strengthening	0	0	0	0
Engage all care providers	2.0	0.1	2.2	0.4
People with TB, and communities	1.5	0.4	1.5	0.4
Research	0.2	0.1	0.7	0.5
Other	0.7	0.2	0.7	0.7

Financial indicators for TB

Government contribution to NTP budget (including loans)	31%	41%
Government contribution to total cost of TB control (including loans)	38%	48%
NTP budget funded	62%	66%
Per capita health financial indicators (US$)		
NTP budget per capita	0.2	0.1
Total costs for TB control per capita	0.2	0.2
Funding gap per capita	0.1	0.5
Government health expenditure per capita (2004)	2.7	
Total health expenditure per capita (2004)	14	

SOURCES, METHODS AND ABBREVIATIONS

[a–h] Please see footnotes page 169.

1 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 declining with growing proportion of cases treated.

2 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 428/100 000 pop and mortality 49/100 000 pop/yr.

3 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.

4 Total TB control costs for 2002–2006 are based on expenditure, whereas those for 2007–2008 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.

5 NTP available funding for 2004–2006 is based on the amount of funding actually received, using retrospective data; available funding for 2002–2003 and 2007–2008 is based on prospectively reported budget data, and estimated as the total budget minus any reported funding gap.

– 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

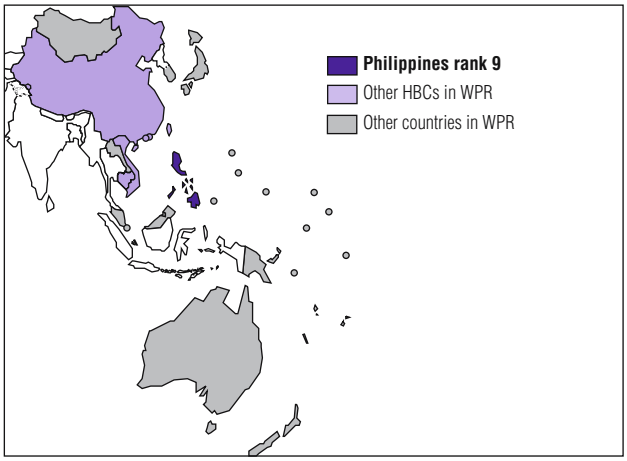
Case notification rates continue to increase in the Philippines as PPM initiatives are expanded and community task forces become involved in case-finding. The quality of treatment continues to improve; the success rate for new smear-positive cases has been above target for the past 7 years. EQA has been extended to all diagnostic facilities, and culture is becoming more widely available. Management of MDR-TB is expanding, much of it with GLC approval. The diagnosis and treatment of TB in children was an important focus for the NTP in 2006; at least one city in each region was equipped in 2006 to manage paediatric TB. A national prevalence survey was completed in 2007, the results of which will help inform estimates of the burden of TB in the Philippines. The introduction of an electronic TB register may result in improvements in the quality of routine data, which can then be better used to monitor programme performance and impact. However, the NTP has no specific plans to perform special analyses of routinely collected data.

SURVEILLANCE AND EPIDEMIOLOGY, 2006

Population (thousands)[a]	86 264
Estimates of epidemiological burden[1]	
Incidence (all cases/100 000 pop/yr)	287
Trend in incidence rate (%/yr, 2005–2006)[2]	**-1.0**
Incidence (ss+/100 000 pop/yr)	129
Prevalence (all cases/100 000 pop)[2]	**432**
Mortality (deaths/100 000 pop/yr)[2]	**45**
Of new TB cases, % HIV+[b]	*0.1*
Of new TB cases, % MDR-TB (2004)[c]	4.0
Of previously treated TB cases, % MDR-TB (2004)[c]	21
Surveillance and DOTS implementation	
Notification rate (new and relapse/100 000 pop/yr)	171
Notification rate (new ss+/100 000 pop/yr)	99
DOTS case detection rate (new ss+, %)	**77**
DOTS treatment success (new ss+, 2005 cohort, %)	**89**
Of new pulmonary cases notified under DOTS, % ss+	61
Of new cases notified under DOTS, % extrapulmonary	1
Of new ss+ cases notified under DOTS, % in women	31
Of sub-national reports expected, % received at next reporting level[d]	94
Laboratory services[3]	
Number of laboratories performing smear microscopy	2 374
Number of laboratories performing culture	3
Number of laboratories performing DST	3
Of laboratories performing smear microscopy, % covered by EQA	100
Management of MDR-TB	
Of new cases notified, % receiving DST at start of treatment	0.0
Of new cases receiving DST at start of treatment, % MDR-TB	58
Of re-treatment cases notified, % receiving DST	8.4
Of re-treatment cases receiving DST, % MDR-TB	91
Collaborative TB/HIV activities	
National policy of counselling and testing TB patients for HIV?	No policy
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	–

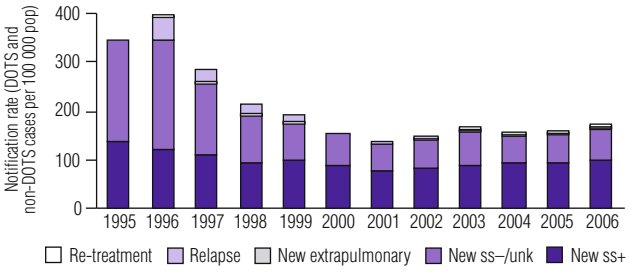
WHO Western Pacific Region (WPR)

Rank based on estimated number of incident cases (all forms) in 2006



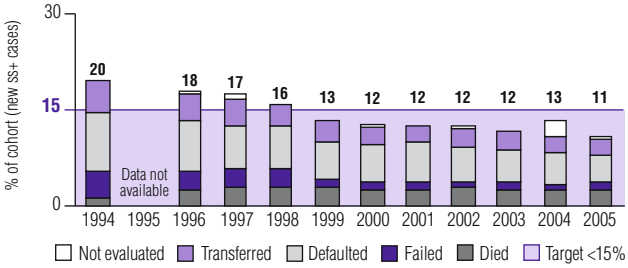
Case notifications

Notifications, particularly ss–, fell dramatically in the late 1990s, but are now fairly stable; proportion of new pulmonary cases that are ss+ has risen to about 60%



Unfavourable treatment outcomes, DOTS

Outcomes not evaluated for all patients in last two years, but treatment success remains above 85% target



DOTS expansion and enhancement	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
DOTS coverage (%)	4.3	2.0	15	17	43	90	95	98	100	100	100	100
DOTS notification rate (new and relapse/100 000 pop)	1.4	2.5	10	25	43	118	138	149	164	158	162	171
DOTS notification rate (new ss+/100 000 pop)	0.6	0.7	4.5	14	27	66	76	82	90	94	97	99
DOTS case detection rate (all new cases, %)	0.4	0.8	3.2	7.7	13	39	43	48	54	52	54	58
DOTS case detection rate (new ss+, %)	0.4	0.5	3.2	10	20	48	56	61	67	72	74	77
Case detection rate within DOTS areas (new ss+, %)[e]	9.7	23	21	60	46	53	59	62	67	72	74	77
DOTS treatment success (new ss+, %)	–	82	83	84	87	88	88	88	88	87	89	–
DOTS re-treatment success (ss+, %)	–	66	26	83	–	–	–	–	76	53	–	–

IMPLEMENTING THE STOP TB STRATEGY[1]

DOTS EXPANSION AND ENHANCEMENT

Political commitment, standardized treatment, and monitoring and evaluation system

Achievements

- Introduced management of paediatric TB in one city in each region; trained NTP coordinators who in turn trained health-care staff; Department of Health provided paediatric anti-TB drugs, PPD reagents and syringes
- Revised NTP manual (4th edition) to include new initiatives; conducted orientation and training of doctors and nurses at all levels on 4th edition of manual
- Contracted external consultant to conduct evaluation of national monitoring and evaluation and information systems for TB, malaria and HIV
- Produced annual report of NTP activities

Planned activities

- Continue training health personnel at all levels on 4th edition of NTP manual
- Regularly monitor and evaluate NTP initiatives at regional and local levels through NTP coordinators and partners
- Pilot test electronic TB register

Quality-assured bacteriology

Achievements

- Completed nationwide expansion of EQA (including capacity building and logistics); results of EQA not available

Planned activities

- Conduct regular monitoring of laboratory activities
- Build capacity for culture needed for programmatic management of MDR-TB
- Strengthen culture capacities of public laboratories identified to collaborate with NTP

Drug supply and management system

Achievements

- Ensured uninterrupted supply of first-line anti-TB drugs to regional and peripheral levels

Planned activities

- Integrate management of second-line anti-TB drugs with Department of Health's drug distribution system to avoid stocks-outs of second-line drugs as experienced in 2006
- Monitor drug supply and distribution at regional level

TB/HIV, MDR-TB AND OTHER CHALLENGES

Collaborative TB/HIV activities

Achievements

- Set up TB/HIV coordination committee with formal endorsement of Secretary of Health; held meetings to discuss roles and function of committee (NTP managers, NAP managers, NGOs and partners of both NTP and NAP invited)

Planned activities

- Formulate policies on collaborative TB/HIV activities
- Implement provider-initiated HIV counselling and testing for TB patients in selected areas in Metro Manila after training relevant health staff

Diagnosis and treatment of multidrug-resistant TB

Achievements

- Expanded management of MDR-TB services to Lung Centre of the Philippines (public facility)
- Decentralized treatment of MDR-TB to health centres
- GLC evaluated management of MDR-TB at Lung Centre of the Philippines and at Makati Medical Center

Planned activities

- Train health personnel and develop modules to standardize and mainstream implementation of programmatic management of MDR-TB
- Formulate policy for programmatic management of MDR-TB and incorporate management of MDR-TB fully into routine activities of NTP
- Prepare those public health facilities that will be participating in management of MDR-TB; train staff and equip additional laboratories for culture and DST

High-risk groups and special situations

Achievements

- Worked with medical staff of National Bilibid and Women's Correctional prisons, and with Bureau of Corrections
- Coordinated with faith-based NGOs and other government organizations to implement TB control in selected urban areas with poor populations

Planned activities

- Explore possibility of introducing management of MDR-TB in prisons

[1] Unless otherwise specified, achievements are for financial year 2006; planned activities are for financial year 2007.

HEALTH SYSTEM STRENGTHENING, INCLUDING HUMAN RESOURCE DEVELOPMENT

Achievements

- Involved broad range of partners from health and other sectors in planning for TB control
- Aligned NTP plan and budget with national plan for health development, poverty reduction strategy paper, medium-term framework for health and SWAp
- Completed planning of Comprehensive and Unified policy on TB Control (CUP) for other government bodies (including departments of education and of labour)

Planned activities

- Hire additional staff for central office of NTP through Global Fund

ENGAGING ALL CARE PROVIDERS

Achievements

- Increased number of formal PPM projects from 48 in 2005 to 149 in 2006, in coordination with Philippine Coalition Against Tuberculosis (PhilCAT) and with support from Global Fund
- Initiated sustainability planning of project-supported PPM sites through PhilCAT
- Conducted DOTS training for staff of non-NTP health facilities participating in PPM activities

Planned activities

- Establish additional PPM initiatives with support from Global Fund
- Conduct central and regional planning for sustainability of PPM projects
- Conduct joint monitoring and evaluation activities at regional level
- Support certification of NTP and non-NTP facilities providing TB diagnosis and treatment by regional certifier team in all regions

EMPOWERING PEOPLE WITH TB, AND COMMUNITIES

Advocacy, communication and social mobilization

Achievements

- Commemorated World TB Day and National Lung Month
- Conducted ACSM training for selected NTP coordinators and partners
- Completed evaluation of social mobilization strategies in World Vision implementation sites

Planned activities

- Develop and finalize NTP ACSM handbook
- Formulate national and regional ACSM plans

Community participation in TB care

Achievements

- Organized community task forces in 268 municipalities (those supported by World Vision); trained task forces in TB control; included contribution of task forces to case-finding in evaluation of task forces

Planned activities

- Involve communities in the observance of World TB Day and National Lung Month events
- Organize additional community task forces
- Conduct refresher courses for community task forces

Patients' Charter

Achievements

The Patients' Charter was published in 2006 and was therefore not available for use in countries until then.

Planned activities

- Incorporate Patients' Charter in DOTS training for health workers
- Promote Patients Charter through advocacy events such as National Lung Month

RESEARCH, INCLUDING SPECIAL SURVEYS AND IMPACT MEASUREMENT

Achievements

- Completed preliminary planning and preparation for 2007 national TB prevalence survey

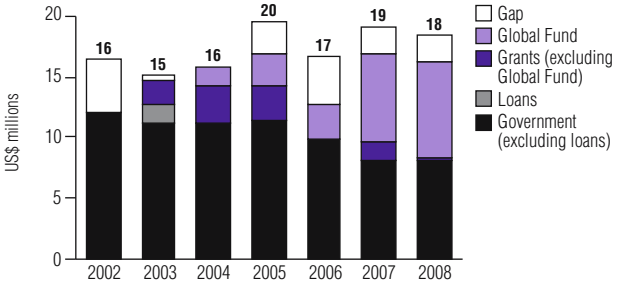
Planned activities

- Conduct national TB prevalence survey
- Conduct operational research on supply chain of anti-TB drugs
- Conduct TB KAP survey of communities, patients and health workers in collaboration with World Vision and University of the Philippines
- Conduct operational research on identification of clinical, radiographic and socio-demographic characteristics of smear-negative X-ray-positive TB

FINANCING THE STOP TB STRATEGY

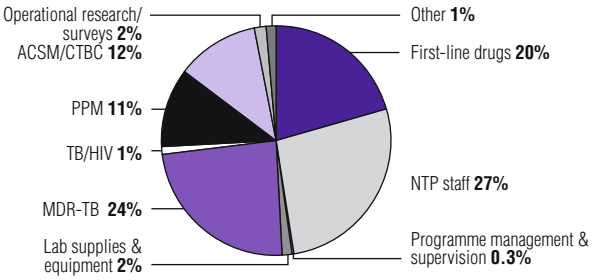
NTP budget by source of funding

Substantial increase in funding from the Global Fund 2007–2008; stable funding needs since 2002



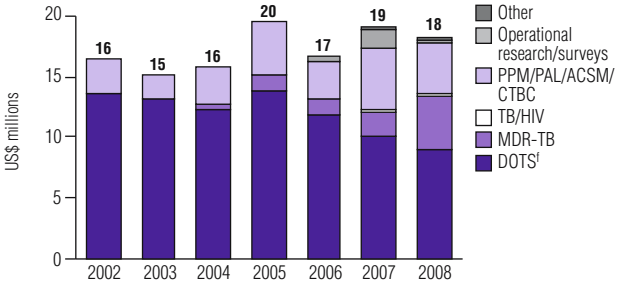
NTP budget by line item, 2008

Largest components of budget are DOTS (49%) and MDR-TB (24%)



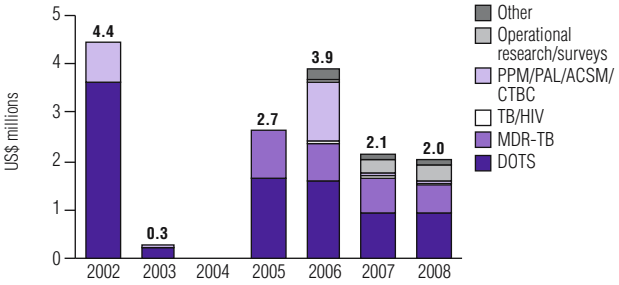
NTP budget by line item

Increased funding needs for MDR-TB and ACSM; NTP expects to treat 340 MDR-TB patients in 2008 (double the number treated in 2007)



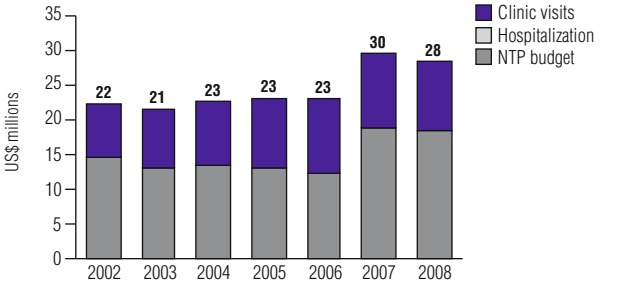
NTP funding gap by line item

Persistent funding gaps for management of MDR-TB since 2005; funding gap for DOTS mainly for dedicated NTP staff



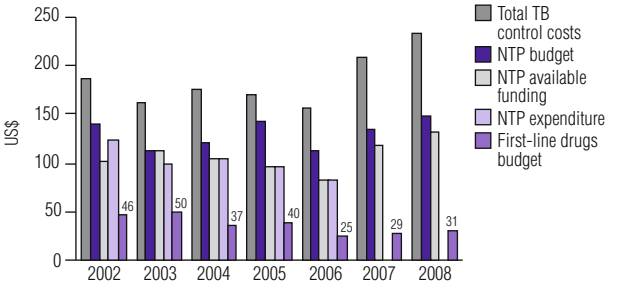
Total TB control costs by line item[4]

Cost of clinic visits based on 120 visits per new ss+ patient during treatment and 24 visits per new ss–/extrapulmonary patient



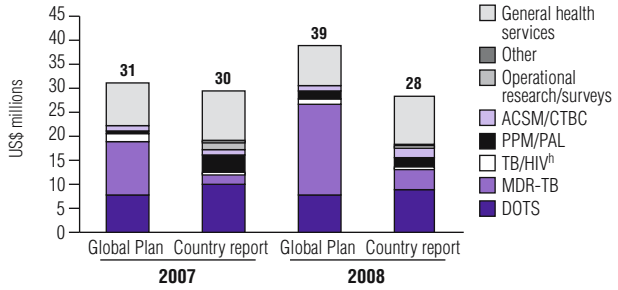
Per patient costs, budgets and expenditures[5]

Increasing costs and budget per patient; lowest expenditure per patient in 2006



Comparison of country report and Global Plan:[g] total TB control costs, 2007–2008

Country report for DOTS and PPM/PAL/ACSM/CTBC ahead of Global Plan; NTP plan for MDR-TB was well-aligned with Global Plan before revision of Global Plan in mid-2007, but targets included in Global MDR/XDR Response Plan are more ambitious



NTP budget and funding gap by Stop TB Strategy component

	2007		2008	
(US$ millions)	BUDGET	GAP	BUDGET	GAP
DOTS expansion and enhancement	10	0.9	9.0	0.9
TB/HIV, MDR-TB and other challenges	2.1	0.8	4.6	0.6
Health system strengthening	0	0	0	0
Engage all care providers	3.8	0	2.1	0
People with TB, and communities	1.2	0.1	2.1	0.1
Research	1.6	0.3	0.3	0.3
Other	0.2	0.1	0.2	0.1

Financial indicators for TB

Government contribution to NTP budget (including loans)	43%	45%
Government contribution to total cost TB control (including loans)	64%	64%
NTP budget funded	89%	89%
Per capita health financial indicators (US$)		
NTP budget per capita	0.2	0.2
Total costs for TB control per capita	0.3	0.3
Funding gap per capita	0.002	0.002
Government health expenditure per capita (2004)	14	
Total health expenditure per capita (2004)	36	

SOURCES, METHODS AND ABBREVIATIONS

[a–h] Please see footnotes page 169.

1 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 year as in other countries in WPR.

2 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 819/100 000 pop and mortality 80/100 000 pop/yr.

3 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.

4 Total TB control costs for 2002–2006 are based on expenditure, whereas those for 2007–2008 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.

5 NTP available funding for 2004–2006 is based on the amount of funding actually received, using retrospective data; available funding for 2002–2003 and 2007–2008 is based on prospectively reported budget data, and estimated as the total budget minus any reported funding gap.

– 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

Despite a high nominal DOTS coverage in the Russian Federation, the case detection rate under DOTS remains low, particularly for smear-positive cases. Death, defaulting and treatment failure contribute almost equally to the very low treatment success rate. Plans to provide second-line treatment to 24 000 MDR-TB patients in 2007 and in 2008 (up from 4000 in 2006) are not yet fully funded. In order to implement these plans, the NTP will need to train the appropriate staff, ensure a high-quality laboratory service and a secure supply of second-line drugs. If successfully implemented, they will make a significant contribution to improving the welfare of people with TB in the Russian Federation and in reducing the further spread of MDR-TB.

SURVEILLANCE AND EPIDEMIOLOGY, 2006

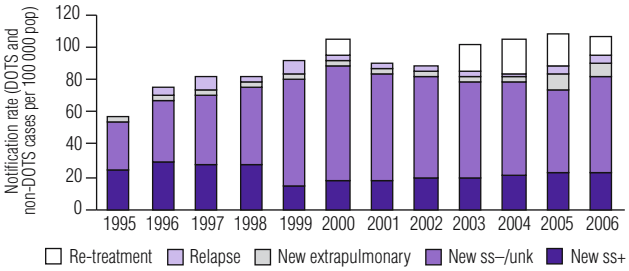
Population (thousands)[a]	143 221
Estimates of epidemiological burden[1]	
Incidence (all cases/100 000 pop/yr)	107
Trend in incidence rate (%/yr, 2005–2006)[2]	**0.7**
Incidence (ss+/100 000 pop/yr)	48
Prevalence (all cases/100 000 pop)[2]	**125**
Mortality (deaths/100 000 pop/yr)[2]	**17**
Of new TB cases, % HIV+[b]	*3.8*
Of new TB cases, % MDR-TB[c]	*13*
Of previously treated TB cases, % MDR-TB[c]	*49*
Surveillance and DOTS implementation	
Notification rate (new and relapse/100 000 pop/yr)	87
Notification rate (new ss+/100 000 pop/yr)	23
DOTS case detection rate (new ss+, %)	**44**
DOTS treatment success (new ss+, 2005 cohort, %)	**58**
Of new pulmonary cases notified under DOTS, % ss+	35
Of new cases notified under DOTS, % extrapulmonary	10
Of new ss+ cases notified, % in women (DOTS and non-DOTS)	26
Of sub-national reports expected, % received at next reporting level[d]	100
Laboratory services[3]	
Number of laboratories performing smear microscopy	4 953
Number of laboratories performing culture	978
Number of laboratories performing DST	302
Of laboratories performing smear microscopy, % covered by EQA	20
Management of MDR-TB	
Of new cases notified, % receiving DST at start of treatment	20
Of new cases receiving DST at start of treatment, % MDR-TB	11
Of re-treatment cases notified, % receiving DST	20
Of re-treatment cases receiving DST, % MDR-TB	23
Collaborative TB/HIV activities	
National policy of counselling and testing TB patients for HIV?	Yes (to all patients)
National surveillance system for HIV-infection in TB patients?	Yes
Of TB patients (new and re-treatment) notified, % tested for HIV	57
Of TB patients tested for HIV, % HIV+	2.3
Of HIV+ TB patients detected, % receiving CPT	–
Of HIV+ TB patients detected, % receiving ART	–

WHO European Region (EUR)

Rank based on estimated number of incident cases (all forms) in 2006

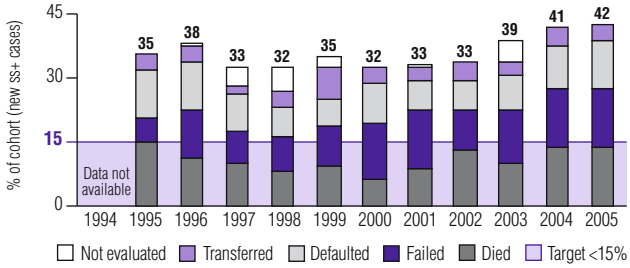
Case notifications

Very high proportion of ss– notifications among new cases suggests under-use of microscopy for diagnosis; high and variable proportion of re-treatment cases



Unfavourable treatment outcomes, DOTS

Death, treatment failure and default rates all continue to be high and contribute to low treatment success rate



DOTS expansion and enhancement	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
DOTS coverage (%)	–	2.3	2.3	5.0	5.0	12	16	25	25	45	83	84
DOTS notification rate (new and relapse/100 000 pop)	–	0.6	1.2	1.2	2.6	7.7	9.9	12	14	24	57	72
DOTS notification rate (new ss+/100 000 pop)	–	0.2	0.4	0.5	0.9	2.5	2.8	3.5	4.4	6.9	16	21
DOTS case detection rate (all new cases, %)	–	0.7	1.2	1.1	2.3	6.4	8.3	11	13	21	50	63
DOTS case detection rate (new ss+, %)	–	0.5	1.0	1.0	1.8	4.9	5.6	7.4	9.3	15	33	44
Case detection rate within DOTS areas (new ss+, %)[e]	–	21	45	20	36	41	35	29	37	32	40	53
DOTS treatment success (new ss+, %)	65	62	67	68	65	68	67	67	61	59	58	–
DOTS re-treatment success (ss+, %)	58	64	–	49	45	49	48	46	45	34	31	–

IMPLEMENTING THE STOP TB STRATEGY[1]

DOTS EXPANSION AND ENHANCEMENT

Political commitment, standardized treatment, and monitoring and evaluation system

Achievements

- Ensured adequate supply of TB diagnostic equipment (microscopes, X-ray including mobile equipment disposables)
- Provided social support for TB patients in 80 out of 86 regions to improve treatment adherence, including provision of food parcels, psychological advice and legal support through Red Cross and/or regional TB services
- Produced annual report of NTP activities

Planned activities

- Develop national plan for TB control to reach MDGs
- Improve TB case detection through PHC services by improved training in TB detection and treatment, development of IEC material and monetary incentives for health workers and TB patients
- Increase the number of regions offering social support to TB patients, and improve the support offered in order to increase adherence to TB treatment

Quality-assured bacteriology

Achievements

- Provided free-of-charge diagnosis through network of 4953 smear microscopy units, 978 culture units and 302 DST units
- Supplied equipment and consumables to microscopy points and bacteriological laboratories to improve access to and quality of laboratory diagnostics, culture, identification and DST for TB diagnosis and treatment control
- Trained 345 laboratory staff trainers at federal level to provide training in their regions on microscopy and bacteriological diagnostics
- Implemented EQA in 998 laboratories (data on performance not available)

Planned activities

- Continue EQA for microscopy and culture
- Purchase consumables for 2700 existing microscopy centres

Drug supply and management system

Achievements

- Established 6-month buffer stock for first-line anti-TB drugs at all regional TB facilities
- Trained TB managers in rational management of anti-TB drugs

Planned activities

- Ensure regular supply of anti-TB drugs for civil and prison TB services
- Conduct quality control for anti-TB drugs procured
- Support development of new anti-TB drugs and vaccines

TB/HIV, MDR-TB AND OTHER CHALLENGES

Collaborative TB/HIV activities

Achievements

- Established TB/HIV Coordination Board within the Ministry of Health and Social Development
- Increased TB and HIV detection through new guidelines, improved TB/HIV recording/reporting system and appointed TB/HIV coordinators
- Implemented policy of testing all new TB patients for HIV
- Initiated development of TB/HIV prevention and treatment strategies
- Expanded system for specialized medical care for TB/HIV patients and improved access to treatment
- Established TB/HIV surveillance system
- Established and equipped TB/HIV counselling and testing units
- Trained 4116 TB and HIV staff in collaborative TB/HIV activities

Planned activities

- Continue working towards improving accuracy of diagnosis and of reporting of HIV in TB patients
- Finalize development of TB/HIV treatment and prevention strategies
- Continue social rehabilitation and introduce psychological rehabilitation
- Improve TB case-finding among HIV patients
- Further strengthen TB/HIV surveillance system
- Continue training on clinical and managerial aspects TB/HIV
- Maintain coordination between TB and HIV control services

Diagnosis and treatment of multidrug-resistant TB

Achievements

- Procured second-line drugs for all 86 regions and 5 federal TB research institutes
- Trained 452 regional TB specialists on management of MDR-TB
- Began selective DRS in 11 sites
- Introduced quality control for DST
- Secured GLC approval of projects in 13 regions to treat a total of 4546 MDR-TB patients
- Applied to GLC for projects in 9 regions and 2 research TB institutes to treat a total of 1782 MDR-TB patients

Planned activities

- Ensure adequate supply of second-line drugs, equipment and consumables for MDR-TB management
- Set up reporting and recording system for MDR-TB
- Start new MDR-TB management projects approved by GLC
- Set up drug resistance surveillance system
- Expand and strengthen quality control system for DST
- Establish 5 centres of excellence for MDR-TB management in civilian TB services

High-risk groups and special situations

Achievements

- Initiated TB case-finding among high-risk groups (household contacts, migrants, homeless, prisoners and HIV patients)
- Introduced infection control measures for hospitals and outpatient clinics
- Implemented quality control measures for DST in prison laboratories
- Started selective DRS in 11 sites in prisons

Planned activities

- Continue TB case-finding among high-risk groups
- Establish 8 centres of excellence on MDR-TB management in prisons
- Increase stock of first-line anti-TB drugs in prisons
- Initiate treatment for at least 400 MDR-TB patients within the Global Fund TB control project in prisons

[1] Unless otherwise specified, achievements are for financial year 2006; planned activities are for financial year 2007.

HEALTH SYSTEM STRENGTHENING, INCLUDING HUMAN RESOURCE DEVELOPMENT

Achievements

- Involved broad range of partners from health and other sectors in planning for TB control
- Developed guidelines and training materials on TB control for PHC workers
- Involved PHC services in TB control at municipal level
- Trained 2146 TB and PHC staff in TB control in general management
- Trained master trainers in TB management and on TB for PHC and laboratory diagnosis

Planned activities

- Perform assessment/mapping of available human resources within TB services, their distribution, qualifications and duties
- Develop human resources development plan for TB control which will be linked to a sector-wide HRD plan
- Identify monetary and other incentives and motivators to attract medical doctors to work for TB control
- Further increase role of PHC in TB control
- Revise postgraduate and graduate curricula in line with revised national TB control strategy

ENGAGING ALL CARE PROVIDERS

Achievements

- Conducted situation analysis for TB projects supported by non-profit organizations; initiated new pilot projects; developed guidelines and scaled up PPM
- Secured endorsement of ISTC by professional organizations
- Involved NGOs and social services in TB control to support TB patients
- Improved collaboration with Ministry of Justice and Ministry of Defence for TB control

Planned activities

- Involve non-profit organizations in TB case-finding, treatment observation and defaulter tracing

EMPOWERING PEOPLE WITH TB, AND COMMUNITIES

Advocacy, communication and social mobilization

Achievements

- Implemented ACSM activities in all 386 basic TB service units
- Provided general public with information on TB control
- Organized educational, media and advocacy campaign on TB control countrywide to commemorate World TB Day
- Organized contests and training for media on TB

Planned activities

- Continue TB education for general public
- Evaluate population awareness of TB and assess priority sources of information
- Engage media in TB education and advocacy through contests for journalists, training and roundtable meetings on TB
- Organize educational and media/advocacy campaigns on TB

Community participation in TB care

Achievements

- Involved communities in TB control in 91 out of 386 TB service units
- Conducted activities with TB patients, their relatives and other people affected through system of "TB schools" that provide health education and psychological support
- Involved communities in organizing national anti-TB day

Planned activities

- Continue organizing activities with relatives of TB patients
- Involve communities in organizing events for World TB Day such as competitions for children, educational campaigns by volunteers, NGOs and former TB patients

Patients' Charter

Achievements

- Translated Patients' Charter into Russian

Planned activities

- Introduce and endorse the Patient's Charter

RESEARCH, INCLUDING SPECIAL SURVEYS AND IMPACT MEASUREMENT

Achievements

- Initiated 14 operational research projects
- Completed studies on social status of patients, MTB typing, TB mortality and new surgical methods for treatment of extrapulmonary TB

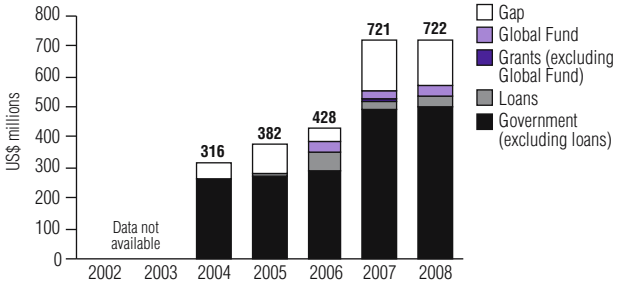
Planned activities

- 60 studies planned, with a focus on epidemiology, high-risk groups, social rehabilitation, psycho-socio rehabilitation and medical rehabilitation

FINANCING THE STOP TB STRATEGY

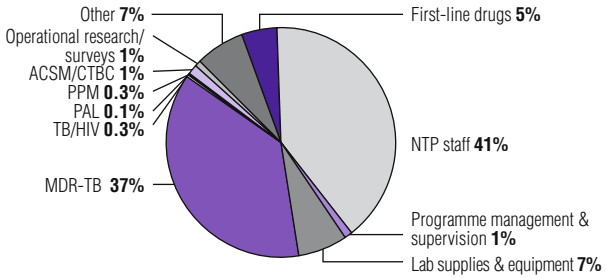
NTP budget by source of funding

Substantial increase in funding needs in 2007 and 2008; while funding from the government has grown, large funding gaps remain



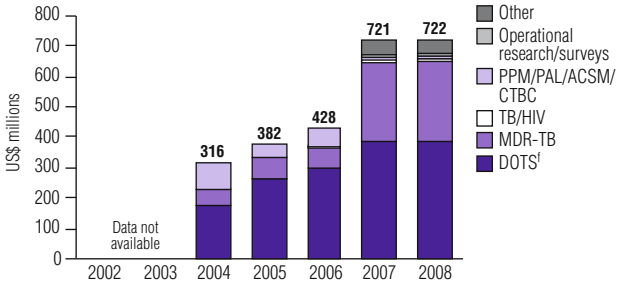
NTP budget by line item, 2008

The largest share of the budget is for dedicated NTP staff and MDR-TB



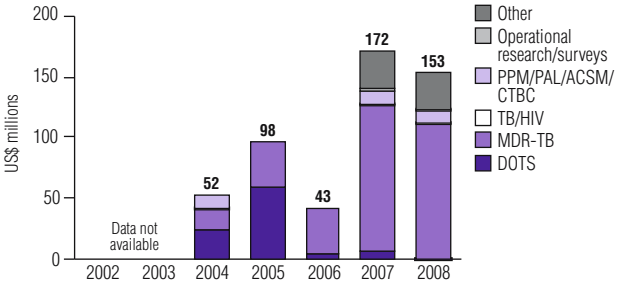
NTP budget by line item

Large increase in funding needs for MDR-TB 2007–2008, to cover treatment for 24 000 MDR-TB patients in each year; cost per MDR-TB patient for second-line drugs US$ 11 000



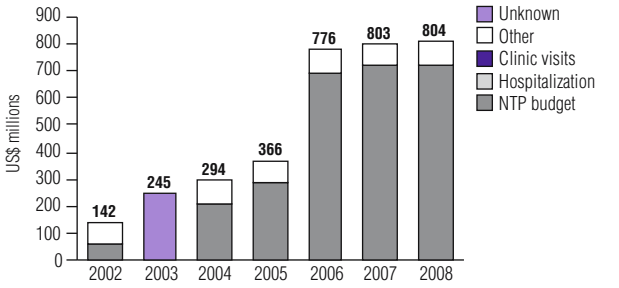
NTP funding gap by line item

Persistent and large funding gaps for second-line drugs since 2004



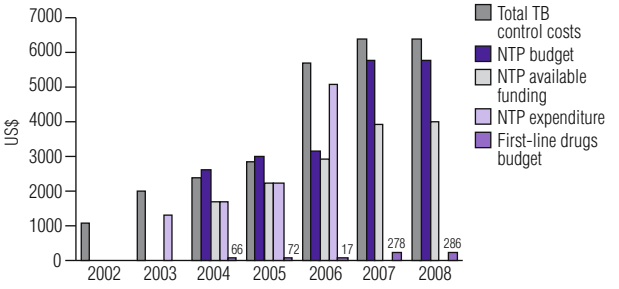
Total TB control costs by line item[4]

Hospitalization costs are for about 80 000 dedicated TB beds



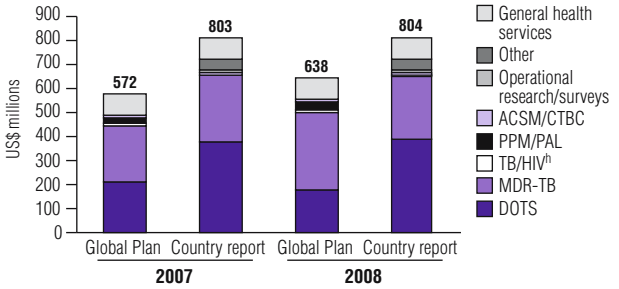
Per patient costs, budgets and expenditures[5]

Increasing cost, budget and expenditure per patient; highest costs and budget among all HBCs; increasing budget for first-line drugs per patient



Comparison of country report and Global Plan:[g] total TB control costs, 2007–2008

Cost of country report far exceeds costs estimated in Global Plan; targets for MDR-TB patients to be treated in country report, as well as costs, similar to those in Global MDR/ XDR Response Plan



NTP budget and funding gap by Stop TB Strategy component

	2007		2008	
(US$ millions)	BUDGET	GAP	BUDGET	GAP
DOTS expansion and enhancement	383	6.4	384	0.8
TB/HIV, MDR-TB and other challenges	269	122	269	112
Health system strengthening	1.0	0.7	1.0	0.7
Engage all care providers	2.0	1.5	2.0	1.4
People with TB, and communities	10	7.4	10	6.9
Research	5.0	2.1	5.0	1.7
Other	51	32	51	30

Financial indicators for TB

Government contribution to NTP budget (including loans)	72%	74%
Government contribution to total cost of TB control (including loans)	75%	77%
NTP budget funded	76%	79%
Per capita health financial indicators (US$)		
NTP budget per capita	5.1	5.1
Total costs for TB control per capita	5.7	5.7
Funding gap per capita	1.2	1.1
Government health expenditure per capita (2004)	150	
Total health expenditure per capita (2004)	245	

SOURCES, METHODS AND ABBREVIATIONS

[a–h] Please see footnotes page 169.

1 Incidence, prevalence and mortality estimates include patients infected with HIV. Incidence estimates based on the assumption that 78% of cases (new and relapse) were detected in 1995 (DOTS and non-DOTS). Moving average of notification rate (new and relapse, DOTS and non-DOTS combined) used as trend in incidence.

2 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.

3 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.

4 Total TB control costs for 2002–2006 are based on expenditure, whereas those for 2007–2008 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.

5 NTP available funding for 2004–2006 is based on the amount of funding actually received, using retrospective data; available funding for 2002–2003 and 2007–2008 is based on prospectively reported budget data, and estimated as the total budget minus any reported funding gap.

– 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.

COUNTRY PROFILE

South Africa

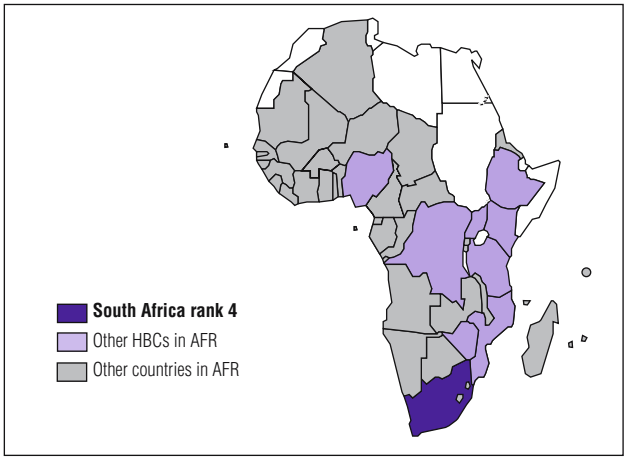
Treatment success rates in South Africa remain low, with death and default the most frequent negative outcomes. Case notification rates continue to increase; a reassessment of the incidence estimate, based on registered deaths, suggests that the 70% case detection rate target was reached for the first time in 2006. Activities related to HIV/TB and MDR-TB are being scaled up, but in 2006 only one third of TB patients were tested for HIV, and information about the number tested for MDR is not available to the NTP. A dramatic increase in funding is expected for 2007 and 2008, principally for investment in infrastructure associated with MDR-TB and XDR-TB.

SURVEILLANCE AND EPIDEMIOLOGY, 2006

Population (thousands)[a]	48 282
Estimates of epidemiological burden[1]	
Incidence (all cases/100 000 pop/yr)	940
Trend in incidence rate (%/yr, 2005–2006)[2]	**1.6**
Incidence (ss+/100 000 pop/yr)	382
Prevalence (all cases/100 000 pop)[2]	**998**
Mortality (deaths/100 000 pop/yr)[2]	**218**
Of new TB cases, % HIV+[b]	*44*
Of new TB cases, % MDR-TB (2002)[c]	1.8
Of previously treated TB cases, % MDR-TB (2002)[c]	6.7
Surveillance and DOTS implementation	
Notification rate (new and relapse/100 000 pop/yr)	628
Notification rate (new ss+/100 000 pop/yr)	272
DOTS case detection rate (new ss+, %)	**71**
DOTS treatment success (new ss+, 2005 cohort, %)	**71**
Of new pulmonary cases notified under DOTS, % ss+	58
Of new cases notified under DOTS, % extrapulmonary	18
Of new ss+ cases notified under DOTS, % in women	45
Of sub-national reports expected, % received at next reporting level[d]	100
Laboratory services[3]	
Number of laboratories performing smear microscopy	143
Number of laboratories performing culture	13
Number of laboratories performing DST	8
Of laboratories performing smear microscopy, % covered by EQA	100
Management of MDR-TB	
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	
National policy of counselling and testing TB patients for HIV?	Yes (to all patients)
National surveillance system for HIV-infection in TB patients?	No
Of TB patients (new and re-treatment) notified, % tested for HIV	32
Of TB patients tested for HIV, % HIV+	53
Of HIV+ TB patients detected, % receiving CPT	98
Of HIV+ TB patients detected, % receiving ART	40

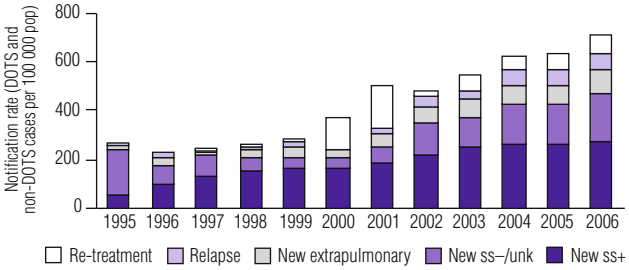
WHO Africa Region (AFR)

Rank based on estimated number of incident cases (all forms) in 2006



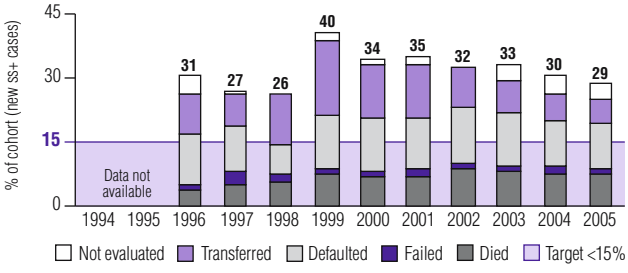
Case notifications

Notifications continue to rise; relapse and re-treatment cases comprise about 20% of total notifications



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	2006
DOTS coverage (%)	–	0.0	13	22	66	77	77	98	100	93	94	100
DOTS notification rate (new and relapse/100 000 pop)	–	–	15	50	202	193	263	456	483	543	543	628
DOTS notification rate (new ss+/100 000 pop)	–	–	9.6	37	122	137	156	210	247	254	250	272
DOTS case detection rate (all new cases, %)	–	0.0	3.7	11	38	34	36	52	52	54	52	60
DOTS case detection rate (new ss+, %)	–	–	6.3	22	61	58	56	66	71	70	67	71
Case detection rate within DOTS areas (new ss+, %)[e]	–	–	49	99	93	75	72	67	72	75	71	71
DOTS treatment success (new ss+, %)	–	69	73	74	60	66	65	68	67	70	71	–
DOTS re-treatment success (ss+, %)	–	67	68	71	47	52	53	53	52	56	58	–

IMPLEMENTING THE STOP TB STRATEGY[1]

DOTS EXPANSION AND ENHANCEMENT

Political commitment, standardized treatment, and monitoring and evaluation system

Achievements

- Revised TB data reporting and recording registers to include information on collaborative TB/HIV activities, and piloted use of revised registers
- Trained health-care workers on infection control

Planned activities

- Implement the TB strategic plan for 2007–2011
- Continue to train health-care workers on TB infection control
- Implement revised TB data reporting and recording registers in all 9 provinces
- Revise national TB control guidelines to include, among other things, recent recommendations on diagnosis of smear-negative and extrapulmonary TB
- Develop guidelines for paediatric TB in collaboration with the subgroup of the Stop TB Partnership

Quality-assured bacteriology

Achievements

- Increased capacity for second-line DST
- Expanded the number of sputum smear examinations performed
- Included Kwazulu-Natal TB laboratory in the national health laboratory system (NHLS)
- Established NRL

Planned activities

- Strengthen the EQA programme for first- and second-line DST
- Establish re-checking for microscopy across the country
- Provide DST for first-line drugs in a total of 9 laboratories, and for second-line drugs in a total 5 laboratories
- Move from a sample-based to a patient-based MDR-TB recording and reporting system to improve reporting of numbers of cases of MDR-TB and XDR-TB and cross-checking between laboratory and health-facility registers

Drug supply and management system

Achievements

None reported

Planned activities

- Train workers in health facilities in management of drug stocks

TB/HIV, MDR-TB AND OTHER CHALLENGES

Collaborative TB/HIV activities

Achievements

- Strengthened integration of HIV/AIDS, STI and TB services at sub-district and facility levels through training
- Improved reporting and recording of TB/HIV activities through the implementation of the revised TB registers

Planned activities

- Ensure that routine screening for TB among HIV patients is included as policy for NAP
- Initiate reporting on collaborative TB/HIV activities

Diagnosis and treatment of multidrug-resistant TB

Achievements

- 9 doctors trained in Latvia on clinical management of drug-resistant TB

Planned activities

- Develop training material on MDR-TB and infection control
- Continue collaboration with WHO on training doctors and nurses in MDR-TB and XDR-TB
- Strengthen collaboration between MDR-TB units and laboratories for better follow-up of MDR-TB patients once discharged
- Revise guidelines for management of MDR-TB and XDR-TB
- Develop national guidelines on infection control for implementation in all health-care facilities
- Conduct a rapid assessment for infection control in 11 MDR-TB units
- Establish drug-resistance surveillance system

High-risk groups and special situations

Achievements

- Focused work on TB control in prison populations, among migratory workers

Planned activities

- Provide special incentives to TB patients, such as food and transport to health facilities

[1] Unless otherwise specified, achievements are for financial year 2006; planned activities are for financial year 2007.

HEALTH SYSTEM STRENGTHENING, INCLUDING HUMAN RESOURCE DEVELOPMENT

Achievements

- Planning for TB control involved sector-wide and inter-sectoral collaboration
- Expanded PAL (PALSA) activities in Western Cape and Free State provinces
- Updated PALSA guidelines

Planned activities

- Monitor implementation of infection control in all health-care facilities
- Expand PALSA activities to additional provinces

ENGAGING ALL CARE PROVIDERS

Achievements

- Conducted training specifically for non-NTP health-care providers with particular emphasis on the mining sector

Planned activities

- Improve reporting of all TB cases from the mining sector to the NTP and harmonize referral between mining health facilities and NTP facilities

EMPOWERING PEOPLE WITH TB, AND COMMUNITIES

Advocacy, communication and social mobilization

Achievements

- Implemented ACSM activities in all 53 districts
- Engaged political and traditional structures
- Advocated for additional human and financial resources for TB

Planned activities

- Develop a national ACSM strategic plan
- Improve human resource capacity and ACSM at national level (1 ACSM unit) and at provincial level (1 dedicated ACSM staff member per province)

Community participation in TB care

Achievements

- Involved communities in all 53 districts in TB control; provided care for TB patients, and counselling and patient education
- Included poverty alleviation as part of the long-term planning of Stop TB activities

Planned activities

- Target advocacy campaign for patient education and counselling
- Increase community awareness about TB through targeted communication campaigns in particular around World TB Day

Patients' Charter

Achievements

The Patients' Charter was published in 2006 and was therefore not available for use in countries until then.

- Disseminated a general patients' charter (not TB-specific) in health facilities

Planned activities

- NTP to support dissemination of general patients' charter

RESEARCH, INCLUDING SPECIAL SURVEYS AND IMPACT MEASUREMENT

Achievements

- None reported

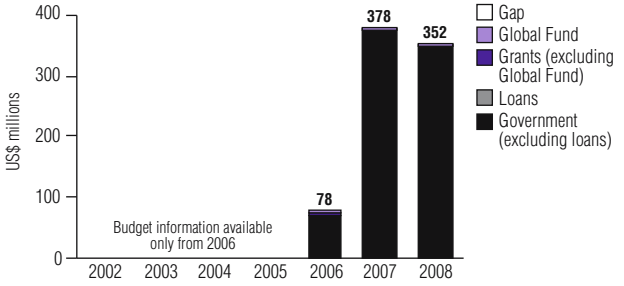
Planned activities

- Pilot PPM initiative with the private medical sector
- Conduct a demonstration project on rapid MDR-TB tests – FIND project (results available in 2008)
- Conduct a rapid assessment of XDR-TB in all MDR-TB units and TB hospitals (results available mid-2008)
- Assess current strategies to support TB patients
- Conduct a feasibility study on use of incentives for TB patients
- Study the cost of community TB care and best practice models for MDR -TB
- Carry out a national prevalence of disease survey
- Conduct a drug-resistance survey

FINANCING THE STOP TB STRATEGY

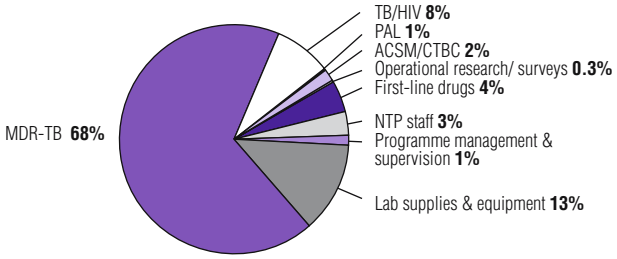
NTP budget by source of funding

Substantial increase in funding needs for 2007–2008 with full funding expected from the government



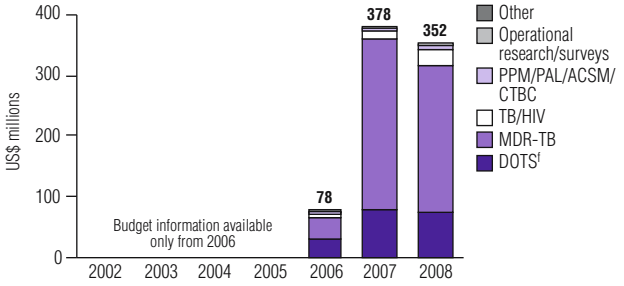
NTP budget by line item, 2008

By far the largest share of the budget is for diagnosis and treatment of MDR-TB



NTP budget by line item

Enormous increase in budget for 2007–2008, mainly for investments in hospital infrastructure for MDR-TB and XDR-TB patients

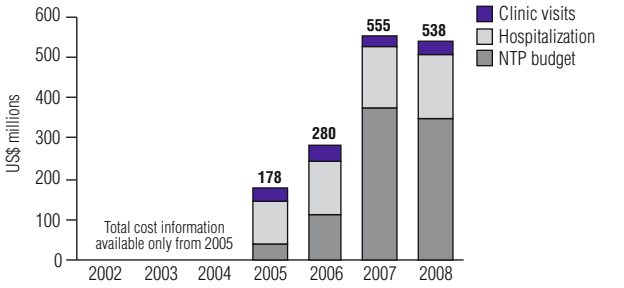


NTP funding gap by line item

No funding gaps have been reported since 2006

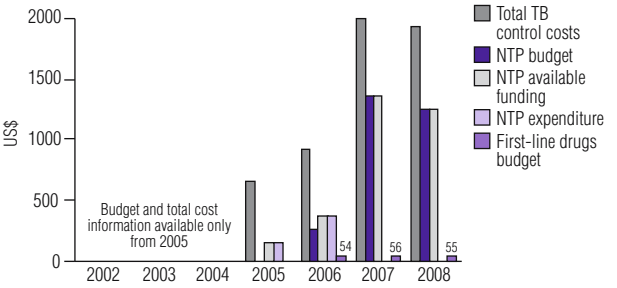
Total TB control costs by line item[4]

NTP budget will account for largest share of TB control costs in 2007–2008 if MDR-TB activities and capital investments are implemented as planned



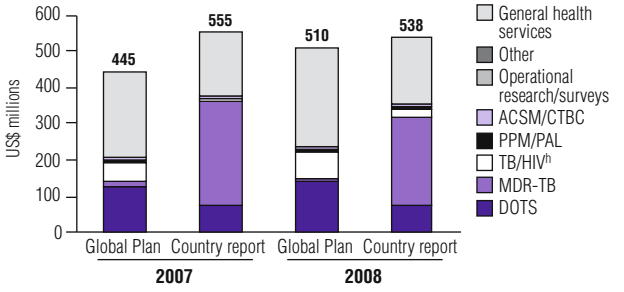
Per patient costs, budgets and expenditures[5]

Highest cost for TB control per patient in Africa



Comparison of country report and Global Plan:[g] total TB control costs, 2007–2008

Projected number of new patients to be treated 2007–2008 higher in Global Plan, therefore higher budget for DOTS; much larger investment in MDR-TB in country plan mainly due to national policy to hospitalize patients for at least 6 months and associated need for renovation and expansion of hospital infrastructure



NTP budget and funding gap by Stop TB Strategy component

	2007		2008	
(US$ millions)	BUDGET	GAP	BUDGET	GAP
DOTS expansion and enhancement	78	0	77	0
TB/HIV, MDR-TB and other challenges	294	0	267	0
Health system strengthening	0.9	0	1.8	0
Engage all care providers	0	0	0	0
People with TB, and communities	2.9	0	5.5	0
Research	2.3	0	1.1	0
Other	0	0	0	0

Financial indicators for TB

Government contribution to NTP budget (including loans)	100%	99%
Government contribution to total cost of TB control (including loans)	100%	100%
NTP budget funded	100%	100%
Per capita health financial indicators (US$)		
NTP budget per capita	7.9	7.4
Total costs for TB control per capita	12	11
Funding gap per capita	0	0
Government health expenditure per capita (2004)	158	
Total health expenditure per capita (2004)	390	

SOURCES, METHODS AND ABBREVIATIONS

[a–h] Please see footnotes page 169.

1 Incidence, prevalence and mortality estimates include patients infected with HIV. Estimates revised in 2006 following analysis of TB mortality data from vital registration system for years 1997–2005. Incidence pre-1997 and post-2005 estimated extrapolated using logistic curve fitted to 1997–2005 estimates.

2 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 774/100 000 pop and mortality 78/100 000 pop/yr.

3 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.

4 Total TB control costs for 2005–2006 are based on expenditure, whereas those for 2007–2008 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.

5 NTP available funding for 2005–2006 is based on the amount of funding actually received, using retrospective data; available funding for 2007–2008 is based on prospectively reported budget data, and estimated as the total budget minus any reported funding gap.

– 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.

COUNTRY PROFILE

Thailand

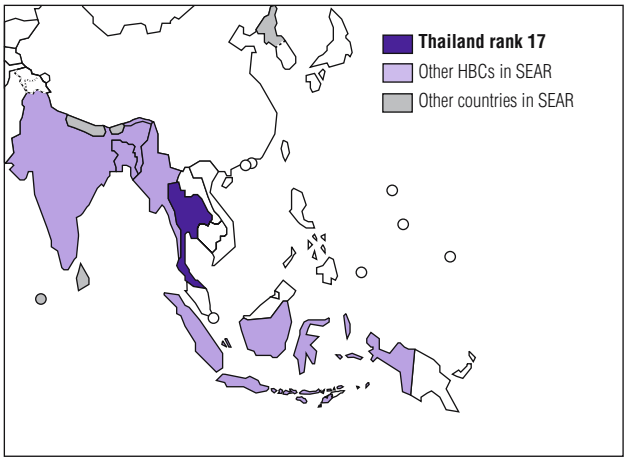
Although the NTP has begun to introduce PPM activities and to address the specific challenges posed by border areas and urban areas, case detection and treatment success rates have not improved substantially over the past 5 years. Routine data collection and budgeting are still hampered by decentralization following the reform of national health services. Collaborative HIV/TB activities are in place and, for 2006, data were available for the first time; 42% of TB patients were tested for HIV, and 80% of HIV patients were screened for TB. Management of MDR-TB has begun in some settings but does not follow WHO guidelines, and data on the number of patients tested and treated are not available.

SURVEILLANCE AND EPIDEMIOLOGY, 2006

Population (thousands)[a]	63 444
Estimates of epidemiological burden[1]	
Incidence (all cases/100 000 pop/yr)	142
Trend in incidence rate (%/yr, 2005–2006)[2]	**0.0**
Incidence (ss+/100 000 pop/yr)	62
Prevalence (all cases/100 000 pop)[2]	**198**
Mortality (deaths/100 000 pop/yr)[2]	**20**
Of new TB cases, % HIV+[b]	11
Of new TB cases, % MDR-TB)[c]	1.7
Of previously treated TB cases, % MDR-TB[c]	35
Surveillance and DOTS implementation	
Notification rate (new and relapse/100 000 pop/yr)	89
Notification rate (new ss+/100 000 pop/yr)	46
DOTS case detection rate (new ss+, %)	73
DOTS treatment success (new ss+, 2005 cohort, %)	75
Of new pulmonary cases notified under DOTS, % ss+	62
Of new cases notified under DOTS, % extrapulmonary	14
Of new ss+ cases notified under DOTS, % in women	29
Of sub-national reports expected, % received at next reporting level[d]	96
Laboratory services[3]	
Number of laboratories performing smear microscopy	937
Number of laboratories performing culture	65
Number of laboratories performing DST	18
Of laboratories performing smear microscopy, % covered by EQA	92
Management of MDR-TB	
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	
National policy of counselling and testing TB patients for HIV?	Yes (to all patients)
National surveillance system for HIV-infection in TB patients?	Yes
Of TB patients (new and re-treatment) notified, % tested for HIV	42
Of TB patients tested for HIV, % HIV+	26
Of HIV+ TB patients detected, % receiving CPT	65
Of HIV+ TB patients detected, % receiving ART	32

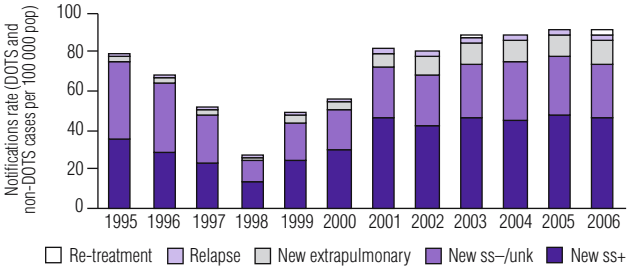
WHO South-East Asia Region (SEAR)

Rank based on estimated number of incident cases (all forms) in 2006



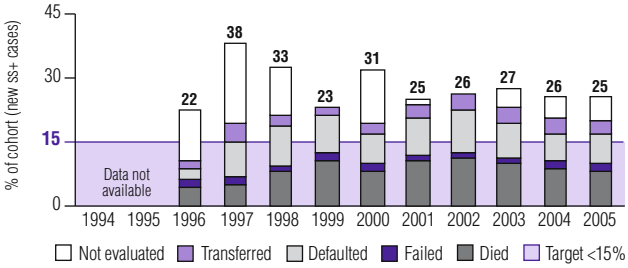
Case notifications

Notification rates rose steeply from 1997 to 2001, but have stablilized since then



Unfavourable treatment outcomes, DOTS

Treatment success rate remains well below the target; significant increase in treatment failures in 2005 cohort



DOTS expansion and enhancement	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
DOTS coverage (%)	–	1.1	4.0	32	59	70	82	100	100	100	100	100
DOTS notification rate (new and relapse/100 000 pop)	–	0.4	6.0	27	49	56	81	80	88	88	92	89
DOTS notification rate (new ss+/100 000 pop)	–	0.2	3.2	13	25	29	46	42	46	45	47	46
DOTS case detection rate (all new cases, %)	–	0.3	4.0	18	33	38	55	55	60	60	63	60
DOTS case detection rate (new ss+, %)	–	0.3	5.1	22	40	47	74	67	73	73	76	73
Case detection rate within DOTS areas (new ss+, %)[e]	–	29	128	67	68	67	91	67	73	73	76	73
DOTS treatment success (new ss+, %)	–	78	62	68	77	69	75	74	73	74	75	–
DOTS re-treatment success (ss+, %)	–	57	55	55	68	–	49	62	62	56	58	–

IMPLEMENTING THE STOP TB STRATEGY[1]

DOTS EXPANSION AND ENHANCEMENT

Political commitment, standardized treatment, and monitoring and evaluation system

Achievements
- Produced 5th annual report of NTP activities

Planned activities
- Revise national TB control manual
- Host 4th external review of NTP

Quality-assured bacteriology

Achievements
- Revised national guidelines for sputum smear microscopy

Planned activities
- Establish culture and DST facilities in 5 additional laboratories
- Strengthen EQA programme
- Translate training packages into Thai language

Drug supply and management system

Achievements
- Provided first- and second-line anti-TB drugs free of charge to all Thai citizens in collaboration with NHSO

Planned activities
- Make anti-TB drugs available free of charge to non-Thai citizens

TB/HIV, MDR-TB AND OTHER CHALLENGES

Collaborative TB/HIV activities

Achievements
- Improved reporting on collaborative TB/HIV activities; data now available to central NTP
- Introduced provider-initiated HIV counselling and testing for TB patients
- Introduced intensified TB case-finding among people with HIV/AIDS
- Referred HIV-positive TB patients to NAP for ART and CPT

Planned activities
- Revise guidelines for collaborative TB/HIV activities
- Improve recording and reporting system
- Strengthen TB/HIV coordinating body

Diagnosis and treatment of multidrug-resistant TB

Achievements
- Developed guidelines for management of MDR-TB and implemented them in selected health facilities
- Initiated DRS of new and re-treatment cases

Planned activities
- Revise MDR-TB guidelines and recording and reporting forms
- Field-test recording and reporting system in selected provinces
- Assess magnitude of XDR-TB among MDR-TB cases based on DRS data
- Conduct training in management of MDR-TB in large hospitals

High-risk groups and special situations

Achievements
- Included screening for TB in prisons and among other vulnerable groups in NTP plan
- Initiated special project for TB control in urban areas

Planned activities
- Develop referral system to allow follow up of TB patients after release from prison

HEALTH SYSTEM STRENGTHENING, INCLUDING HUMAN RESOURCE DEVELOPMENT

Achievements
- Involved Ministry of Justice, NAP and NGOs in process of planning for TB control
- Built capacity through pilot testing of electronic database management system in some provinces
- Set up indicators to monitor certified hospitals
- Advocated for inclusion of TB treatment success rate as one of the indicators used by the office of health inspectors

Planned activities
- Introduce SMART electronic recording and reporting system, developed by National Health Security Office, in hospitals
- Implement human resource development plan for TB
- Strengthen laboratory facilities in a phased manner

[1] Unless otherwise specified, achievements are for financial year 2006; planned activities are for financial year 2007.

ENGAGING ALL CARE PROVIDERS

Achievements

- Pilot tested implementation of PPM in 15 hospitals in Bangkok, including provision of first- and second-line anti-TB drugs
- Scaled up involvement of private hospitals in TB control
- Used ISTC to promote involvement of non-NTP providers in TB control

Planned activities

- Strengthen referral system between hospitals where PPM is being pilot tested and existing health centres
- Introduce ISTC to collaborating private hospitals
- Strengthen monitoring of PPM collaborators to ensure that guidelines are followed
- Engage doctors in private hospitals in TB control activities
- Launch recording and reporting systems in private hospitals

EMPOWERING PEOPLE WITH TB, AND COMMUNITIES

Advocacy, communication and social mobilization

Achievements

- Organized campaign for World TB Day

Planned activities

- Organize World TB Day campaign
- Engage various media to promote TB control

Community participation in TB care

Achievements

- Involved community members in suspect identification and referral in some areas, following training

Planned activities

- Develop model for community involvement in slum area of Bangkok
- Launch "Royal Project" on King's birthday, focusing on community participation in TB care
- Continue training community members in suspect identification and referral
- Encourage cured patients to act as treatment supervisors

Patients' Charter

Achievements

The Patients' Charter was published in 2006 and was therefore not available for use in countries until then.

Planned activities

- None reported

RESEARCH, INCLUDING SPECIAL SURVEYS AND IMPACT MEASUREMENT

Achievements

- Implemented active population-based surveillance and enhanced TB control in collaboration with Thailand TB active surveillance network
- Studied technical capacity of provincial health staff on HIV surveillance, prevention and treatment among TB patients
- Conducted 3rd national DRS
- Carried out DRS on the Thai–Myanmar border

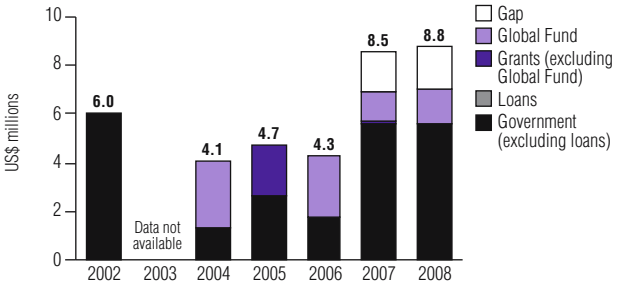
Planned activities

- Conduct prevalence of disease survey
- Finalize DRS along Thai–Cambodia border area

FINANCING THE STOP TB STRATEGY

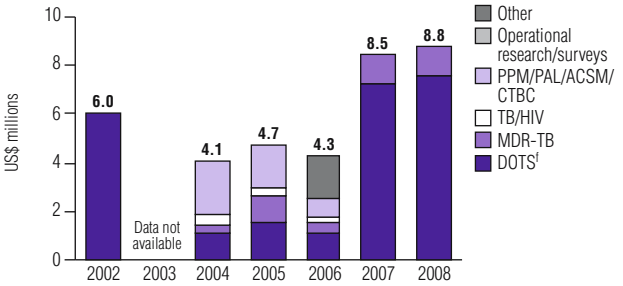
NTP budget by source of funding

NTP budget data since 2004 are for the TB cluster in Bangkok only; at this level most funding is from the government



NTP budget by line item

Since 2004 NTP budget data are for the TB cluster in Bangkok only; at this level most of the budget is for DOTS



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 since 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 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 for all provinces in South Africa in 2007.

SOURCES, METHODS AND ABBREVIATIONS

[a–h] Please see footnotes page 169.

1 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 declining with growing proportion of cases treated.

2 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 347/100 000 pop and mortality 27/100 000 pop/yr.

3 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.

– 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

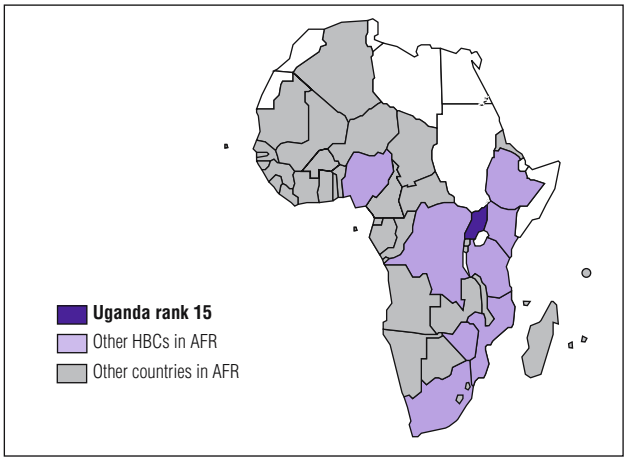
Two of the core components of DOTS (smear microscopy for diagnosis and direct observation of treatment) are still not routinely performed in all districts of Uganda. Treatment outcomes were reported for almost all patients included in the 2004 and 2005 cohorts of new smear-positive cases. However, in both years Uganda had the highest default rate of any high-burden country, despite the use of community-based TB care. Collaborative TB/HIV activities are expanding, but still in 2006 only one quarter of TB patients were tested for HIV. Although funding needs for 2007–2008 are higher than for previous years, the amount available is lower and limited funding is expected from central government for 2007–2008, resulting in increasing funding gaps. Even where funds are allocated, disbursement and absorption are problematic.

SURVEILLANCE AND EPIDEMIOLOGY, 2006

Population (thousands)[a]	29 899
Estimates of epidemiological burden1	
Incidence (all cases/100 000 pop/yr)	355
Trend in incidence rate (%/yr, 2005–2006)2	**-4.1**
Incidence (ss+/100 000 pop/yr)	154
Prevalence (all cases/100 000 pop)2	**561**
Mortality (deaths/100 000 pop/yr)2	**84**
Of new TB cases, % HIV+[b]	*16*
Of new TB cases, % MDR-TB (1997)[c]	0.5
Of previously treated TB cases, % MDR-TB (1997)[c]	4.4
Surveillance and DOTS implementation	
Notification rate (new and relapse/100 000 pop/yr)	136
Notification rate (new ss+/100 000 pop/yr)	68
DOTS case detection rate (new ss+, %)	**44**
DOTS treatment success (new ss+, 2005 cohort, %)	**73**
Of new pulmonary cases notified under DOTS, % ss+	58
Of new cases notified under DOTS, % extrapulmonary	10
Of new ss+ cases notified under DOTS, % in women	40
Of sub-national reports expected, % received at next reporting level[d]	97
Laboratory services3	
Number of laboratories performing smear microscopy	726
Number of laboratories performing culture	3
Number of laboratories performing DST	2
Of laboratories performing smear microscopy, % covered by EQA	71
Management of MDR-TB	
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	
National policy of counselling and testing TB patients for HIV?	Yes (to all patients)
National surveillance system for HIV-infection in TB patients?	Yes
Of TB patients (new and re-treatment) notified, % tested for HIV	26
Of TB patients tested for HIV, % HIV+	59
Of HIV+ TB patients detected, % receiving CPT	23
Of HIV+ TB patients detected, % receiving ART	8

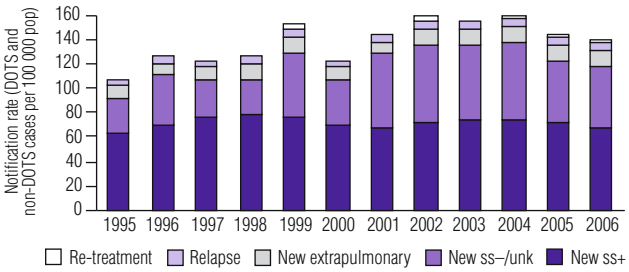
WHO Africa Region (AFR)

Rank based on estimated number of incident cases (all forms) in 2006



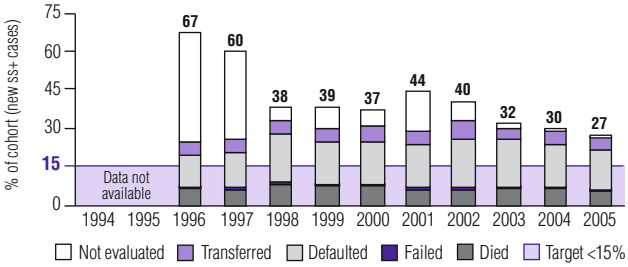
Case notifications

Notification rates peaked around 2003 and are now declining



Unfavourable treatment outcomes, DOTS

Low cure rate and high default rate continue to hinder achievement of treatment success rate target; outcomes reported for almost all new ss+ patients



DOTS expansion and enhancement	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
DOTS coverage (%)	–	0.0	100	100	100	100	100	100	100	100	100	100
DOTS notification rate (new and relapse/100 000 pop)	–	–	126	126	132	123	145	155	154	156	142	136
DOTS notification rate (new ss+/100 000 pop)	–	–	76	78	77	70	68	73	75	75	71	68
DOTS case detection rate (all new cases, %)	–	0.0	37	37	44	34	38	38	37	39	37	37
DOTS case detection rate (new ss+, %)	–	–	56	56	56	48	44	44	44	45	44	44
Case detection rate within DOTS areas (new ss+, %)[e]	–	–	56	56	56	48	44	44	44	45	44	44
DOTS treatment success (new ss+, %)	–	33	40	62	61	63	56	60	68	70	73	–
DOTS re-treatment success (ss+, %)	–	32	58	60	48	64	63	55	60	68	–	–

IMPLEMENTING THE STOP TB STRATEGY[1]

DOTS EXPANSION AND ENHANCEMENT

Political commitment, standardized treatment, and monitoring and evaluation system

Achievements

- Uganda Stop TB Partnership contracted 3 NGOs to provide additional human resources and to support TB control in 8 districts, general TB control activities in 7 districts and external quality assurance of sputum smear microscopy in Kampala
- Received approval for Global Fund round 6 proposal for TB control activities
- Printed more TB registers and reporting forms incorporating 2005 revisions to capture information about collaborative TB/HIV activities
- Produced 4th annual report of NTP activities

Planned activities

- Expand DOTS by involving more private-for-profit health providers in referral of TB suspects, diagnosis and treatment
- Use the MSH "management and organizational sustainability tool" (MOST) to assess management of NTP

Quality-assured bacteriology

Achievements

- Expanded external quality assurance of sputum smear microscopy using blinded rechecking
- Conducted refresher training courses on AFB smear microscopy at NRL and Buluba training centre, with participation of 127 laboratory technicians
- Expanded QA to 73 out of 80 districts
- Conducted monthly supervisory visits to districts by laboratory team

Planned activities

- Complete expansion of external quality control and assurance of microscopy services to remaining 7 districts: Abim, Apac, Kabong, Kotido, Lira, Moroto and Nakapirpirit
- Establish specimen referral system for DST
- Continue to retrain staff identified during supervisory visits in AFB smear microscopy and replace 200 old microscopes
- Together with FIND, establish a molecular laboratory for testing validating new technologies in the NRL by March 2008
- Introduce use of liquid culture media

Drug supply and management system

Achievements

- Carried out quality control of imported anti-TB drugs
- Conducted training in all districts on new logistic management information system (LMIS), which was operational in all districts in 2006

Planned activities

- Provide adequate stationery to enable districts and health facilities to record drug use and make drug requisitions
- Support supervision to monitor and motivate peripheral-level health workers to use LMIS appropriately. This includes identification of problems and helping health workers to find solutions, collaborative work on job training, assistance for missing equipment and repair of microscopes.
- Procure HPLC machine for national drug authority to increase capacity for batch testing
- Initiate discussions with manufacturer and NDA for fast-tracking registration of anti-TB drugs

TB/HIV, MDR-TB AND OTHER CHALLENGES

Collaborative TB/HIV activities

Achievements

- Expanded collaboration to more districts through training of district health workers on TB/HIV collaborative activities
- Developed and utilized training modules (health workers from 13 districts trained on these modules)
- Developed and adapted IEC materials to district settings

Planned activities

- Continue training to expand collaborative TB/HIV activities to 20 more districts with TBCAP/IUATLD support
- Increase proportion of TB patients tested for HIV, and proportion of HIV patients screened for TB
- Improve referral mechanisms between NTP and NAP services so that HIV-positive TB patients obtain appropriate care

Diagnosis and treatment of multidrug-resistant TB

Achievements

- Applied to Global Fund for funds for second-line anti-TB drugs and for DRS
- Established collaboration between MSF France, CDC, Medical Research Council, Cape Western University and the Mulago hospital, other regional hospitals and NRL to collect data on drug-resistant TB
- Managed 14 identified cases of MDR-TB
- Mulago hospital initiated treatment of 6 MDR-TB patients (14 patients known to be on second-line drug treatment in December 2007)
- Obtained, through GLC, second-line drugs to treat 50 MDR-TB patients

Planned activities

- Develop management protocol for drug-resistant cases
- Train clinicians and nurses to manage drug-resistant TB
- Conduct DST tests by NRL
- Apply to GLC for technical assistance
- Procure from GLC 100 courses of second-line drugs under Global Fund round 6 grant

[1] Unless otherwise specified, achievements are for financial year 2006; planned activities are for financial year 2007.

High-risk groups and special situations

Achievements

- Set up additional TB service points in camps for internally displaced people in 5 districts: Amuru, Gulu, Kaberamaido, Kitgum and Pader

Planned activities

- Establish TB services in 3 regional prisons of Gulu, Kabarole and Luzira in collaboration with ICRC
- Establish ACSM meetings with regional prisons and national army

HEALTH SYSTEM STRENGTHENING, INCLUDING HUMAN RESOURCE DEVELOPMENT

Achievements

- Involved broad range of partners from health and other sectors, including NGOs, in planning for TB control
- Held refresher training courses on AFB smear microscopy for 127 laboratory technicians at NRL and at Buluba training centre
- Supervised peripheral-level health workers, identifying gaps and finding appropriate solutions
- Developed PAL guidelines for clinical officers

Planned activities

- Recruit additional staff to address human resource shortages

ENGAGING ALL CARE PROVIDERS

Achievements

- Conducted training on DOTS and community-based DOTS strategies for non-NTP health-care providers
- Continued collaboration with private not-for-profit faith-based organizations
- Initiated agreements for collaboration with private providers

Planned activities

- Conduct situation analysis for PPM
- Design collaboration mechanism between NRL and districts to improve communication between private health providers and district supervisors by better defining roles and responsibilities
- Train and engage more private health providers (100 private practitioners in Kampala)
- Disseminate ISTC through planned regional workshops and meetings

EMPOWERING PEOPLE WITH TB, AND COMMUNITIES

Advocacy, communication and social mobilization

Achievements

- Carried out advocacy activities during commemoration of World TB Day in Mpigi District in 2007
- Held radio talk shows on TB and TB/HIV

Planned activities

- Commemorate World TB Day 2007 by organizing radio talk shows to mobilize community, especially in dancing and drama schools
- Continue monthly radio talk show to inform general public that TB is curable, that treatment is available at health centres and that it is important to complete treatment
- Provide daily information on TB/HIV
- Finalize TB communication strategy
- Activate ACSM Working Group of Uganda Stop TB Partnership

Community participation in TB care

Achievements

- Involved communities in TB control in all 78 districts; community volunteers selected as treatment supporters
- Community volunteers used in some districts to identify and refer TB suspects for sputum examination

Planned activities

- Mobilize communities on TB control, especially in referral of suspects and selection of TB volunteers

Patients' Charter

Achievements

The Patients' Charter was published in 2006 and was therefore not available for use in countries until then.

Planned activities

- Adapt, print and disseminate Patients' Charter in clinics and during all meetings
- Develop methodology to strengthen collaboration with Uganda National Health Consumers' Organisation

RESEARCH, INCLUDING SPECIAL SURVEYS AND IMPACT MEASUREMENT

Achievements

- Completed "Barriers to TB/HIV collaborative activities" study supported by IUATLD and USAID
- Initiated recruitment of patients for study of HAART in TB patients in Buluba

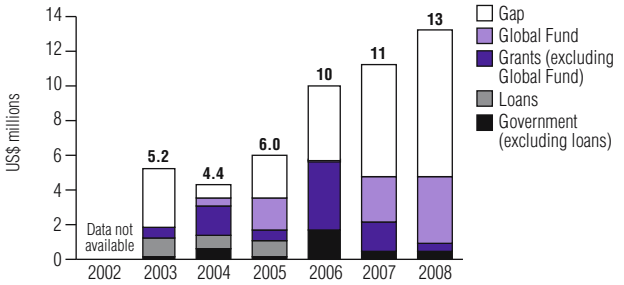
Planned activities

- Conduct DRS to establish prevalence of and patterns of resistance
- Carry out national census of laboratories with support from FIND
- Conduct disease prevalence survey in 2008
- Commence in-depth analysis of routine surveillance data in 2008

FINANCING THE STOP TB STRATEGY

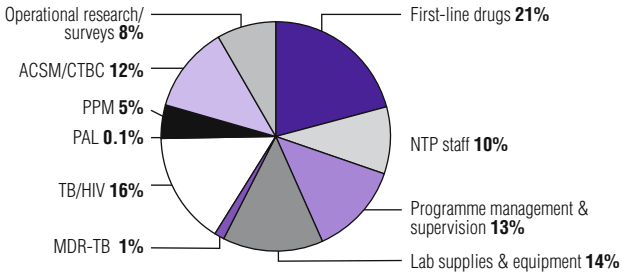
NTP budget by source of funding

Decreased government funding and persistently large funding gaps



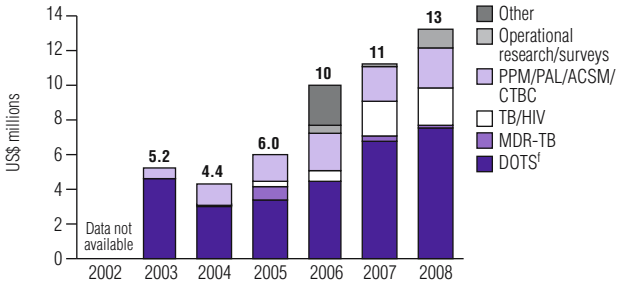
NTP budget by line item, 2008

The largest components of the NTP budget are DOTS (58%) and collaborative TB/HIV activities (16%)



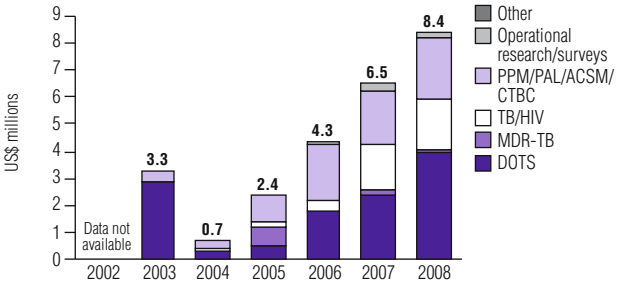
NTP budget by line item

Increasing funding needs for all components of the Stop TB Strategy



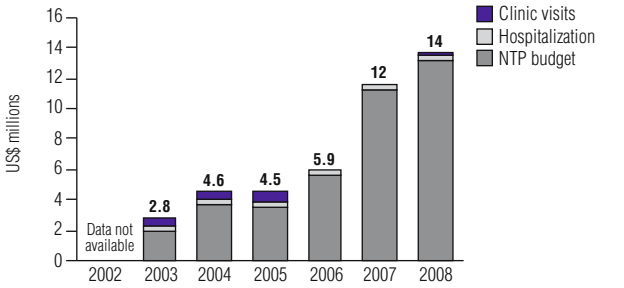
NTP funding gap by line item

Almost all budget for TB/HIV, PPM, ACSM and community involvement is unfunded



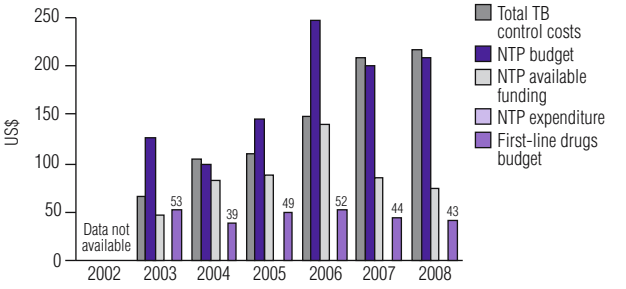
Total TB control costs by line item[4]

Cost of clinic visits for DOT per TB patient based on 12 visits (2003–2005) and 3 visits (2006–2008); small number of visits to health facilities reflects role of community volunteers



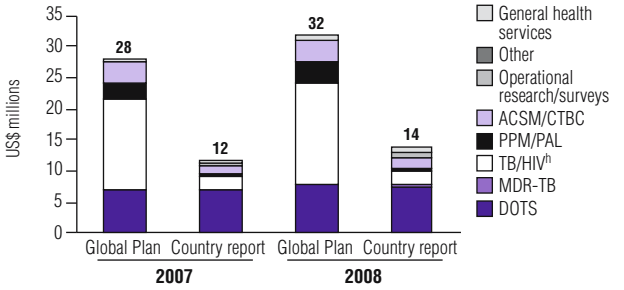
Per patient costs, budgets and expenditures[5]

Increasing costs per patient but decreasing available funding per patient



Comparison of country report and Global Plan:[g] total TB control costs, 2007–2008

Global Plan and country report similar for DOTS component; costs in Global Plan much higher than country report for other components of the Stop TB Strategy, especially TB/HIV



NTP budget and funding gap by Stop TB Strategy component

	2007		2008	
(US$ millions)	BUDGET	GAP	BUDGET	GAP
DOTS expansion and enhancement	6.8	2.4	7.5	4.0
TB/HIV, MDR-TB and other challenges	2.2	1.8	2.3	2.0
Health system strengthening	0.02	0.02	0.02	0.02
Engage all care providers	0.5	0.5	0.6	0.6
People with TB, and communities	1.5	1.5	1.6	1.6
Research	0.3	0.3	1.1	0.2
Other	0	0	0	0

Financial indicators for TB

Government contribution to NTP budget (including loans)	4.6%	4.0%
Government contribution to total cost of TB control (including loans)	8.6%	7.9%
NTP budget funded	42%	36%
Per capita health financial indicators (US$)		
NTP budget per capita	0.4	0.4
Total costs for TB control per capita	0.4	0.4
Funding gap per capita	0.2	0.3
Government health expenditure per capita (2004)	6.2	
Total health expenditure per capita (2004)	19	

SOURCES, METHODS AND ABBREVIATIONS

[a–h] Please see footnotes page 169.

1 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).

2 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 56/100 000 pop/yr.

3 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.

4 Total TB control costs for 2003–2006 are based on available funding, and those for 2007–2008 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.

5 NTP available funding for 2003–2008 is based on prospectively reported budget data, and estimated as the total budget minus any reported funding gap.

– 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

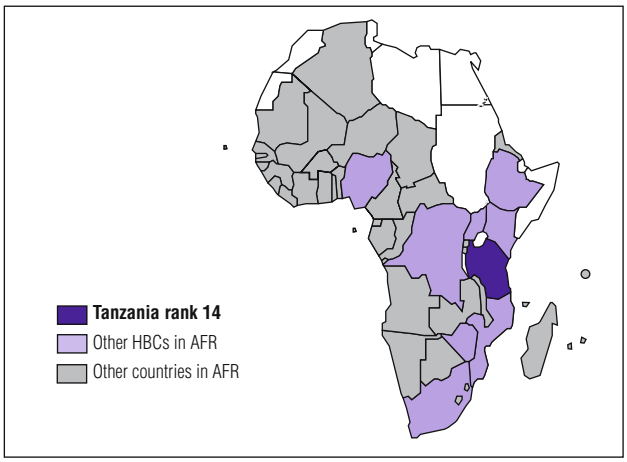
In 2008 the United Republic of Tanzania will benefit from a massive increase in the budget for TB control that is almost met by a corresponding increase in available funding. The planned expansion of collaborative TB/HIV activities to the whole country in 2007, use of community-based TB care in more districts and formal collaboration with private practitioners should improve both the case detection rate and treatment success. The provision of ART to HIV-positive TB patients is likely to reduce the currently high death rate, and plans to improve the recording and reporting system may help reduce the number of patients lost to follow up after transfer. Management of MDR-TB was begun in 2007; preparations began in 2006 with the construction of laboratories and hospital wards and the recruitment of personnel.

SURVEILLANCE AND EPIDEMIOLOGY, 2006

Population (thousands)[a]	39 459
Estimates of epidemiological burden[1]	
Incidence (all cases/100 000 pop/yr)	312
Trend in incidence rate (%/yr, 2005–2006)[2]	**-3.9**
Incidence (ss+/100 000 pop/yr)	135
Prevalence (all cases/100 000 pop)[2]	**459**
Mortality (deaths/100 000 pop/yr)[2]	**66**
Of new TB cases, % HIV+[b]	*18*
Of new TB cases, % MDR-TB (2007)[c]	1.1
Of previously treated TB cases, % MDR-TB (2007)[c]	0.0
Surveillance and DOTS implementation	
Notification rate (new and relapse/100 000 pop/yr)	150
Notification rate (new ss+/100 000 pop/yr)	63
DOTS case detection rate (new ss+, %)	**46**
DOTS treatment success (new ss+, 2005 cohort, %)	**82**
Of new pulmonary cases notified under DOTS, % ss+	55
Of new cases notified under DOTS, % extrapulmonary	22
Of new ss+ cases notified under DOTS, % in women	37
Of sub-national reports expected, % received at next reporting level[d]	100
Laboratory services[3]	
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	
Of new cases notified, % receiving DST at start of treatment	0.6
Of new cases receiving DST at start of treatment, % MDR-TB	1
Of re-treatment cases notified, % receiving DST	3.7
Of re-treatment cases receiving DST, % MDR-TB	5.3
Collaborative TB/HIV activities	
National policy of counselling and testing TB patients for HIV?	Yes (to all patients)
National surveillance system for HIV-infection in TB patients?	Yes
Of TB patients (new and re-treatment) notified, % tested for HIV	11
Of TB patients tested for HIV, % HIV+	50
Of HIV+ TB patients detected, % receiving CPT	57
Of HIV+ TB patients detected, % receiving ART	26

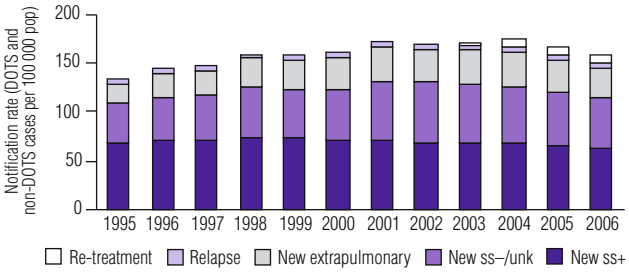
WHO Africa Region (AFR)

Rank based on estimated number of incident cases (all forms) in 2006



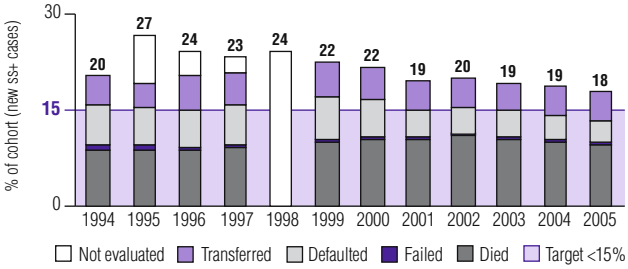
Case notifications

Notification rates for all case types declining



Unfavourable treatment outcomes, DOTS

Making slow progress towards treatment success rate target but death rate remains high



DOTS expansion and enhancement	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
DOTS coverage (%)	98	100	100	100	100	100	100	100	100	100	100	100
DOTS notification rate (new and relapse/100 000 pop)	133	145	147	159	159	161	177	169	168	167	159	150
DOTS notification rate (new ss+/100 000 pop)	67	70	70	74	73	71	71	68	68	69	66	63
DOTS case detection rate (all new cases, %)	47	48	46	49	47	46	48	47	47	48	47	47
DOTS case detection rate (new ss+, %)	57	56	53	54	52	49	48	45	46	47	47	46
Case detection rate within DOTS areas (new ss+, %)[e]	58	56	53	54	52	49	48	45	46	47	47	46
DOTS treatment success (new ss+, %)	73	76	77	76	78	78	81	80	81	81	82	–
DOTS re-treatment success (ss+, %)	76	75	75	73	74	73	76	77	75	76	77	–

IMPLEMENTING THE STOP TB STRATEGY[1]

DOTS EXPANSION AND ENHANCEMENT

Political commitment, standardized treatment, and monitoring and evaluation system

Achievements

- Declared TB a national emergency in August 2006
- Changed TB treatment regimen countrywide from 8 to 6 months by introducing rifamipicin in the continuation phase
- Set up quarterly meetings to computerize district TB recording and reporting countrywide, with support from CDC
- Revised TB reporting and recording forms and TB register in line with WHO recommendations
- Produced 11th annual report of NTP activities

Planned activities

- Develop strategic plan, including component on national TB emergency
- Monitor treatment outcomes and adverse drug reactions nationally
- Monitor accuracy and completeness of TB data by development of specific indicators

Quality-assured bacteriology

Achievements

- Completed national DRS

Planned activities

- Pilot test use of liquid culture media and introduce LED microscopy in 3 regions: Dar el Salaam, Mwanza and Tanga

Drug supply and management system

Achievements

- Introduced FDCs in priority areas, with support from GDF
- Distributed anti-TB drugs free of charge to all collaborating service providers, including NGOs and major private-for-profit health facilities

Planned activities

- Conduct physical inspection of drugs and drug stores in health facilities

TB/HIV, MDR-TB AND OTHER CHALLENGES

Collaborative TB/HIV activities

Achievements

- Developed national guidelines for collaborative TB/HIV activities
- Trained more than 1500 health workers to implement collaborative TB/HIV activities
- Scaled up HIV testing and counselling for TB patients, and provided ART and CPT to identified HIV-infected TB patients

Planned activities

- Provide CPT to 80% of HIV-positive TB patients
- Provide ART in TB clinics in 31 out of 156 districts
- Train 700 health workers at district level to implement collaborative TB/HIV activities

Diagnosis and treatment of multidrug-resistant TB

Achievements

- Built new TB wards and laboratory unit for management of MDR-TB
- Recruited 6 medical officers, 16 nurses, 1 pharmacist and 2 laboratory technologists for management of MDR-TB
- Strengthened laboratories in order to perform culture and DST

Planned activities

- Apply for second-line drugs for treatment of MDR-TB through GLC
- Train 26 clinicians, nurses and laboratory staff in management of MDR-TB
- Introduce drug resistance surveillance by providing DST for all previously treated cases and 10% of new cases
- Introduce EQA for culture and DST

High-risk groups and special situations

Achievements

- Initiated screening for TB in prisons and among refugee populations

Planned activities

- None reported

HEALTH SYSTEM STRENGTHENING, INCLUDING HUMAN RESOURCE DEVELOPMENT

Achievements

- Collaborated with planning department of MoH, ministries of justice and of defence, NAP and NGOs in planning for TB control
- Trained over 4000 general health workers in clinical management of TB and leprosy (1 health centre established in each village)
- Renovated 12 TB diagnostic centres in 7 districts
- Provided 60 microscopes and other laboratory supplies to diagnostic centres and to public and private health facilities in 18 districts, as part of FIDELIS programme
- Developed draft modules on TB control for inclusion in curricula for medical doctors and nurses of 4 medical schools

Planned activities

- Continue to renovate health infrastructure and increase supply of microscopes
- Develop long-term HRD plan for TB, with technical support from partners
- Train additional 600 general health workers

[1] Unless otherwise specified, achievements are for financial year 2006; planned activities are for financial year 2007.

ENGAGING ALL CARE PROVIDERS

Achievements

- Carried out national assessment of involvement of non-NTP providers in diagnosis and treatment of TB, with WHO technical support
- Supplied anti-TB drugs free of charge to private health centres

Planned activities

- Introduce patient-centred treatment approach to all districts, in close collaboration with PATH
- Strengthen PPM by involving major private providers in urban areas in TB control
- Introduce ISTC in medical school curriculum

EMPOWERING PEOPLE WITH TB, AND COMMUNITIES

Advocacy, communication and social mobilization

Achievements

- Collaborated with NGOs and influential community leaders in advocacy and sensitization about TB
- Developed new ACSM messages for TB/HIV

Planned activities

- Conduct social marketing of TB

Community participation in TB care

Achievements

- Involved communities in TB control in 11 districts
- Introduced patient-centred treatment and community-based DOT
- Supported creation of club for former TB patients
- Introduced community-based TB control activities in 3 districts with nomadic populations

Planned activities

- Involve former TB patients in TB centres in 31 districts
- Recruit focal persons at central level to coordinate community and empowerment activities
- Support creation of additional associations for former TB patients
- Monitor community-based DOTS in nomadic populations

Patients' Charter

Achievements

- Distributed 500 copies of Patient's Charter to districts

Planned activities

- Develop mechanisms to involve TB patients and former TB patients, recognizing their potential to contribute to TB control activities

RESEARCH, INCLUDING SPECIAL SURVEYS AND IMPACT MEASUREMENT

Achievements

- Conducted national DRS
- Began research projects on treatment of HIV in TB patients
- Initiated national survey of prevalence of infection (3 health workers attended workshops in Botswana and Latvia) and began preparations for national prevalence of disease survey

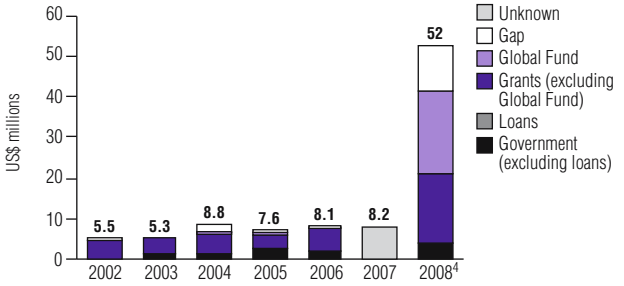
Planned activities

- Continue preparation for prevalence of disease survey

FINANCING THE STOP TB STRATEGY

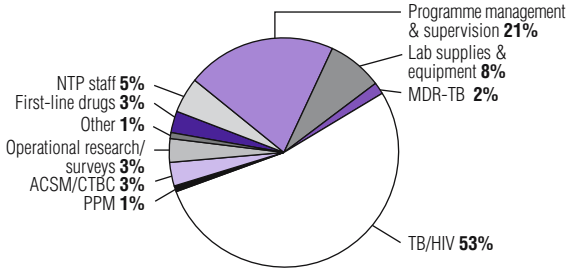
NTP budget by source of funding

NTP has developed plan and budget for 2008–2012 that covers all elements of the Stop TB Strategy; funding needs now much higher than previous years; while funding has grown, mostly from external donors and Global Fund, funding gaps remain



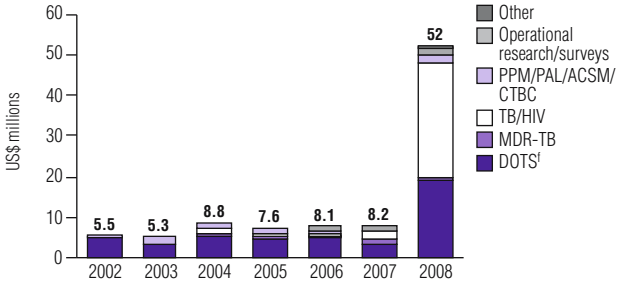
NTP budget by line item, 2008

Largest components of budget are TB/HIV (53%) and DOTS (37%); the NTP has estimated and reported a comprehensive budget for collaborative TB/HIV activities, including activities funded through the NAP



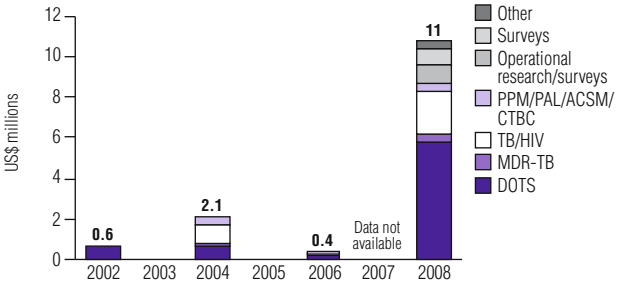
NTP budget by line item

Increased budget for DOTS component, mainly for supervision activities and training at peripheral level; 85% of TB/HIV budget is for activities conducted by the NAP



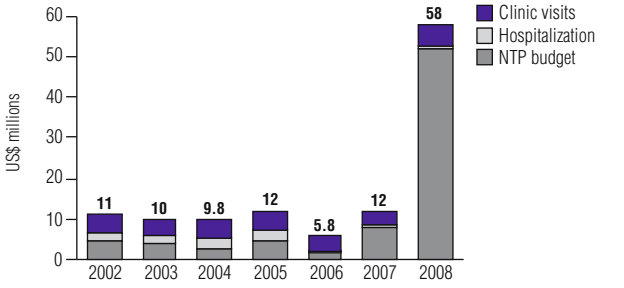
NTP funding gap by line item

Funding gap within DOTS mainly for training and laboratory supplies and equipment



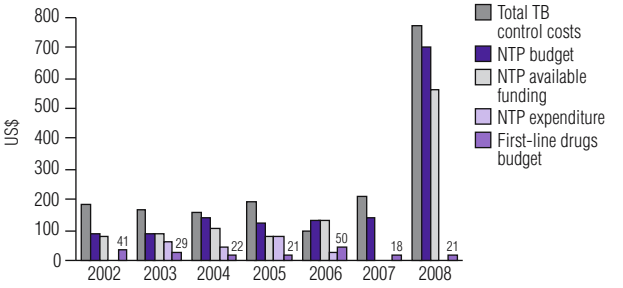
Total TB control costs by line item[5]

NTP budget will account for largest share of total TB control costs in 2008 if fully funded, whereas the use of general health services by TB patients accounts for the largest share of total TB control costs 2002–2005



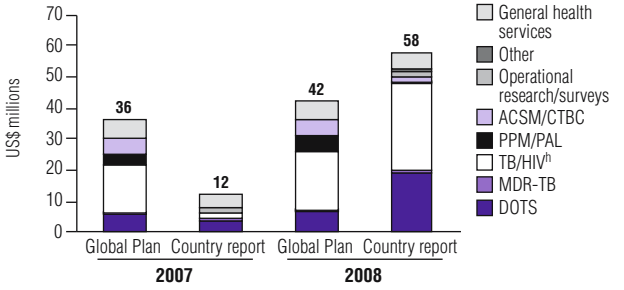
Per patient costs, budgets and expenditures[6]

Substantial increase in cost and budget per patient as TB control broadened in line with the Stop TB Strategy; increase in available funding per patient



Comparison of country report and Global Plan:[g] total TB control costs, 2007–2008

Planned implementation of DOTS and TB/HIV in 2008 ahead of Global Plan expectations; full costing of TB/HIV activities has brought costs reported by country in line with Global Plan; this might happen for other HBCs if similarly comprehensive assessments of costs were undertaken



NTP budget and funding gap by Stop TB Strategy component

	2007		2008	
(US$ millions)	BUDGET	GAP	BUDGET	GAP
DOTS expansion and enhancement	3.3	–	19	5.8
TB/HIV, MDR-TB and other challenges	3.2	–	29	2.5
Health system strengthening	0	–	0	0
Engage all care providers	0	–	0.4	0.3
People with TB, and communities	0	–	1.8	0.3
Research	1.7	–	1.8	1.8
Other	0	–	0.4	0.3

Financial indicators for TB

Government contribution to NTP budget (including loans)	–	8.0%
Government contribution to total cost of TB control (including loans)	–	16%
NTP budget funded	–	79%
Per capita health financial indicators (US$)		
NTP budget per capita	0.2	1.3
Total costs for TB control per capita	0.3	1.4
Funding gap per capita	–	0.3
Government health expenditure per capita (2004)	5.2	
Total health expenditure per capita (2004)	12	

SOURCES, METHODS AND ABBREVIATIONS

[a–h] Please see footnotes page 169.

1 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).

2 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 270/100 000 pop and mortality 36/100 000 pop/yr.

3 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.

4 Funding channelled through the NAP is mostly external financing, e.g. other donors or Global Fund. The split of these funds between Global Fund and other donors was not known This figure assumed a 50/50 split.

5 Total TB control costs for 2002 are based on available funding, whereas those for 2003–2006 are based on expenditure, and those for 2007–2008 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.

6 NTP available funding for 2004–2005 is based on the amount of funding actually received, using retrospective data; available funding for 2002–2003, 2006 and 2008 is based on prospectively reported budget data, and estimated as the total budget minus any reported funding gap.

– 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

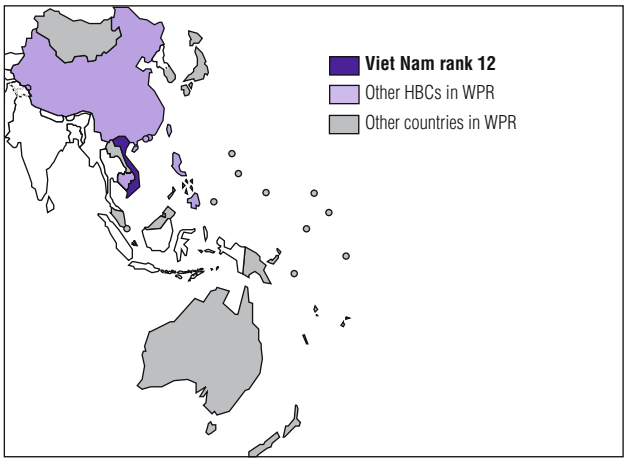
The national disease prevalence survey currently under way will provide a reassessment of the burden of TB in Viet Nam, and may also help explain the apparent lack of impact of the programme, despite having met the targets for case detection and treatment success for the past 10 years. Collaborative TB/HIV activities and management of MDR/TB are relatively new areas of work, demanding new skills and more funding. Despite increased funding for 2007 and 2008, gaps remain. Formal PPM activities are being scaled up, in an attempt to address the problems of poor TB treatment in the private sector.

SURVEILLANCE AND EPIDEMIOLOGY, 2006

Population (thousands)[a]	86 206
Estimates of epidemiological burden[1]	
Incidence (all cases/100 000 pop/yr)	173
Trend in incidence rate (%/yr, 2005–2006)[2]	**-1.0**
Incidence (ss+/100 000 pop/yr)	77
Prevalence (all cases/100 000 pop)[2]	**225**
Mortality (deaths/100 000 pop/yr)[2]	**23**
Of new TB cases, % HIV+[b]	5.0
Of new TB cases, % MDR-TB[c]	*2.7*
Of previously treated TB cases, % MDR-TB[c]	*19*
Surveillance and DOTS implementation	
Notification rate (new and relapse/100 000 pop/yr)	113
Notification rate (new ss+/100 000 pop/yr)	65
DOTS case detection rate (new ss+, %)	**85**
DOTS treatment success (new ss+, 2005 cohort, %)	**92**
Of new pulmonary cases notified under DOTS, % ss+	77
Of new cases notified under DOTS, % extrapulmonary	20
Of new ss+ cases notified under DOTS, % in women	27
Of sub-national reports expected, % received at next reporting level[d]	100
Laboratory services[3]	
Number of laboratories performing smear microscopy	874
Number of laboratories performing culture	18
Number of laboratories performing DST	2
Of laboratories performing smear microscopy, % covered by EQA	85
Management of MDR-TB	
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	
National policy of counselling and testing TB patients for HIV?	Yes (to all patients)
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+	5
Of HIV+ TB patients detected, % receiving CPT	–
Of HIV+ TB patients detected, % receiving ART	–

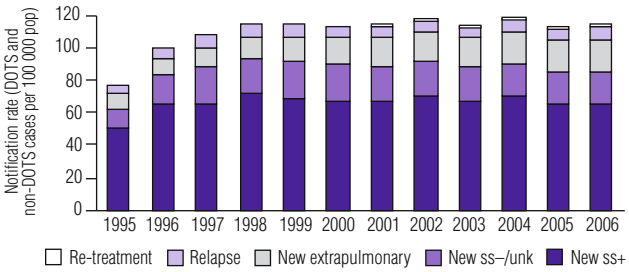
WHO Western Pacific Region (WPR)

Rank based on estimated number of incident cases (all forms) in 2006



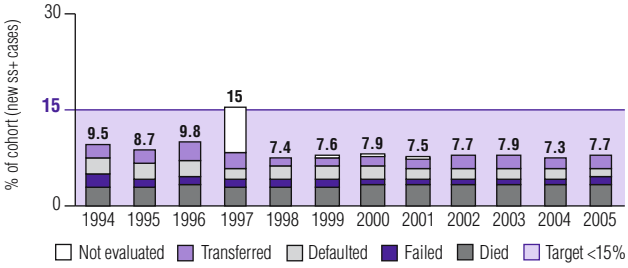
Case notifications

Notification rates fairly stable since late 1990s, despite consistently high case detection and treatment success rates



Unfavourable treatment outcomes, DOTS

Treatment success rates consistently at or above target for more than 10 years



DOTS expansion and enhancement	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
DOTS coverage (%)	50	95	93	96	99	100	100	100	100	100	100	100
DOTS notification rate (new and relapse/100 000 pop)	38	68	103	110	113	114	113	117	112	117	112	113
DOTS notification rate (new ss+/100 000 pop)	26	51	66	69	69	67	68	70	68	70	65	65
DOTS case detection rate (all new cases, %)	18	33	51	55	58	58	59	61	59	62	60	61
DOTS case detection rate (new ss+, %)	30	59	78	82	83	82	83	87	85	89	84	85
Case detection rate within DOTS areas (new ss+, %)[e]	59	62	84	86	84	82	83	87	85	89	84	85
DOTS treatment success (new ss+, %)	91	90	85	93	92	92	93	92	92	93	92	–
DOTS re-treatment success (ss+, %)	81	84	80	84	87	79	85	85	85	84	83	–

IMPLEMENTING THE STOP TB STRATEGY[1]

DOTS EXPANSION AND ENHANCEMENT

Political commitment, standardized treatment, and monitoring and evaluation system

Achievements

- Hosted end-term external evaluation of the NTP (2001–2005)
- Produced 21st annual report of NTP activities

Planned activities

All planned activities reported for 2007 are described under the headings below.

Quality-assured bacteriology

Achievements

- Piloted laboratory quality assurance services (LQAS) in 4 provincial laboratories: Quang Ninh, Da Nang, Ho Chi Minh, and Tien Giang

Planned activities

- Implement LQAS in 17 provincial laboratories (bringing total to 21 out of 64 provinces)
- Establish DST services required for management of MDR-TB

Drug supply and management system

Achievements

- Ensured uninterrupted supply of quality-assured first-line drugs, provided free-of-charge to patients

Planned activities

- Organize a meeting with MOH on procurement of anti-TB drugs, especially second-line drugs
- Obtain technical support from MSH on procurement, management and distribution of anti-TB drugs

TB/HIV, MDR-TB AND OTHER CHALLENGES

Collaborative TB/HIV activities

Achievements

- Pilot tested HIV counselling and testing in TB units in 3 provinces with high HIV prevalence
- Developed forms and registers for collaborative TB/HIV activities and trained TB/HIV staff in use of new forms and registers
- Initiated development of national policy guidelines on collaborative TB/HIV activities

Planned activities

- Establish HIV counselling and testing centres in additional TB units
- Complete development of national policy guidelines on collaborative TB/HIV activities
- Introduce routine screening for TB in HIV-positive people

Diagnosis and treatment of multidrug-resistant TB

Achievements

- Established focus group for MDR-TB
- Conducted situation analysis on availability of second-line anti-TB drugs outside NTP
- Studied treatment history of failures, relapse and chronic TB cases and investigated anti-TB drug resistance patterns among re-treatment TB cases

Planned activities

- Implement management of MDR-TB in pilot sites
- Initiate DRS and computerize data for ongoing DRS as well as laboratory data on MDR-TB and XDR-TB
- Submit proposal to GLC
- Develop guidelines for management of MDR-TB and implement them in Ho Chi Minh City

High-risk groups and special situations

Achievements

- Included special activities for TB among prisoners and in ethnic minority groups, and initiatives to address gender-related issues in NTP development plan 2007–2011

Planned activities

- Increase access to and use of health services for ethnic minority groups and poor people by expanding integrated community health services to remote and mountainous districts/areas

HEALTH SYSTEM STRENGTHENING, INCLUDING HUMAN RESOURCE DEVELOPMENT

Achievements

- Expanded "Strengthening primary health-care network and TB control" project to remote and mountainous areas
- Conducted training on TB for general health staff
- Completed PPM scale up in the country, which is a pathfinder for creating linkages between the private and public health sectors

Planned activities

- Continue capacity-building on TB control for TB staff, HIV workers, the private sector and general health-care workers
- Develop plan for PAL adaptation and implementation and PAL guidelines

[1] Unless otherwise specified, achievements are for financial year 2006; planned activities are for financial year 2007.

ENGAGING ALL CARE PROVIDERS

Achievements

- Instituted formal PPM activities in 17 out of 64 provincial TB units; trained private practitioners in TB control, and signed agreements

Planned activities

- Establish PPM advisory board at national level
- Develop PPM strategy and operational guidelines

EMPOWERING PEOPLE WITH TB, AND COMMUNITIES

Advocacy, communication and social mobilization

Achievements

- Undertook ACSM activities in all 64 provincial TB units
- Conducted workshop on TB with the Viet Nam Women's Union, Viet Nam Farmer's Union and Ministry of Education
- Conducted communication campaign on World TB Day
- Developed IEC material on TB for communes

Planned activities

- Strengthen cooperation on IEC with the Viet Nam Women's Union, Viet Nam Farmer's Union and the Ministry of Education
- Communicate knowledge on TB to communities through TV, radio, newspapers, posters, leaflets and other media
- Develop IEC material for ethnic minorities in mountainous provinces
- Develop IEC material for mass media

Community participation in TB care

Achievements

- Involved communities in TB control in all 673 district TB units; in suspect identification and referral, and patient treatment support

Planned activities

- Develop IEC material for communes, including booklet on TB and TB/HIV

Patients' Charter

Achievements

The Patients' Charter was published in 2006 and was therefore not available for use in countries until then.

Planned activities

- None reported

RESEARCH, INCLUDING SPECIAL SURVEYS AND IMPACT MEASUREMENT

Achievements

- Developed protocol and commenced disease prevalence survey; completed sampling in all 70 clusters

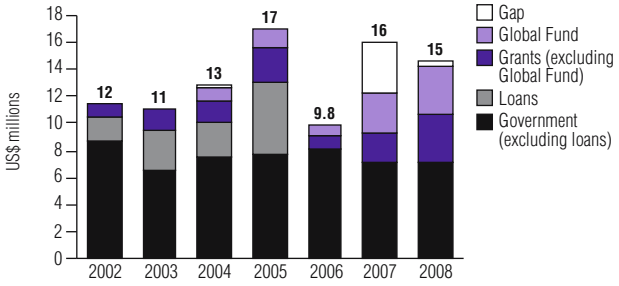
Planned activities

- Analyse results of disease prevalence survey
- Conduct surveys on TB/HIV morbidity and mortality

FINANCING THE STOP TB STRATEGY

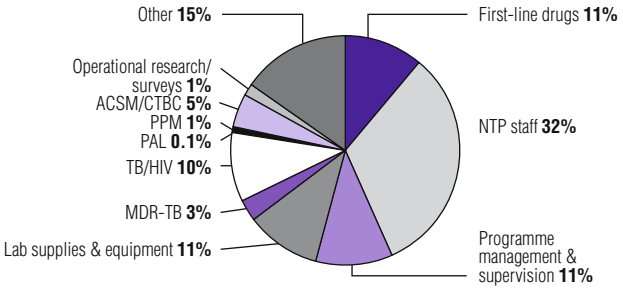
NTP budget by source of funding

Increased funding from the Global Fund and other donors in 2007 and 2008, reducing funding gaps that existed in 2007



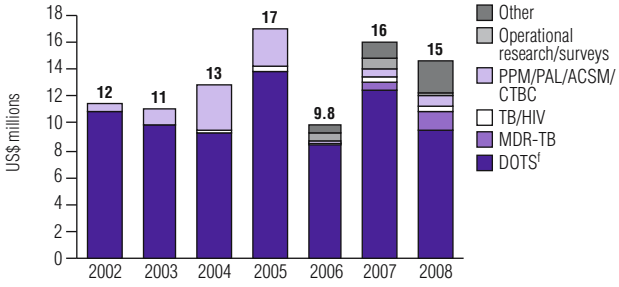
NTP budget by line item, 2008

Largest component of budget is for DOTS (65%), followed by collaborative TB/HIV activities (10%)



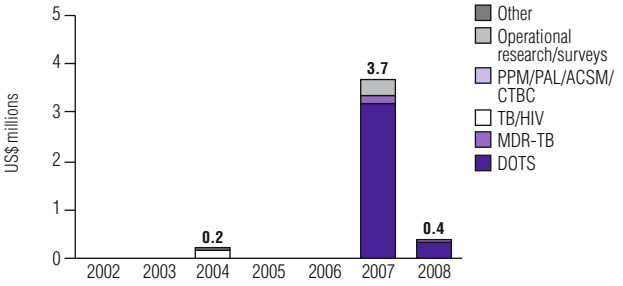
NTP budget by line item

Increased funding needs for new components of the Stop TB Strategy in 2007–2008, such as MDR-TB, PPM and ACSM; increased budget for DOTS reflects plan to establish 5 new culture laboratories



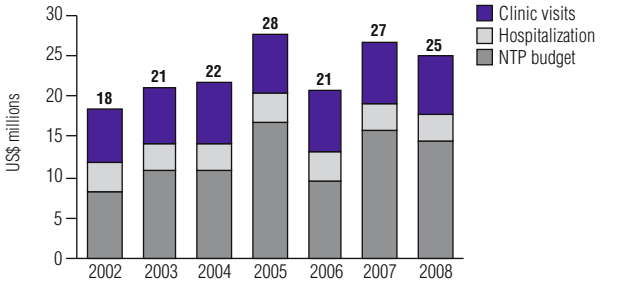
NTP funding gap by line item

Funding gap within DOTS component mainly for first-line drugs and routine programme management and supervision activities; funding gap in 2008 much smaller than in 2007



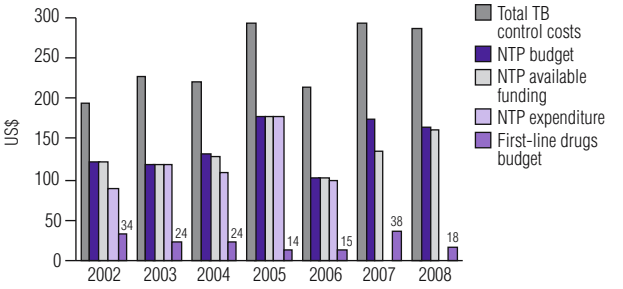
Total TB control costs by line item[4]

Cost of outpatient visits during TB treatment based on 66 visits; hospitalization costs based on estimate that 60% of TB patients are admitted for an average of 30 days



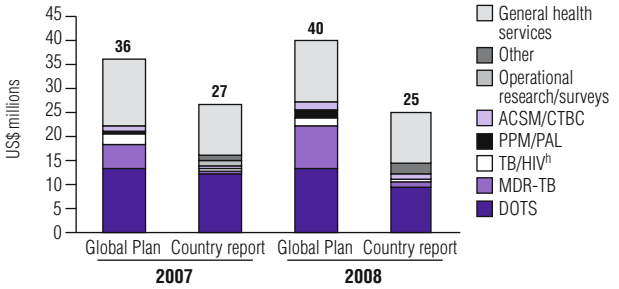
Per patient costs, budgets and expenditures[5]

Expenditure per patient in 2006 lowest since 2003; highest first-line drugs budget per patient in 2007



Comparison of country report and Global Plan:[9] total TB control costs, 2007–2008

Targets for MDR-TB patients to be treated in Global MDR/XDR response plan much higher than scaling-up planned by NTP



NTP budget and funding gap by Stop TB Strategy component

	2007		2008	
(US$ millions)	BUDGET	GAP	BUDGET	GAP
DOTS expansion and enhancement	12	3.2	9.4	0.3
TB/HIV, MDR-TB and other challenges	1.0	0.2	1.8	0.1
Health system strengthening	0	0	0.01	0
Engage all care providers	0.02	0.01	0.1	0
People with TB, and communities	0.5	0	0.7	0
Research	0.9	0.3	0.2	0.01
Other	1.0	0	2.2	0

Financial indicators for TB

Government contribution to NTP budget (including loans)	45% (2007), 49% (2008)
Government contribution to total cost of TB control (including loans)	67% (2007), 70% (2008)
NTP budget funded	77% (2007), 97% (2008)
Per capita health financial indicators (US$)	
NTP budget per capita	0.2 (2007), 0.2 (2008)
Total costs for TB control per capita	0.3 (2007), 0.3 (2008)
Funding gap per capita	0.005 (2007), 0.001 (2008)
Government health expenditure per capita (2004)	8.1
Total health expenditure per capita (2004)	30

SOURCES, METHODS AND ABBREVIATIONS

[a–h] Please see footnotes page 169.

1 Incidence, prevalence and mortality estimates include patients infected with HIV. Incidence estimate based on assumption of ARTI of 1.7% in 1997, and assumed to be declining at 1% per year as in other countries in WPR.

2 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 444/100 000 pop and mortality 39/100 000 pop/yr.

3 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.

4 Total TB control costs for 2002–2006 are based on expenditure, whereas those for 2007–2008 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.

5 NTP available funding for 2004–2006 is based on the amount of funding actually received, using retrospective data; available funding for 2002–2003 and 2007–2008 is based on prospectively reported budget data, and estimated as the total budget minus any reported funding gap.

– 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

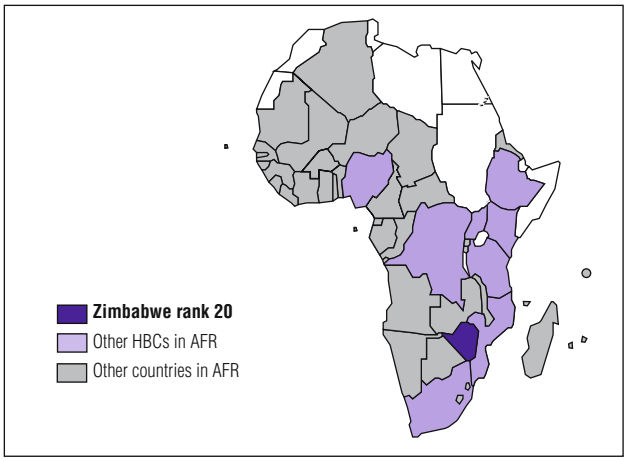
While the Zimbabwe NTP has a policy of testing TB patients for HIV, and providing ART and CPT to HIV-positive patients, no data are available on the number of patients tested or treated. There is no designated TB/HIV coordinator in either the NTP or the national AIDS control programme. Treatment outcomes are poor and have shown no improvement over the past 8 years; large proportions of patients die, default or are lost to follow-up during transfer. Funding and disbursement problems continue; budgets and funding for 2007 and 2008 are considerably lower than in previous years.

SURVEILLANCE AND EPIDEMIOLOGY, 2006

Population (thousands)[a]	13 228
Estimates of epidemiological burden[1]	
Incidence (all cases/100 000 pop/yr)	557
Trend in incidence rate (%/yr, 2005–2006)[2]	**-6.8**
Incidence (ss+/100 000 pop/yr)	227
Prevalence (all cases/100 000 pop)[2]	**597**
Mortality (deaths/100 000 pop/yr)[2]	**131**
Of new TB cases, % HIV+[b]	*43*
Of new TB cases, % MDR-TB (1995)[c]	1.9
Of previously treated TB cases, % MDR-TB (1995)[c]	8.3
Surveillance and DOTS implementation	
Notification rate (new and relapse/100 000 pop/yr)	335
Notification rate (new ss+/100 000 pop/yr)	96
DOTS case detection rate (new ss+, %)	**42**
DOTS treatment success (new ss+, 2005 cohort, %)	**68**
Of new pulmonary cases notified under DOTS, % ss+	35
Of new cases notified under DOTS, % extrapulmonary	15
Of new ss+ cases notified under DOTS, % in women	47
Of sub-national reports expected, % received at next reporting level[d]	100
Laboratory services[3]	
Number of laboratories performing smear microscopy	180
Number of laboratories performing culture	1
Number of laboratories performing DST	1
Of laboratories performing smear microscopy, % covered by EQA	6
Management of MDR-TB	
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	
National policy of counselling and testing TB patients for HIV?	Yes (to all patients)
National surveillance system for HIV-infection in TB patients?	No
Of TB patients (new and re-treatment) notified, % tested for HIV	0
Of TB patients tested for HIV, % HIV+	–
Of HIV+ TB patients detected, % receiving CPT	0
Of HIV+ TB patients detected, % receiving ART	0

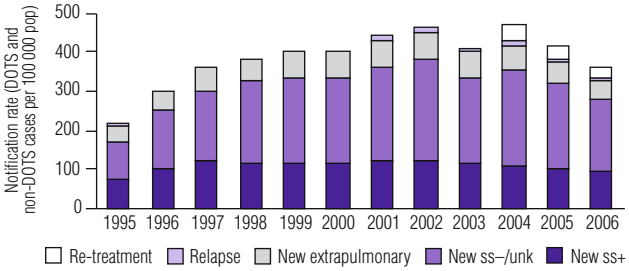
WHO Africa Region (AFR)

Rank based on estimated number of incident cases (all forms) in 2006



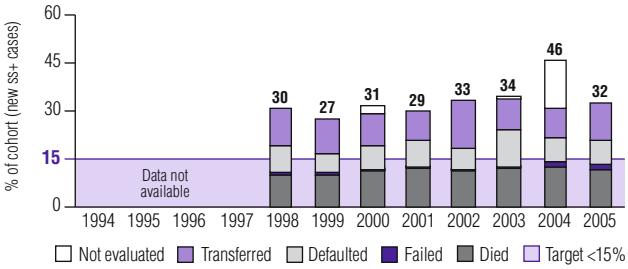
Case notifications

Significant decline in ss– notifications in recent years



Unfavourable treatment outcomes, DOTS

Reporting of outcomes rate improved over 2004 cohort, but outcomes of treatment showing no improvement since 1998



DOTS expansion and enhancement	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
DOTS coverage (%)	–	0.0	0.0	100	12	100	100	100	100	100	100	100
DOTS notification rate (new and relapse/100 000 pop)	–	–	–	381	400	402	440	460	411	431	385	335
DOTS notification rate (new ss+/100 000 pop)	–	–	–	117	115	114	120	124	112	112	100	96
DOTS case detection rate (all new cases, %)	–	0.0	0.0	65	65	62	63	66	59	65	63	58
DOTS case detection rate (new ss+, %)	–	–	–	50	47	45	45	46	41	44	41	42
Case detection rate within DOTS areas (new ss+, %)[e]	–	–	–	50	409	45	45	46	41	44	41	42
DOTS treatment success (new ss+, %)	–	–	–	70	73	69	71	67	66	54	68	–
DOTS re-treatment success (ss+, %)	–	–	–	–	66	65	61	63	62	53	60	–

IMPLEMENTING THE STOP TB STRATEGY[1]

DOTS EXPANSION AND ENHANCEMENT

Political commitment, standardized treatment, and monitoring and evaluation system

Achievements
- Finalized national strategic plan for TB control 2006–2010
- Revised NTP manual
- Produced annual report of NTP activities

Planned activities
- Train health workers on DOTS
- Distribute new NTP manual

Quality-assured bacteriology

Achievements
- Developed plan for training of laboratory technicians, including training by NRL of 45 microscopists in smear microscopy, malaria microscopy and HIV rapid testing
- Procured reagents and materials to resume culture and DST
- Provided support and supervision to peripheral-level laboratories

Planned activities
- Train laboratory technicians
- Secure external technical assistance for DST

Drug supply and management system

Achievements
- Developed plan for nationwide adoption of FDCs

Planned activities
- Train health workers on FDC management and initiate distribution of FDCs
- Carry out forecasting and quantification exercise to guide improved management of anti-TB drug stocks
- Train health providers on drug management

TB/HIV, MDR-TB AND OTHER CHALLENGES

Collaborative TB/HIV activities

Achievements
- Developed plan to strengthen collaboration between NTP and NAP
- Set up a national coordinating body
- Revised monitoring and evaluation tools to capture HIV information

Planned activities
- Develop comprehensive policy on collaborative TB/HIV activities
- Develop guidelines on TB/HIV for health providers
- Pilot test provision of IPT in selected health centres

Diagnosis and treatment of multidrug-resistant TB

Achievements
- Published national guidelines for treatment of MDR-TB
- Developed MDR-TB/XDR-TB emergency strategic plan

Planned activities
- Update MDR-TB guidelines
- Finalize MDR-TB/XDR-TB response plans

High-risk groups and special situations

Achievements
- Screened prisoners for TB on admission
- Implemented TB diagnosis and treatment in prisons

Planned activities
- Provide transport free of charge to TB patients

HEALTH SYSTEM STRENGTHENING, INCLUDING HUMAN RESOURCE DEVELOPMENT

Achievements
- Involved broad range of partners from health and other sectors in planning for TB control

Planned activities
- None reported

ENGAGING ALL CARE PROVIDERS

Achievements
- None reported; no formal PPM activities in place

Planned activities
- Revise PPM policy and guidelines
- Train private health providers on TB diagnosis and treatment in line with NTP guidelines
- Disseminate ISTC

[1] Unless otherwise specified, achievements are for financial year 2006; planned activities are for financial year 2007.

EMPOWERING PEOPLE WITH TB, AND COMMUNITIES

Advocacy, communication and social mobilization

Achievements

- Commemorated World TB Day

Planned activities

- Commemorate World TB Day
- Develop ACSM strategy
- Develop multimedia information package to raise awareness of TB

Community participation in TB care

Achievements

- Involved community members in some districts in referral of suspects and DOT, but without formal training
- Provided travel warrants enabling patients to travel to hospital for follow-up

Planned activities

- Develop strategy for community-based TB care
- Involve communities in all districts in TB suspect referral and DOT, with support from NGOs and formal training for community members
- Develop alternative mechanism to provide transport to patients, as current system relies on transport operators accepting warrants, which they are reluctant to do given reimbursement delays

Patients' Charter

Achievements

The Patients' Charter was published in 2006 and was therefore not available for use in countries until then.

Planned activities

- None reported

RESEARCH, INCLUDING SPECIAL SURVEYS AND IMPACT MEASUREMENT

Achievements

- None reported

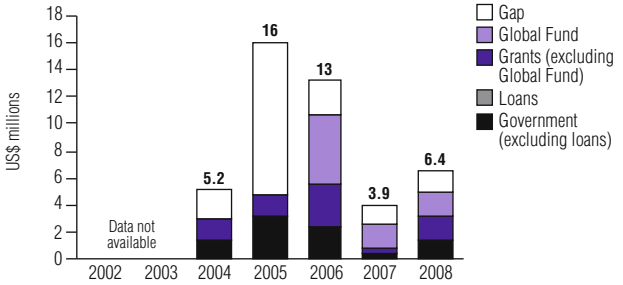
Planned activities

- None reported

FINANCING THE STOP TB STRATEGY

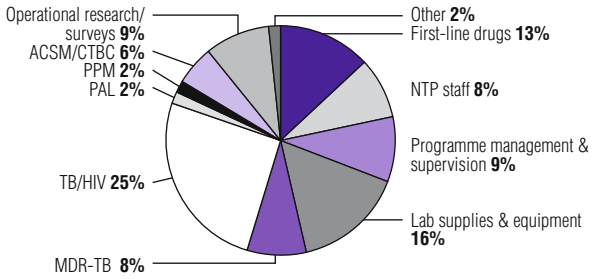
NTP budget by source of funding

Decreased budget reported in 2007 and 2008 despite 27% increase in expected number of patients to be treated in 2007 compared with 2006



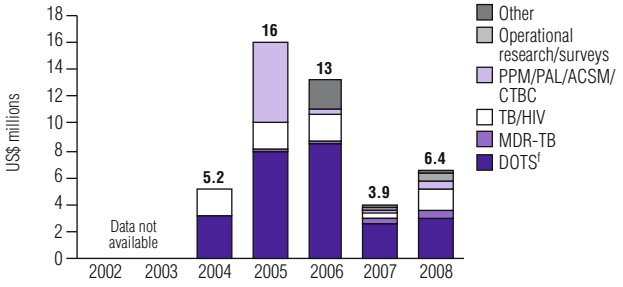
NTP budget by line item, 2008

Largest share of budget is for DOTS component (45%) and collaborative TB/HIV activities (25%)



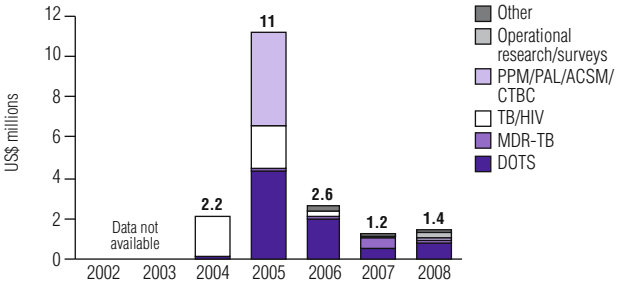
NTP budget by line item

Decreased funding within DOTS component mainly due to reduced budget for first-line drugs and routine programme management and supervision activities



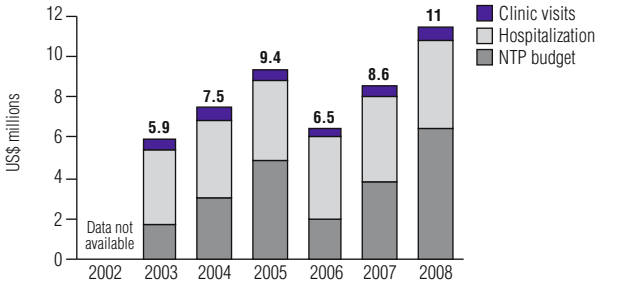
NTP funding gap by line item

Funding gap within DOTS component mainly for dedicated NTP staff and first-line drugs



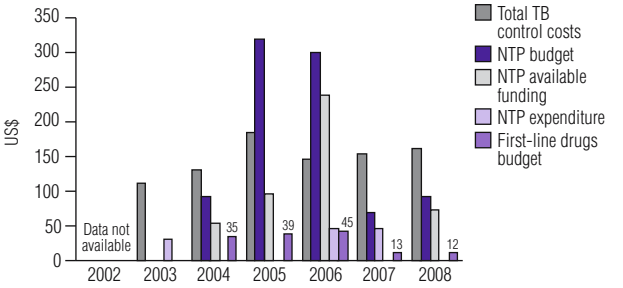
Total TB control costs by line item[4]

Hospitalization costs are for 1660 estimated dedicated TB beds



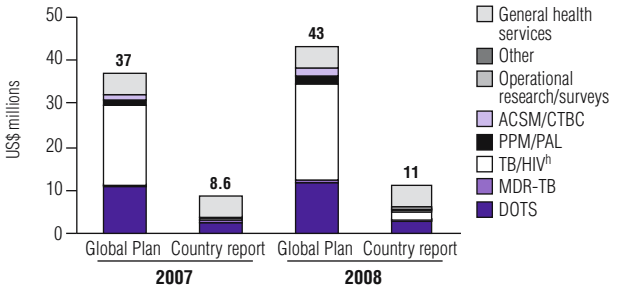
Per patient costs, budgets and expenditures[5]

Cost and budget per patient substantially lower in 2007 and 2008 compared with the previous two years



Comparison of country report and Global Plan:[g] total TB control costs, 2007–2008

Substantial differences between country report and Global Plan; Global Plan allows DOTS budget to increase in line with expected number of patients whereas country report does not; big discrepancy in TB/HIV costs, as in several other HBCs



NTP budget and funding gap by Stop TB Strategy component

	2007		2008	
(US$ millions)	BUDGET	GAP	BUDGET	GAP
DOTS expansion and enhancement	2.6	0.6	3.0	0.9
TB/HIV, MDR-TB and other challenges	1.0	0.6	2.2	0.1
Health system strengthening	0.02	0.02	0.1	0.05
Engage all care providers	0.02	0.02	0.1	0.05
People with TB, and communities	0.1	0.03	0.4	0.03
Research	0.1	0.04	0.6	0.3
Other	0.05	0.03	0.1	0.04

Financial indicators for TB

Government contribution to NTP budget (including loans)	9.1%	21%
Government contribution to total cost of TB control (including loans)	59%	55%
NTP budget funded	68%	78%
Per capita health financial indicators (US$)		
NTP budget per capita	0.3	0.5
Total costs for TB control per capita	0.7	0.9
Funding gap per capita	0.1	0.1
Government health expenditure per capita (2004)	13	
Total health expenditure per capita (2004)	27	

SOURCES, METHODS AND ABBREVIATIONS

[a–h] Please see footnotes page 169.

1 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).

2 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 246/100 000 pop and mortality 47/100 000 pop/yr.

3 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.

4 Total TB control costs for 2003 and 2006 are based on expenditure, whereas those for 2004–2005 are based on available funding, and those for 2007–2008 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.

5 NTP available funding for 2004–2006 is based on the amount of funding actually received, using retrospective data; available funding for 2002–2003 and 2007–2008 is based on prospectively reported budget data, and estimated as the total budget minus any reported funding gap.

– 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.

Footnotes

[a] *World population prospects – the 2006 revision*. New York, United Nations Population Division, 2007.

[b] Estimates of HIV prevalence in incident TB cases (all ages). Estimates in regular type are based on national surveillance or survey data. Those in italics are derived from the UNAIDS estimate of HIV prevalence in the general population, using an incidence rate ratio of 6.

[c] Estimates of prevalence of MDR-TB are from *Anti-tuberculosis drug resistance in the world. Fourth global report*. The WHO/IUATLD Global Project on Anti-tuberculosis Drug Resistance Surveillance. Geneva, 2008. World Health Organization. WHO/HTM/TB/2008.394. Estimates shown in regular type are survey data. Estimates in italics are estimates based on several sub-national surveys or on a multivariate regression analysis.

[d] Completeness of reporting assessed at lowest level in reporting hierarchy for which information is available.

[e] Case detection within DOTS areas calculated by dividing national case detection rate (new ss+) by DOTS coverage.

[f] DOTS includes the following components shown in the pie chart above: first-line drugs, NTP staff, programme management and supervision, and laboratory supplies and equipment.

[g] 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.

[h] 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.

ANNEX 2

Methods

A.2.1 Monitoring the global TB epidemic and progress in TB control (1995–2006)

A2.1.1 Data collection and verification

Every year, WHO requests information from NTPs or relevant public health authorities in 212 countries or territories via a standard data collection form.[1] The latest form was distributed in mid-2007. The section on monitoring and surveillance requested data including the following: TB case notifications in 2006 (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 2006; and treatment outcomes for TB patients registered during 2005 (DOTS, non-DOTS, HIV-infected, each with seven categories) and MDR-TB patients registered during 2003 (GLC-approved and other, each with three categories). The main case definitions are given in **Table A2.1**.

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 result of mycobacterial culture testing; and HIV-positive TB cases by sex and age.

NTPs that respond to WHO are also asked to update information for earlier years where possible. As a result of such revisions, the data (case notifications, treatment outcomes, etc.) presented in this report for years preceding 2005 and 2006 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.[2]

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).

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

[2] Revised WHO procedures for recording and reporting at district level are described at http://www.who.int/tb/dots/r_and_r_forms/en/index.html

TABLE A2.1

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 one or more initial sputum smear examinations (direct smear microscopy) AFB+.

SMEAR-NEGATIVE PULMONARY CASE A patient with pulmonary tuberculosis not meeting the above criteria for smear-positive disease. Diagnostic criteria should include: at least two sputum smear examinations negative for AFB; and radiographic abnormalities consistent with active pulmonary tuberculosis; and no response to a course of broad-spectrum antibiotics (except in a patient for whom there is laboratory confirmation or strong clinical evidence of HIV infection); 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.

RE-TREATMENT CASE A patient previously treated for TB, who is started on a re-treatment regimen after previous treatment has failed (treatment after failure), who returns to treatment having previously defaulted (see below; treatment after default), or who was previously declared cured or treatment completed and is diagnosed with bacteriologically positive (sputum smear or culture) TB (relapse).

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 2005). 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.

A2.1.2 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 to implement the Stop TB Strategy (**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 states plus Bulgaria and Romania), and combine western European countries with the other high-income countries.[1] The countries within each of the resulting nine subregions are listed in the legend to **Figure 1.7**.

A2.1.3 Estimating TB incidence, prevalence and death rates

General principles for estimating incidence 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 in publications in peer-reviewed journals.[2,3,4] In 2007, WHO has also prepared a series of country-by-country explanations of these estimates (for each country, there is one Word file with a text explanation of the key methods, and one Excel file that sets out the data, assumptions and calculations), as well as a document that provides an overview of the methods in a format that is designed to be accessible to non-epidemiologists. These documents are available upon request.

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:

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

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

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

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

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.

Estimates of the incidence of HIV-positive TB

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%).

To estimate the prevalence of HIV among new TB cases, we mostly use an indirect method based as set out in the following equation:

$$\text{prevalence of HIV in new} = \frac{p_{HIV} \cdot IRR}{1+p_{HIV}(IRR-1)} \quad (5)$$

where p_{HIV} is HIV prevalence in the general population and IRR is the incidence rate ratio, i.e. the TB incidence rate in HIV-positive people divided by the TB incidence rate in HIV-negative people.[5] IRR takes values of 30 (range 21–39, with a triangular distribution in uncertainty analysis) for high-income countries and 6.0 (range

[1] As defined by the World Bank. High-income countries are those with a per capita gross national income (GNI) of US$ 11 116 or more.

[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] Data on HIV prevalence in the general population are unpublished data provided to WHO by UNAIDS.

3.5–8.0) for all other countries.[1] This method was used for 184 (out of 212) countries and territories.

For an increasing number of countries, however, we can estimate HIV prevalence in TB cases more directly. This is because HIV-testing of TB patients is becoming a routine practice in several countries, and some countries have carried out surveys of HIV prevalence in TB patients. For 15 countries that met one of two sets of criteria, we used surveillance or survey data to estimate the prevalence of HIV in incident TB cases in 2006, instead of the indirect method described above. The criteria were:

- At least 60% of notified TB cases had been tested for HIV in 2006 and at least 1000 cases had been tested. This set of criteria was met by 13 countries (Benin, El Salvador, Hong Kong Special Administrative Region of China, Kazakhstan, Kenya, the Lao People's Democratic Republic, Latvia, Malawi, Malaysia, Panama, the Republic of Moldova, Rwanda and Uzbekistan);
- Surveys had been undertaken in a representative sample of TB patients (rather than, for example, specific risk groups). This criterion was met in Cambodia and Viet Nam.

In addition, we identified two groups of countries where the indirect estimate was not consistent with the results of routine testing. The first group consisted of countries where the number of cases predicted by the indirect method was less than the number of HIV-positive TB cases that were identified by testing (seven countries: Gambia, Guatemala, Honduras, the Islamic Republic of Iran, Portugal, Thailand and Venezuela). The second group consisted of six countries where the number of HIV-positive TB patients identified, divided by the number of notified TB cases, was more than 1.5 times the prevalence estimated using the indirect method (Armenia, Belize, Burkina Faso, Jamaica, Trinidad and Tobago, and Uruguay). For these two groups of countries, we estimated the prevalence of HIV among new TB cases by dividing the number of HIV-positive TB cases identified by the number of TB cases notified. This is still a conservative estimate of HIV prevalence, since some of the untested cases could be HIV-positive, but it produces an estimate that must be closer to the true value than the indirect method.

From these estimates of HIV prevalence in new TB cases and the estimated prevalence of HIV in the general population,[2] we calculated the IRR for each country. The IRR was then used to calculate the prevalence of HIV in TB cases for the years 1990–2005.

Estimating incidence rates for the period 1995–2006

For each country, estimates of the incidence of TB for each year during the period 1995–2006 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 the amount of effort invested in compiling and reporting data 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.

Estimates of prevalence and death rates

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 that 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

[1] 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 high-income countries 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 six 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 six, on which basis we retained the original estimate used by Corbett et al. Further details are available from tbdocs@who.int

[2] UNAIDS, unpublished data provided to WHO in November 2007.

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 3**.

Because accurate measurement is crucial in the evaluation of epidemic trends, a recent paper provides methodological guidance,[5] based on a review by the WHO Task Force on TB Impact Measurement. This paper 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 4**).

A2.1.4 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.[6]

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 (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 evalua-

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 2006 revision*. New York, United Nations Population Division, 2007.
5 Dye C. et al. Measuring tuberculosis burden, trends and the impact of control programmes. *Lancet Infectious Diseases* (published online 16 January 2008; http://infection.thelancet.com).
6 *Tuberculosis handbook*. Geneva, World Health Organization, 1998 (WHO/TB/98.253).

tion 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 implemented, 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.

A2.1.5 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 that complete a course of treatment, without bacteriological confirmation of cure (**Table A2.1**). 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 2005) with the number of cases notified as smear-positive (also in 2005). 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 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.

A2.1.6 Determinants of tuberculosis dynamics: comparisons among countries

For the first time, this report includes an analysis of the broader determinants of TB epidemics. Case notifications were used to calculate trends in new TB cases (all forms of disease), expressed as rates per 100 000 population, over the 10 years from 1997 to 2006. Among 212 countries and territories that routinely provide data, countries were excluded where three or more years of data were missing, where notifications were highly variable between years, or where the trend is likely to have been affected by efforts to improve case detection. The latter is based on a detailed knowledge of DOTS implementation in individual countries. Nine high-burden countries were excluded from the analysis based on these criteria: Afghanistan, Bangladesh, Cambodia, Indonesia, Myanmar, Nigeria, Pakistan, Thailand and Uganda, as were 69 other countries. The countries included in the analysis accounted for 70% of the regional number of estimated new cases of TB in the African Region, for 93% in central Europe, for 98% in the high-income countries, for 19% in the Eastern Mediterranean Region, for 100% in Latin America and the Caribbean, and for 75% in Asia (the South-East Asia and Western Pacific regions combined). The exponential trend in the incidence rate was then obtained by unweighted least squares regression for the remaining 134 countries that did meet the criteria.

Because data on TB trends and determinants were not available for all countries, the nine subregions defined in **Figure 1.7** (see **Chapter 1**) were regrouped as six. These were: the African Region (giving trend estimates for 28 of 49 countries), Central and Eastern Europe (25 of 28), the Eastern Mediterranean Region (12 of 19), high-income countries (26 in Western Europe and the United States of America, of 30), Latin America and the Caribbean (25 of 42), and the South-East Asia and Western Pacific regions combined (18 of 43).

We investigated the link between incidence trends and 30 independent variables. The variables describe, for each country, aspects of the economy, population, behavioural and biological risk factors, health services

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

and the intensity of TB control.[1] For each region separately, we established which variables were associated with incidence trends by unweighted univariate least squares linear regression. This analysis was done as the precursor to a full multivariate analysis, which will be presented elsewhere.

A2.2 Implementing the Stop TB Strategy (2006–2008)

The information on implementing and planning the Stop TB Strategy presented and analysed in this report reflects activities mostly carried out in the 2006–2007 fiscal year and planned for the 2007–2008 fiscal year (see also **A2.3 Financing TB control**). For the first time in 2007, all data were requested via the same questionnaire as that used for the collection of the surveillance, epidemiological and financial data described in **A2.1 and A2.3**.[2] In previous years, a separate questionnaire had been sent to HBCs. As with questions on surveillance, epidemiological and financial data, questions on planning and implementation of the Stop TB Strategy were sent to all countries, although there was a more extended set of questions for HBCs.

The questionnaire was structured around the major components and subcomponents of the Stop TB Strategy and included questions on: DOTS expansion and enhancement, including laboratory and diagnostic services, standardized treatment and patient support, drug management, and monitoring and evaluation including impact measurement; collaborative TB/HIV activities; drug-resistant TB; special populations and other high-risk groups; health system strengthening and TB control, including human resource development, the Practical Approach to Lung Health (PAL), the extent to which TB control activities are integrated into primary health-care services, and the links between planning for TB control and broader planning frameworks and initiatives at the level of the health or public sector as a whole; public–public and public–private mix (PPM) approaches; International Standards for Tuberculosis Care;[3] advocacy, communication and social mobilization (ACSM); community TB care; Patients' Charter for Tuberculosis Care;[4] and operational research.

Completed questionnaires were reviewed at all levels of WHO by country offices, regional offices and at headquarters. The acknowledgement form described above in A2.1 included follow-up queries regarding missing data or questions of clarification from submitted questionnaires. For HBCs, data were also used to produce the strategy component of the country profiles presented in Annex 1. This profile was discussed with NTP managers during international and regional meetings wherever possible, and with WHO staff with particular expertise or knowledge of each country. These discussions are used to produce a final version of the profile, which is sent to the NTP for their review and approval. Any clarifications or corrections provided at this stage are incorporated by WHO staff at headquarters.

Additional details about data collection or analysis that are specific to DOTS implementation, collaborative TB/HIV activities and diagnosis and treatment of MDR-TB are provided below.

A2.2.1 Implementation of DOTS and the Stop TB Strategy

Before the launch of the Stop TB Strategy in 2006, NTPs reporting to WHO were classified as either DOTS or non-DOTS, based on the elements listed in **Tables 2.1 and 2.2** (see **Chapter 2**). To be classified as DOTS in this report, a country must have officially accepted and adopted the DOTS strategy in 2006, and must have implemented its four technical components in at least part of the country (**Annex 3**). Based on NTP responses to standard questions about policy – and usually on further discussion with the NTP – we accepted or revised each country's own determination of its DOTS status.

DOTS 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[5] 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 2006, 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 3**. 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).

[1] Dye C et al, Determinants of trends in tuberculosis incidence: an ecologic analysis for 134 countries. Unpublished paper available from the authors.
[2] Posted at www.who.int/tb/country/en/
[3] Hopewell PC et al. International standards for tuberculosis care. *Lancet Infectious Diseases*, 2006, 6:710–725.
[4] Posted at www.who.int/tb/publications/2006/istc/en/index.html
[5] 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.

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 3**. The case detection rate (defined above in **A2.1**) is a more precise measure of DOTS implementation but is also more demanding of data.

A2.2.2 Collaborative TB/HIV activities

In 2002, questions on collaborative TB/HIV activities were introduced into the WHO data collection form for the first time, but were sent to 41 priority countries only. These countries were selected because they accounted for 97% of the estimated global number of HIV-positive TB cases.[1] From 2003–2005, data on three aspects of collaborative TB/HIV activities were requested from all countries: HIV testing of TB patients, and provision of CPT and ART to those TB patients found to be HIV positive. In 2005, all questions were sent not only to the 41 countries described above, but also to a further 22 countries.[2] These countries were added to the list of countries that were sent the full set of questions because they were defined by UNAIDS as having a generalized HIV epidemic (UNAIDS 2004).[3] From 2006 onwards, all questions have been sent to all countries.

For some indicators that require both a numerator and a denominator, countries reported only the numerator or only the denominator. Given this incompleteness in reporting, estimates of the proportion of HIV-positive TB cases treated with CPT and ART, and the proportion of TB cases tested that were HIV-positive, were based on "matched data", i.e. reported figures are based on data from only those countries that provided data on both the numerator and the denominator.

Indicators for monitoring and evaluating collaborative TB/HIV activities are available from WHO.[4]

A2.2.3 Diagnosis and management of MDR-TB

In addition to the standard data collection form, 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.[5] 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 has recently been published.[6] 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.[7]

This report also used data compiled through the Green Light Committee (GLC) monitoring process, which is separate from the annual WHO TB data collection form that is sent to all countries.

In **Chapter 2**, particular attention is given to 25 countries that have been identified to be high priority at global level. These countries were defined using the following criteria:

- the estimated number of MDR-TB cases is above 4000 per year; and/or
- the proportion of TB cases that is estimated to have MDR-TB is above 10%.

A2.3 Financing TB Control (2002–2008)

A2.3.1 Data collection

We collected data from five main sources: NTPs, the WHO-CHOICE team,[8] Global Fund proposals and databases, previous WHO reports in this series, and epidemiological and financial analyses carried out for the Global Plan.[9] In 2007, data were collected directly from countries using a two-page questionnaire included

[1] The 41 countries are: Angola, Botswana, Brazil, Burkina Faso, Burundi, Cambodia, Cameroon, Central African Republic, Chad, China, Congo, Côte d'Ivoire, Djibouti, the Democratic Republic of the Congo, Ethiopia., Ghana, Haiti, India, Indonesia, Kenya, Lesotho, Malawi, Mali, Mozambique, Myanmar, Namibia, Nigeria, Russian Federation, Rwanda, Sierra Leone, South Africa, Sudan, Swaziland, Thailand, Togo, Uganda, Ukraine, the United Republic of Tanzania, Viet Nam, Zambia and Zimbabwe.

[2] The 22 countries are Bahamas, Barbados, Belize, Benin, Dominican Republic, Equatorial Guinea, Eritrea, Estonia, Gabon, Guatemala, Guinea, Guinea-Bissau, Guyana, Honduras, Jamaica, Liberia, Madagascar, Niger, Panama, Somalia, Suriname, and Trinidad and Tobago.

[3] HIV prevalence estimates for 2004 (unpublished data) Geneva, Joint United Nations Programme on HIV/AIDS.

[4] *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 http://www.who.int/hiv/pub/tb/en/guidetomonitoringevaluationtb_hiv.pdf; accessed January 2008).

[5] 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: http://www.who.int/tb/challenges/mdr/surveillance/en/index.html

[6] The WHO/IUATLD Global Project on Anti-tuberculosis Drug Resistance Surveillance. *Anti-tuberculosis drug resistance in the world. Fourth global report*. Geneva, World Health Organization, 2008 (WHO/HTM/TB/2008.394).

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

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

[9] *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).

TABLE A2.2

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 2002–2008	STOP TB STRATEGY	GLOBAL PLAN	BUDGET LINES IN 2006 AND 2007 DATA COLLECTION FORM	BUDGET LINES BEFORE 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[a]	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 and special surveys of prevalence of disease and infection	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

[a] 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.

in the standard WHO data collection form (described above in **A2.1**). NTP managers were asked to complete three tables. The first two tables required a summary of the NTP budget for fiscal years 2007 and 2008, in US$, by line item and source of funding (including a column for funding gaps). The third table requested NTP expenditure data for 2006, 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 2007 and 2008, for (a) smear-positive and (b) smear-negative and extrapulmonary cases combined.

Line items for the budget tables were designed to be in line with the Stop TB Strategy and to allow for comparisons with the cost categories used in the Global Plan. A total of 14 line items were defined: first-line drugs; dedicated NTP staff; routine programme management and supervision activities; laboratory supplies and equipment; PAL; PPM; second-line drugs for MDR-TB; management of MDR-TB (budget excluding second-line drugs); collaborative TB/HIV activities; ACSM; community-based care; operational research; surveys of disease prevalence and infection; 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 A2.2**.

A2.3.2 Data entry and analysis

We created a standardized Microsoft Excel worksheet which generates financial tables and related figures for each country that reported data for each year 2002–2008. The workbook also contains additional worksheets for summary analyses and for the data required as inputs to the country-specific analyses (e.g. unit costs for bed-days and outpatient clinic visits, national health account statistics). This system allows a systematic analysis of each country's data, which in turn is used to determine which countries, other than HBCs, have provided data of sufficient quality to be included in the main figures and tables of the report. This country worksheet includes 12 tables and related figures:

- NTP budget by line item for each year 2002–2008. Line items were grouped to allow for comparisons with the Stop TB Strategy and the Global Plan. This grouping, both for the budget categories used in 2006–2008 and those used in 2002–2005, is explained in **Table A2.2**.
- NTP budget by line item for each year 2002–2008, according to the categories used in each round of data collection.
- NTP budget by source of funding for each year 2002–2008, with the funding sources defined according to the 2007 data collection form, i.e. government (excluding loans), loans, Global Fund, grants (excluding Global Fund) and budget gap.
- NTP expenditures by source of funding for 2002–2006, with funding sources as defined for NTP budgets.
- NTP expenditures by line item for each year 2002–2006. Lines were grouped, as for budgets, to allow for

comparisons with the Global Plan and the Stop TB Strategy (**Table A2.2**).

- NTP expenditure by line item for each year 2002–2006, according to the categories used in each round of data collection.
- Total TB control costs by funding source for each year 2002–2008, with funding sources as defined for NTP budgets.
- Total TB control costs by line item for each year 2002–2008, 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 anti-TB drugs.
- Comparison of NTP budget, available funding and expenditure for 2003–2006 by line item.[1]
- Funding gap by line item for each year 2002–2008. Line items were grouped as for budget and expenditure tables (**Table A2.2**).
- Financial indicators for 2007 and 2008, which were defined as government contribution to NTP budgets (as a percentage), government contribution to total TB control costs (as a percentage), the proportion of the NTP budget for which funding is available, the NTP budget per capita, total TB control costs per capita, the funding gap per capita, total expenditure on health per capita, and general government expenditure on health per capita.
- Comparison of total costs based on the country report with total costs implied by the Global Plan, for 2006–2008.

Budget data for 2007 and 2008 were taken from the 2007 data collection form. Budget data for 2006 were taken from the 2006 data collection form, and 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, 2005 and 2006 were based on the 2003, 2004, 2005, 2006 and 2007 data collection forms, respectively. Total TB control costs were estimated by adding costs for hospitalization and outpatient clinic visits to either NTP expenditures (for 2002–2006) or NTP budgets (for 2007–2008). Expenditures were used in preference to budgets for 2002–2006 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 2007 and 2008, they will be used instead of budget data to calculate, retrospectively, the total cost of TB control in these years. For countries other than HBCs, expenditures before 2003 are not available in our database. For some HBCs, expenditures were not available for 2002–2006. In this case, we 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.

The total cost of outpatient clinic visits was estimated in two steps. First, the unit cost (in US$)[2] 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 2002–2006) or the number of patients whom the NTP expects to treat (for 2007–2008). 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. However, we used dedicated TB beds to calculate the cost of hospitalization when the total cost of these beds is higher than the total cost estimated by multiplying the country's estimate of the number of bed-days per patient by the number of patients treated. For HBCs, this was the case for seven countries that have dedicated TB beds: Bangladesh, Brazil, Cambodia, India, Mozambique, Myanmar and the Russian Federation. 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 2002–2006) and the number of patients whom the NTP expects to treat (for 2007–2008). Since the total costs of TB control for 2002–2006 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 is large or there is a significant budgetary under-spend. In addition, for 2002–2006, expenditures per patient were sometimes higher than the available funding per patient. This can occur when the NTP budg-

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

[2] 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.

et 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 2007 and 2008 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 may include only the budget managed by the NTP, and not the budget for such activities that is managed by the national AIDS control programme. In the 2007 round of data collection, we were able to improve our understanding of both TB and HIV budgets for collaborative TB/HIV activities in several countries (for example, Kenya and the United Republic of Tanzania). **Table A2.3** 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. prices are not adjusted for inflation) rather than constant prices (i.e. all prices are adjusted to a common year). This means that values given for individual countries in *Global tuberculosis control* reports for the years 2002–2007 do not have to be adjusted, which makes it easier for country staff to review the data for previous years. The adjustment makes only a small difference to the numbers reported (less than 20% 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 and tables was produced.

High-burden countries

For HBCs specifically, seven of these charts plus a summary table appear in the profiles for each country at **Annex 1**: NTP budget by funding source 2002–2008; NTP budget line items in 2008, according to the line items used in the 2007 round of data collection; NTP budget by line item 2002–2008, with line items as defined in the first column of **Table A2.2**; NTP funding gap by line item, with line items as defined in the first column of table **A2.2**; total TB control costs by line item 2002–2008; per patient costs, budgets, available funding, expenditures and budget for first-line drugs 2002–2008; costs according to country reports compared with costs implied by the Global Plan for 2007 and 2008; and a summary table including (a) the NTP budget and funding gap by component of the Stop TB Strategy for 2007 and 2008 and (b) financial indicators.[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 2002–2007 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 2006 with the change between 2003 and 2006 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 2006 and government contributions to total NTP budgets and TB control costs. Data on GNI per capita were taken from *World development indicators 2006*.[3]

Other countries

For countries other than the HBCs, we used the data provided on the 2007 data collection form to assess NTP budgets by region in 2008, 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 171 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 (apart from HBCs) meeting both criteria was 64. We then compared these aggregated values to costs according to country reports.

[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 2007: devdata.worldbank.org/dataquery.

TABLE A2.3

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 COLLABORATIVE TB/HIV 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 2007 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).								

DCPP indicates Disease control priorities project of the World Bank; 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.

A2.3.3 Global Fund contribution to TB control

We evaluated funding available from the Global Fund for both HBCs and other countries, as announced after the first seven rounds of funding. We assessed total approved funding at the end of 2007, disbursements to the end of 2007, 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. We also assessed how the total value of grants awarded for TB control has evolved between rounds 1 and 7, and the approval rate. The approval rate was calculated as the number of proposals considered by the Global Fund 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.

ANNEX 3

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

The following tables contain summaries of country data grouped by WHO region.[1]

All rates given are per 100 000 population (i.e. the total population of a country or region), except for case notifications by age and sex, where the estimated population for each age and sex category is used. Population estimates are from the United Nations Population Division.[2]

NTP manager (or equivalent); person responsible for completing data collection form (if different)

The people named on the data collection form returned to WHO in 2007. This list acknowledges the contribution of NTP managers and others; those named are not necessarily the current NTP managers.

Table A3.1 Estimated burden of TB, 1990 and 2006

Estimates of incidence, prevalence and mortality for 1990 (baseline year for MDG) and 2006 (the latest year covered by this report). See Methods for details of calculations. Unless otherwise specified, estimates are for TB in HIV-negative and HIV-positive people.

Table A3.2 Case notifications and case detection rates, DOTS and non-DOTS combined, 2006

Case notifications by history (new or re-treatment), by site (pulmonary or extrapulmonary) and by smear status (smear-positive, negative or unknown). See **Table A2.1** for definitions of case types. Proportions of case types and estimated case detection rate for DOTS and non-DOTS combined.

- *Population*, source: *World population prospects – the 2006 revision*. New York, United Nations Population Division, 2007.
- *All notified*: all notified cases, including new cases (new smear-positive, new smear-negative/unknown/not done, other new and new extrapulmonary), re-treatment cases (relapse, treatment after failure, treatment after default and other re-treatment) and other cases (cases in patients for whom it is not known whether they have previously been treated for TB).
- *New and relapse*: new and relapse cases, including new smear-positive, new smear-negative/unknown/not done, other new, new extrapulmonary and (smear-positive) relapse cases (for the WHO European Region only, cases reported as "previous treatment history unknown" are also included).
- *Other new*: new cases for which the site of disease is not recorded.
- *Re-treatment cases*: Smear-positive cases in patients previously treated for TB. (*Other re-treat.* includes re-treatment cases for which the outcome of previous treatment is not known, and smear-negative re-treatment cases including smear-negative relapse cases)
- *Other*: cases in patients for whom it is not known whether they have previously been treated for TB, and chronic cases (smear-positive cases in patients who have previously received re-treatment regimens).
- *New pulm. lab. confirmed*: new pulmonary cases in which diagnosis has been confirmed by smear and/or culture examination.
- *Detection rate, all new*: notified new cases divided by estimated incident cases (expressed as a percentage).
- *Detection rate, new ss+*: the number of notified new smear-positive cases divided by the number of estimated incident smear-positive cases (expressed as a percentage).
- *SS+ (% of pulm.)*: the percentage of all new pulmonary cases who are smear-positive.
- *SS+ (% of new+relapse)*: the percentage of new and relapse case who are new smear-positive.
- *Extrapulm. (% of new+relapse)*: the percentage of all new and relapse cases who are extrapulmonary.
- *Re-treat. (% of new+re-treat.)*: notified re-treatment cases as a percentage of all notified cases.

Table A3.3 DOTS coverage, case notifications and case detection rates, 2006

As for Table A3.3, but for DOTS notifications.

- *DOTS coverage*: the percentage of the national population living in areas where health services have adopted DOTS.

[1] The WHO Global TB Database, which includes detailed data for previous years, is available at www.who.int/tb/country/global_tb_database.

[2] *World population prospects – the 2006 revision*. New York, United Nations Population Division, 2007.

Table A3.4 Laboratory services, collaborative TB/HIV activities and management of MDR-TB, 2005–2006

Laboratory services

- *Numbers of laboratories*: 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, 2005–2006

- *TB pts tested for HIV*: the number of TB patients tested for HIV.
- *TB pts HIV-positive*: the number of TB patients tested 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 anti-TB treatment.

Data for 2005 were requested in the data collection form in 2006 and in 2007. For those countries that provided 2005 data in 2006 but not in 2007, the data provided in 2006 are shown.

Multidrug-resistant (MDR) TB, 2006

- *Lab-confirmed MDR*: the number of laboratory-confirmed cases of MDR-TB identified among patients (new and re-treatment) in whom TB was diagnosed in 2006.
- *DST in new cases*: the number of new TB cases in 2006 for whom drug sensitivity testing (DST) was performed at the start of treatment.
- *MDR in new cases*: the number of new cases who were identified as MDR-TB based on DST at start of treatment.
- *Re-treatment DST*: the number re-treatment cases registered in 2006 for whom DST was performed at the start of treatment.
- *Re-treatment MDR*: the number of re-treatment cases identified as MDR-TB based on DST at the start of treatment.

Table A3.5 Treatment outcomes, 2005 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 A3.6 Re-treatment outcomes, 2005 cohort

Re-treatment outcomes of smear-positive cases treated under DOTS after relapse, treatment failure or default.

Table A3.7 DOTS treatment success and case detection rates, 1994–2006

Treatment success rates (the proportion of registered cases who cured or completed treatment) for new smear-positive cases treated under DOTS from 1994 to 2005 and smear-positive case detection rates under DOTS from 1995 to 2006.

Table A3.8 New smear-positive case notification rates by age and sex, absolute numbers, DOTS and non-DOTS, 2006

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; other countries provide the breakdown for all new cases or all notified cases (see country notes).

Table A3.9 New smear-positive case notification rates by age and sex, DOTS and non-DOTS, 2006

Notification rates of new smear-positive cases by age and sex (DOTS + non-DOTS). Rates are missing where the 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 the breakdown of notified cases or population by age and sex is missing.

Table A3.10 Number of TB cases notified, 1980–2006
Table A3.11 Case notification rates, 1980–2006
Table A3.12 New smear-positive cases notified, numbers and rates, 1993–2006

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 A3.1 **Estimated burden of TB, 1990 and 2006**

	Incidence, 1990				Prevalence, 1990		TB mortality, 1990		Incidence, 2006								Prevalence, 2006				TB mortality, 2006				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 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	829 377	162	359 978	70	1 703 191	333	212 228	42	2 807 688	363	605 989	78	1 202 861	155	212 096	27	4 233 723	547	302 995	39	639 089	83	204 559	26	22
AMR	469 150	65	233 967	32	697 620	96	61 973	9	330 724	37	21 265	2.4	164 952	18	9 508	1.1	398 030	44	10 632	1.2	40 600	4.5	3 876	≤ 1	6.4
EMR	427 069	111	191 950	50	895 047	234	102 432	27	569 708	105	6 538	1.2	255 715	47	2 288	≤ 1	826 308	152	3 269	≤ 1	107 895	20	2 737	≤ 1	1.1
EUR	318 540	37	142 953	17	446 679	53	46 898	6	433 261	49	12 842	1.4	193 683	22	4 495	≤ 1	478 332	54	6 421	≤ 1	62 197	7.0	2 335	≤ 1	3.0
SEAR	2 612 643	200	1 173 978	90	6 970 394	533	669 167	51	3 100 355	180	39 556	2.3	1 391 204	81	13 844	≤ 1	4 974 978	289	19 778	1	514 699	30	10 805	≤ 1	1.3
WPR	1 919 985	127	862 944	57	4 864 814	322	387 894	26	1 915 285	109	22 823	1.3	859 596	49	7 988	≤ 1	3 512 972	199	11 412	≤ 1	291 240	17	6 545	≤ 1	1.2
Global	**6 576 763**	**124**	**2 965 770**	**56**	**15 577 744**	**294**	**1 480 592**	**28**	**9 157 021**	**139**	**709 013**	**11**	**4 068 011**	**62**	**250 220**	**4**	**14 424 343**	**219**	**354 506**	**5**	**1 655 721**	**25**	**230 857**	**4**	**7.7**

* Incidence, prevalence and mortality estimates include patients with HIV. Estimates labelled "HIV+" are estimates of TB in HIV-positive people (all ages). 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 187 for further details. Data can be downloaded from www.who.int/tb

Table A3.2 **Case notifications and case detection rates, DOTS and non-DOTS combined, 2006**

	Notified TB cases, DOTS and non-DOTS combined															Estimated incidence and case detection rate				Proportions			
					New pulmonary			New extra-	Other	Re-treatment cases							Estimated incidence		Case detection rate		ss+	ss+	Extrapulm.	Re-treat.
	Population	All notified	New and relapse		ss+		ss-/unk.	pulmonary	new	Relapse	After failure	After default	Other re-treat.		Other	New pulm. 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	773 792	1 310 841	1 234 260	160	555 123	72	381 696	220 643	1 860	74 938	7 901	18 952	48 249		1 479	557 376	2 807 688	1 202 861	41	46	59	45	18	11
AMR	899 388	235 816	224 548	25	125 178	14	54 670	32 392	1 921	10 387	1 182	4 871	4 750		465	135 462	330 724	164 952	65	76	70	56	14	9
EMR	544 173	325 797	322 306	59	131 882	24	115 040	66 543	0	8 841	1 352	2 085	37		17	132 113	569 708	255 715	55	52	53	41	21	4
EUR	887 455	423 952	359 735	41	109 901	12	170 786	56 363	0	22 685	9 638	2 747	48 741		3 091	141 159	433 261	193 683	78	57	39	31	16	20
SEAR	1 721 049	2 104 673	1 920 644	112	938 637	55	609 705	261 839	1 188	109 275	25 583	80 175	76 882		1 389	964 908	3 100 355	1 391 204	58	67	61	49	14	14
WPR	1 764 231	1 416 373	1 331 333	75	671 254	38	506 031	86 136	4 332	63 580	3 994	4 845	31 913		44 288	685 707	1 915 285	859 596	66	78	57	50	6	8
Global	**6 590 088**	**5 817 452**	**5 392 826**	**82**	**2 531 975**	**38**	**1 837 928**	**723 916**	**9 301**	**289 706**	**49 650**	**113 675**	**210 572**		**50 729**	**2 616 725**	**9 157 021**	**4 068 011**	**56**	**62**	**58**	**47**	**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 187 for further details. Data can be downloaded from www.who.int/tb

Table A3.3 **DOTS coverage, case notifications and case detection rates, 2006**

		TB cases reported from DOTS services													Estimated incidence and case detection rate				Proportions			
	DOTS			New pulmonary			New extra-	Other	Re-treatment cases					New pulm.	Estimated incidence		Case detection rate		ss+	ss+	Extrapulm.	Re-treat.
	coverage	New and relapse		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	91	1 223 008	158	549 420	71	379 631	220 151	1 860	71 946	7 827	18 652	48 249	1 479	551 668	2 807 688	1 202 861	41	46	59	45	18	11
AMR	93	204 547	23	114 412	13	48 830	29 824	1 913	9 568	1 116	4 291	3 970	463	124 271	330 724	164 952	59	69	70	56	15	9
EMR	98	318 973	59	131 820	24	113 401	64 921	0	8 831	1 352	2 085	37	17	132 051	569 708	255 715	54	52	54	41	20	4
EUR	67	310 156	35	100 102	11	142 303	45 579	0	22 172	9 571	2 672	29 305	141	126 522	433 261	193 683	66	52	41	32	15	18
SEAR	100	1 920 371	112	938 572	55	609 499	261 837	1 188	109 275	25 583	80 175	76 882	1 382	964 843	3 100 355	1 391 204	58	67	61	49	14	14
WPR	100	1 297 078	74	662 152	38	488 956	79 672	4 331	61 967	3 847	4 583	28 141	40 997	672 353	1 915 285	859 596	64	77	58	51	6	7
Global	**93**	**5 274 133**	**80**	**2 496 478**	**38**	**1 782 620**	**701 984**	**9 292**	**283 759**	**49 296**	**112 458**	**186 584**	**44 479**	**2 571 708**	**9 157 021**	**4 068 011**	**54**	**61**	**58**	**47**	**13**	**11**

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 187 for further details. Data can be downloaded from www.who.int/tb

Table A3.4 **Laboratory services, collaborative TB/HIV activities and management of MDR-TB, 2005–2006**

	Laboratory services, 2006				Collaborative TB/HIV activities								Management of MDR-TB, 2006				
					2005				2006								
	number of labs working with NTP			smear 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
AFR	7 726	212	181	4 618	141 006	73 385	52 963	20 033	287 945	150 739	134 270	55 894	7 062	815	74	2 498	202
AMR	14 221	4 175	2 388	9 341	84 032	14 232	4 539	8 492	75 775	11 386	7 022	6 840	1 636	13 279	958	2 001	689
EMR	3 492	159	33	1 735	2 582	330	58	50	4 678	259	46	134	244	1 905	53	366	164
EUR	7 409	1 837	690	2 109	178 033	6 548	101	78	192 965	5 281	281	1 175	12 282	68 324	5 709	19 881	6 711
SEAR	19 772	125	41	16 202	31 847	7 025	305	190	87 139	15 920	4 677	2 335	763	614	4	1 210	690
WPR	7 390	458	122	6 433	32 605	2 221	20	21	38 672	2 632	290	201	629	6 331	89	1 298	498
Global	**60 010**	**6 966**	**3 455**	**40 438**	**470 105**	**103 741**	**57 986**	**28 864**	**687 174**	**186 217**	**146 586**	**66 579**	**22 616**	**91 268**	**6 887**	**27 254**	**8 954**

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 187 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 A3.5 **Treatment outcomes, 2005 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	538 816	546 832	101	63	13	7	1	9	4	3	76	11 185	10 196	91	49	19	7	4	11	4	6	68	112 510	35	27	11	3	13	6	6	62
AMR	101 808	108 413	106	57	21	5	1	7	3	6	78	23 002	10 266	45	30	40	5	1	10	5	9	70	16 290	40	15	6	3	14	6	15	55
EMR	113 677	113 555	100	72	11	3	1	8	4	1	83	187	222	119	41	23	4	2	10	19	0	65	12 860	60	15	5	4	10	4	3	75
EUR	72 316	73 768	102	60	10	8	8	8	3	2	71	25 802	10 153	39	37	46	3	1	4	1	7	83	29 865	39	7	13	17	15	4	6	45
SEAR	855 306	854 169	100	83	4	4	2	6	1	0	87	2 065	0	0							100		253 864	49	22	7	5	15	2	0	72
WPR	661 322	662 266	100	89	3	2	1	1	1	2	92	10 290	429	4	9	10	4	2	0	0	75	18	105 843	81	6	3	3	2	2	4	87
Global	**2 343 245**	**2 359 003**	**101**	**78**	**7**	**4**	**2**	**5**	**2**	**2**	**85**	**72 531**	**31 266**	**43**	**38**	**34**	**5**	**2**	**8**	**4**	**8**	**73**	**531 232**	**52**	**19**	**7**	**4**	**12**	**3**	**3**	**71**

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 2005 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 2005 is used, or the sum of outcomes if the latter is greater. Data can be downloaded from www.who.int/tb

Table A3.6 **Re-treatment outcomes, 2005 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
AFR	47213	53	13	10	2	11	5	5	67	6 097	42	14	9	10	15	5	4	56	10552	41	12	10	3	23	5	6	53
AMR	7 776	53	14	5	3	10	5	10	67	861	17	21	7	11	13	5	25	38	4 014	23	19	6	2	22	7	22	41
EMR	9 074	65	13	4	3	9	3	3	78	1 276	48	19	8	8	12	5	1	67	2 411	49	21	6	4	16	4	0	70
EUR	16 279	45	6	12	13	12	4	8	52	3 287	29	5	13	18	13	4	20	33	1 632	22	20	12	12	26	2	6	43
SEAR	93 865	67	7	7	5	12	2	1	74	21 761	52	8	8	14	16	2	0	61	73 508	59	8	8	4	19	2	0	67
WPR	59 750	83	5	3	3	1	2	3	88	784	56	8	6	18	4	4	4	64	904	55	8	7	4	13	9	5	62
Global	**233 957**	**66**	**8**	**7**	**4**	**9**	**3**	**3**	**74**	**34 066**	**47**	**10**	**9**	**13**	**15**	**3**	**3**	**57**	**93 021**	**55**	**9**	**8**	**4**	**20**	**3**	**2**	**64**

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 2005 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 A3.7 **DOTS treatment success and case detection rates, 1994–2006**

	DOTS new smear-positive treatment success (%)												DOTS new smear-positive case detection rate (%)											
	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
AFR	59	62	57	63	70	69	72	71	73	73	74	76	23	25	29	34	35	35	36	42	44	46	45	46
AMR	76	77	83	82	81	83	81	82	83	83	82	78	25	25	27	31	34	41	40	43	47	56	60	69
EMR	82	87	86	79	77	83	83	83	84	83	83	83	11	10	11	18	20	24	26	31	33	38	45	52
EUR	68	69	72	72	76	77	77	75	76	75	74	71	3	3	5	11	11	12	14	22	23	26	36	52
SEAR	80	74	77	72	72	73	83	84	85	85	87	87	1	4	5	8	14	18	27	34	44	55	62	67
WPR	90	91	93	93	95	94	92	93	90	91	91	92	16	28	32	33	32	37	39	39	50	65	77	77
Global	**77**	**79**	**77**	**79**	**81**	**80**	**82**	**82**	**82**	**83**	**84**	**85**	**11**	**16**	**18**	**22**	**24**	**28**	**32**	**37**	**44**	**52**	**58**	**61**

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 A3.8 **New smear-positive case notification by age and sex, absolute numbers, DOTS and non-DOTS, 2006**

	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	7 298	53 722	95 504	72 972	42 630	19 950	11 877	9 749	57 309	76 914	45 149	23 702	11 513	6 908	17 047	111 031	172 418	118 121	66 332	31 463	18 785	1.3
AMR	1 559	15 908	16 247	14 040	12 046	8 109	8 063	1 787	11 484	10 891	7 360	5 695	4 035	4 830	3 346	27 392	27 138	21 400	17 741	12 144	12 893	1.6
EMR	1 703	15 826	16 877	12 312	10 576	7 717	6 603	3 322	15 855	14 006	10 255	7 490	5 223	4 137	5 024	31 680	30 883	22 567	18 066	12 940	10 740	1.2
EUR	232	9 377	17 081	17 735	17 493	7 763	5 734	375	6 619	7 968	5 381	4 065	2 127	4 321	607	15 996	25 049	23 116	21 558	9 890	10 055	2.4
SEAR	5 519	103 371	128 734	132 947	119 160	85 344	53 209	9 326	75 939	80 704	59 256	42 147	27 764	15 163	14 845	179 310	209 438	192 203	161 307	113 108	68 372	2.0
WPR	1 663	59 204	72 397	84 846	81 537	72 114	89 255	2 032	39 521	38 404	35 981	29 600	26 458	33 598	3 695	98 725	110 801	120 827	111 137	98 572	122 853	2.2
Global	**17 974**	**257 408**	**346 840**	**334 852**	**283 442**	**200 997**	**174 741**	**26 591**	**206 727**	**228 887**	**163 382**	**112 699**	**77 120**	**68 957**	**44 564**	**464 134**	**575 727**	**498 234**	**396 141**	**278 117**	**243 698**	**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 187 for further details. Data can be downloaded from www.who.int/tb

Table A3.9 **New smear-positive case notification rates by age and sex, DOTS and non-DOTS, 2006**

	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	4	67	175	206	182	141	110	6	72	141	125	95	72	51	5	70	158	165	137	104	77
AMR	1	21	24	23	24	24	24	2	15	16	12	11	11	11	1	18	20	17	17	17	17
EMR	2	26	38	39	47	62	66	4	28	34	35	36	41	37	3	27	36	37	42	52	51
EUR	0	14	26	27	30	18	12	0	10	12	8	6	5	6	0	12	19	18	18	11	8
SEAR	2	61	91	118	140	170	129	4	48	61	55	52	54	32	3	54	76	87	97	112	77
WPR	1	39	51	56	74	96	129	1	28	28	25	28	36	42	1	34	40	41	51	67	83
Global	**2**	**42**	**67**	**74**	**81**	**88**	**82**	**3**	**36**	**46**	**37**	**32**	**33**	**25**	**2**	**39**	**57**	**55**	**56**	**60**	**50**

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 A3.10 **Number of TB cases notified, 1980–2006**

	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	2006
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	1 234 260
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	166 458	241 854	258 188	256 656	254 980	262 886	240 619	238 580	230 403	233 678	228 448	235 511	227 599	224 548
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	191 744	207 375	235 943	287 352	322 306
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	359 735
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	1 920 644
WPR	356 452	355 337	461 550	462 181	540 985	615 153	651 840	655 006	716 427	741 913	894 073	760 863	754 463	718 783	724 290	824 954	873 425	870 920	834 599	820 469	786 285	805 105	811 482	980 890	1 160 130	1 274 124	1 331 333
Global	**2 512 883**	**2 604 408**	**2 773 149**	**2 758 009**	**2 788 077**	**2 947 752**	**3 127 176**	**3 321 895**	**3 556 428**	**3 611 472**	**3 740 203**	**3 719 878**	**3 121 030**	**3 035 457**	**3 178 151**	**3 400 323**	**3 653 659**	**3 523 295**	**3 649 452**	**3 820 985**	**3 737 852**	**3 845 409**	**4 103 257**	**4 406 540**	**4 852 597**	**5 130 407**	**5 392 826**
Number reporting	195	194	194	196	193	198	197	199	201	197	196	192	187	179	178	191	196	193	199	196	196	195	206	204	202	199	202
% reporting	92	92	92	93	91	94	93	94	95	93	93	91	89	85	84	91	93	91	94	93	93	92	98	97	96	94	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 A3.11 **Case notification rates, 1980–2006**

	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	2006
AFR	58	57	60	62	62	67	66	71	78	74	82	78	80	75	96	86	97	97	108	115	117	126	143	150	160	157	160
AMR	37	39	37	37	34	34	33	34	34	33	32	34	34	22	31	33	32	32	32	29	28	27	27	26	27	26	25
EMR	184	176	144	75	53	56	67	82	77	70	61	80	27	49	28	28	33	30	50	36	29	34	38	40	45	54	59
EUR	44	43	40	39	38	36	36	35	33	32	29	27	29	28	28	33	37	41	40	43	43	42	43	41	40	41	41
SEAR	79	85	97	110	110	112	117	124	133	135	131	131	97	93	92	97	100	88	84	95	90	89	92	94	101	105	112
WPR	27	27	34	34	39	44	46	45	49	50	59	50	49	46	46	51	54	53	50	49	47	47	47	57	67	73	75
Global	**56**	**58**	**60**	**59**	**58**	**61**	**63**	**66**	**70**	**69**	**71**	**69**	**57**	**55**	**56**	**59**	**63**	**60**	**61**	**63**	**61**	**62**	**65**	**69**	**75**	**79**	**82**

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 A3.12 **New smear-positive cases notified, numbers and rates, 1993–2006**

	Number of cases														Rate (per 100 000 population)													
	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
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	555 123	19	21	36	44	45	51	54	54	59	65	71	75	73	72
AMR	98 265	137 645	138 932	136 987	142 556	139 253	135 153	131 294	129 944	127 575	125 815	126 345	124 810	125 178	13	18	18	17	18	17	16	16	15	15	14	14	14	14
EMR	20 260	20 428	46 851	58 720	57 947	74 923	69 140	60 959	69 101	76 125	81 313	94 775	113 864	131 882	5	5	11	13	13	16	15	13	14	15	16	18	21	24
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	109 901	5	10	12	13	12	13	10	11	10	9	12	10	11	12
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	938 637	23	22	25	25	25	25	31	32	35	37	41	47	51	55
WPR	222 813	241 737	314 271	388 142	416 954	379 698	383 613	376 109	371 806	372 528	453 812	579 566	671 612	671 254	14	15	20	24	25	23	23	22	22	22	26	33	38	38
Global	**811 476**	**917 813**	**1 175 290**	**1 331 989**	**1 371 331**	**1 414 648**	**1 507 579**	**1 535 217**	**1 621 460**	**1 726 396**	**1 948 797**	**2 223 480**	**2 413 759**	**2 531 975**	**15**	**16**	**21**	**23**	**23**	**24**	**25**	**25**	**26**	**27**	**31**	**35**	**37**	**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

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	Vonai Teveredzi; Grace Kangwagye Nkubito
Burkina Faso	Sary Mathurin Dembélé; Michel Sawadogo
Burundi	Donatien Nkurunziza
Cameroon	Wang Hubert; Adolphe Nkou Bikoe
Cape Verde	Maria da Luz Lima
Central African Republic	Aguide Soumouk; Pierre Kanda
Chad	Mahamat Ali Acyl
Comoros	Aboubacar Mze Mbaba
Congo	Ongouo Hermann; Antoine Ngoulou
Côte d'Ivoire	Jacquemin Kouakou; Amoin Angennes Akaki
DR Congo	André Ndongosieme; Marie-Léopoldine Mbulula
Equatorial Guinea	
Eritrea	Kiflom Bahlebi; Mineab Sebhatu
Ethiopia	Bekele Chaka; Fekadesilase Mikru; Diriba Agegnehu
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; Hillary Kipruto
Lesotho	Job Ndile
Liberia	C. Lawuo Gwesa; Henry Dickson
Madagascar	Rarivoson Benjamin; Sylvestre Ranaivohajaina
Malawi	Felix Salaniponi; John kwanjana
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	Marafa Boulacar; Moumouni Kadi
Nigeria	Ben C. Nwobi; Amos F. Omoniyi
Rwanda	Michel Gasana; Evariste Gasana
Sao Tome & Principe	Aleixo Rodrigues de Sousa Pires
Senegal	
Seychelles	
Sierra Leone	Foday Dafae; Saffa Kamara
South Africa	Lindiwe Mvusi; Carina Idema; Letta Seshoka
Swaziland	Themba Dlamini
Togo	Fantchè Awokou
Uganda	Francis Adatu-Engwau; Joseph Imoko
UR Tanzania	Saidi Egwaga; Emmanuel Nkiligi
Zambia	Nathan Kapata
Zimbabwe	Charles Sandy

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.

Table A3.1 **Estimated burden of TB, Africa, 1990 and 2006**

	Incidence, 1990				Prevalence, 1990		TB mortality, 1990		Incidence, 2006.								Prevalence, 2006				TB mortality, 2006				HIV prevalence in 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	9 379	37	4 220	17	11 067	44	541	2	18 699	56	94	≤ 1	8 405	25	33	≤ 1	18 652	56	47	≤ 1	679	2	5	≤ 1	0.5
Angola	21 380	203	9 563	91	54 196	514	6 110	58	47 231	285	2 628	16	20 991	127	920	6	57 009	344	1 314	8	4 854	29	396	2	5.6
Benin	3 963	77	1 749	34	7 255	140	779	15	7 878	90	1 173	13	3 428	39	411	5	11 857	135	586	7	1 584	18	473	5	15
Botswana	3 286	240	1 345	98	4 026	294	463	34	10 230	551	5 504	296	4 053	218	1 926	104	8 430	454	2 752	148	1 696	91	1 120	60	54
Burkina Faso	14 097	159	6 115	69	29 873	337	4 451	50	35 678	248	6 030	42	15 452	108	2 111	15	68 360	476	3 015	21	10 231	71	3 033	21	17
Burundi	8 345	147	3 634	64	17 451	307	2 151	38	29 987	367	2 286	28	13 266	162	800	10	58 374	714	1 143	14	7 459	91	1 067	13	7.6
Cameroon	9 371	77	4 105	34	23 593	193	2 640	22	34 829	192	5 360	29	15 137	83	1 876	10	43 033	237	2 680	15	5 225	29	1 473	8	15
Cape Verde	575	162	259	73	1 468	413	163	46	873	168	–	–	393	76	–	–	1 679	324	–	–	189	36	–	–	–
Central African Republic	4 146	138	1 813	60	10 102	336	1 216	40	14 713	345	2 617	61	6 359	149	916	21	22 532	528	1 309	31	3 394	80	1 100	26	18
Chad	7 294	119	3 244	53	15 549	254	1 762	29	31 262	299	3 089	30	13 759	131	1 081	10	59 719	570	1 544	15	7 984	76	1 423	14	10
Comoros	450	85	203	38	980	186	77	15	358	44	≤ 1	≤ 1	161	20	≤ 1	≤ 1	704	86	≤ 1	≤ 1	54	7	≤ 1	≤ 1	0.1
Congo	3 900	161	1 693	70	6 089	251	868	36	14 869	403	1 680	46	6 523	177	588	16	20 872	566	840	23	2 946	80	548	15	11
Côte d'Ivoire	21 467	168	9 346	73	42 207	330	5 110	40	79 515	420	10 829	57	34 699	183	3 790	20	141 218	747	5 414	29	19 941	105	4 919	26	14
DR Congo	59 364	156	26 201	69	100 829	266	13 383	35	237 473	392	21 830	36	104 680	173	7 641	13	391 136	645	10 915	18	50 834	84	9 035	15	9.2
Equatorial Guinea	347	102	154	45	596	176	65	19	1 268	256	145	29	556	112	51	10	2 000	404	73	15	267	54	60	12	11
Eritrea	2 272	72	1 016	32	7 299	231	646	20	4 402	94	186	4	1 962	42	65	1	10 232	218	93	2	1 010	22	84	2	4.2
Ethiopia	77 268	151	34 158	67	157 070	307	18 830	37	306 330	378	19 220	24	135 926	168	6 727	8	519 609	641	9 610	12	67 545	83	7 292	9	6.3
Gabon	1 408	153	624	68	3 515	383	400	44	4 635	354	963	73	1 990	152	337	26	5 606	428	482	37	902	69	279	21	21
Gambia	1 762	183	789	82	3 343	347	365	38	4 278	257	323	19	1 893	114	113	7	7 039	423	161	10	887	53	132	8	7.5
Ghana	34 855	224	15 501	99	82 914	532	9 329	60	46 693	203	3 275	14	20 684	90	1 146	5	87 162	379	1 637	7	10 946	48	1 482	6	7.0
Guinea	7 365	122	3 302	55	15 307	254	1 722	29	24 321	265	1 234	13	10 821	118	432	5	42 821	466	617	7	5 166	56	527	6	5.1
Guinea-Bissau	1 583	156	709	70	4 098	403	394	39	3 602	219	193	12	1 602	97	68	4	5 145	313	97	6	655	40	64	4	5.4
Kenya	27 255	116	10 545	45	31 150	133	6 685	29	140 548	384	73 122	200	55 934	153	25 593	70	122 126	334	36 561	100	26 278	72	16 735	46	52
Lesotho	2 945	184	1 230	77	4 064	254	480	30	12 670	635	6 137	308	5 088	255	2 148	108	10 229	513	3 069	154	1 764	88	933	47	48
Liberia	2 828	132	1 262	59	7 109	333	795	37	11 857	331	584	16	5 277	147	204	6	20 669	578	292	8	2 493	70	246	7	4.9
Madagascar	21 201	176	9 540	79	43 915	365	4 630	38	47 469	248	198	1	21 341	111	69	≤ 1	79 424	415	99	≤ 1	8 708	45	79	≤ 1	0.4
Malawi	24 371	258	9 319	99	30 356	321	7 076	75	51 172	377	35 781	264	19 449	143	12 523	92	43 668	322	17 891	132	15 040	111	12 204	90	70
Mali	23 198	302	10 387	135	54 813	715	6 157	80	33 460	280	1 611	13	14 896	124	564	5	69 201	578	805	7	8 290	69	797	7	5
Mauritania	4 377	225	1 969	101	11 200	576	1 218	63	9 626	316	245	8	4 307	142	86	3	18 437	606	123	4	2 156	71	109	4	2.5
Mauritius	278	26	125	12	526	50	45	4	284	23	9	≤ 1	127	10	3	≤ 1	496	40	5	≤ 1	46	4	3	≤ 1	3.3
Mozambique	23 955	177	10 486	77	40 323	298	4 825	36	92 835	443	27 731	132	39 002	186	9 706	46	130 790	624	13 865	66	24 490	117	11 324	54	30
Namibia	4 342	306	1 875	132	9 552	674	1 069	75	15 689	767	6 022	294	6 458	316	2 108	103	13 466	658	3 011	147	1 956	96	845	41	38
Niger	9 660	124	4 339	55	24 611	315	2 742	35	23 845	174	560	4	10 674	78	196	1	43 089	314	280	2	4 986	36	238	2	2.3
Nigeria	117 235	124	52 046	55	262 953	278	30 064	32	449 558	311	42 988	30	198 002	137	15 046	10	889 666	615	21 494	15	117 141	81	20 836	14	10
Rwanda	11 567	159	4 500	62	14 675	201	4 537	62	37 563	397	15 270	161	15 377	162	5 344	56	53 166	562	7 635	81	12 151	128	7 081	75	41
Sao Tome & Principe	157	135	71	61	401	345	44	38	159	103	–	–	72	46	–	–	392	252	–	–	40	26	–	–	–
Senegal	15 188	192	6 828	86	29 830	378	3 289	42	32 638	270	896	7	14 598	121	313	3	60 797	504	448	4	7 020	58	397	3	2.7
Seychelles	31	43	14	20	81	113	6	9	28	33	–	–	13	15	–	–	48	56	–	–	4	5	–	–	–
Sierra Leone	8 751	214	3 912	96	20 055	491	2 234	55	29 690	517	1 531	27	13 208	230	536	9	56 103	977	765	13	6 848	119	686	12	5.2
South Africa	109 968	301	47 543	130	283 192	774	28 592	78	453 929	940	200 693	416	184 199	382	70 243	145	482 036	998	100 346	208	105 179	218	64 757	134	44
Swaziland	2 310	267	978	113	5 750	665	659	76	13 097	1 155	7 060	623	5 188	458	2 471	218	12 287	1 084	3 530	311	3 157	278	2 088	184	54
Togo	12 960	327	5 724	145	30 705	775	3 543	89	24 922	389	2 587	40	10 956	171	905	14	50 444	787	1 294	20	6 700	105	1 305	20	10
Uganda	29 080	163	12 292	69	52 779	296	9 989	56	106 037	355	17 346	58	45 982	154	6 071	20	167 703	561	8 673	29	25 038	84	7 016	23	16
UR Tanzania	45 408	178	19 573	77	68 826	270	9 098	36	123 140	312	21 653	55	53 248	135	7 578	19	180 936	459	10 826	27	26 014	66	7 504	19	18
Zambia	24 152	297	10 000	123	51 687	636	8 105	100	64 632	553	23 875	204	26 697	228	8 356	71	66 383	568	11 938	102	11 875	102	5 342	46	37
Zimbabwe	14 282	136	5 677	54	25 811	246	4 880	47	73 714	557	31 430	238	30 028	227	11 001	83	78 978	597	15 715	119	17 269	131	9 523	72	43
AFR	**829 377**	**162**	**359 978**	**70**	**1 703 191**	**333**	**212 228**	**42**	**2 807 688**	**363**	**605 989**	**78**	**1 202 861**	**155**	**212 096**	**27**	**4 233 723**	**547**	**302 995**	**39**	**639 089**	**83**	**204 559**	**26**	**22**

– indicates no estimate.

* Incidence, prevalence and mortality estimates include patients with HIV. Estimates labelled "HIV+" are estimates of TB in HIV-positive people (all ages). 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 187 for further details. Data can be downloaded from www.who.int/tb

Table A3.2 **Case notifications and case detection rates, DOTS and non-DOTS combined, Africa, 2006**

	Notified TB cases, DOTS and non-DOTS combined															Incidence and case detection rates				Proportions			
					New pulmonary			New extra-	Other	Re-treatment cases					New pulm.	Estimated incidence		Case detection rate		ss+	ss+	Extrapulm.	Re-treat.
	Population	All notified	New and relapse		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	33 351	21 263	21 143	63	8 538	26	1 827	10 219		559	26	94			8 737	18 699	8 405	110	102	82	40	48	3
Angola	16 557	54 699	50 419	305	21 499	130	11 635	2 719	0	14 566	322	3 958	0	0	21 499	47 231	20 991	76	102	65	43	5	34
Benin	8 760	3 734	3 619	41	2 943	34	206	322	0	148	59	56	0	0	3 300	7 878	3 428	44	86	93	81	9	7
Botswana	1 858	8 519	8 413	453	3 252	175	3 776	1 149		236	42	64			3 594	10 230	4 053	80	80	46	39	14	4
Burkina Faso	14 359	4 248	3 941	27	2 659	19	506	551	50	175	224	38	45	0	2 659	35 678	15 452	11	17	84	67	14	11
Burundi	8 173	6 176	6 114	75	3 119	38	950	1 900	0	145	40	22	0		3 326	29 987	13 266	20	24	77	51	31	3
Cameroon	18 175	24 879	24 316	134	13 811	76	6 569	3 035		901	88	475			13 811	34 829	15 137	67	91	68	57	12	6
Cape Verde	519	276	262	51	131	25	88	33		10	3	11			131	873	393	29	33	60	50	13	9
Central African Republic	4 265	6 375	6 045	142	4 448	104	707	664	0	226	67	263	0	0	4 999	14 713	6 359	40	70	86	74	11	9
Chad	10 468															31 262	13 759						
Comoros	818	116	112	14	67	8	22	20	0	3	3	1			67	358	161	30	42	75	60	18	6
Congo	3 689	8 600	8 478	230	3 340	91	2 504	2 353		281	34	88			3 340	14 869	6 523	55	51	57	39	28	5
Côte d'Ivoire	18 914	21 145	20 746	110	12 867	68	2 675	4 411	0	793	277	122	0	0	12 867	79 515	34 699	25	37	83	62	21	6
DR Congo	60 644	98 139	95 666	158	63 488	105	10 093	18 213		3 872	997	992		484	63 488	237 473	104 680	39	61	86	66	19	6
Equatorial Guinea	496															1 268	556						
Eritrea	4 692	3 136	3 026	64	680	14	1 484	782	0	80	5	28	77	0	680	4 402	1 962	67	35	31	22	26	6
Ethiopia	81 021	123 009	122 198	151	36 674	45	40 234	43 255		2 035	298	513			36 674	306 330	135 926	39	27	48	30	35	2
Gabon	1 311	3 206	3 051	233	1 145	87	1 478	313		115	9	146			1 145	4 635	1 990	63	58	44	38	10	8
Gambia	1 663	1 881	1 795	108	1 209	73	467	102	0	17	2	15	69	0	1 209	4 278	1 893	42	64	72	67	6	5
Ghana	23 008	12 511	12 471	54	7 786	34	3 139	1 049	0	497	18	22			7 786	46 693	20 684	26	38	71	62	8	4
Guinea	9 181	9 076	8 787	96	5 903	64	898	1 699		287	126	163			6 500	24 321	10 821	35	55	87	67	19	6
Guinea-Bissau	1 646	2 161	2 137	130	1 030	63	955	19	0	133	8	16	0	0	1 030	3 602	1 602	56	64	52	48	1	7
Kenya	36 553	115 234	108 342	296	39 154	107	48 338	17 443		3 407	121	1 657	5 114		39 154	140 548	55 934	75	70	45	36	16	9
Lesotho	1 995	13 368	12 073	605	4 024	202	4 934	2 477		638	86	147	807	255	4 024	12 670	5 088	90	79	45	33	21	13
Liberia	3 579	4 514	4 447	124	2 906	81	646	829	0	66	38	29			2 906	11 857	5 277	37	55	82	65	19	3
Madagascar	19 159	22 517	21 966	115	15 613	81	1 175	4 011		1 167	356	195			15 613	47 469	21 341	44	73	93	71	18	8
Malawi	13 571	27 011	25 054	185	8 166	60	10 608	5 268		1 012			1 957		8 166	51 172	19 449	47	42	43	33	21	11
Mali	11 968	5 224	4 989	42	3 802	32	386	580	0	221	150	85	0	0	3 802	33 460	14 896	14	26	91	76	12	9
Mauritania	3 044	2 766	2 694	89	1 486	49	480	536	0	192	24	48	0	0	1 486	9 626	4 307	26	34	76	55	20	10
Mauritius	1 252	115	114	9	85	7	11	15		3	0	1			85	284	127	39	67	89	75	13	3
Mozambique	20 971	35 632	35 257	168	18 275	87	10 618	4 929	0	1 435	170	205	0	0	18 275	92 835	39 002	36	47	63	52	14	5
Namibia	2 047	15 771	14 673	717	5 356	262	4 178	2 450	1 674	1 015	207	90	801		5 356	15 689	6 458	87	83	56	37	17	13
Niger	13 737	8 755	8 474	62	5 279	38	1 443	1 275		477	107	174			5 279	23 845	10 674	34	49	79	62	15	9
Nigeria	144 720	74 225	70 734	49	39 903	28	25 782	2 975	0	2 074	787	1 336	1 368	0	39 903	449 558	198 002	15	20	61	56	4	7
Rwanda	9 464	8 283	8 117	86	4 220	45	1 603	1 766	136	392	123	43	0		4 220	37 563	15 377	21	27	72	52	22	7
Sao Tome & Principe	155	153	153	99	36	23	116	1	0	0	0	0	0	0	36	159	72	96	50	24	24	1	
Senegal	12 072															32 638	14 598						
Seychelles	86															28	13						
Sierra Leone	5 743	8 208	8 041	140	4 629	81	2 802	480	0	130	51	116			4 629	29 690	13 208	27	35	62	58	6	4
South Africa	48 282	341 165	303 114	628	131 099	272	93 348	47 849	0	30 818	2 639	6 974	28 438	0	131 099	453 929	184 199	60	71	58	43	16	20
Swaziland	1 134	9 195	8 278	730	2 539	224	3 842	1 584		313	140	37		740	2 539	13 097	5 188	61	49	40	31	19	6
Togo	6 410	2 924	2 819	44	2 131	33	279	319	0	90	37	68		0	2 131	24 922	10 956	11	19	88	76	11	7
Uganda	29 899	41 579	40 782	136	20 364	68	14 940	4 027		1 451			797		20 364	106 037	45 982	37	44	58	50	10	5
UR Tanzania	39 459	62 100	59 282	150	24 724	63	20 120	12 621		1 817	120	257	2 441		24 724	123 140	53 248	47	46	55	42	21	7
Zambia	11 696	51 179	47 790	409	14 025	120	22 059	9 841		1 865	97	403	2 889		14 025	64 632	26 697	71	53	39	29	21	10
Zimbabwe	13 228	47 774	44 328	335	12 718	96	23 775	6 559		1 276			3 446		12 718	73 714	30 028	58	42	35	29	15	10
AFR	**773 792**	**1 310 841**	**1 234 260**	**160**	**555 123**	**72**	**381 696**	**220643**	**1860**	**74 938**	**7 901**	**18 952**	**48 249**	**1 479**	**557 376**	**2 807 688**	**1 202 861**	**41**	**46**	**59**	**45**	**18**	**11**

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 187 for further details. Data can be downloaded from www.who.int/tb

Table A3.3 **DOTS coverage, case notifications and case detection rates, Africa, 2006**

		TB cases reported from DOTS services													Estimated incidence and case detection rate				Proportions			
	DOTS coverage	New and relapse		New pulmonary ss+		New pulmonary ss- / unk.	New extra-pulmonary	Other new	Re-treatment cases Relapse	After failure	After default	Other re-treat.	Other	New pulm. lab. confirm.	Estimated incidence all forms	Estimated incidence ss+	Case detection rate all new	Case detection rate new ss+	ss+ (% of pulm.)	ss+ (% of new+relapse)	Extrapulm. (% of new+relapse)	Re-treat. (% of new+re-treat.)
	%	number	rate	number	rate	number	number	number	number	number	number	number	number	number	number	number	%	%				
Algeria	100	21 143	63	8 538	26	1 827	10 219		559	26	94			8 737	18 699	8 405	110	102	82	40	48	3
Angola	92	39 436	238	15 915	96	9 706	2 238	0	11 577	249	3 659	0	0	15 915	47 231	20 991	59	76	62	40	6	36
Benin	100	3 619	41	2 943	34	206	322	0	148	59	56	0	0	3 300	7 878	3 428	44	86	93	81	9	7
Botswana	100	8 413	453	3 252	175	3 776	1 149		236	42	64			3 594	10 230	4 053	80	80	46	39	14	4
Burkina Faso	100	3 941	27	2 659	19	506	551	50	175	224	38	45	0	2 659	35 678	15 452	11	17	84	67	14	11
Burundi	100	6 114	75	3 119	38	950	1 900	0	145	40	22	0		3 326	29 987	13 266	20	24	77	51	31	3
Cameroon	100	24 316	134	13 811	76	6 569	3 035		901	88	475			13 811	34 829	15 137	67	91	68	57	12	6
Cape Verde	80	262	51	131	25	88	33		10	3	11			131	873	393	29	33	60	50	13	9
Central African Republic	70	5 929	139	4 365	102	687	654	0	223	66	262	0	0	4 911	14 713	6 359	39	69	86	74	11	9
Chad															31 262	13 759						
Comoros	100	112	14	67	8	22	20	0	3	3	1			67	358	161	30	42	75	60	18	6
Congo	60	8 478	230	3 340	91	2 504	2 353		281	34	88			3 340	14 869	6 523	55	51	57	39	28	5
Côte d'Ivoire	100	20 746	110	12 867	68	2 675	4 411	0	793	277	122	0	0	12 867	79 515	34 699	25	37	83	62	21	6
DR Congo	100	95 666	158	63 488	105	10 093	18 213		3 872	997	992		484	63 488	237 473	104 680	39	61	86	66	19	6
Equatorial Guinea															1 268	556						
Eritrea	86	3 026	64	680	14	1 484	782	0	80	5	28	77	0	680	4 402	1 962	67	35	31	22	26	6
Ethiopia	100	122 198	151	36 674	45	40 234	43 255		2 035	298	513			36 674	306 330	135 926	39	27	48	30	35	2
Gabon	31	3 051	233	1 145	87	1 478	313		115	9	146			1 145	4 635	1 990	63	58	44	38	10	8
Gambia	100	1 795	108	1 209	73	467	102	0	17	2	15	69	0	1 209	4 278	1 893	42	64	72	67	6	5
Ghana	100	12 471	54	7 786	34	3 139	1 049	0	497	18	22			7 786	46 693	20 684	26	38	71	62	8	4
Guinea	100	8 787	96	5 903	64	898	1 699		287	126	163			6 500	24 321	10 821	35	55	87	67	19	6
Guinea-Bissau	87	2 137	130	1 030	63	955	19	0	133	8	16	0	0	1 030	3 602	1 602	56	64	52	48	1	7
Kenya	100	108 342	296	39 154	107	48 338	17 443		3 407	121	1 657	5 114		39 154	140 548	55 934	75	70	45	36	16	9
Lesotho	100	12 073	605	4 024	202	4 934	2 477		638	86	147	807	255	4 024	12 670	5 088	90	79	45	33	21	13
Liberia	100	4 447	124	2 906	81	646	829	0	66	38	29			2 906	11 857	5 277	37	55	82	65	19	3
Madagascar	100	21 966	115	15 613	81	1 175	4 011		1 167	356	195			15 613	47 469	21 341	44	73	93	71	18	8
Malawi	100	25 054	185	8 166	60	10 608	5 268		1 012			1 957		8 166	51 172	19 449	47	42	43	33	21	11
Mali	100	4 989	42	3 802	32	386	580	0	221	150	85	0	0	3 802	33 460	14 896	14	26	91	76	12	9
Mauritania	82	2 694	89	1 486	49	480	536	0	192	24	48	0	0	1 486	9 626	4 307	26	34	76	55	20	10
Mauritius	100	114	9	85	7	11	15		3	0	1			85	284	127	39	67	89	75	13	3
Mozambique	100	35 257	168	18 275	87	10 618	4 929	0	1 435	170	205	0	0	18 275	92 835	39 002	36	47	63	52	14	5
Namibia	100	14 673	717	5 356	262	4 178	2 450	1 674	1 015	207	90	801		5 356	15 689	6 458	87	83	56	37	17	13
Niger	52	8 474	62	5 279	38	1 443	1 275		477	107	174			5 279	23 845	10 674	34	49	79	62	15	9
Nigeria	75	70 734	49	39 903	28	25 782	2 975	0	2 074	787	1 336	1 368		39 903	449 558	198 002	15	20	61	56	4	7
Rwanda	100	8 117	86	4 220	45	1 603	1 766	136	392	123	43	0		4 220	37 563	15 377	21	27	72	52	22	7
Sao Tome & Principe	0														159	72						
Senegal															32 638	14 598						
Seychelles															28	13						
Sierra Leone	100	8 041	140	4 629	81	2 802	480	0	130	51	116			4 629	29 690	13 208	27	35	62	58	6	4
South Africa	100	303 114	628	131 099	272	93 348	47 849	0	30 818	2 639	6 974	28 438	0	131 099	453 929	184 199	60	71	58	43	16	20
Swaziland	100	8 278	730	2 539	224	3 842	1 584		313	140	37		740	2 539	13 097	5 188	61	49	40	31	19	6
Togo	100	2 819	44	2 131	33	279	319	0	90	37	68		0	2 131	24 922	10 956	11	19	88	76	11	7
Uganda	100	40 782	136	20 364	68	14 940	4 027		1 451			797		20 364	106 037	45 982	37	44	58	50	10	5
UR Tanzania	100	59 282	150	24 724	63	20 120	12 621		1 817	120	257	2 441		24 724	123 140	53 248	47	46	55	42	21	7
Zambia	100	47 790	409	14 025	120	22 059	9 841		1 865	97	403	2 889		14 025	64 632	26 697	71	53	39	29	21	10
Zimbabwe	100	44 328	335	12 718	96	23 775	6 559		1 276			3 446		12 718	73 714	30 028	58	42	35	29	15	10
AFR	**91**	**1 223 008**	**158**	**549 420**	**71**	**379 631**	**220 151**	**1 860**	**71 946**	**7 827**	**18 652**	**48 249**	**1 479**	**551 668**	**2 807 688**	**1 202 861**	**41**	**46**	**59**	**45**	**18**	**11**

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 187 for further details. Data can be downloaded from www.who.int/tb

Table A3.4 **Laboratory services, collaborative TB/HIV activities and management of MDR-TB, Africa, 2005–2006**

	Laboratory services, 2006				Collaborative TB/HIV activities								Management of MDR-TB, 2006				
					2005				2006								
	number of labs working with NTP			smear 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	206	21	3	10													
Angola	143	143	143														
Benin	51			47	796	110			3 318	494	337	213	21	81	3	66	17
Botswana	51	2	1	39	2 291	1 829			4 583	3 260							
Burkina Faso	107			107	1 213	559	379	181	1 412	718	472	193	6	0	0	0	0
Burundi	137	1	0	137									0	0	0	0	0
Cameroon	198	1	1	198	0	0			8 639	3 363							
Cape Verde	20	0	0	1	298	14		14	270	8	8						
Central African Republic	59	1	1	40									0	0	0	0	0
Chad																	
Comoros	3	0	0	3	112	2	2	2	116	2	0	0	0	0	0	0	0
Congo																	
Côte d'Ivoire	82	1	1	82	4 079	1 551	590	216	5 810	2 130	1 185	994					
DR Congo	1 069	1	1	1 069	1 885	386	284	3	1 314	188	170	102	1			75	1
Equatorial Guinea																	
Eritrea	61	0	0	0													
Ethiopia	713	1	1		3 211	1 321	1 166	388	3 255	1 295	1 108	354					
Gabon	14	0	0	0	185	185	185		645	645	645						
Gambia	19	1	1	16					550	142		23	1	1	1	29	0
Ghana	211	3	2	150	844	340	340	125	2 136	711	485	99					
Guinea	60	1	1	51									25	104	2	33	17
Guinea-Bissau	44	1	1	1	200	110	110	33	151	85	85	43	0	0	0	0	0
Kenya	770	2	2	400	15 658	8 954	3 940	1 546	69 290	36 049	50 916	15 447	89	0	0	1 049	89
Lesotho	17	1	1	1	156	127	100		2 508	2 222	1 248	191	0	0	0	0	0
Liberia	100	0	0	0	114	14	0		688	101							
Madagascar	227	1	1	6	1 759	16							2	53	0	35	6
Malawi	94	1	1	1	12 243	8 447	7 747	4 156	17 253	12 064	11 244	6 863				875	8
Mali		0	0						478	70			0	0	0	0	0
Mauritania	73	1	1	54	10	0	0	0					7	61	3	12	4
Mauritius	1	1	1	0	115	2	2	1	100	5	4	4	2	85	0	4	2
Mozambique	250	1	1	11					8 631	6 079	1 058	2 789	129	61	61	149	49
Namibia	34	1	1	34	2 547	1 465											
Niger	76	0	0	0		152	65	52									
Nigeria	694	0	0	416	6 897	1 241			7 522	1 558							
Rwanda	173	1	1	170	5 003	2 276	349	292	6 300	2 561	1 124	789					
Sao Tome & Principe	1			0	152	5	0	0	153	3	0	0	0	0	0	0	0
Senegal																	
Seychelles						2	2	2									
Sierra Leone	60	0	0	60					1 230	105	105						
South Africa	143	13	8	143	67 988	35 299	35 299	11 654	110 235	58 249	57 053	23 344	6 716				
Swaziland	13	1	1						1 847	1 476	1 298	287					
Togo					0	0	0										
Uganda	726	3	2	515	10 555	7 523	1 889	762	10 826	6 375	1 481	501					
UR Tanzania	690	3	1	690	1 613	841	514	188	7 140	3 604	2 050	935	13	369	4	171	9
Zambia	156	3	1	156	1 082	614		418	11 545	7 177	2 194	2 723	50				
Zimbabwe	180	1	1	10	0	0	0	0	0	0	0	0	0	0	0	0	0
AFR	**7 726**	**212**	**181**	**4 618**	**141 006**	**73 385**	**52 963**	**20 033**	**287 945**	**150 739**	**134 270**	**55 894**	**7 062**	**815**	**74**	**2 498**	**202**

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 187 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 A3.5 **Treatment outcomes, Africa, 2005 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	8 654	8 379	97	74	13	2	0	3	4	4	87												713	48	24	2	1	6	2	17	72
Angola	16 024	17 678	110	46	26	3	2	20	3	0	72	4 386	2 435	56	38	36	2	14	7	3	0	74	1 613	23	24	5	17	26	4	0	47
Benin	2 739	2 766	101	74	13	7	2	3	1	0	87												341	60	21	10	3	6	1	0	81
Botswana	3 170	3 335	105	37	33	7	1	8	9	6	70												219	33	28	11	5	12	11	0	61
Burkina Faso	2 294	2 290	100	66	5	14	7	6	1	0	71												272	71	4	6	10	6	4	0	75
Burundi	3 262	3 424	105	52	27	4	0	17	1	0	79																				
Cameroon	13 001	13 169	101	66	7	6	1	14	3	2	74												1 611	49	7	6	3	16	4	16	55
Cape Verde	135	135	100	56	8	3	2	19	4	7	64												34	41	15	0	0	24	3	18	56
Central African Republic	2 153	3 090	144	37	28	6	2	8	19	0	65	0	127		54	29	4	9	4	0	0	83	291	53	30	9	0	8	1	0	82
Chad	2 516																														
Comoros	79	70	89	91	0	3	4	0	1	0	91												5	100	0	0	0	0	0	0	100
Congo	3 640	4 121	113	24	4	0	1	13	3	55	28												477	12	2	0	0	3	5	78	14
Côte d'Ivoire	11 300	11 300	100	64	12	8	2	9	6	0	75	1 196	1 196	100	53	10	8	3	17	4	5	63	906	44	15	7	7	12	2	12	59
DR Congo	65 040	65 066	100	80	5	6	1	4	2	1	85												5 448	71	4	10	4	6	3	2	74
Equatorial Guinea																															
Eritrea	687	688	100	83	5	7	1	2	1	0	88																				
Ethiopia	38 525	39 430	102	64	14	5	1	4	5	7	78												3 116	41	15	9	2	5	4	24	56
Gabon	1 042	1 165	112	35	12	10	1	42	1	0	46												150	18	12	5	3	60	3	0	30
Gambia	1 127	1 127	100	81	6	7	1	3	1	1	87																				
Ghana	7 505	7 584	101	68	5	9	2	11	4	1	73												540	40	8	6	3	11	2	30	48
Guinea	5 479	5 811	106	65	7	6	2	10	10	0	72												458	45	16	10	7	13	11	0	60
Guinea-Bissau	1 132	1 167	103	51	18	12	1	11	7	0	69												147	44	33	8	0	7	7	0	77
Kenya	40 389	40 436	100	71	11	5	0	8	5	0	82												3 794	68	9	10	1	7	5	0	77
Lesotho	4 280	5 542	129		73	8	1	4	6	8	73												597	0	71	11	2	2	6	8	71
Liberia	2 167	2 167	100	60	16	3	0	12	8	0	76												57	75	9	2	0	9	5	0	84
Madagascar	13 056	15 298	117	67	7	6	1	13	5	0	74												1 825	65	7	7	2	12	6	0	72
Malawi	8 443	8 443	100	72	2	15	1	3	2	6	73												1 093	74	1	19	1	3	2	2	75
Mali	3 523	3 530	100	69	6	11	4	7	3	0	75												379	67	6	10	5	10	3	0	73
Mauritania	1 155	1 761	152	44	11	2	1	19	12	13	55																				
Mauritius	110	110	100	86		3		6	5	0	86												5	60	20	0	0	20	0	0	80
Mozambique	17 877	17 877	100	78	1	12	1	5	2	1	79												1 855	69	1	15	2	10	3	0	70
Namibia	5 222	5 222	100	59	16	7	2	10	6	0	75												2 009	24	29	11	3	13	6	15	52
Niger	5 050	5 050	100	49	25	5	2	14	5	0	74																				
Nigeria	35 048	35 080	100	50	25	9	4	11	0	0	75												3 662	48	18	2	11	20	0	1	66
Rwanda	4 166	4 175	100	73	10	6	2	3	5	1	83												506	56	9	15	3	4	10	3	65
Sao Tome & Principe												49	49	100	98	0	2	0	0	0	0	98									
Senegal	6 722																														
Seychelles	8																														
Sierra Leone	4 370	4 370	100	77	8	6	1	6	2	0	86												328	68	7	6	3	15	1	0	75
South Africa	119 906	128 393	107	58	13	7	2	10	6	4	71	5 554	6 389	115	52	14	9	1	11	4	9	66	63 588	29	29	11	2	16	6	6	58
Swaziland	2 187	2 187	100	22	20	6	2	5	21	24	42												1 113	7	21	11	3	5	13	41	28
Togo	1 798	1 796	100	66	5	12	4	11	2	0	71												128	73	2	14	4	7	0	0	75
Uganda	20 559	20 559	100	32	41	6	0	16	5	0	73																				
UR Tanzania	25 264	25 324	100	79	4	9	0	4	4	0	82												5 067	37	39	13	1	4	5	1	77
Zambia	14 857	14 857	100	76	8	8	1	2	5	0	84												5 496	24	60	9	1	3	4	0	83
Zimbabwe	13 155	12 860	98	59	9	12	2	7	12	0	68												4 667	13	46	16	0	13	11	0	60
AFR	**538 816**	**546 832**	**101**	**63**	**13**	**7**	**1**	**9**	**4**	**3**	**76**	**11 185**	**10 196**	**91**	**49**	**19**	**7**	**4**	**11**	**4**	**6**	**68**	**112 510**	**35**	**27**	**11**	**3**	**13**	**6**	**6**	**62**

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 2005 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 2005 is used, or the sum of outcomes if the latter is greater. Data can be downloaded from www.who.int/tb

Table A3.6 **Re-treatment outcomes, Africa, 2005 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	548	51	25	2	1	1	2	18	76	46	39	13	2	4	0		41	52	119	39	24	1	1	27	3	6	63
Angola										1 613	23	24	5	17	26	4	0	47									
Benin	154	72	15	7	1	4	1	0	87	89	57	22	8	4	6	2	0	80	98	44	28	15	3	9	1	0	71
Botswana																											
Burkina Faso	129	77	4	2	12	3	2	0	81	110	65	5	12	6	5	7	0	70	33	64	6	3	9	18	0	0	70
Burundi																											
Cameroon	1 009	51	7	7	2	15	3	15	58	121	52	5	7	10	20	7	0	57	481	43	7	5	3	17	4	21	50
Cape Verde	34	41	15	0	0	24	3	18	56																		
Central African Republic	163	55	31	7	0	6	1	0	85	39	46	31	10	0		0	13	77	89	53	27	10	0		2	8	80
Chad																											
Comoros	2	100	0	0	0	0	0	0	100	3	100	0	0	0	0	0	0	100	0	0	0	0	0	0			0
Congo	350	13	1	1	0	4	5	76	14	27	15	19	0	0	0		67	33	100	7	0	0	0	0		93	7
Côte d'Ivoire																											
DR Congo	3 543	75	3	10	3	4	3	2	78	884	64	4	11	5	11	3	3	68	1 021	63	4	10	8	8	4	2	67
Equatorial Guinea																											
Eritrea																											
Ethiopia																											
Gabon	150	18	12	5	3	60	3	0	30																		
Gambia																											
Ghana	540	40	8	6	3	11	2	30	48																		
Guinea	231	52	13	11	4	11	10	0	65	101	39	17	10	14	10	11	0	55	126	37	19	7	6	18	13	0	56
Guinea-Bissau	130	46	32	8	0	8	6	0	78	1	0	0	0	0	0		100	0	16	25	50	13	0	0		13	75
Kenya																											
Lesotho	597		71	11	2	2	6	8	71																		
Liberia	33	70	9	3		9	9	0	79	10	90	10					0	100	14	79	7			14		0	86
Madagascar																											
Malawi	1 093	74	1	19	1	3	2	2	75																		
Mali	195	70	5	10	4	8	2	0	75	94	71	4	9	5	10	1	0	76	90	56	8	10	8	13	6	0	63
Mauritania																											
Mauritius	3	67				33		0	67										2	50	50					0	100
Mozambique	1 376	73	1	15	2	8	2	0	74	178	57	1	17	8	12	3	1	58	301	58	1	15	2	21	3	1	59
Namibia	1 062	45	17	13	5	14	6	0	61																		
Niger																											
Nigeria																											
Rwanda	341	57	12	14	3	2	10	1	69	59	54	0		2	3	12	29	54	50	48	6	20	6	14	4	2	54
Sao Tome & Principe																											
Senegal																											
Seychelles																											
Sierra Leone	136	68	9	7	4	12	0	0	77	57	70	4	7	5	12	2	0	74	135	67	6	5	0		2	19	73
South Africa	30 099	49	15	10	2	13	6	5	64	2 213	40	13	12	9	13	7	6	53	7 540	36	13	10	2	28	6	5	49
Swaziland	311	17	15	14	5	4	18	27	32	97	10	12	14	14	2	4	42	23	62	19	15	11	3	8	3	40	34
Togo	128	73	2	14	4	7	0	0	75																		
Uganda																											
UR Tanzania	1 864	76	3	11	0	4	5	0	79	140	61	1	14	5	10	9	0	62	275	60	12	14	2	9	3	0	72
Zambia	1 805	66	19	6	2	3	4	0	85	215	55	29	7	1	3	5	0	84	0	0	0	0	0	0	0		0
Zimbabwe	1 187	53	7	18	1	9	12	0	60																		
AFR	**47 213**	**53**	**13**	**10**	**2**	**11**	**5**	**5**	**67**	**6 097**	**42**	**14**	**9**	**10**	**15**	**5**	**4**	**56**	**10 552**	**41**	**12**	**10**	**3**	**23**	**5**	**6**	**53**

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 2005 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 A3.7 **DOTS treatment success and case detection rates, Africa, 1994–2006**

	DOTS new smear-positive treatment success (%)												DOTS new smear-positive case detection rate (%)											
	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Algeria			86			87	87	84	89	90	91	87			132			126	116	115	115	107	107	102
Angola				15	68		68	66	74	68	68	72			60	38	50		73	101	101	87	80	76
Benin	76	73	72	73	77	77		79	80	81	83	87	83	82	82	81	86	86		83	81	82	83	86
Botswana	72	67	70	70	47	71	77	78	71	77	65	70	73	85	85	87	71	75	70	75	68	70	74	80
Burkina Faso		25	29	61	59	61	60	65	64	66	67	71	11	17	15	17	16	17	16	16	16	16	17	17
Burundi	44	45		67	74		80	80	79	79	78	79	19	24	29	18	35		30	25	26	26	25	24
Cameroon				80	75	75	77	62	70		71	74		4		10	19	31	37	54	74	75	87	91
Cape Verde											71	64							41				35	33
Central African Republic		37					57	61		59	91	65		58					8	45	5	3	34	69
Chad	63	47			64				72	78	69		35	14			34			29	7	14	19	
Comoros	94	90		85		93	93	92	96		94	91	54	57		54		49	53	42	28	38	48	42
Congo	69					61	69	66	71	69	63	28	69			52		86	80	86	56	64	56	51
Côte d'Ivoire	17	68	56	61	62	63		73	67	72	71	75	50	50	46	45	41	32	8	32	33	33	33	37
DR Congo	71	80	48	64	70	69	78	77	78	83	85	85	41	47	44	54	51	48	50	49	55	62	63	61
Equatorial Guinea	89	89	77	82						51			85	74	73	83						74		
Eritrea				83	73	44	76	80	82	85	85	88			9	11	40	42	48	41	53	41	37	35
Ethiopia	74	61	73	72	74	76	80	76	76	70	79	78	15	20	22	23	24	30	30	30	31	31	29	27
Gabon								49	47	34	40	46							80	68	81	82	58	58
Gambia	74	76	80	70				71	74	75	86	87	74	67	69	72				67	64	59	63	64
Ghana		54	51	48	59	55	50	56	60	66	72	73	15	14	31	32	30	37	40	40	39	36	37	38
Guinea	78	78	75	74	73	74	68	74	72	75	72	72	44	52	50	53	52	54	53	52	51	53	54	55
Guinea-Bissau						35		51	48	80	75	69						45		41	52	70	74	64
Kenya	73	75	77	65	77	78	80	80	79	80	80	82	57	58	54	59	58	51	59	61	64	66	68	70
Lesotho	56	47	71	63		69		71	52	70	69	73	59	69	81	73		72		67	73	84	84	79
Liberia		79		75		74	80	76	76	73	70	76		31		40		26	21	42	27	49	42	55
Madagascar	51	55		64			70	69	74	71	71	74	52	65		67			66	65	70	70	64	73
Malawi	22	71	68	71	69	71	73	70	72	73	71	73	42	44	47	51	46	44	44	40	39	43	43	42
Mali	68	59	65	62	70	68		50	50	65	71	75	16	18	21	20	19	17		20	22	22	24	26
Mauritania										58	22	55										43	28	34
Mauritius	96				91	87	93	93	92	87	89	86	89			85	96	90	67	67	78	92	87	67
Mozambique	67	39	54	67		71	75	78	78	76	77	79	57	52	50	49	48	45	43	43	43	44	46	47
Namibia			66	58	61	51	56	63	66	63	68	75	21	80	82	84	80	77	80	77	86	79	81	83
Niger			57	66		60	65	64	58	70	61	74			31	32	37	40	43	41	50	45	50	49
Nigeria	65	49	32	73	73	75	79	79	79	78	73	75	11	11	10	11	12	12	12	11	15	17	18	20
Rwanda			61	68	72	67	61		58	67	77	83	35	35	41	54	45	33	26	29	32	28	27	27
Sao Tome & Principe																								
Senegal	38	44	44	55	48	58	52	53	66	70	74		62	65	57	54	48	53	53	48	52	48	48	
Seychelles		89	100	100		90	82	67	45	100	92			82	97	67		83	90	68	38	100	62	
Sierra Leone	75	69	74	79		75	77	80	81	83	82	86	28	40	39	36		33	33	32	31	34	36	35
South Africa			69	73	74	60	66	65	68	67	70	71			6	22	61	58	56	66	71	70	67	71
Swaziland								36	47	42	50	42								33	34	38	43	49
Togo	45	60	65	66	69	76		55	68	63	67	71	13	13		11	11	11		4	13	16	17	19
Uganda			33	40	62	61	63	56	60	68	70	73			56	56	56	48	44	44	44	45	44	44
UR Tanzania	80	73	76	77	76	78	78	81	80	81	81	82	57	56	53	54	52	49	48	45	46	47	47	46
Zambia								75	83	75	83	84								41	63	59	53	53
Zimbabwe					70	73	69	71	67	66	54	68						50	47	45	45	46	41	44	41	42
AFR	**59**	**62**	**57**	**63**	**70**	**69**	**72**	**71**	**73**	**73**	**74**	**76**	**23**	**25**	**29**	**34**	**35**	**35**	**36**	**42**	**44**	**46**	**45**	**46**

Treatment success, sum of cured and completed; DOTS new smear-positive case detection rate, notified new smear-positive 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 A3.8 **New smear-positive case notification by age and sex, absolute numbers, DOTS and non-DOTS, Africa, 2006**

	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	41	1 173	1 573	692	409	251	360	80	971	679	339	223	197	408	121	2 144	2 252	1 031	632	448	768	1.6
Angola	540	2 632	3 049	2 182	1 397	729	428	689	2 851	2 892	1 990	1 223	583	314	1 229	5 483	5 941	4 172	2 620	1 312	742	1.0
Benin	18	298	624	465	247	124	106	32	310	371	158	111	38	41	50	608	995	623	358	162	147	1.8
Botswana	36	262	577	490	289	122	104	54	326	507	259	133	55	38	90	588	1 084	749	422	177	142	1.4
Burkina Faso	13	227	473	433	307	183	140	33	155	252	198	99	99	47	46	382	725	631	406	282	187	2.0
Burundi	30	347	600	488	320	114	64	41	296	367	242	140	56	14	71	643	967	730	460	170	78	1.7
Cameroon	119	1 581	2 685	1 935	1 130	492	264	205	1 488	1 908	1 039	555	260	150	324	3 069	4 593	2 974	1 685	752	414	1.5
Cape Verde	2	15	22	18	8	6	4	2	14	16	5	6	4	9	4	29	38	23	14	10	13	1.3
Central African Republic	48	409	770	923	152	83	30	52	538	613	647	126	42	16	100	947	1 383	1 570	278	125	46	1.2
Chad																						
Comoros	0	12	9	7	4	4	1	0	5	5	9	6	4	1	0	17	14	16	10	8	2	1.2
Congo	32	371	656	392	174	69	51	44	384	500	247	138	79	54	76	755	1 156	639	312	148	105	1.2
Côte d'Ivoire	171	1 467	2 476	1 614	915	564	368	191	1 327	1 776	1 069	445	275	209	362	2 794	4 252	2 683	1 360	839	577	1.4
DR Congo	1 122	6 391	9 486	7 321	5 011	2 657	1 504	1 517	7 236	8 522	5 621	3 762	2 019	975	2 639	13 627	18 008	12 942	8 773	4 676	2 479	1.1
Equatorial Guinea																						
Eritrea	6	50	55	44	52	42	36	17	109	123	64	45	19	18	23	159	178	108	97	61	54	0.7
Ethiopia	978	6 137	5 950	3 567	2 016	1 066	521	1 178	5 238	5 326	2 704	1 324	510	159	2 156	11 375	11 276	6 271	3 340	1 576	680	1.2
Gabon	20	157	207	148	89	40	23	19	160	123	79	39	20	21	39	317	330	227	128	60	44	1.5
Gambia	13	126	284	170	112	58	56	5	88	126	71	49	25	26	18	214	410	241	161	83	82	2.1
Ghana	33	557	1 273	1 388	956	529	443	70	494	711	515	381	207	229	103	1 051	1 984	1 903	1 337	736	672	2.0
Guinea	31	834	1 168	916	512	274	162	85	586	581	396	187	118	53	116	1 420	1 749	1 312	699	392	215	1.9
Guinea-Bissau	8	86	178	143	90	74	24	7	82	116	90	81	36	15	15	168	294	233	171	110	39	1.4
Kenya	387	4 708	8 229	4 975	2 467	1 037	645	583	4 953	6 052	2 792	1 343	604	379	970	9 661	14 281	7 767	3 810	1 641	1 024	1.3
Lesotho	33	228	628	550	440	218	49	50	370	642	430	171	90	125	83	598	1 270	980	611	308	174	1.1
Liberia	59	324	442	371	250	125	97	55	292	371	242	125	85	68	114	616	813	613	375	210	165	1.3
Madagascar	117	1 500	2 391	2 220	1 714	766	458	208	1 458	1 944	1 444	874	353	166	325	2 958	4 335	3 664	2 588	1 119	624	1.4
Malawi	42	584	1 647	1 054	491	256	182	80	848	1 545	813	348	183	93	122	1 432	3 192	1 867	839	439	275	1.1
Mali	28	361	679	550	436	272	216	30	250	371	249	168	116	76	58	611	1 050	799	604	388	292	2.0
Mauritania	12	197	294	203	150	106	96	16	109	114	86	49	29	25	28	306	408	289	199	135	121	2.5
Mauritius	0	4	9	22	10	12	6	1	3	7	3	4	1	3	1	7	16	25	14	13	9	2.9
Mozambique																						
Namibia	86	347	1 052	799	386	174	146	74	485	875	521	239	92	80	160	832	1 927	1 320	625	266	226	1.3
Niger	25	537	1 265	909	487	359	217	37	270	427	306	207	149	84	62	807	1 692	1 215	694	508	301	2.6
Nigeria	247	4 488	8 145	5 517	3 330	1 431	897	385	4 029	5 430	2 516	1 894	1 049	545	632	8 517	13 575	8 033	5 224	2 480	1 442	1.5
Rwanda	25	598	769	591	407	182	100	80	494	467	259	139	72	37	105	1 092	1 236	850	546	254	137	1.7
Sao Tome & Principe	0	5	8	4	2	1	2	1	4	7	0	0	1	1	1	9	15	4	2	2	3	1.6
Senegal																						
Seychelles																						
Sierra Leone	43	485	851	709	446	216	166	68	375	536	357	207	111	59	111	860	1 387	1 066	653	327	225	1.7
South Africa	2 062	10 498	21 273	19 743	11 752	4 392	1 862	2 579	14 073	20 387	12 656	5 767	2 550	1 505	4 641	24 571	41 660	32 399	17 519	6 942	3 367	1.2
Swaziland	32	187	452	268	164	91	45	35	367	464	245	107	48	25	67	554	916	513	271	139	70	1.0
Togo	15	174	358	344	183	94	79	29	214	268	170	96	58	49	44	388	626	514	279	152	128	1.4
Uganda	255	1 624	4 084	3 391	1 591	718	511	363	1 792	2 909	1 736	812	332	238	618	3 416	6 993	5 127	2 403	1 050	749	1.5
UR Tanzania	204	2 060	4 926	3 832	2 154	1 348	1 029	293	1 745	3 326	1 970	995	507	335	497	3 805	8 252	5 802	3 149	1 855	1 364	1.7
Zambia	150	945	3 496	1 645	684	323	186	224	1 500	2 834	1 257	452	207	122	374	2 445	6 330	2 902	1 136	530	308	1.1
Zimbabwe	215	736	2 391	1 939	896	348	199	237	1 020	2 424	1 355	632	230	96	452	1 756	4 815	3 294	1 528	578	295	1.1
AFR	**7 298**	**53 722**	**95 504**	**72 972**	**42 630**	**19 950**	**11 877**	**9 749**	**57 309**	**76 914**	**45 149**	**23 702**	**11 513**	**6 908**	**17 047**	**111 031**	**172 418**	**118 121**	**66 332**	**31 463**	**18 785**	**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 187 for further details. Data can be downloaded from www.who.int/tb

Table A3.9 **New smear-positive case notification rates by age and sex, Africa, DOTS and non-DOTS, 2006**

	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	31	52	31	29	34	52	2	27	23	16	16	24	49	1	29	38	24	22	29	50
Angola	14	159	280	307	309	285	245	18	170	260	268	245	196	139	16	164	270	287	276	237	185
Benin	1	33	103	114	88	82	108	2	35	64	40	39	21	30	1	34	84	78	63	49	62
Botswana	11	120	361	523	446	364	432	17	151	338	282	181	133	96	14	136	350	403	306	236	224
Burkina Faso	0	15	45	70	96	109	77	1	11	25	32	26	44	18	1	13	35	51	58	71	43
Burundi	2	39	116	151	135	100	80	2	33	68	69	51	36	11	2	36	91	108	90	63	37
Cameroon	3	82	204	230	205	138	91	5	78	148	125	97	66	43	4	80	176	178	150	100	64
Cape Verde	2	25	61	66	63	119	53	2	24	42	17	30	46	63	2	25	51	41	43	72	59
Central African Republic	5	94	266	509	120	106	44	6	121	208	340	85	41	17	6	108	237	423	101	69	28
Chad																					
Comoros	0	14	15	17	16	27	10	0	6	8	22	24	25	8	0	10	11	20	20	26	9
Congo	4	100	236	222	161	101	101	6	103	181	140	117	98	80	5	101	209	181	138	100	89
Côte d'Ivoire	4	71	184	184	138	129	120	5	64	138	137	75	72	70	5	68	162	162	108	102	95
DR Congo	8	107	236	294	321	274	226	11	121	211	220	221	175	107	9	114	223	256	269	220	157
Equatorial Guinea																					
Eritrea	1	10	13	26	54	58	86	2	22	30	35	34	19	27	1	16	22	31	43	36	49
Ethiopia	5	75	108	96	84	70	49	7	65	96	71	52	31	12	6	70	102	84	68	50	29
Gabon	9	114	206	203	173	129	84	8	117	121	109	76	65	62	8	116	164	156	125	97	72
Gambia	4	81	242	191	190	152	189	1	58	109	80	81	60	78	3	70	176	135	135	104	130
Ghana	1	23	72	117	123	101	111	2	21	42	44	49	39	52	1	22	57	81	86	69	80
Guinea	2	91	184	208	168	146	132	4	66	95	93	61	57	33	3	79	140	151	114	99	76
Guinea-Bissau	2	56	170	211	204	258	109	2	53	108	126	168	112	55	2	54	139	167	185	181	79
Kenya	5	117	300	307	245	194	146	8	123	224	171	122	99	71	6	120	262	238	181	143	105
Lesotho	8	98	499	977	943	614	127	13	154	432	507	222	168	224	10	127	463	694	494	346	184
Liberia	7	90	182	241	256	226	282	7	82	157	159	122	137	155	7	86	170	200	187	179	211
Madagascar	3	80	182	244	277	218	166	5	78	146	156	138	93	50	4	79	164	200	207	153	103
Malawi	1	43	182	201	148	112	100	3	63	172	145	92	70	41	2	53	177	172	118	90	67
Mali	1	30	88	132	177	205	117	1	20	46	51	51	57	31	1	25	66	88	105	116	68
Mauritania	2	64	123	127	139	223	197	3	37	51	55	44	45	41	2	51	88	91	90	121	110
Mauritius	0	4	9	22	12	27	17	1	3	7	3	5	2	6	0	4	8	13	8	14	11
Mozambique																					
Namibia	22	150	682	782	637	469	485	19	211	584	495	324	196	193	20	180	634	636	465	317	316
Niger	1	47	158	142	99	133	92	1	21	49	52	54	61	42	1	33	101	99	79	98	69
Nigeria	1	30	83	86	76	54	46	1	27	55	38	41	36	24	1	29	69	62	58	45	34
Rwanda	1	52	137	167	160	158	107	4	42	71	63	46	46	27	3	47	102	111	98	93	59
Sao Tome & Principe	0	29	69	66	49	48	66	3	23	61	0	0	37	27	2	26	65	31	22	42	45
Senegal																					
Seychelles																					
Sierra Leone	4	89	226	255	235	170	199	6	69	140	123	99	76	55	5	79	182	187	164	120	118
South Africa	27	217	527	671	566	348	230	34	294	520	417	248	167	116	30	255	523	542	398	249	160
Swaziland	14	134	591	648	541	447	281	16	261	560	451	265	188	118	15	198	575	536	383	303	188
Togo	1	27	79	118	95	80	92	2	33	59	57	47	44	44	2	30	69	87	70	61	65
Uganda	3	53	210	305	235	172	158	5	59	153	163	111	68	58	4	56	182	236	170	116	102
UR Tanzania	2	51	177	225	198	195	200	3	43	121	115	84	62	51	3	47	149	170	139	123	116
Zambia	6	76	416	361	253	175	128	8	121	353	288	145	89	62	7	99	385	325	196	127	90
Zimbabwe	8	45	226	367	260	173	100	9	62	246	270	155	87	36	9	53	236	320	203	124	63
AFR	**4**	**67**	**175**	**206**	**182**	**141**	**110**	**6**	**72**	**141**	**125**	**95**	**72**	**51**	**5**	**70**	**158**	**165**	**137**	**104**	**77**

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 A3.10 **Number of TB cases notified, Africa, 1980–2006**

	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	2006
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	21143
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	50 419
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	3 619
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	8 413
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	3 941
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	6 114
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	24 316
Cape Verde	516	344	393	230	285	259		285	276	210	221					303	179	196	205			291	195	316	294	292	262
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	6 045
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	112
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	8 478
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	20 746
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	95 666
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	3 026
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	122 198
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	3 051
Gambia	239	58														1 023	1 242	1 357	1 558	1 514			1 859	1 945	2 142	2 031	1 795
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	12 471
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	8 787
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	2 137
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	108 342
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	12 073
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	4 447
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	21 966
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	25 054
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	4 989
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	2 694
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	114
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	35 257
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	14 673
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	8 474
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	70 734
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	8 117
Sao Tome & Principe	131	37	40	59	49	40	8	55	13		17	120		97	41				106	96	97	97	94	457	121	136	153
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	8 041
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	303 114
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	8 278
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	2 819
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	40 782
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	59 282
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	47 790
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	44 328
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**	**1 234 260**
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	42
% 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	91

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 A3.11 **Case notification rates, Africa, 1980–2006**

	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	2006
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	63
Angola	129	93	94	76	113	93	98	87	82	94	98	103	100	71	60	42	122	116	108	105	115	152	204	238	227	231	305
Benin	49	49	45	44	45	46	48	41	42	39	40	40	43	40	35	38	36	34	34	36	37		37	37	38	39	41
Botswana	267	253	254	262	273	231	217	254	213	191	215	233	289	313	311	362	414	445	476	508	537	549	575	549	558	548	453
Burkina Faso	38	34	32	42	12	59	13	17	11	19	17	16		15	9	25	17	15	19	20	19	20	19	20	21	25	27
Burundi	19	15	22	23	40	47	51	52	70	83	80	84	75	77	62	53	60	84	102	97		95	90	94	95	84	75
Cameroon	27	24	39	35	33	32	20	35	43	46	48	54	52	53	53	23	21	27	33	49	33	70	66	94	101	121	134
Cape Verde	178	117	131	75	91	81		86	81	60	62					76	44	47	48			63	41	65	59	58	51
Central African Republic	28	32	60	66	18	19	28	18	28	2	71	66				97	102	123	131	132		65	121	97	95	77	142
Chad	5	6	3	40	28	28	24	20	52	43	42	46	41	43	48	45	26	29	35	58			56	49	50	62	
Comoros									43	27	27	22	19	22	19	20	22	21	20	23	17	19	15	10	11	14	14
Congo	41	65	194	210	136	126	145	156	170	185	24	25	46	75	110	129	156	116	127	161	288	296	294	226	276	273	230
Côte d'Ivoire	50	50	55	62	60	55	55	56	55	57	61	61	67	68	96	80	85	87	91	90	76	95	91	99	110	106	110
DR Congo	18	11	33	43	65	80	83	79	85	85	56	86	92	86	87	94	99	94	121	120	120	128	132	153	164	165	158
Equatorial Guinea					63	6	0	3	6	47	77	95	74	85	95	80	82	91	101						113		
Eritrea											117		138	367	487	668	160	249	227	170	181	72	70	113	97	78	64
Ethiopia	108	111	133	140	155	165	180	185	199	163	173	113	110		170	43	67	92	106	107	131	133	151	157	160	157	151
Gabon	127	114	106	101	86	109	95	103	83	102	100	96	95	97	101	106	88	129	122	138		208	170	177	204	195	233
Gambia	36	8														88	103	109	121	113			126	128	136	126	108
Ghana	46	34	36	21	15	24	28	41	36	40	41	45	43	51	98	48	57	57	59	53	54	58	56	55	54	54	54
Guinea		40	31	17	24	25	21	22	31	32	33	36	45	46	47	48	58	57	60	64	66	70	73	76	84	76	96
Guinea-Bissau	81	57	25	44	42	59	143	80	81	138	114	119	98	139	143	135	137	115	65	87	93		108	110	118	111	130
Kenya	68	59		66		53	49	50	50	56	50	51	58	79	86	103	124	137	165	188	205	228	244	271	290	288	296
Lesotho	315	288	361	245	203	199	1	15	151	156	158	184	202	203	256	301	319	361	428	461	517		523	616	580	545	605
Liberia	41	52	42	43		20	11	18	41				94	86	85	65	37		65		49	55	105	76	130	100	124
Madagascar	100	80	37	36	85	31	35	36	39	46	52	49	64	75	79	155	88		96			99	98	109	110	102	115
Malawi	77	79	67	70	63	73	82	93	97	104	131	152	145	173	196	190	200	195	207	216	203	218	201	206	210	193	185
Mali	14	15	3	8	28	24	27	36	35	22	38	33	39	39	36	35	41	55	44	46	42		42	41	40	40	42
Mauritania	504	611	147	143	238	257	128	206	212	213	272	153	211	190		173	168	161	149	146	120				115	73	89
Mauritius	14	16	12	15	12	11	12	11	11	12	11	13	12	15	13	12	10	11	10	13	13	10	12	11	11	10	9
Mozambique	61	56	45	46	39	42	62	82	104	119	117	120	105	112	111	112	112	112	114	116	116	118	133	146	155	162	168
Namibia						428	375	294	217	272	188	170	116	351		93	565	568	620	545	575	683	684	736	754	739	717
Niger	12	48	12	11	10	10	8	8	9	8	66			7	42	21		40	49	36	42	44	43	57	53	59	62
Nigeria	14	15	15	13	14	18	17	23	29	15	21	20	15	11	8	12	13	14	17	20	21	36	29	33	41	44	49
Rwanda	29	26		24	24	22	38	48	58	65	88	45				54	60	74	87	85	75	64	69	76	72	78	86
Sao Tome & Principe	138	38	41	59	48	39	8	51	12		15	101		79	33				78	70	69	68	65	310	81	89	99
Senegal	34	43	26	38		16	13	85	75	78	63	83	89	80	78	84	92	87	86	74	82	81	77	84	79	83	
Seychelles	24	0	24	24	15	15	35	20	14	8	57			7		11	20	23	14	26	25	23	35	12	21	16	
Sierra Leone	23	26	26	9	23	24	10	3	3		15	36	40	65	62	47	78	75	76		83	99	97	102	106	121	140
South Africa	190	201	209	199	195	180	163	167	176	190	220	207	214	227	223	178	258	291	323	331	333	322	462	483	562	564	628
Swaziland		23	470	292				142	167	166		172		158		214	242	303	358	401	555	569	619	703	724	717	730
Togo	7	4	7	6	11	22	17	33	29	24	33	31	29	24	26	34	35	33	25	24	26		29	31	36	41	44
Uganda	8	9	4	15			9	9	19	6	83	103	108	109	131	119	124	126	126	132	123	145	155	154	156	142	136
UR Tanzania	61	63	59	57	57	63	69	73	76	78	87	96	105	112	120	133	145	147	159	159	161	177	169	168	167	159	150
Zambia	89	100	103	105	107	118	121	135	168	181	208	280	297	347	390	388	426			442	477	434	499	487	480	432	409
Zimbabwe	56	54	58	47	67	54	57	61	61	67	87	109	147	178	207	261	298	359	381	400	402	440	460	411	431	385	335
AFR	**58**	**57**	**60**	**62**	**62**	**67**	**66**	**71**	**78**	**74**	**82**	**78**	**80**	**75**	**96**	**86**	**97**	**97**	**108**	**115**	**117**	**126**	**143**	**150**	**160**	**157**	**160**

Rates are per 100 000 population. From 1995 on, number shown is notification rate of new and relapse 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 A3.12 **New smear-positive cases notified, numbers and rates, Africa, 1993–2006**

	Number of cases													Rate (per 100 000 population)											
	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
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	8 538		25	20	23	26	25	26	27	26	26	27	26	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	21 499	42	36	31	63	64	55	54	65	83	123	125	130	127	130
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	2 943	29	27	30	29	29	29	31	32		31	31	31	32	34
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	3 252	101	109	122	158	172	186	161	179	174	188	170	172	173	175
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	2 659		6	10	13	10	12	12	13	12	12	13	14	16	19
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	3 119	31	25	18	24	32	43	45		44	40	42	43	42	38
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	13 811	17	14	21	16	24	29	38	25	29	48	63	64	73	76
Cape Verde			111	117	103	104			140	111	165	169	135	131			28	28	25	24			30	23	34	34	27	25
Central African Republic			1 794	1 992	2 267	2 637	2 725		1 382	2 758	2 818	2 923	2 153	4 448			52	56	63	71	72		35	69	69	71	51	104
Chad			2 002	870			2 920			3 519	3 599	2 270	2 516				28	12			36			39	38	23	25	
Comoros			103	107	100	99	112	87	92	72	48	63	79	67			17	17	16	15	16	12	13	10	6	8	10	8
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	3 340		62	72	87	67	67	71	132	131	149	101	117	101	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	12 867	50		55	58	57	61	60	50	63	62	64	67	67	68
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	63 488	35		46	52	52	69	71	71	81	83	97	109	111	105
Equatorial Guinea			219	209	226	284						406					57	53	56	69						86		
Eritrea					120	135	527	590	702	646	887	720	687	680					4	4	15	16	18	16	21	17	15	14
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	36 674		10	15	21	25	29	32	44	46	50	53	54	49	45
Gabon		395	486	263	577	889	916		1 137	1 033	1 233	1 323	1 042	1 145		38	46	24	52	78	79		94	84	99	104	81	87
Gambia			778	743	820	900	861			1 035	1 040	1 011	1 127	1 209			67	62	66	70	64			70	68	64	70	73
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	7 786		33	15	35	39	40	35	36	37	37	36	33	33	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	5 903	31	30	31	38	39	43	44	48	49	51	52	57	61	64
Guinea-Bissau			956	922	855	541	704	526		899	963	1 186	1 132	1 030			80	75	68	42	53	38		62	64	77	71	63
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	39 154	39	43	51	60	66	81	89	92	98	104	113	119	113	107
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	4 024	84	78	79	102	134	136	147	161		164	187	217	216	202
Liberia	1 547		1 154	668		1 190		1 021	934	1 974	1 319	2 490	2 167	2 906	75		54	29		44		33	29	61	40	74	63	81
Madagascar	6 881	7 366	8 026	8 456		9 639			11 092	11 387	12 881	13 526	13 056	15 613	52	54	58	59		63			67	66	73	75	70	81
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	8 166	58	60	62	65	72	80	72	71	70	63	61	66	64	60
Mali		1 740	1 866	2 173	3 178	2 558	2 690	2 527		2 757	3 015	3 069	3 523	3 802		20	21	24	35	27	28	25		26	28	27	30	32
Mauritania			2 074		2 519	1 172	2 051	1 583				1 662	1 155	1 486			93		107	48	82	62				58	39	49
Mauritius			113	99	112	109	122	115	85	86	99	117	110	85			10	9	10	9	10	10	7	7	8	10	9	7
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	18 275	64	63	66	64	66	70	72	73	75	80	82	85	87	87
Namibia			697	2 849	3 220	3 598	3 760	4 012	4 535	4 689	5 487	5 155	5 222	5 356			42	167	184	200	204	213	237	241	279	259	259	262
Niger	463	1 865	1 492		3 452	3 195	2 631	3 045	3 476	3 495	4 505	4 311	5 050	5 279	5	21	16		35	31	25	27	30	29	36	34	38	38
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	39 903	2		9	10	10	11	13	14	18	17	21	24	25	28
Rwanda			1 840	2 034	2 820	4 417	4 298	3 681	3 252	3 956	4 627	4 179	4 166	4 220			33	35	44	63	56	45	38	45	52	46	45	45
Sao Tome & Principe							30	30	41	42	33	50	49	36							22	21	29	29	22	33	32	23
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	60	64	57	56	50	56	57	53	59	56	57	
Seychelles	2		6	11	13	9	10	11	12	9	5	13	8		3		8	14	17	11	12	14	15	11	6	15	9	
Sierra Leone		1 408	1 454	2 234	2 296	2 262		2 472	2 692	2 938	3 113	3 735	4 370	4 629		34	35	54	54	53		55	57	60	60	69	78	81
South Africa			23 112	42 163	54 073	66 047	72 098	75 967	83 808	98 799	116 364	126 268	125 460	131 099			56	99	125	150	161	167	182	212	247	266	262	272
Swaziland			660	2 226			1 781	1 823	1 279	1 410	1 585	1 902	2 187	2 539			69	228			171	172	119	129	144	171	194	224
Togo	545		887	913	935	904	904	984		1 203	1 306	1 608	1 798	2 131	13		20	20	19	18	17	18		21	22	26	29	33
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	20 364	60	72	64	70	76	78	77	70	68	73	75	75	71	68
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	24 724	55	59	67	70	70	74	73	71	71	68	68	69	66	63
Zambia		9 620	10 038	12 072			11 645	12 927	13 024	16 351	18 934	17 247	14 857	14 025		107	108	127			114	124	122	150	171	153	129	120
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	12 718	47		76	100	119	117	115	114	120	124	112	112	100	96
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**	**555 123**	**19**	**21**	**36**	**44**	**45**	**51**	**54**	**54**	**59**	**65**	**71**	**75**	**73**	**72**

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

Malawi

Fewer new pulmonary smear positive cases were evaluated than registered due to national policy of registering all patients in whom TB is diagnosed, but reporting outcomes only for those who start treatment.

Mozambique

While DOTS is available in all administrative areas, it is estimated that only around 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. In 2006, of the 18 275 notified new smear-positive cases, 337 were in patients aged under 15 years, and 17 938 were patients aged 15 years or more.

Nigeria

Breakdown of notified cases by age and sex was not available for all states.

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	Lynette Rogers
Antigua & Barbuda	Oritta Zachariah; Janet Samuel
Argentina	Elsa Zerbini
Bahamas	
Barbados	R.A. Manohar Singh
Belize	Ines Mendez-Moguel;Marvin Manzanero
Bermuda	John Cann; Lise M. Outerbridge; Dy-Juan M. DeRoza
Bolivia	Miram Nogales Rodriguez
Brazil	Joseney Raimundo Pires dos Santos; Draurio Barreira; Stefano Barbosa Codenotti
British Virgin Islands	
Canada	Edward Ellis; Victor Galant
Cayman Islands	A. K. Kumar; Timothy E. D. McLaughlin-Munroe
Chile	Manuel Zuñiga Gajardo; Zulema Torres Gaete
Colombia	Gilberto Alvarez Uribe; Ernesto Moreno Naranjo; César Castiblanco Montañez
Costa Rica	Zeidy Mata A.
Cuba	María Josefa Llanes Cordero
Dominica	Paul Ricketts
Dominican Republic	Juan José Cordero; Belkys Marcelino
Ecuador	Jorge Iñiguez Luzuriaga; Rocío Morales; Christian Acosta
El Salvador	Julio Garay Ramos; Marta De Abrego; Xochil Aleman
Grenada	Agnes Banfield
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	Martín Castellanos Joya; Martha A. García Avilés; Héctor A. Téllez Medina
Montserrat	Violet Brown; Dorothea L Hazel
Netherlands Antilles	I. Gerstenbluth; Y. Halabi
Nicaragua	Alejandro A. Tardencilla Gutiérrez
Panama	Cecilia Lyons de Arango; C. Torres, J. Bravo
Paraguay	Juan Carlos Jara Rodríguez; Irmina Toledo; Ofelia Cuevas; Tomasa Portillo; Mirian Alvarez
Peru	César Antonio Bonilla Asalde; Yvonne Cortez Jara; Eladia Quispe Yataco
Puerto Rico	Ada S. Martinez; María del Carmen Bermúdez
Saint Kitts & Nevis	Dianne Francis-Delaney; William Turner
Saint Lucia	Alina Montane Jaime
St Vincent & Grenadines	Roger Duncan; Anneke Wilson
Suriname	Roel Mahabier
Trinidad & Tobago	Dottin Ramoutar; Leilawat Mohammed
Turks & Caicos Islands	Farina Hussein
Uruguay	Jorge Rodriguez de Marco
US Virgin Islands	
USA	Kenneth G. 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.

Table A3.1 **Estimated burden of TB, the Americas, 1990 and 2006**

	Incidence, 1990				Prevalence, 1990		TB mortality, 1990		Incidence, 2006.								Prevalence, 2006				TB mortality, 2006				HIV prevalence in incident
	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	TB cases (%)
Anguilla	3	30	1	13	4	47	≤ 1	5	3	26	–	–	1	12	–	–	5	40	–	–	≤ 1	5	–	–	–
Antigua & Barbuda	6	10	3	5	10	16	1	2	5	6	–	–	2	3	–	–	7	9	–	–	≤ 1	≤ 1	–	–	–
Argentina	23 911	73	10 692	33	39 506	121	3 209	10	15 231	39	672	2	6 787	17	235	≤ 1	18 965	48	336	≤ 1	2 043	5	157	≤ 1	4
Bahamas	182	71	75	29	210	82	47	18	126	38	46	14	52	16	16	5	131	40	23	7	25	8	14	4	37
Barbados	54	20	24	9	66	24	11	4	32	11	6	2	14	5	2	≤ 1	34	11	3	1	6	2	2	≤ 1	19
Belize	90	49	40	22	145	78	18	9	137	49	17	6	60	21	6	2	159	56	9	3	17	6	5	2	13
Bermuda	4	7	2	3	6	10	≤ 1	≤ 1	2	4	–	–	1	2	–	–	4	6	–	–	≤ 1	≤ 1	–	–	–
Bolivia	20 400	306	9 175	138	31 541	473	3 493	52	18 562	198	90	≤ 1	8 344	89	32	≤ 1	24 906	266	45	≤ 1	2 795	30	27	≤ 1	0.5
Brazil	125 064	84	79 976	53	192 447	129	10 881	7	93 933	50	11 523	6	59 371	31	6 098	3	104 062	55	5 761	3	7 556	4	1 402	≤ 1	12
British Virgin Islands	4	23	2	10	6	38	≤ 1	4	3	13	–	–	1	6	–	–	4	20	–	–	≤ 1	2	–	–	–
Canada	2 647	10	1 181	4	2 046	7	265	≤ 1	1 678	5	104	≤ 1	745	2	36	≤ 1	1 277	4	52	≤ 1	167	≤ 1	10	≤ 1	6.2
Cayman Islands	2	7	≤ 1	3	3	10	≤ 1	1	2	4	–	–	≤ 1	2	–	–	3	6	–	–	≤ 1	≤ 1	–	–	–
Chile	6 479	49	2 912	22	7 649	58	675	5	2 417	15	27	≤ 1	1 085	7	10	≤ 1	2 689	16	14	≤ 1	207	1	4	≤ 1	1.1
Colombia	22 141	63	9 941	29	36 846	106	3 594	10	20 522	45	435	≤ 1	9 192	20	152	≤ 1	26 674	59	218	≤ 1	2 863	6	118	≤ 1	2.1
Costa Rica	676	22	304	10	1 106	36	108	4	620	14	8	≤ 1	278	6	3	≤ 1	726	17	4	≤ 1	60	1	2	≤ 1	1.3
Cuba	3 145	30	1 415	13	4 029	38	346	3	1 018	9	3	≤ 1	458	4	1	≤ 1	1 182	10	2	≤ 1	98	≤ 1	≤ 1	≤ 1	0.3
Dominica	13	18	6	8	21	30	2	3	11	16	–	–	5	7	–	–	11	16	–	–	≤ 1	1	–	–	–
Dominican Republic	10 100	138	4 511	62	16 981	233	2 104	29	8 534	89	280	3	3 812	40	98	1	11 369	118	140	1	1 439	15	89	≤ 1	3.3
Ecuador	20 580	200	9 250	90	35 278	343	4 539	44	16 958	128	186	1	7 612	58	65	≤ 1	25 732	195	93	≤ 1	3 412	26	74	≤ 1	1.1
El Salvador	5 091	100	2 265	44	8 255	162	839	16	3 385	50	365	5	1 487	22	128	2	4 319	64	183	3	580	9	108	2	11
Grenada	6	6	2	3	9	10	1	1	5	5	–	–	2	2	–	–	8	8	–	–	≤ 1	≤ 1	–	–	–
Guatemala	8 055	90	3 601	40	12 516	141	1 340	15	10 277	79	1 357	10	4 489	34	475	4	13 479	103	678	5	1 859	14	430	3	13
Guyana	324	44	142	19	522	71	66	9	1 215	164	116	16	535	72	41	5	1 592	215	58	8	213	29	36	5	10
Haiti	33 212	467	14 760	208	55 788	785	7 593	107	28 290	299	1 923	20	12 538	133	673	7	38 020	402	961	10	5 465	58	663	7	6.8
Honduras	5 626	115	2 476	51	8 609	176	899	18	5 322	76	336	5	2 361	34	118	2	6 648	95	168	2	777	11	93	1	6.3
Jamaica	198	8	86	4	311	13	34	1	197	7	52	2	84	3	18	≤ 1	220	8	26	≤ 1	35	1	15	≤ 1	26
Mexico	51 467	61	23 117	28	85 521	102	8 380	10	22 473	21	256	≤ 1	10 087	10	90	≤ 1	26 711	25	128	≤ 1	2 128	2	55	≤ 1	1.1
Montserrat	1	11	≤ 1	5	2	18	≤ 1	2	≤ 1	9	–	–	≤ 1	4	–	–	≤ 1	15	–	–	≤ 1	2	–	–	–
Netherlands Antilles	27	14	12	6	54	28	5	3	14	8	–	–	6	3	–	–	29	15	–	–	3	1	–	–	–
Nicaragua	5 785	140	2 602	63	8 124	196	899	22	3 203	58	24	≤ 1	1 439	26	8	≤ 1	4 084	74	12	≤ 1	409	7	6	≤ 1	0.8
Panama	1 674	69	735	30	2 629	109	231	10	1 463	45	201	6	638	19	70	2	1 402	43	100	3	122	4	25	≤ 1	14
Paraguay	3 134	74	1 409	33	4 983	117	568	13	4 267	71	80	1	1 912	32	28	≤ 1	6 041	100	40	≤ 1	711	12	27	≤ 1	1.9
Peru	84 406	388	37 910	174	109 588	504	7 987	37	44 815	162	913	3	20 076	73	320	1	51 705	187	457	2	4 538	16	179	≤ 1	2.0
Puerto Rico	385	11	173	5	603	17	68	2	186	5	–	–	84	2	–	–	235	6	–	–	24	≤ 1	–	–	–
Saint Kitts & Nevis	5	13	2	6	9	21	≤ 1	2	6	11	–	–	2	5	–	–	8	17	–	–	≤ 1	2	–	–	–
Saint Lucia	27	20	12	9	45	33	5	4	28	17	–	–	13	8	–	–	36	22	–	–	3	2	–	–	–
St Vincent & Grenadines	37	34	17	15	62	57	7	6	35	30	–	–	16	13	–	–	56	47	–	–	6	5	–	–	–
Suriname	400	99	179	45	664	165	77	19	290	64	24	5	128	28	8	2	435	95	12	3	60	13	9	2	8.2
Trinidad & Tobago	192	16	83	7	282	23	34	3	112	8	32	2	47	4	11	≤ 1	136	10	16	1	21	2	10	≤ 1	29
Turks & Caicos Islands	4	31	2	14	6	51	≤ 1	6	4	17	–	–	2	8	–	–	6	22	–	–	≤ 1	2	–	–	–
Uruguay	1 047	34	466	15	1 365	44	118	4	910	27	131	4	397	12	46	1	1 034	31	65	2	108	3	24	≤ 1	14
US Virgin Islands	20	19	9	9	31	30	3	3	11	10	–	–	5	5	–	–	18	16	–	–	2	2	–	–	–
USA	24 030	9	10 584	4	18 142	7	2 396	≤ 1	13 148	4	1 398	≤ 1	5 777	2	489	≤ 1	9 842	3	699	≤ 1	1 310	≤ 1	134	≤ 1	11
Venezuela	8 499	43	3 810	19	11 598	59	1 128	6	11 271	41	659	2	5 006	18	231	≤ 1	14 026	52	330	1	1 530	6	155	≤ 1	5.8
AMR	**469 150**	**65**	**233 967**	**32**	**697 620**	**96**	**61 973**	**9**	**330 724**	**37**	**21 265**	**2**	**164 952**	**18**	**9 508**	**1**	**398 030**	**44**	**10 632**	**1**	**40 600**	**5**	**3 876**	**≤ 1**	**6.4**

– indicates no estimate.

* Incidence, prevalence and mortality estimates include patients with HIV. Estimates labelled "HIV+" are estimates of TB in HIV-positive people (all ages). 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 187 for further details. Data can be downloaded from www.who.int/tb

Table A3.2 **Case notifications and case detection rates, DOTS and non-DOTS combined, the Americas, 2006**

	Notified TB cases, DOTS and non-DOTS combined																Incidence and case detection rates				Proportions			
					New pulmonary			New extra-	Other	Re-treatment cases					New pulm.	Estimated incidence		Case detection rate		ss+	ss+	Extrapulm.	Re-treat.
	Population	All notified	New and relapse		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	0	0	0	0	0	0	0	0	0	0	0	0	0		3	1	0	0				
Antigua & Barbuda	84	4	4	5	4	5	0	0	0	0	0	0	0	0	4	5	2	86	190	100	100		
Argentina	39 134	10 132	9 406	24	4 834	12	2 669	1 266	585	52		256	201	269	5 245	15 231	6 787	61	71	64	51	13	5
Bahamas	327															126	52						
Barbados	293	5	5	2	4	1	0	1	0	0	0	0	0	0	5	32	14	16	29	100	80	20	
Belize	282	87	85	30	60	21	18	0	0	7	0	0	2		60	137	60	57	100	77	71		10
Bermuda	64	3	3	5	2	3	0	1	0	0	0	0	0	0	2	2	1	126	186	100	67	33	
Bolivia	9 354	9 200	9 014	96	5 788	62	1 064	1 654		508	32	154			5 788	18 562	8 344	46	69	84	64	18	8
Brazil	189 323	83 293	77 632	41	41 117	22	22 585	10 656	0	3 274	219	2 282	3 160	0	43 201	93 933	59 371	79	69	65	53	14	11
British Virgin Islands	22															3	1						
Canada	32 577	1 621	1 434	4	407	1	586	402	0	39	0	0	86	101	725	1 678	745	83	55	41	28	28	8
Cayman Islands	46	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0	0				
Chile	16 465	2 559	2 486	15	1 533	9	233	571	0	149	1	26		46	1 598	2 417	1 085	97	141	87	62	23	7
Colombia	45 558	11 128	11 128	24	7 648	17	1 348	1 700	0	432				0	8 457	20 522	9 192	52	83	85	69	15	4
Costa Rica	4 399	512	488	11	285	6	92	95	0	16	3	21		0	358	620	278	76	102	76	58	19	8
Cuba	11 267	765	765	7	432	4	188	96		49					432	1 018	458	70	94	70	56	13	6
Dominica	68	19	19	28	8	12	11	0	0	0	0	0	0	0	8	11	5	177	165	42	42		
Dominican Republic	9 615	4 819	4 561	47	2 658	28	893	631	41	338	19	239	0	0	2 699	8 534	3 812	49	70	75	58	14	12
Ecuador	13 202	4 920	4 594	35	3 182	24	540	455		417	82	168	76		3 184	16 958	7 612	25	42	85	69	10	15
El Salvador	6 762	1 679	1 644	24	913	14	347	283	0	101	17	18	0	0	913	3 385	1 487	46	61	72	56	17	8
Grenada	106	1	1	1	1	1	0	0	0	0	0	0	0	0	1	5	2	19	42	100	100		
Guatemala	13 029	3 674	3 626	28	2 501	19	414	238	360	113	18	30			3 513	10 277	4 489	34	56	86	69	7	4
Guyana	739	747	710	96	294	40	372	19		25	1	36			513	1 215	535	56	55	44	41	3	8
Haiti	9 446	14 002	13 959	148	7 461	79	4 796	1 436	0	266	0	43	0	0	7 461	28 290	12 538	48	60	61	53	10	2
Honduras	6 969	3 197	3 197	46	2 018	29	656	350	0	173	0	0	0	0	2 018	5 322	2 361	57	85	75	63	11	5
Jamaica	2 699	98	95	4	61	2	18	13	1	2	0	2	1	0	61	197	84	47	73	77	64	14	5
Mexico	105 342	18 710	17 887	17	11 874	11	2 468	2 751		794	90	569	117	47	12 096	22 473	10 087	76	118	83	66	15	8
Montserrat	6	0	0	0	0	0	0	0	0	0	0	0	0	0		1	0	0	0				
Netherlands Antilles	189	5	5	3	5	3	0	0	0	0	0	0	0	0	5	14	6	35	78	100	100		
Nicaragua	5 532	2 105	1 997	36	1 285	23	408	177	0	127	25	83	0	0	1 285	3 203	1 439	58	89	76	64	9	11
Panama	3 288	1 847	1 636	50	858	26	464	254	0	60	10	47	154	0	858	1 463	638	108	134	65	52	16	15
Paraguay	6 016	2 308	2 308	38	1 441	24	709	152	6						1 446	4 267	1 912	54	75	67	62	7	
Peru	27 589	36 643	34 311	124	19 251	70	6 045	5 035	835	3 145	642	784	906		20 086	44 815	20 076	70	96	76	56	15	15
Puerto Rico	3 969	112	112	3	69	2	36	7	0	0	0	0	0	0	106	186	84	60	82	66	62	6	
Saint Kitts & Nevis	50	1	1	2	1	2									1	6	2	18	40	100	100		
Saint Lucia	163	15	15	9	13	8	0	0	0	2	0	0	0	0	13	28	13	47	104	100	87		13
St Vincent & Grenadines	120	19	13	11	8	7	4	0	0	1	0	0	6	0	13	35	16	34	50	67	62		37
Suriname	455	136	127	28	63	14	43	16	1	4	0	5	2	2	63	290	128	42	49	59	50	13	8
Trinidad & Tobago	1 328	253	232	17	149	11	60	17	0	6	1	20			149	112	47	202	316	71	64	7	11
Turks & Caicos Islands	25	8	7	28	7	28	0	0	0	0	0	1	0	0	7	4	2	167	371	100	100		13
Uruguay	3 331	571	557	17	305	9	152	70	0	30	0	2	12		357	910	397	58	77	67	55	13	8
US Virgin Islands	111															11	5						
USA	302 841	13 779	13 779	5	5 091	2	5 792	2 889	7						9 099	13 148	5 777	105	88	47	37	21	
Venezuela	27 191	6 839	6 705	25	3 547	13	1 659	1 157	85	257	22	85	27		3 632	11 271	5 006	57	71	68	53	17	6
AMR	**899 388**	**235 816**	**224 548**	**25**	**125 178**	**14**	**54 670**	**32392**	**1921**	**10 387**	**1 182**	**4 871**	**4 750**	**465**	**135 462**	**330 724**	**164 952**	**65**	**76**	**70**	**56**	**14**	**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 187 for further details. Data can be downloaded from www.who.int/tb

Table A3.3 **DOTS coverage, case notifications and case detection rates, the Americas, 2006**

		TB cases reported from DOTS services													Estimated incidence and case detection rate				Proportions			
	DOTS			New pulmonary			New extra-	Other	Re-treatment cases					New pulm.	Estimated incidence		Case detection rate		ss+	ss+	Extrapulm.	Re-treat.
	coverage	New and relapse		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	0														3	1						
Antigua & Barbuda	0														5	2						
Argentina	100	9 406	24	4 834	12	2 669	1 266	585	52		256	201	269	5 245	15 231	6 787	61	71	64	51	13	5
Bahamas															126	52						
Barbados	100	5	2	4	1	0	1	0	0	0	0	0	0	5	32	14	16	29	100	80	20	
Belize	100	85	30	60	21	18	0	0	7	0	0	2		60	137	60	57	100	77	71		10
Bermuda	0														2	1						
Bolivia	47	9 014	96	5 788	62	1 064	1 654		508	32	154			5 788	18 562	8 344	46	69	84	64	18	8
Brazil	86	61 127	32	32 463	17	17 688	8 374	0	2 602	166	1 790	2 386	0	34 217	93 933	59 371	62	55	65	53	14	11
British Virgin Islands															3	1						
Canada	100	1 434	4	407	1	586	402	0	39	0	0	86	101	725	1 678	745	83	55	41	28	28	8
Cayman Islands	100	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0	0				
Chile	100	2 486	15	1 533	9	233	571	0	149	1	26		46	1 598	2 417	1 085	97	141	87	62	23	7
Colombia	60	11 128	24	7 648	17	1 348	1 700	0	432				0	8 457	20 522	9 192	52	83	85	69	15	4
Costa Rica	100	488	11	285	6	92	95	0	16	3	21		0	358	620	278	76	102	76	58	19	8
Cuba	100	765	7	432	4	188	96		49					432	1 018	458	70	94	70	56	13	6
Dominica	100	19	28	8	12	11	0	0	0	0	0	0	0	8	11	5	177	165	42	42		
Dominican Republic	80	4 316	45	2 515	26	847	600	38	316	19	220	0	0	2 553	8 534	3 812	47	66	75	58	14	12
Ecuador	80	3 728	28	2 610	20	402	378		338	70	136	72		2 612	16 958	7 612	20	34	87	70	10	15
El Salvador	100	1 644	24	913	14	347	283	0	101	17	18	0	0	913	3 385	1 487	46	61	72	56	17	8
Grenada	0														5	2						
Guatemala	70	3 626	28	2 501	19	414	238	360	113	18	30			3 513	10 277	4 489	34	56	86	69	7	4
Guyana	60	469	63	239	32	194	15		21	1	32			370	1 215	535	37	45	55	51	3	11
Haiti	91	13 170	139	6 873	73	4 686	1 377	0	234	0	35	0	0	6 873	28 290	12 538	46	55	59	52	10	2
Honduras	100	3 197	46	2 018	29	656	350	0	173	0	0	0	0	2 018	5 322	2 361	57	85	75	63	11	5
Jamaica	100	95	4	61	2	18	13	1	2	0	2	1	0	61	197	84	47	73	77	64	14	5
Mexico	100	17 887	17	11 874	11	2 468	2 751		794	90	569	117	47	12 096	22 473	10 087	76	118	83	66	15	8
Montserrat	100	0	0	0	0	0	0	0	0	0	0	0	0		1	0	0	0				
Netherlands Antilles	0														14	6						
Nicaragua	80	1 997	36	1 285	23	408	177	0	127	25	83	0	0	1 285	3 203	1 439	58	89	76	64	9	11
Panama	100	1 636	50	858	26	464	254	0	60	10	47	154	0	858	1 463	638	108	134	65	52	16	15
Paraguay	85	1 325	22	911	15	341	71	2						912	4 267	1 912	31	48	73	69	5	
Peru	100	34 311	124	19 251	70	6 045	5 035	835	3 145	642	784	906		20 086	44 815	20 076	70	96	76	56	15	15
Puerto Rico	100	112	3	69	2	36	7	0	0	0	0	0	0	106	186	84	60	82	66	62	6	
Saint Kitts & Nevis	100	1	2	1	2									1	6	2	18	40	100	100		
Saint Lucia	100	15	9	13	8	0	0	0	2	0	0	0	0	13	28	13	47	104	100	87		13
St Vincent & Grenadines	100	13	11	8	7	4	0	0	1	0	0	6	0	13	35	16	34	50	67	62		37
Suriname	0														290	128						
Trinidad & Tobago	0														112	47						
Turks & Caicos Islands	100	7	28	7	28	0	0	0	0	0	1	0	0	7	4	2	167	371	100	100		13
Uruguay	100	557	17	305	9	152	70	0	30	0	2	12		357	910	397	58	77	67	55	13	8
US Virgin Islands															11	5						
USA	100	13 779	5	5 091	2	5 792	2 889	7						9 099	13 148	5 777	105	88	47	37	21	
Venezuela	100	6 705	25	3 547	13	1 659	1 157	85	257	22	85	27		3 632	11 271	5 006	57	71	68	53	17	6
AMR	**93**	**204 547**	**23**	**114 412**	**13**	**48 830**	**29 824**	**1 913**	**9 568**	**1 116**	**4 291**	**3 970**	**463**	**124 271**	**330 724**	**164 952**	**59**	**69**	**70**	**56**	**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 187 for further details. Data can be downloaded from www.who.int/tb

Table A3.4 **Laboratory services, collaborative TB/HIV activities and management of MDR-TB, the Americas, 2005–2006**

	Laboratory services, 2006				Collaborative TB/HIV activities								Management of MDR-TB, 2006				
					2005				2006								
	number of labs working with NTP			smear 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	1			0													
Antigua & Barbuda	1	0	0		6	3	3	3	4	3	3	3	0	0	0	0	0
Argentina	725	117	18	143													
Bahamas																	
Barbados	1	1		1	8	2	0		5		0						
Belize	2			1	106	25	17	17	87	11	8	8	0	0	0	0	0
Bermuda	1	1	1	1	1	0	0		2	0	0	0	0	3	0	0	0
Bolivia	486	486	486	0	0	0	0	0							34		
Brazil	4 044	193	38	2 100	51 552	8 249	4 442	6 995	54 189	8 059	6 960	6 457	399				
British Virgin Islands					0	0	0	0									
Canada	10	10	10	10	414	63			388	55			12	1 077	8	104	2
Cayman Islands	4			4	1	0			0	0				0			
Chile	186	47	1	186					61	61			7	105	0	115	7
Colombia	2 176	841	3	2 176	5 537	353			5 978	386			39	263	14	138	25
Costa Rica	97	27	1	80	374	50		42					4			40	1
Cuba	480	480			729	0	16		724	1	0		0	180	0	5	0
Dominica						0	0			0	0	0	0	0	0	0	0
Dominican Republic	164	5	1	152	78	3	0	0	1 771	218					0		24
Ecuador	270	11	1	270	10	3	0										
El Salvador	199	7	1	199	1 544	188	37	71	1 631	176	22	63	2	0	0		
Grenada	1	0	0	1	0	0			0	0	0	0	0	0	0	0	0
Guatemala	136	8	3	1	600	478		1 160	1 429	485							
Guyana		1	0		456	80			566	75							
Haiti	239	1	1	91	5 062	1 797			722	164							
Honduras	144	144	144	0	1 455	200	0	0	1 787	202							
Jamaica	3	0	0	2	79	28	12	15	81	25	16	18	0	20	0	1	0
Mexico	1 235	31	7	658	1 382	217							123	479	61	175	62
Montserrat					1	0	0	0									
Netherlands Antilles					2	2			1	1			1	5	1	0	0
Nicaragua	143	3	1	1	556	30	0		0	0	0		3	0	0	140	0
Panama	64	7	1	64	1 569	200		20	1 566	215		49	10	57	10		5
Paraguay	92	4	1	68									7	27	1	22	6
Peru	1 350	67	7	1 350	668	668			648	648			893	876	736	1 123	534
Puerto Rico	1	1	1		93	28			101	20			1	97	1	0	0
Saint Kitts & Nevis	1			1													
Saint Lucia	2	0	0	2	1	0			1	0							
St Vincent & Grenadines					7	1	0	0	18	2							
Suriname					87	20		2		24							
Trinidad & Tobago	1	1	1	0	124	42	12	15	250	73	13	36	1	18	0	5	1
Turks & Caicos Islands	1	1	1	1	5	1	0	0	8	0	0	0	0	0	0	0	0
Uruguay	1	1	1		574	74	0		533	82		18	1	320	0	29	1
US Virgin Islands																	
USA	1 657	1 657	1 657	1 657	8 273	1 035							111	9 722	91		
Venezuela	303	22	1	121	2 678	392	0	152	3 224	400	0	188	22	30	1	104	21
AMR	**14 221**	**4 175**	**2 388**	**9 341**	**84 032**	**14 232**	**4 539**	**8 492**	**75 775**	**11 386**	**7 022**	**6 840**	**1 636**	**13 279**	**958**	**2 001**	**689**

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 187 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 A3.5 **Treatment outcomes, the Americas, 2005 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																																
Antigua & Barbuda	6											0	6		50		33			17	0	50									
Argentina	4 709	4 709	100	19	34	5	0	5	3	33	53												1 615	7	26	5	0	9	2	51	33
Bahamas																																
Barbados	0	11		45	45	9				0	91																					
Belize	59	59	100	56	19	12	2	12	0	0	75												14	57	29	14	0	0	0	0	86
Bermuda												0	1							100	0											
Bolivia	6 278	6 278	100	76	2	3	1	5	4	8	78												772	63	3	5	3	7	3	16	66
Brazil	26 224	33 527	128	32	44	5	1	9	4	4	77	15 869	8 566	54	27	45	5	1	10	6	7	72	7 394	26	21	7	2	18	10	16	47
British Virgin Islands	0																															
Canada	433	459	106	8	59	9	0	1	1	21	68												106	8	59	7	0	3	2	21	68
Cayman Islands	0	1		0	0	0	0	100	0	0	0												0							0	
Chile	1 186	1 221	103	78	0	9	0	5	2	6	78												140	69	3	14	1	9	3	0	72
Colombia	2 404	7 778	324	63	9	6	1	7	4	10	71	4 466											0							0	
Costa Rica	330	306	93	85	4	5	2	3	1	0	89												49	55	12	4	2	24	2	0	67
Cuba	467	466	100	90	2	6	1	1		1	91												48	67	0	6	4	2	0	21	67
Dominica																																
Dominican Republic	2 724	2 522	93	80	5	4	2	7	3	0	85	225	175	78	76	4	6	1	9	3	0	80	530	56	5	7	8	19	6	0	60
Ecuador	2 151	2 150	100	81	3	3	3	6	2	2	83	897											554	56	8	5	10	12	3	6	64
El Salvador	1 059	1 059	100	91	0	4	1	2	0	1	91												114	68	0	6	4	13	0	8	68
Grenada												0	6		67		33				0	67									
Guatemala	2 420																															
Guyana	196	203	104	1	65	6		22	0	4	67	44	54	123	2	28	7		39	6	19	30	13	8	54	15	0	8	0	15	62
Haiti	6 625	6 625	100	73	8	6	1	7	4	1	81	715	715	100	68	6	8	1	9	7	1	74	197	65	7	1	1	10	5	12	72
Honduras	2 069	1 905	92	81	7	5	0	4	3	0	88												169	59	9	6	2	17	7	0	69
Jamaica	53	53	100	4	53	13	0	26	4	0	57												5	0	20	0	0	80	0	0	20
Mexico	11 997	12 172	101	71	6	5	1	6	3	8	77												1 456	48	7	7	4	14	2	18	55
Montserrat	1																															
Netherlands Antilles																																
Nicaragua	1 253	1 496	119	73	13	5	2	6	3	0	85												181	71	12	7	2	7	2	0	83
Panama	860	873	102	68	12	8	0	10	1	0	80												237	23	35	9	4	22	7	0	58
Paraguay	618	634	103	59	32	3	0	4	2	0	91	642	637	99	13	24	4		7	1	51	37										
Peru	18 490	14 793	80	91		2	2	4	1	0	91												2 299	78	0	5	5	11	1	0	78
Puerto Rico	60	60	100	75	0	22	0	3	0	0	75												113	0	73	23	0	4	1	0	73
Saint Kitts & Nevis	0																						2	0	50	0	0	0	0	50	50
Saint Lucia	11	13	118	15	54	31	0	0	0	0	69																					
St Vincent & Grenadines	6																															
Suriname												49																				
Trinidad & Tobago												95	106	112	68	4	12		16		0	72									
Turks & Caicos Islands	0	3		33	33	0	0	0	33	0	67												5	20	20	20	0	0	40	0	40
Uruguay	355	345	97	80	4	11	0	4	0	1	84												30	57	17	13	3	7	0	3	73
US Virgin Islands																																
USA	5 111	5 111	100		64	8		2	3	24	64																					
Venezuela	3 653	3 581	98	83		5	0	10	2	0	83												247	80	0	4	2	12	2	0	80
AMR	**101 808**	**108 413**	**106**	**57**	**21**	**5**	**1**	**7**	**3**	**6**	**78**	**23 002**	**10 266**	**45**	**30**	**40**	**5**	**1**	**10**	**5**	**9**	**70**	**16 290**	**40**	**15**	**6**	**3**	**14**	**6**	**15**	**55**

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 2005 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 2005 is used, or the sum of outcomes if the latter is greater. Data can be downloaded from www.who.int/tb

Table A3.6 **Re-treatment outcomes, the Americas, 2005 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	226	11	18	4	0	7	4	56	29	381	10	36	8	1	20	3	22	46	806	4	22	4	0	3	2	66	26
Bahamas																											
Barbados																											
Belize	7	57	14	29	0	0	0	0	71	7	57	43	0	0	0	0	0	100	0	0	0	0	0	0	0		0
Bermuda																											
Bolivia	772	63	3	5	3	7	3	16	66																		
Brazil	2 426	22	35	6	1	11	10	15	57	237	5	13	3	22	5	10	43	18	1 955	13	26	6	2	27	11	15	39
British Virgin Islands																											
Canada	42	7	62	7	0	0	2	21	69																		
Cayman 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
Chile	129	71	3	16	1	7	3	0	74										11	55	0	0		36	0	9	55
Colombia																											
Costa Rica	19	68	21	5	5	0	0	0	89	8	75	13	13				0	88	22	36	5			55	5	0	41
Cuba	39	82		8				10	82	5				40			60		4					25		75	
Dominica																											
Dominican Republic	312	63	4	5	8	15	5	0	68	30	27	3	10	50	10	0	0	30	188	47	5	9	2	28	9	0	53
Ecuador	315	64	4	4	10	10	2	5	69	74	47	3	5	23	11	5	5	50	136	50	10	7	3	20	3	7	60
El Salvador	78	79	0	6	4	4	0	6	79	9	44	0	0		22	0	33	44	27	44	0		4	37	0	15	44
Grenada																											
Guatemala																											
Guyana	3		100					0	100										10	10	40	20		10		20	50
Haiti	173	66	7	0	0	9	5	13	73	0	0	0	0	0	0	0		0	24	54	8	4	4	21	8	0	63
Honduras	169	59	9	6	2	17	7	0	69																		
Jamaica																			2		50			50		0	50
Mexico	646	56	7	5	5	9	1	16	63	82	30	6	12	7	12	1	30	37	385	43	6	8	2	23	3	16	49
Montserrat																											
Netherlands Antilles																											
Nicaragua	118	74	13	8	0	5	0	0	86	18	67	11	11	0		6	6	78	45	67	9	2	7	11	4	0	76
Panama	58	57	19	5	3	14	2	0	76	8	25	13	13	38	13	0	0	38	64	30	20	8	5	33	5	0	50
Paraguay																											
Peru	1 967	80		5	5	9	1	0	80										332	64		6	4	24	2	0	64
Puerto Rico																											
Saint Kitts & Nevis																											
Saint Lucia																											
St Vincent & Grenadines																											
Suriname																											
Trinidad & Tobago																											
Turks & Caicos Islands	0	0	0	0	0	0	0		0	2	0	0	0	0	0		100	0	3	33	33	33	0	0	0	0	67
Uruguay	30	57	17	13	3	7	0	3	73																		
US Virgin Islands																											
USA																											
Venezuela	247	80		4	2	12	2	0	80																		
AMR	**7 776**	**53**	**14**	**5**	**3**	**10**	**5**	**10**	**67**	**861**	**17**	**21**	**7**	**11**	**13**	**5**	**25**	**38**	**4 014**	**23**	**19**	**6**	**2**	**22**	**7**	**22**	**41**

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 2005 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 A3.7 **DOTS treatment success and case detection rates, the Americas, 1994–2006**

	DOTS new smear-positive treatment success (%)												DOTS new smear-positive case detection rate (%)											
	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Anguilla																								
Antigua & Barbuda					50	50	100	100	100		100						44	136	46	91	47		284	
Argentina					55	59	54	64	58	66	58	53			4	7	20	31	39	72	67	66	67	71
Bahamas					72	66		64	59	62							65	101		59	55	71		
Barbados										100		91							40	34		136		29
Belize						88	78	66	85	89	60	75		96	65			84	99	129	110	59	101	100
Bermuda																								
Bolivia	66	62	71	77	62	74	79	82	84	81	80	78	39	78	73	76	76	74	77	79	74	73	75	69
Brazil					91	89	73	67	75	83	81	77				3	3	6	6	8	14	37	43	55
British Virgin Islands																								
Canada				40	39	36	35	42	36	45	62	68	46	46	52	50	54	61	58	52	44	58	58	55
Cayman Islands								100											130			130		
Chile	83	79	80	77	83	83	82	83	86	85	83	78	72	76	82	87	88	81	90	100	97	105	102	141
Colombia					74	82	80	85	84	83	85	71					30	87		9	8	18	26	83
Costa Rica						81	76	72	85	94		89					31	119	86	75	116	147	117	102
Cuba	86	90	92	90	94	91	93	93	92	93	93	91	83	89	87	92	95	95	85	88	89	85	95	94
Dominica			100					100							94	57				39				165
Dominican Republic						81	79	85	78	81	80	85					8	6	9	38	61	65	71	66
Ecuador								82	84	84	85	83							5	30	37	41	28	34
El Salvador					77	78	79	88	88	88	90	91			46	53	56	57	58	59	54	59	69	61
Grenada																								
Guatemala	62	61	81	73	79	81	86	85	84	91	85		43	57	56	56	56	50	40	44	42	54	55	56
Guyana						91	91	90	85	57	72	67						10	20	11	33	27	40	45
Haiti				73	79	70	73	75	78	78	80	81			1	11	22	20	27	36	41	43	52	55
Honduras					93	88	89	86	87	87	85	88				2	15	105	124	128	89	84	87	85
Jamaica		67	72	79	89	74	45	78	49	53	46	57		94	98	94	106	106	88	71	96	82	63	73
Mexico			75	65	78	80	76	83	84	83	82	77			16	31	43	78	108	87	105	95	112	118
Montserrat																					465		420	
Netherlands Antilles																								
Nicaragua	81	80	79	81	82	81	82	83	82	84	87	85	70	80	80	82	81	80	85	77	86	85	83	89
Panama				51	51	80	67	65	73	74	78	80				13	8	35	80	93	90	132	133	134
Paraguay	46	51					77	86	92	85	83	91	14	56				4	9	8	19	20	33	48
Peru	81	83	89	90	92	93	90	90	92	89	90	91	101	88	94	99	91	87	87	86	81	84	88	96
Puerto Rico		68	69	69	72	70	64	76	60	66	71	75		58	72	66	76	67	72	88	70	76	71	82
Saint Kitts & Nevis					25	50										165	82			41				40
Saint Lucia				67	82	89	100	50	25	89	64	69			113	81	73	57	48	64	64	88	88	104
St Vincent & Grenadines				86		100	100	80			86					18		55	18		37	31	38	50
Suriname																								
Trinidad & Tobago																								
Turks & Caicos Islands					71							67					123							371
Uruguay	83	68	80	77	84	83	85	85	82	86		84	77	95	95	85	90	80	80	73	90	91	88	77
US Virgin Islands		50												73										
USA	72	76	79	79	81	82	83	83	83	83	82	64	85	83	83	85	86	84	85	85	86	87	86	88
Venezuela	68	74	80	72	81	82	76	80	82	82	81	83	73	75	74	78	81	77	67	65	80	78	74	71
AMR	**76**	**77**	**83**	**82**	**81**	**83**	**81**	**82**	**83**	**83**	**82**	**78**	**25**	**25**	**27**	**31**	**34**	**41**	**40**	**43**	**47**	**56**	**60**	**69**

Treatment success, sum of cured and completed; DOTS new smear-positive case detection rate, notified new smear-positive 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 A3.8 **New smear-positive case notification by age and sex, absolute numbers, DOTS and non-DOTS, the Americas, 2006**

	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																						
Argentina	67	519	484	360	351	346	321	74	438	437	235	197	173	213	141	957	921	595	548	519	534	1.4
Bahamas																						
Barbados			2						1					1		1	2				1	1.0
Belize	3	4	4	7	5	1	3	2	6	5	3	5	6	6	5	10	9	10	10	7	9	0.8
Bermuda				1								1						1	1			1.0
Bolivia	127	1 147	699	471	390	333	398	179	764	461	253	177	148	241	306	1 911	1 160	724	567	481	639	1.6
Brazil	343	4 783	6 098	6 050	5 042	2 885	2 221	343	3 132	3 506	2 569	1 885	1 121	1 139	686	7 915	9 604	8 619	6 927	4 006	3 360	2.0
British Virgin Islands																						
Canada	2	34	34	33	42	26	64	4	39	30	25	16	6	52	6	73	64	58	58	32	116	1.4
Cayman Islands	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Chile	12	107	140	176	197	179	199	7	70	91	74	95	64	122	19	177	231	250	292	243	321	1.9
Colombia	219	709	713	737	785	573	766	210	603	653	520	377	314	469	429	1 312	1 366	1 257	1 162	887	1 235	1.4
Costa Rica	1	27	36	29	34	25	24	4	27	24	20	15	8	11	5	54	60	49	49	33	35	1.6
Cuba		22	73	93	50	47	50		8	18	22	12	14	23		30	91	115	62	61	73	3.5
Dominica	0	0	1	1	0	1	1	0	1	0	1	1	1	0	0	1	1	2	1	2	1	1.0
Dominican Republic	25	342	480	340	207	111	92	38	287	320	189	106	63	58	63	629	800	529	313	174	150	1.5
Ecuador	32	479	496	340	259	181	183	46	321	315	183	143	92	112	78	800	811	523	402	273	295	1.6
El Salvador	6	93	124	101	76	54	103	7	71	80	49	50	38	61	13	164	204	150	126	92	164	1.6
Grenada	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	
Guatemala																						
Guyana	6	37	61	59	40	15	5	1	15	21	20	14	3	1	7	52	82	79	54	18	6	3.0
Haiti	93	1 110	1 132	672	455	201	174	137	1 113	1 039	638	387	184	126	230	2 223	2 171	1 310	842	385	300	1.1
Honduras	21	213	297	213	139	96	147	28	206	234	123	85	87	129	49	419	531	336	224	183	276	1.3
Jamaica	0	9	10	9	6	6	9	0	2	5	3	1	0	1	0	11	15	12	7	6	10	4.1
Mexico	129	986	1 320	1 333	1 275	1 012	1 215	153	696	774	662	794	722	803	282	1 682	2 094	1 995	2 069	1 734	2 018	1.6
Montserrat																						
Netherlands Antilles	0	0	0	2	1	1	0	1	0	0	0	0	0	0	1	0	0	2	1	1	0	4.0
Nicaragua	15	162	151	129	98	90	72	25	168	144	90	65	38	38	40	330	295	219	163	128	110	1.3
Panama	7	100	134	107	88	48	57	14	64	83	52	45	26	33	21	164	217	159	133	74	90	1.7
Paraguay	20	187	213	139	149	122	112	18	130	81	72	55	61	66	38	317	294	211	204	183	178	2.0
Peru	400	4 071	2 470	1 494	1 106	884	869	435	2 713	1 852	1 082	762	557	556	835	6 784	4 322	2 576	1 868	1 441	1 425	1.4
Puerto Rico	1	4	7	6	13	9	7	1	4	3	6	3	2	3	2	8	10	12	16	11	10	2.1
Saint Kitts & Nevis						1														1		
Saint Lucia					3	5	5						1	1					3	6	6	6.5
St Vincent & Grenadines						4	2							2						4	4	3.0
Suriname	5	6	13	9	4	1	7	2	1	4	1	8	0	2	7	7	17	10	12	1	9	2.5
Trinidad & Tobago	2	7	27	23	20	16	12	1	3	10	5	4	8	23	3	10	37	28	24	24	35	2.0
Turks & Caicos Islands	0	1	1	0	0	0	0	0	1	1	1	1	1	0	0	2	2	1	1	1	0	0.4
Uruguay	1	38	53	34	30	38	29	4	21	19	11	6	11	10	5	59	72	45	36	49	39	2.7
US Virgin Islands																						
USA	12	388	568	659	759	531	596	11	257	384	263	212	146	303	23	645	952	922	971	677	899	2.2
Venezuela	10	323	405	413	422	267	320	42	322	297	188	173	140	225	52	645	702	601	595	407	545	1.6
AMR	**1 559**	**15 908**	**16 247**	**14 040**	**12 046**	**8 109**	**8 063**	**1 787**	**11 484**	**10 891**	**7 360**	**5 695**	**4 035**	**4 830**	**3 346**	**27 392**	**27 138**	**21 400**	**17 741**	**12 144**	**12 893**	**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 187 for further details. Data can be downloaded from www.who.int/tb

Table A3.9 **New smear-positive case notification rates by age and sex, DOTS and non-DOTS, the Americas, 2006**

	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	15	16	15	18	23	20	1	13	14	10	9	10	9	1	14	15	13	13	16	13
Bahamas																					
Barbados			9						5					6		2	4				4
Belize	6	14	18	45	49	17	53	4	21	22	19	51	108	99	5	17	20	32	50	62	77
Bermuda																					
Bolivia	7	124	102	95	113	148	209	10	85	67	49	48	59	101	9	105	84	72	79	101	149
Brazil	1	27	39	47	52	50	43	1	18	22	19	18	17	17	1	23	31	33	34	32	28
British Virgin Islands																					
Canada	0	2	2	1	2	1	3	0	2	1	1	1	0	2	0	2	1	1	1	1	3
Cayman Islands																					
Chile	1	7	12	14	20	28	35	0	5	8	6	9	9	15	0	6	10	10	14	18	24
Colombia	3	17	20	24	35	45	74	3	14	18	16	15	21	35	3	15	19	20	25	32	52
Costa Rica	0	6	10	9	14	19	20	1	6	7	7	6	6	8	0	6	9	8	10	12	13
Cuba		3	8	9	7	9	8		1	2	2	2	2	3		2	5	5	5	5	6
Dominica																					
Dominican Republic	2	39	65	56	48	41	34	2	33	43	31	25	24	21	2	36	54	43	36	33	28
Ecuador	1	37	49	42	43	49	49	2	26	31	23	23	24	26	2	32	40	32	33	36	37
El Salvador	1	15	21	28	32	32	63	1	11	13	12	18	20	29	1	13	17	20	24	25	43
Grenada	0	0	14	0	0	0	0	0	0	0	0	0	0	0	0	0	7	0	0	0	0
Guatemala																					
Guyana	5	61	114	104	90	56	24	1	24	40	41	37	14	4	3	42	77	75	66	37	14
Haiti	5	108	171	145	139	98	97	8	108	147	129	110	79	58	6	108	158	137	124	88	76
Honduras	2	29	60	65	61	71	109	2	28	44	34	36	62	83	2	28	52	49	48	66	95
Jamaica	0	3	5	5	5	8	10	0	1	3	2	1	0	1	0	2	4	3	3	4	5
Mexico	1	11	15	20	26	33	43	1	7	8	9	15	23	23	1	9	12	14	20	28	32
Montserrat																					
Netherlands Antilles	0	0	0	14	8	12	0	5	0	0	0	0	0	0	2	0	0	6	3	5	0
Nicaragua	1	27	36	46	51	79	68	2	28	33	30	32	35	32	2	28	35	38	41	57	49
Panama	1	34	50	47	56	46	59	3	22	32	23	28	25	32	2	28	41	35	42	35	45
Paraguay	2	30	48	42	58	76	82	2	21	19	22	22	39	43	2	25	34	32	40	58	61
Peru	9	150	109	87	90	112	122	10	102	83	62	61	69	65	10	126	96	74	75	90	91
Puerto Rico	0	1	3	2	6	5	3	0	1	1	2	1	1	1	0	1	2	2	3	3	2
Saint Kitts & Nevis																					
Saint Lucia					39	106	98						20	15					19	62	52
St Vincent & Grenadines						131	60							45						63	51
Suriname	7	13	39	27	18	8	54	3	2	12	3	35	0	12	5	8	25	15	27	4	31
Trinidad & Tobago	1	5	24	24	27	35	32	1	2	9	5	5	16	46	1	4	17	14	15	25	40
Turks & Caicos Islands																					
Uruguay	0	15	22	17	16	26	16	1	9	8	5	3	7	4	1	12	15	11	9	16	9
US Virgin Islands																					
USA	0	2	3	3	4	3	4	0	1	2	1	1	1	1	0	1	2	2	2	2	2
Venezuela	0	12	19	23	32	32	50	1	12	14	11	13	16	30	1	12	16	17	23	24	39
AMR	**1**	**21**	**24**	**23**	**24**	**24**	**24**	**2**	**15**	**16**	**12**	**11**	**11**	**11**	**1**	**18**	**20**	**17**	**17**	**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 A3.10 **Number of TB cases notified, the Americas, 1980–2006**

	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	2006
Anguilla	0	0	4	0	0	1	0	0	0	0	0	0	0			2		0				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	4
Argentina	16 406	16 693	17 292	17 305	16 359	15 987	14 681	13 368	13 267	12 636	12 309	12 185	12 606	13 887	13 683	13 450	13 397	12 621	12 276	11 871	11 767	11 456	11 548	10 728	10 619	9 770	9 406
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		5
Belize	21	33	44	140	35	25	23	41	28	30	57	89	65	80	59	95	99	107	123	104	106	136	135	99	83	102	85
Bermuda	1	2	5	10	3	3	6	2	1	2	0	3	4			4	0	4	0	0	0	0	0		6		3
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	9 014
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	77 632
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	1 434
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		0
Chile	8 523	7 337	6 941	6 989	6 561	6 644	6 854	6 280	6 324	6 728	6 151	5 498	5 304	4 598	4 138	4 150	4 178	3 880	3 652	3 429	3 021	3 006	2 448	2 226	2 664	2 134	2 486
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	11 128
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	488
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	765
Dominica	20	26	18	16	5	8	35	27	7	13	6	14	13	7	12	8	10	6	5				2				19
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	4 561
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	4 594
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	1 644
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		1
Guatemala	5 624	6 641	7 277	6 013	6 586	6 570	4 806	5 700	5 739	4 900	3 813	2 631	2 517	2 474	2 508	3 119	3 232	2 948	2 755	2 820	2 913	2 419	2 909	2 642	3 313	3 365	3 626
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	710
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	13 959
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	3 197
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	95
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	17 887
Montserrat	1	0	0	1	7	9	5	13	6	5	1	1	0			0			1	2	0	0	0	1	0	1	0
Netherlands Antilles																	5	14	7	4	5	9	15	9	11		5
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	1 997
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	1 636
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	2 308
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	34 311
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	112
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	1
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	15
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	13
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	127
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	232
Turks & Caicos Islands	2	0	2	5	0	4	2	12			0	0	0	0						17		3	3	6			7
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	557
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	25 107	24 205	22 728	21 210	19 751	18 287	17 501	16 310	15 945	15 056	14 838	14 502	14 080	13 779
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	6 705
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**	**166 458**	**241 854**	**258 188**	**256 656**	**254 980**	**262 886**	**240 619**	**238 580**	**230 403**	**233 678**	**228 448**	**235 511**	**227 599**	**224 548**
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	41
% 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	93

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 A3.11 **Case notification rates, the Americas, 1980–2006**

	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	2006
Anguilla	0	0	57	0	0	14	0	0	0	0	0	0	0			19		0				0	0	0	0		0
Antigua & Barbuda	11	4	0	1	4	3	11	0	5	5	2	0	10			0	4	6	5	4	5	1	5	1		7	5
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	24
Bahamas	33	31	25	26	23	27	22	18	21	21	18	20	24	22	28	20	21	30	25	25	27		14	12	17		
Barbados	26	1	12	7	5	5	3	1	1	2	2	2	2			1	1	2	2	1	1	2	2		7		2
Belize	15	22	29	91	22	15	14	24	16	17	31	47	33	40	28	44	45	47	53	44	43	54	53	38	31	37	30
Bermuda	2	4	9	18	5	5	10	3	2	3	0	5	7			7	0	6	0	0	0	0	0		9		5
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	96
Brazil	60	69	69	66	66	62	60	58	57	54	50	56	56		48	56	53	50	56	46	45	42	45	44	47	43	41
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	4
Cayman Islands	0	11	0	5	5	19	5	0	0	8	8	11	10	7		6	0	0	8	5	12	2	0	0	2		0
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	15
Colombia	41	40	41	45	41	38	36	35	34	33	36	34	31	30	24	26	25	20	23	27	28	27	26	27	25	23	24
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	11
Cuba	12	8	8	8	7	7	6	6	6	6	5	5	4	7	15	14	13	12	11	10	11	8	8	7	7	7	7
Dominica	27	35	25	22	7	11	49	38	10	19	9	20	19	10	17	12	15	9	7				3				28
Dominican Republic	37	29	40	47	48	35	39	36	44	44	36	25	46	52	55	51	77	65	61	67	61	54	45	51	49	53	47
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	34	35
El Salvador	49	45	46	44	33	31	34	34	48	12	46	44	47	62	71	43	29	28	28	27	24	23	24	21	21	27	24
Grenada	19	1	1	6	4	2	1	2	0	4	0	1	3	0	3	4	0	2	2	5	0		1	2	2		1
Guatemala	80	92	99	80	85	83	59	69	67	56	43	29	27	26	26	31	32	28	26	26	26	21	25	22	27	26	28
Guyana	16	15	18	20	22	29	25	16	20	16	23	18	25	12	36	40	42	55	43	55	57	57	80	86	82	86	96
Haiti	146	113	56	112	93	78	131	128	118	116		141				79	83	124	118	108	122	117	136	156	159	154	148
Honduras	46	45	44	49	52	80	97	94	86	85	75	91	80	71	79	89	73	69	83	75	103	80	70	59	54	49	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	4
Mexico	45	46	34	31	19	20	17	18	19	19	17	18	17	17	18	12	22	25	22	20	18	19	17	17	15	18	17
Montserrat	8	0	0	9	61	80	45	118	55	46	9	9	0		0				15	35	0	0	0	20	0	18	0
Netherlands Antilles																	3	8	4	2	3	5	8	5	6		3
Nicaragua	40	111	90	78	75	70	69	77	69	77	71	66	66	63	60	61	63	58	53	51	47	47	40	43	41	35	36
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	50
Paraguay	42	42	42	52	48	52	43	38	36	55	51	52	43	44	39	36	42	39	36	40	36	38	38	38	40	35	38
Peru	92	123	119	122	119	125	124	150	177	167	174	183	232	224	207	190	172	171	175	159	151	143	137	117	123	123	124
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	3
Saint Kitts & Nevis	16	9	14	5	7	0	0	0	0	0	0	2	10	14	5	12	7	27	11	7	0	4	6	2	4	0	2
Saint Lucia	35	33	30	39	44	17	26	19	24	21	9	18	18		17	8	24	15	13	11	6	10	11	9	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	11
Suriname	22	23	15	21	20	13	15	20	19	18	20	12	14	11	13		13	18	20	22	20	17	22	21	22	26	28
Trinidad & Tobago	7	7	6	10	9	10	10	10	9	10	10	11	11	9	10	13	16	20	15	12	15	16	10	11	13	13	17
Turks & Caicos Islands	27	0	24	58	0	42	20	117			0	0	0	0						95		15	14	27			28
Uruguay	64	58	49	46	46	40	36	34	31	32	29	24	22	22	21	19	22	22	20	19	19	21	16	19	22	19	17
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	9	9	8	8	7	7	6	6	6	5	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	25
AMR	**37**	**39**	**37**	**37**	**34**	**34**	**33**	**34**	**34**	**33**	**32**	**34**	**34**	**22**	**31**	**33**	**32**	**32**	**32**	**29**	**28**	**27**	**27**	**26**	**27**	**26**	**25**

Rates are per 100 000 population. From 1995 on, number shown is notification rate of new and relapse 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 A3.12 **New smear-positive cases notified, numbers and rates, the Americas, 1993–2006**

	Number of cases														Rate (per 100 000 population)											
	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Anguilla			0		0				0	0		0		0			0		0					0	0		0		0
Antigua & Barbuda				2			1	3	1	2	1		6	4				3			1	4	1	3	1		7	5
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	4 834	17	17	16	16	15	14	13	13	15	15	13	12	12	12
Bahamas	41	41	38	25	57	30	37	56		32	29	37			15	15	14	9	20	10	12	18		10	9	12		
Barbados			3	3	5	4	2	3	6	5		19		4			1	1	2	1	1	1	2	2		7		1
Belize	50	36	36	46	32	52	48	44	53	71	62	34	59	60	25	17	17	21	14	22	20	18	21	28	24	13	21	21
Bermuda			2	0		0	0	0	0	0		0		2			3	0		0	0	0	0	0		0		3
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	5 788	96	94	94	91	83	85	82	78	79	79	72	69	68	62
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	41 117		25	28	27	26	26	24	24	22	23	22	23	23	22
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	407	2	2	1	1	2	1	1	2	1	1	1	1	1	1
Cayman Islands	2		0	0	0	2	2	5	1	0	0	1		0	7		0	0	0	5	5	12	2	0	0	2		0
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	1 533	19	14	11	11	11	10	10	8	9	9	8	8	7	9
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	7 648	19	17	20	19	15	17	20	20	19	18	18	17	15	17
Costa Rica		230	245	302	320	353	458	349	385	328	346	419	330	285		7	7	8	9	9	12	9	10	8	8	10	8	6
Cuba	565	914	834	835	765	746	720	675	559	540	507	453	467	432	5	8	8	8	7	7	6	6	5	5	5	4	4	4
Dominica	6	8	5	7	5	5				2				8	9	12	7	10	7	7				3				12
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	2 658	30	40	35	46	38	32	38	33	29	24	31	29	31	28
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	3 182	49	60	52	55	61	41	35	41	36	33	35	34	23	24
El Salvador	2 471	2 144		965	882	1 071	1 023	1 008	1 003	980	870	926	1 059	913	46	39		17	15	18	17	16	16	15	13	14	16	14
Grenada	0	3	2	0	1	2	3	0		0	2	2		1	0	3	2	0	1	2	3	0		0	2	2		1
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	2 501	22	20	24	22	21	21	21	18	15	16	15	19	19	19
Guyana	51	61	85	71	105	85	178	119	174	138	244	164	240	294	7	8	12	10	14	12	24	16	24	19	33	22	32	40
Haiti				3 524	5 497	6 442	6 828	5 887	5 607	6 188	7 015	7 044	7 340	7 461				44	68	78	81	69	64	70	78	77	79	79
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	2 018	38	44	41	32	33	39	40	55	50	48	33	30	30	29
Jamaica	83	61	93	81	84	90	90	90	75	60	81	69	53	61	3	2	4	3	3	4	4	3	3	2	3	3	2	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	11 874	9	11	10	9	16	12	12	12	15	11	13	11	12	11
Montserrat		0			1	2	0	0	0	1	0	1	0			0				15	35	0	0	0	20	0	18	0
Netherlands Antilles				3	5	6	2	2	7	9	4	8		5				2	3	3	1	1	4	5	2	4		3
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	1 285	38	35	34	36	34	33	31	29	29	25	26	25	23	23
Panama	1 046	748	1 066	904	592	1 393	432	460	671	773	778	884	860	858	41	29	40	33	21	49	15	16	22	25	25	28	27	26
Paraguay	985	873	748	894	859	850	1 041	900	915	1 004	1 166	1 199	1 260	1 441	22	19	16	18	17	17	20	17	17	18	21	21	21	24
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	19 251	155	145	135	111	112	111	97	88	83	78	69	68	68	70
Puerto Rico	122	139	128	110	126	106	106	81	74	78	62	65	60	69	3	4	3	3	3	3	3	2	2	2	2	2	2	2
Saint Kitts & Nevis	2	2	4	2		4	2	0	0	1		0	0	1	5	5	9	5		9	4	0	0	2		0	0	2
Saint Lucia		17	11	22	14	10	9	7	6	8	8	11	11	13		12	8	15	9	7	6	5	4	5	5	7	7	8
St Vincent & Grenadines	11	0	5	3	2	3	4	9	3	0	6	5	6	8	10	0	4	3	2	3	3	8	3	0	5	4	5	7
Suriname				39	31	32	36	37	36	42	35	37	49	63				9	7	7	8	8	8	9	8	8	11	14
Trinidad & Tobago		55	7	58	52	82	87	115	152	60	77	71	95	149		4	1	5	4	6	7	9	12	5	6	5	7	11
Turks & Caicos Islands							2		1	2	6			7							11		5	9	27			28
Uruguay	388	381	349	426	423	374	392	348	340	308	373	373	355	305	12	12	11	13	13	11	12	10	10	9	11	11	11	9
US Virgin Islands			2	5													2	5										
USA	9 429	8 964	8 093	7 454	6 935	6 624	6 275	5 883	5 650	5 439	5 368	5 277	5 111	5 091	4	3	3	3	3	2	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	3 547	13	13	14	14	14	15	15	14	14	14	15	14	14	13
AMR	**98 265**	**137 645**	**138 932**	**136 987**	**142 556**	**139 253**	**135 153**	**131 294**	**129 944**	**127 575**	**125 815**	**126 345**	**124 810**	**125 178**	**13**	**18**	**18**	**17**	**18**	**17**	**16**	**16**	**15**	**15**	**14**	**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

Canada

Treatment outcomes not available for all jurisdictions.

Colombia

The numbers of TB cases tested for HIV and found HIV-positive were reported by 50% of health centres for 2005 and by 26% of health centres for 2006.

Treatment outcomes were not available for all regions.

United States of America

In addition to the 51 reporting areas, the United States includes 8 territories (American Samoa, Federated States of Micronesia, Guam, Marshall Islands, Northern Mariana Islands, Puerto Rico, Republic of Palau, US Virgin Islands) that report separately to WHO. The data for these 8 territories are not included with the data for the USA.

Definitions of case types and outcomes do not exactly match those used by WHO.

One state out of 51 did not provide data on HIV testing (the area not providing data represents approximately 20% of TB cases in 2006 and 12% of population of the USA).

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	Said Guelleh
Egypt	Essam Hamza El-Moghazy; Amal Galal
Islamic Republic of Iran	Mahshid Nasehi; Shahnaz Ahmadi
Iraq	Dhafer S. Hashim
Jordan	Khaled Abu Rumman; Nadia Abu Sabra
Kuwait	Rashed Al-Owaish; Mohamed Gaafar
Lebanon	Mtanios Saade
Libyan Arab Jamahiriya	Bashir Saafi
Morocco	Naima Ben Cheikh; Iahsen Iaasri
Oman	Hassan Al-Tuhami
Pakistan	Hassan Sadiq; Yuriko Egami
Qatar	Abdul Latif Al-Khal
Saudi Arabia	Adel Mohammed Turkistani; Mohammad Salama Abouzeid
Somalia	Aiyed Munim
Sudan	Alsadig Yousof Mohammed Ahmed; Joseph Lasu; Samia Ali Alagab; Khadiga Adam; Sindani Ireneaus Sebit
Syrian Arab Republic	Fadia Maamari
Tunisia	Dhikrayet Gamara
United Arab Emirates	Juma Bilol Fairouz; Kifah Ibrahim
West Bank and Gaza Strip	Walid Daoud
Yemen	Amin N. Al-Absi

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.

Table A3.1 **Estimated burden of TB, Eastern Mediterranean,1990 and 2006**

	Incidence, 1990				Prevalence, 1990		TB mortality, 1990		Incidence, 2006.								Prevalence, 2006				TB mortality, 2006				HIV prevalence in 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	
Afghanistan	31 375	248	14 119	112	77 705	614	8 864	70	42 074	161	9	≤ 1	18 932	73	3	≤ 1	60 260	231	5	≤ 1	8 291	32	3	≤ 1	≤ 0.05
Bahrain	376	76	169	34	593	120	44	9	304	41	–	–	137	18	–	–	330	45	–	–	30	4	–	–	–
Djibouti	3 227	576	1 438	256	8 318	1 484	686	122	6 622	809	668	82	2 913	356	234	29	10 638	1 300	334	41	1 136	139	195	24	10
Egypt	20 310	37	9 139	17	26 790	49	2 356	4	17 778	24	12	≤ 1	7 999	11	4	≤ 1	23 011	31	6	≤ 1	2 063	3	3	≤ 1	0.1
Iran (Islamic Republic of)	20 308	36	9 131	16	28 122	50	2 358	4	15 545	22	336	≤ 1	6 961	10	118	≤ 1	19 578	28	168	≤ 1	1 839	3	75	≤ 1	2.2
Iraq	10 371	56	4 667	25	16 326	88	2 218	12	15 968	56	–	–	7 186	25	–	–	22 326	78	–	–	3 110	11	–	–	–
Jordan	365	11	164	5	365	11	26	≤ 1	306	5	–	–	138	2	–	–	330	6	–	–	30	≤ 1	–	–	–
Kuwait	954	45	429	20	1 908	89	111	5	667	24	–	–	300	11	–	–	689	25	–	–	59	2	–	–	–
Lebanon	1 112	37	500	17	1 285	43	111	4	452	11	2	≤ 1	203	5	≤ 1	≤ 1	506	12	1	≤ 1	45	1	≤ 1	≤ 1	0.5
Libyan Arab Jamahiriya	1 176	27	529	12	1 791	41	197	5	1 059	18	–	–	477	8	–	–	1 059	18	–	–	77	1	–	–	–
Morocco	30 446	123	13 695	55	26 449	107	2 745	11	28 776	93	127	≤ 1	12 937	42	44	≤ 1	24 265	79	64	≤ 1	2 599	8	17	≤ 1	0.4
Oman	482	26	217	12	744	40	42	2	336	13	–	–	151	6	–	–	366	14	–	–	29	1	–	–	–
Pakistan	204 820	181	92 154	82	483 329	428	55 425	49	291 743	181	922	≤ 1	131 192	82	323	≤ 1	423 011	263	461	≤ 1	54 911	34	290	≤ 1	0.3
Qatar	282	60	127	27	331	71	28	6	491	60	–	–	221	27	–	–	601	73	–	–	56	7	–	–	–
Saudi Arabia	6 957	43	3 131	19	10 975	68	807	5	10 631	44	–	–	4 784	20	–	–	14 883	62	–	–	1 233	5	–	–	–
Somalia	22 236	331	9 995	149	53 388	795	7 687	114	18 444	218	299	4	8 270	98	105	1	24 757	293	150	2	3 488	41	115	1	1.6
Sudan	44 689	172	19 934	77	107 288	414	15 362	59	91 331	242	4 157	11	40 683	108	1 455	4	158 115	419	2 079	6	25 562	68	2 037	5	4.6
Syrian Arab Republic	9 021	71	4 059	32	13 982	110	972	8	6 251	32	–	–	2 813	14	–	–	7 723	40	–	–	673	3	–	–	–
Tunisia	2 583	31	1 162	14	4 029	49	246	3	2 520	25	5	≤ 1	1 133	11	2	≤ 1	2 856	28	2	≤ 1	278	3	≤ 1	≤ 1	0.2
United Arab Emirates	555	30	250	13	876	47	64	3	681	16	–	–	306	7	–	–	1 029	24	–	–	79	2	–	–	–
West Bank and Gaza Strip	671	31	302	14	1 059	49	120	6	788	20	–	–	355	9	–	–	1 223	31	–	–	138	4	–	–	–
Yemen	14 753	120	6 639	54	29 395	239	1 964	16	16 944	78	–	–	7 625	35	–	–	28 752	132	–	–	2 168	10	–	–	–
EMR	**427 069**	**111**	**191 950**	**50**	**895 047**	**234**	**102 432**	**27**	**569 708**	**105**	**6 538**	**1**	**255 715**	**47**	**2 288**	**≤ 1**	**826 308**	**152**	**3 269**	**≤ 1**	**107 895**	**20**	**2 737**	**≤ 1**	**1.1**

– indicates no estimate.

* Incidence, prevalence and mortality estimates include patients with HIV. Estimates labelled "HIV+" are estimates of TB in HIV-positive people (all ages). 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 187 for further details. Data can be downloaded from www.who.int/tb

Table A3.2 **Case notifications and case detection rates, DOTS and non-DOTS combined, Eastern Mediterranean, 2006**

	Notified TB cases, DOTS and non-DOTS combined															Incidence and case detection rates				Proportions			
					New pulmonary			New extra-	Other	Re-treatment cases					New pulm.	Estimated incidence		Case detection rate		ss+	ss+	Extrapulm.	Re-treat.
	Population	All notified	New and relapse		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.)
Afghanistan	26 088	25 475	25 475	98	12 468	48	6 809	5 066		1 132					12 468	42 074	18 932	58	66	65	49	20	4
Bahrain	739	278	278	38	98	13	77	103	0	0	0	0	0	0	98	304	137	92	72	56	35	37	
Djibouti	819	3 095	3 011	368	1 153	141	400	1 266	0	192	62	22	0	0	1 153	6 622	2 913	43	40	74	38	42	9
Egypt	74 166	10 400	10 046	14	4 745	6	2 130	2 726	0	445	160	194			4 745	17 778	7 999	54	59	69	47	27	8
Iran (Islamic Republic of)	70 270	9 535	9 361	13	4 802	7	1 866	2 386	0	307	131	43	0	0	4 810	15 545	6 961	58	69	72	51	25	5
Iraq	28 506	8 043	8 043	28	2 886	10	2 179	2 375		603					2 886	15 968	7 186	47	40	57	36	30	7
Jordan	5 729	381	359	6	104	2	70	181		4	5	0		17	113	306	138	116	76	60	29	50	2
Kuwait	2 779	644	644	23	284	10	76	284	0	0	0	0	0	0	323	667	300	97	95	79	44	44	
Lebanon	4 055	375	375	9	112	3	90	165	0	8	0	0	0	0	112	452	203	81	55	55	30	44	2
Libyan Arab Jamahiriya	6 039	2 274	2 022	33	745	12	473	804			0	252			745	1 059	477	191	156	61	37	40	11
Morocco	30 853	26 099	26 099	85	12 280	40	2 055	11 764							12 453	28 776	12 937	91	95	86	47	45	
Oman	2 546	339	339	13	184	7	42	108		5	0	0			184	336	151	99	122	81	54	32	1
Pakistan	160 943	179 067	176 678	110	65 253	41	82 519	25 745	0	3 161	908	1 481			65 253	291 743	131 192	59	50	44	37	15	3
Qatar	821	339	339	41	115	14	76	148							115	491	221	69	52	60	34	44	
Saudi Arabia	24 175	3 774	3 774	16	1 914	8	663	1 096	0	101					1 914	10 631	4 784	35	40	74	51	29	3
Somalia	8 445	11 904	11 864	140	6 861	81	2 479	2 034	0	490	15	25	0	0	6 861	18 444	8 270	62	83	73	58	17	4
Sudan	37 707	29 019	28 937	77	12 194	32	9 801	4 966	0	1 976	35	47	0	0	12 194	91 331	40 683	30	30	55	42	17	7
Syrian Arab Republic	19 408	4 025	3 931	20	1 352	7	563	1 950	0	66	36	21	37	0	1 352	6 251	2 813	62	48	71	34	50	4
Tunisia	10 215	2 131	2 131	21	922	9	261	912		36					922	2 520	1 133	83	81	78	43	43	2
United Arab Emirates	4 248	90	90	2	52	1	18	16	0	4	0	0	0	0	54	681	306	13	17	74	58	18	4
West Bank and Gaza Strip	3 889	42	42	1	16	0	7	19	0	0	0	0	0	0	16	788	355	5	5	70	38	45	
Yemen	21 732	8 468	8 468	39	3 342	15	2 386	2 429	0	311					3 342	16 944	7 625	48	44	58	39	29	4
EMR	**544 173**	**325 797**	**322 306**	**59**	**131 882**	**24**	**115 040**	**66543**	**0**	**8 841**	**1 352**	**2 085**	**37**	**17**	**132 113**	**569 708**	**255 715**	**55**	**52**	**53**	**41**	**21**	**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 187 for further details. Data can be downloaded from www.who.int/tb

Table A3.3 **DOTS coverage, case notifications and case detection rates, Eastern Mediterranean, 2006**

		TB cases reported from DOTS services													Estimated incidence and case detection rate				Proportions			
	DOTS coverage	New and relapse		New pulmonary ss+		New pulmonary ss- / unk.	New extra-pulmonary	Other new	Re-treatment cases: Relapse	After failure	After default	Other re-treat.	Other	New pulm. lab. confirm.	Estimated incidence: all forms	Estimated incidence: ss+	Case detection rate: all new	Case detection rate: new ss+	ss+ (% of pulm.)	ss+ (% of new+relapse)	Extrapulm. (% of new+relapse)	Re-treat. (% of new+re-treat.)
	%	number	rate	number	rate	number	number	number	number	number	number	number	number	number	number	number	%	%				
Afghanistan	97	25 475	98	12 468	48	6 809	5 066		1 132					12 468	42 074	18 932	58	66	65	49	20	4
Bahrain	100	278	38	98	13	77	103	0	0	0	0	0	0	98	304	137	92	72	56	35	37	
Djibouti	100	3 011	368	1 153	141	400	1 266	0	192	62	22	0	0	1 153	6 622	2 913	43	40	74	38	42	9
Egypt	100	10 046	14	4 745	6	2 130	2 726	0	445	160	194			4 745	17 778	7 999	54	59	69	47	27	8
Iran (Islamic Republic of)	100	9 361	13	4 802	7	1 866	2 386	0	307	131	43	0	0	4 810	15 545	6 961	58	69	72	51	25	5
Iraq	87	8 043	28	2 886	10	2 179	2 375		603					2 886	15 968	7 186	47	40	57	36	30	7
Jordan	100	359	6	104	2	70	181		4	5	0		17	113	306	138	116	76	60	29	50	2
Kuwait	100	644	23	284	10	76	284	0	0	0	0	0	0	323	667	300	97	95	79	44	44	
Lebanon	100	375	9	112	3	90	165	0	8	0	0	0	0	112	452	203	81	55	55	30	44	2
Libyan Arab Jamahiriya	100	2 022	33	745	12	473	804			0	252			745	1 059	477	191	156	61	37	40	11
Morocco	100	26 099	85	12 280	40	2 055	11 764							12 453	28 776	12 937	91	95	86	47	45	
Oman	100	339	13	184	7	42	108		5	0	0			184	336	151	99	122	81	54	32	1
Pakistan	100	176 678	110	65 253	41	82 519	25 745	0	3 161	908	1 481			65 253	291 743	131 192	59	50	44	37	15	3
Qatar	100	339	41	115	14	76	148							115	491	221	69	52	60	34	44	
Saudi Arabia	100	3 774	16	1 914	8	663	1 096	0	101					1 914	10 631	4 784	35	40	74	51	29	3
Somalia	80	11 864	140	6 861	81	2 479	2 034	0	490	15	25	0	0	6 861	18 444	8 270	62	83	73	58	17	4
Sudan	91	28 937	77	12 194	32	9 801	4 966	0	1 976	35	47	0	0	12 194	91 331	40 683	30	30	55	42	17	7
Syrian Arab Republic	100	3 931	20	1 352	7	563	1 950	0	66	36	21	37	0	1 352	6 251	2 813	62	48	71	34	50	4
Tunisia	100	2 131	21	922	9	261	912		36					922	2 520	1 133	83	81	78	43	43	2
United Arab Emirates	20	90	2	52	1	18	16	0	4	0	0	0	0	54	681	306	13	17	74	58	18	4
West Bank and Gaza Strip	100	42	1	16	0	7	19	0	0	0	0	0	0	16	788	355	5	5	70	38	45	
Yemen	98	5 135	24	3 280	15	747	807	0	301					3 280	16 944	7 625	29	43	81	64	16	6
EMR	**98**	**318 973**	**59**	**131 820**	**24**	**113 401**	**64 921**	**0**	**8 831**	**1 352**	**2 085**	**37**	**17**	**132 051**	**569 708**	**255 715**	**54**	**52**	**54**	**41**	**20**	**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 187 for further details. Data can be downloaded from www.who.int/tb

Table A3.4 **Laboratory services, collaborative TB/HIV activities and management of MDR-TB, Eastern Mediterranean, 2005–2006**

	Laboratory services, 2006				Collaborative TB/HIV activities								Management of MDR-TB, 2006				
					2005				2006								
	number of labs working with NTP			smear 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														
Afghanistan	500	1	1														
Bahrain	9	2	1	9	128	6	0	0	167	7	0	0	2	2	2	0	
Djibouti	9	0	0	0	224	135	20	20				95					
Egypt	157	18	1	157									119	44	7	168	112
Iran (Islamic Republic of)	313	30	1	313					1 002	206	9	22	28	432	4	90	24
Iraq	101	3	1	100									20				
Jordan	150	50	1	11	86	0	0	0	104	0	0	0	14	72	3	16	11
Kuwait	12	1	1	12	517	3	3	3	644	2	2	2	10	644	10	0	0
Lebanon	68	4	1	6	3	3	0		5	5	0		3	6	1	19	3
Libyan Arab Jamahiriya	27	3	3	0													
Morocco	167	12	2	167													
Oman	203	10	1	203	257	10	10	10	334	10	10	10	2	2	2	0	0
Pakistan	982	3	1	318	0	0	0	0									
Qatar					325	0	0	0	339	0	0	0	1	193	1	0	0
Saudi Arabia	90	10	10	8													
Somalia	47	0	0	0	375	21	8	0	0								
Sudan	285	1	1	117	180	150	15	15	103	20	20	0					
Syrian Arab Republic	68	1	1	68	345	0	0	0	14	0	0	0	14	0	0	20	8
Tunisia	66	7	5	66	129	2	2	2	1 066	3	5	5	10		8		
United Arab Emirates													0				
West Bank and Gaza Strip	7	1	0	0	13	0	0	0	0	0	0	0	0	0	0	0	0
Yemen	231	2	1	180	0	0	0	0	900	6			21	510	15	53	6
EMR	**3 492**	**159**	**33**	**1 735**	**2 582**	**330**	**58**	**50**	**4 678**	**259**	**46**	**134**	**244**	**1 905**	**53**	**366**	**164**

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 187 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 A3.5 **Treatment outcomes, Eastern Mediterranean, 2005 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
Afghanistan	9 949	10 013	101	83	7	2	1	2	5	0	90												856	87	2	3	1	2	5	0	89
Bahrain	101	15	15	93	0	7	0	0	0	0	93																				
Djibouti	1 120	1 120	100	71	9	1	1	16	2	0	80												253	58	10	3	2	24	2	0	69
Egypt	5 217	5 154	99	66	13	3	2	3	2	11	79												738	41	17	10	12	8	8	3	59
Iran (Islamic Republic of)	4 581	4 581	100	78	5	7	3	3	4	1	83												448	68	8	9	3	4	5	3	76
Iraq	3 096	3 096	100	76	10	3	2	7	3	0	86												953	60	12	4	8	12	4	0	72
Jordan	86	86	100	71	12	5	7	6	0	0	83																				
Kuwait	187	187	100	53	10	1	0	7	29	0	63												1	0	100	0	0	0	0	0	100
Lebanon	131	131	100	81	11	2	1	6	0	0	92												4	75	25	0	0	0	0	0	100
Libyan Arab Jamahiriya	860	860	100	40	29	2	0	27	2	0	69																				
Morocco	12 757	12 683	99	76	5	2	1	9	7	0	81												1 650	55	17	4	5	14	5	0	72
Oman	131	104	79	90		10				0	90	0	35							100	0										
Pakistan	48 319	48 205	100	71	13	3	1	9	4	0	83												5 009	61	15	5	3	11	3	2	76
Qatar	96	96	100	74	9	1	0	0	15	1	83																				
Saudi Arabia	1 722	1 722	100	60	5	7	1	10	1	16	65												96	40	9	9	5	18	3	16	49
Somalia	7 068	7 059	100	85	4	4	1	4	2	0	89												524	76	5	6	2	5	3	3	80
Sudan	12 730	12 730	100	64	18	3	1	9	2	2	82												1 828	53	29	3	1	9	2	4	81
Syrian Arab Republic	1 350	1 350	100	76	13	3	2	6	1	0	89												144	53	14	5	9	19	0	0	67
Tunisia	915	910	99	83	7	2	1	2	4	0	90																				
United Arab Emirates	62	62	100	42	31	6	0	15	6	0	73												5	80	0	0	0	20	0	0	80
West Bank and Gaza Strip	7	12	171	58	42	0	0	0	0	0	100												0							0	
Yemen	3 192	3 379	106	70	10	3	1	6	4	6	80	187	187	100	49	28	4	2	12	4	0	77	351	48	9	2	3	7	1	30	58
EMR	**113 677**	**113 555**	**100**	**72**	**11**	**3**	**1**	**8**	**4**	**1**	**83**	**187**	**222**	**119**	**41**	**23**	**4**	**2**	**10**	**19**	**0**	**65**	**12 860**	**60**	**15**	**5**	**4**	**10**	**4**	**3**	**75**

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 2005 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 2005 is used, or the sum of outcomes if the latter is greater. Data can be downloaded from www.who.int/tb

Table A3.6 **Re-treatment outcomes, Eastern Mediterranean, 2005 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	856	87	2	3	1	2	5	0	89																		
Bahrain																											
Djibouti	192	63	8	1	1	25	3	0	71	42	50	12	12	5	19	2	0	62	19	37	26	5	11	21	0	0	63
Egypt	449	48	12	7	10	9	11	4	59	198	25	31	17	16	7	4	1	56	91	43	16	12	13	7	5	3	59
Iran (Islamic Republic of)	274	73	6	10	1	3	5	1	79	131	69	5	7	5	8	3	4	74	43	35	30	7	7	7	5	9	65
Iraq	768	66	9	4	5	12	4	0	75	81	47	20	7	16	5	5	0	67	104	31	24	5	22	14	4	0	55
Jordan																											
Kuwait	1	0	100	0	0	0	0	0	100	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0		0
Lebanon	4	75	25	0	0	0	0	0	100																		
Libyan Arab Jamahiriya																											
Morocco	1282	71	6	4	4	12	4	0	76	77		48	8	16	17	12	0	48	226		53	4	5	31	6	0	53
Oman																											
Pakistan	2638	68	12	4	2	8	3	3	80	578	50	18	5	3	16	6	0	69	1793	55	18	5	3	15	3	0	74
Qatar																											
Saudi Arabia	96	40	9	9	5	18	3	16	49																		
Somalia	360	78	4	6	2	4	2	5	82	99	69	6	8	5	8	4	0	75	65	75	3	8	2	8	5	0	78
Sudan	1737	51	30	3	1	9	2	4	81	42	83	7	5	2	2	0	0	90	49	84	2	10	0		0	4	86
Syrian Arab Republic	61	66	15	5	5	10	0	0	80	28	61	0	0		21	0	18	61	21	29	24	14	0		0	33	52
Tunisia																											
United Arab Emirates	5	80	0	0	0	20	0	0	80	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0		0
West Bank and Gaza Strip	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0		0
Yemen	351	48	9	2	3	7	1	30	58																		
EMR	**9 074**	**65**	**13**	**4**	**3**	**9**	**3**	**3**	**78**	**1 276**	**48**	**19**	**8**	**8**	**12**	**5**	**1**	**67**	**2 411**	**49**	**21**	**6**	**4**	**16**	**4**	**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 2005 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 A3.7 **DOTS treatment success and case detection rates, Eastern Mediterranean, 1994–2006**

	DOTS new smear-positive treatment success (%)												DOTS new smear-positive case detection rate (%)											
	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Afghanistan				45	33	87	86	84	87	86	89	90			3	9	9	15	24	33	34	44	52	66
Bahrain					13	95	73	87	88	97	82	93					15	17	17	12	12	51	74	72
Djibouti		75	77	76	79	72	62	78	82	73	80	80		93	97	82	72	61	55	50	46	40	40	40
Egypt	52		81	82	87	87	87	82	88	80	70	79	43	1	11	17	32	45	49	54	58	64	64	59
Iran (Islamic Republic of)			87	84	83	82	85	85	85	84	84	83	42		12	35	54	58	61	61	62	63	62	69
Iraq					83	85	92	89	91	85	85	86				5	13	51	55	59	53	49	44	40
Jordan	90				92	88	90	86	89	87	85	83	106			76	77	70	78	75	91	73	66	76
Kuwait						66	69	73	55	62	63	63					62	65	62	71	70	85	63	95
Lebanon	89				73	96	92	91	91	92	90	92	40				75	65	64	63	63	71	64	55
Libyan Arab Jamahiriya					68	67			61	62	64	69					147	111		136	147	175	176	156
Morocco	86	90	88	89	88	88	89	87	89	86	87	81	92	93	93	90	92	89	88	91	93	93	98	95
Oman		84	87	91	86	95	93	90	92	90	90	90		121	121	121	91	123	112	117	85	128	95	122
Pakistan	74	70		67	66	70	74	77	78	79	82	83	1	2		4	2	3	5	13	17	25	37	50
Qatar	83	81	72	79	84	74	66	60	75	73	78	83	33	27	24	43	33	29	41	34	52	38	46	52
Saudi Arabia					57	66	73	77	76	79	82	65					21	36	38	39	38	38	38	40
Somalia		86	84	90	88	88	83	86	89	90	91	89		29	39	39	43	47	57	59	63	79	86	83
Sudan				70	65	81	79	80	78	82	77	82		2	1	27	27	31	29	30	31	32	33	30
Syrian Arab Republic			92	88	88	84	79	81	87	88	86	89			8	20	27	40	43	42	46	48	44	48
Tunisia					91	91	91	90	92	91	90	90					93	101	103	90	84	88	83	81
United Arab Emirates							74	62	79	64	70	73						27	25	20	27	19	21	17
West Bank and Gaza Strip									100	80	50	100						10	8		4	1	2	5
Yemen		66	78	81	80	79	75	80	80	82	82	80	1	8	29	37	50	54	51	47	45	41	41	43
EMR	**82**	**87**	**86**	**79**	**77**	**83**	**83**	**83**	**84**	**83**	**83**	**83**	**11**	**10**	**11**	**18**	**20**	**24**	**26**	**31**	**33**	**38**	**45**	**52**

Treatment success, sum of cured and completed; DOTS new smear-positive case detection rate, notified new smear-positive 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 A3.8 **New smear-positive case notification by age and sex, absolute numbers, DOTS and non-DOTS, Eastern Mediterranean, 2006**

	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+	
Afghanistan	193	837	791	574	572	572	410	442	2 139	2 340	1 654	1 006	630	309	635	2 976	3 131	2 228	1 578	1 202	719	0.5
Bahrain	0	10	25	11	18	1	1	0	7	14	4	5	2	0	0	17	39	15	23	3	1	2.1
Djibouti	14	225	246	165	63	33	20	24	117	129	59	35	18	5	38	342	375	224	98	51	25	2.0
Egypt	54	542	728	563	587	340	135	64	470	367	338	279	155	87	117.1884	1011.329	1095.372	901.1138	865.6116	494.8911	222.4945	1.7
Iran (Islamic Republic of)	12	357	495	365	318	249	686	48	430	236	185	292	336	793	60	787	731	550	610	585	1479	1.1
Iraq	14	409	593	278	230	147	107	38	338	264	133	154	111	70	52	747	857	411	384	258	177	1.6
Jordan	0	9	23	16	7	4	10	0	8	11	3	5	2	6	0	17	34	19	12	6	16	2.0
Kuwait	1	19	72	40	37	14	3	0	17	41	23	5	6	6	1	36	113	63	42	20	9	1.9
Lebanon	0	11	12	18	14	10	8	1	16	12	5	2	2	1	1	27	24	23	16	12	9	1.9
Libyan Arab Jamahiriya	1	98	247	150	49	23	23	8	55	34	24	10	12	11	9	153	281	174	59	35	34	3.8
Morocco	73	2 104	2 373	1 498	1 036	527	551	155	1 273	1 025	597	426	335	307	228	3377	3398	2095	1462	862	858	2.0
Oman	6	18	19	18	18	12	2	2	21	22	7	13	12	14	8	39	41	25	31	24	16	1.0
Pakistan	820	7 290	6 896	5 594	5 427	4 392	3 439	1 941	8 410	7 030	5 404	3 913	2 802	1 950	2761	15700	13926	10998	9340	7194	5389	1.1
Qatar	0	22	21	17	22	6	1	0	6	11	7	1	0	1	0	28	32	24	23	6	2	3.4
Saudi Arabia	10	256	323	229	169	94	101	39	226	211	107	56	37	56	49	482	534	336	225	131	157	1.6
Somalia	166	1 377	1 121	647	436	309	336	170	668	628	432	269	171	131	336	2045	1749	1079	705	480	467	1.8
Sudan	297	1 351	1 890	1 504	1 102	710	532	312	965	1 108	948	763	442	270	609	2316	2998	2452	1865	1152	802	1.5
Syrian Arab Republic	8	225	267	137	110	71	44	18	195	109	42	53	39	34	26	420	376	179	163	110	78	1.8
Tunisia	5	125	174	119	111	58	85	3	53	52	33	33	33	38	8	178	226	152	144	91	123	2.8
United Arab Emirates	0	5	3	7	3	1	4	2	6	4	5	3	4	5	2	11	7	12	6	5	9	0.8
West Bank and Gaza Strip	0	1	3	4	1	1	2	0	0	0	1	1	1	1	0	1	3	5	2	2	3	3.0
Yemen	29	535	555	358	246	143	103	55	435	358	244	166	73	42	84	970	913	602	412	216	145	1.4
EMR	**1 703**	**15 826**	**16 877**	**12 312**	**10 576**	**7 717**	**6 603**	**3 322**	**15 855**	**14 006**	**10 255**	**7 490**	**5 223**	**4 137**	**5 024**	**31 680**	**30 883**	**22 567**	**18 066**	**12 940**	**10 740**	**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 187 for further details. Data can be downloaded from www.who.int/tb

Table A3.9 **New smear-positive case notification rates by age and sex, DOTS and non-DOTS, Eastern Mediterranean, 2006**

	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	3	31	44	48	74	120	146	7	87	143	151	142	138	105	5	58	91	97	107	129	125
Bahrain	0	16	27	14	31	5	9	0	13	24	8	15	16	0	0	14	26	11	25	9	4
Djibouti	9	256	389	371	224	185	181	16	135	208	133	119	92	36	12	196	299	252	171	136	101
Egypt	0	7	13	14	17	16	8	1	6	6	8	8	7	4	0	7	10	11	12	12	6
Iran (Islamic Republic of)	0	4	8	9	10	16	44	1	5	4	5	10	18	50	0	4	6	7	10	17	47
Iraq	0	14	28	18	24	28	29	1	12	13	9	17	20	16	0	13	20	14	21	24	22
Jordan	0	2	5	4	4	4	11	0	1	2	1	3	2	6	0	1	3	3	3	3	9
Kuwait	0	8	16	11	21	22	10	0	9	16	13	5	16	27	0	8	16	11	16	20	17
Lebanon	0	3	4	7	7	8	6	0	4	4	2	1	1	1	0	4	4	4	4	4	3
Libyan Arab Jamahiriya	0	15	42	38	17	14	20	1	9	6	7	5	9	9	0	12	24	23	12	12	14
Morocco	2	66	100	82	67	64	74	3	39	39	30	28	39	35	2	52	68	55	48	51	53
Oman	1	6	7	9	14	23	6	0	8	11	6	18	30	41	1	7	9	8	16	26	23
Pakistan	3	39	58	64	83	116	111	7	48	63	66	65	76	60	5	44	60	65	74	97	85
Qatar	0	32	15	13	25	22	14	0	13	19	15	4	0	26	0	25	16	14	20	17	18
Saudi Arabia	0	11	12	10	14	21	29	1	10	11	8	9	10	17	1	11	12	9	12	16	23
Somalia	9	174	182	162	167	211	335	9	84	100	105	96	106	108	9	129	140	133	130	156	211
Sudan	4	35	67	80	88	85	86	4	26	40	51	59	50	37	4	31	54	65	73	67	60
Syrian Arab Republic	0	10	16	13	17	20	16	1	9	7	4	8	11	10	0	9	11	9	13	15	13
Tunisia	0	12	19	17	21	21	29	0	5	6	5	6	11	11	0	8	13	11	14	16	19
United Arab Emirates	0	1	0	1	1	1	14	0	2	1	2	3	15	25	0	2	1	1	2	5	19
West Bank and Gaza Strip	0	0	1	2	1	2	4	0	0	0	1	1	2	1	0	0	1	1	1	2	3
Yemen	1	22	38	40	40	42	44	1	19	25	27	26	20	15	1	21	32	33	33	30	29
EMR	**2**	**26**	**38**	**39**	**47**	**62**	**66**	**4**	**28**	**34**	**35**	**36**	**41**	**37**	**3**	**27**	**36**	**37**	**42**	**52**	**51**

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 A3.10 **Number of TB cases notified, Eastern Mediterranean, 1980–2006**

	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	2006
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	25475
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	278
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	3 011
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	10 046
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	9 192	9 361
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	8 043
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	359
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	644
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	375
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	2 022
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	26 099
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	339
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	52 762	70 485	94 327	142 211	176 678
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	339
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	3 774
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	11 864
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	28 937
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	3 931
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	2 131
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	90
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	42
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	8 468
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**	**191 744**	**207 375**	**235 943**	**287 352**	**322 306**
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	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	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 A3.11 **Case notification rates, Eastern Mediterranean, 1980–2006**

	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	2006
Afghanistan	514	521	312	403	149	87	119	152	135	119	34	171						7	16	16	34	47	62	60	76	87	98
Bahrain	63	73	42	60	52	47	36	27	31	26	24	28	27	21		7	8	7	13	23	32	28	28	38	34	39	38
Djibouti		640	184		388	562	434	427	406	382	375	500	487	580	542		519	577	551	583	544	562	418	416	372	387	368
Egypt	4	3	4	4	3	3	2	43	3	3	4	6	15	6	7	18	20	22	20	18	16	16	16	16	16	16	14
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	13	13
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	38	34	28
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	7	6
Kuwait	62	57	58	55	50	42	34	28	23	22	13	16	14	12	13	19	23	29	29	24	23	21	24	22	21	19	23
Lebanon		2	3	10	14	67	78	85				29	28		28	28	23	19	17	18	15	14	11	10	10	10	9
Libyan Arab Jamahiriya	23	15	15	17	10	8	7	8	10	6	10	5	26			30	26		31	31	25		33	34	29	35	33
Morocco	127	143	136	127	102	120	121	116	108	110	111	109	99	106	114	111	116	109	103	105	100	97	101	90	86	86	85
Oman	158	74	68	58	58	56	79	37	28	27	26	23	19	14	14	13	13	13	12	11	13	12	12	10	12	10	13
Pakistan	399	396	384	133	100	117	151	175	183	156	139	167		60		10	3		65	15	8	23	35	46	61	90	110
Qatar	112	85	62	68	61	69	57	61	52	42	39	40		40		58	48	38	44	44	45	44	40	38	36	41	41
Saudi Arabia	114	81	79	66	59	31	27	21	16	16	15	13	12	14	14			16	16	17	17	16	15	15	14	15	16
Somalia				43	42	42	47	111	41	20					32	40	62	69	65	70	81	94	99	120	148	157	140
Sudan	168	234				7	10	3	3	3	1	62	72	134	81	49	67	67	70	82	74	70	71	71	74	75	77
Syrian Arab Republic	19	20	19	19	20	20	35	37	41	45	47	43	40		36	30	35	32	34	34	31	29	27	27	25	23	20
Tunisia	39	35	38	44	35	34	33	30	29	30	25	25	25	30	27	27	26		24	23	21	20	19	20	20	21	21
United Arab Emirates	51	58	51	40	40	40	31	52	20	17	15	12	11		19		20		27	2	4	2	2	3	2	3	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	1
Yemen									30	42	38	53	75	78	77	93	89	72	72	74	75	70	61	52	49	43	39
EMR	**184**	**176**	**144**	**75**	**53**	**56**	**67**	**82**	**77**	**70**	**61**	**80**	**27**	**49**	**28**	**28**	**33**	**30**	**50**	**36**	**29**	**34**	**38**	**40**	**45**	**54**	**59**

Rates are per 100 000 population. From 1995 on, number shown is notification rate of new and relapse 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 A3.12 **New smear-positive cases notified, numbers and rates, Eastern Mediterranean, 1993–2006**

	Number of cases														Rate (per 100 000 population)													
	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Afghanistan					618	1 833	1 669	2 892	4 639	6 509	6 510	8 273	9 949	12 468					3	9	8	14	22	29	28	34	40	48
Bahrain	82		17	31	22	25	21	23	23	17	16	69	101	98	15		3	5	4	4	3	4	3	3	2	10	14	13
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	1 153	277	285		272	287	246	220	191	176	164	155	137	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	4 745		3	7	8	9	8	8	7	7	7	7	8	7	6
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	4 581	4 802		8	9	9	8	8	8	8	8	8	8	7	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	2 886	26	28	15	46	35	38	41	13	14	15	13	12	11	10
Jordan	173	161	187	170	136	110	102	89	94	91	108	91	86	104	4	4	4	4	3	2	2	2	2	2	2	2	2	2
Kuwait	148	155	175	153	201	185	169	180	174	206	201	247	187	284	8	9	10	9	11	9	8	8	7	8	8	9	7	10
Lebanon		148	197	198	206	224	249	202	171	148	134	146	131	112		4	6	6	6	6	7	5	4	4	3	4	3	3
Libyan Arab Jamahiriya				515			803	607		722	764	872	860	745				10			15	11		13	13	15	15	12
Morocco			14 171	14 278	14 134	13 426	13 420	12 872	12 804	12 914	12 842	12 280	12 757	12 280			53	52	51	48	47	45	44	44	43	41	42	40
Oman	123	135	135	164	165	156	120	164	156	151	110	160	131	184	6	6	6	7	7	7	5	7	6	6	4	6	5	7
Pakistan	11 020		2 578	1 849		14 974	6 248	3 285	10 935	16 380	21 301	31 557	48 319	65 253	9		2	1		11	4	2	7	11	14	20	31	41
Qatar			60	46	39	69	58	53	77	64	95	73	96	115			11	9	7	12	10	9	12	9	13	10	12	14
Saudi Arabia	800				1 568	1 644	1 680	1 595	1 686	1 674	1 646	1 683	1 722	1 914	5				8	8	8	8	8	8	7	7	7	8
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	6 861		19	25	46	48	47	51	54	64	64	67	81	86	81
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	12 194		13	30	30	35	34	34	37	33	30	31	33	34	32
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	1 352			9	10	9	10	10	10	9	8	9	8	7	7
Tunisia	1 006	983	1 243	1 005		1 196	1 066	1 099	1 077	927	878	944	915	922	12	11	14	11		13	11	11	11	9	9	9	9	9
United Arab Emirates							31	73	69	57	77	57	62	52							1	2	2	2	2	1	2	1
West Bank and Gaza Strip			9	24		8		37	31		15	4	7	16			0	1		0		1	1		0	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	3 342	0	0	24	27	28	29	31	31	27	22	19	17	16	15
EMR	**20 260**	**20 428**	**46 851**	**58 720**	**57 947**	**74 923**	**69 140**	**60 959**	**69 101**	**76 125**	**81 313**	**94 775**	**113 864**	**131 882**	**5**	**5**	**11**	**13**	**13**	**16**	**15**	**13**	**14**	**15**	**16**	**18**	**21**	**24**

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

Of the 278 notified TB cases, 202 were in non-nationals; of the 98 new smear-positive cases notified, 84 were in non-nationals.

Oman

Of the 334 notified TB cases, 83 were in non-nationals; of the 184 new smear-positive cases notified, 66 were in non-nationals.

Sudan

DOTS coverage is the weighted average of coverage in the northern (100% coverage) and southern (55% coverage) parts of the country, which account for 80% and 20% of the total population, respectively.

The numbers of laboratories performing culture and DST do not include those in the southern part of the country.

Separate data for patients treated after failure and after default, and data on the number of TB patients tested for HIV, found HIV-positive and started on CPT were provided for the southern part of the country only.

EUROPE

SOUTH-EAST ASIA

WESTERN PACIFIC

Europe

NTP MANAGER (OR EQUIVALENT); PERSON FILLING OUT DATA COLLECTION FORM (IF DIFFERENT)	
Albania	Hasan Hafizi; Donika Bardhi
Andorra	Margarita Coll Armangué; Jennifer Fernandez
Armenia	Vagan Rasailovich Pogosyan; Narine Mejlimyan
Austria	Jean-Paul Klein
Azerbaijan	Faig Frudinovich Agayev; Natavan Alikhanova
Belarus	Gennady Lvovich Gurevich; Andrei Petrovich Astrovko
Belgium	Maryse Wanlin; Patrick De Smet
Bosnia & Herzegovina	Zehra Dizdarevic; Mladen Duronjic
Bulgaria	Vladimir Milanov
Croatia	Aleksandar Simunovic
Cyprus	Andreas Georghiou; Chrystalla Hadjianastassiou
Czech Republic	Jiří Wallenfels; Alena Ondračková
Denmark	Peter Henrik Andersen; Charlotte Kjelsø
Estonia	Kai Kliiman; Vahur Hollo
Finland	Petri Ruutu
France	Marie Claire Paty; Delphine Antoine
Georgia	Archil Salakaia
Germany	Walter Haas; Bonita Brodhun
Greece	Georgia Spala; Dimitra Panagiotopoulou
Hungary	János Strausz and Gábor Kovács
Iceland	Thorsteinn Blöndal
Ireland	Joan O'Donnell
Israel	Daniel Chemtob; Yana Roshal
Italy	Maria Grazia Pompa; Stefania D'Amato
Kazakhstan	Shahimurat Shaimovich Ismailov; Klar Khasanovna Baimukhanova
Kyrgyzstan	Avtandil Shermamatovitch Alisherov; Elmira Djusupbekovna Abdrakhmanova
Latvia	Janis Leimans; Vija Riekstina
Lithuania	Edita Davidavičienė
Luxembourg	Pierrette Huberty-Krau; Norbert Charlé
Malta	Analita Pace Asciak; Anthony Gatt
Monaco	
Montenegro	Olivera Bojović
Netherlands	Vincent Kuyvenhoven; Connie Erkens
Norway	Brita Askeland Winje
Poland	Kazimierz Roszkowski; Ireneusz Szczuka
Portugal	António Fonseca Antunes
Republic of Moldova	Silviu Sofronie; Dmitrii Sain
Romania	Constantin Marica; Domnica Chiotan
Russian Federation	Ekaterina Petrovna Kakorina; Elena Igorevna Skachkova
San Marino	
Serbia	Gordana Radosavljević-Ašić and Radmila Curčić
Slovakia	Ivan Solovic; Jana Svecova
Slovenia	Damijan Eržen
Spain	Odorina Tello Anchuela; Elena Rodríguez Valín
Sweden	Victoria Romanus
Switzerland	Peter Helbling
Tajikistan	Sadulo Makhmadalievich Saidaliev; Firuza Teshaevna Sharipova
TFYR Macedonia	Stefan Talevski; Maja Zakoska
Turkey	Feyzullah Gümüslü; Ülgen Gullu
Turkmenistan	Babakuli Dzhumaev
Ukraine	Mikhailo Vasilievich Golubchikov; Oksana Rostislavovna Smetanina
United Kingdom	John Watson; Brian Smyth; Jim McMenamin; Roland Salmon; Michelle Kruijshaar; Eisin Shakir
Uzbekistan	Dilrabo Ulmasova; Nilufar Abdieva

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.

Table A3.1 **Estimated burden of TB, Europe, 1990 and 2006**

	Incidence, 1990				Prevalence, 1990		TB mortality, 1990		Incidence, 2006.								Prevalence, 2006				TB mortality, 2006				HIV prevalence in 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	819	25	369	11	1 380	42	141	4	598	19	–	–	269	8	–	–	831	26	–	–	108	3	–	–	–
Andorra	19	36	8	16	21	39	2	4	14	19	–	–	6	9	–	–	12	17	–	–	1	2	–	–	–
Armenia	1 173	33	528	15	1 893	53	206	6	2 177	72	25	≤ 1	977	32	9	≤ 1	2 422	80	13	≤ 1	308	10	5	≤ 1	1.2
Austria	1 801	23	806	10	1 395	18	180	2	1 046	13	47	≤ 1	466	6	17	≤ 1	801	10	24	≤ 1	104	1	5	≤ 1	4.5
Azerbaijan	2 546	35	1 146	16	4 192	58	380	5	6 484	77	34	≤ 1	2 915	35	12	≤ 1	7 340	87	17	≤ 1	867	10	6	≤ 1	0.5
Belarus	3 948	38	1 776	17	6 460	63	553	5	5 989	61	49	≤ 1	2 690	28	17	≤ 1	6 903	71	24	≤ 1	802	8	9	≤ 1	0.8
Belgium	1 997	20	893	9	1 573	16	203	2	1 389	13	53	≤ 1	620	6	19	≤ 1	1 112	11	27	≤ 1	145	1	6	≤ 1	3.8
Bosnia & Herzegovina	4 029	94	1 813	42	6 917	161	651	15	2 005	51	–	–	902	23	–	–	2 243	57	–	–	293	7	–	–	–
Bulgaria	2 353	27	1 059	12	3 838	44	327	4	3 101	40	–	–	1 396	18	–	–	3 190	41	–	–	386	5	–	–	–
Croatia	3 326	74	1 497	33	5 700	126	527	12	1 832	40	–	–	824	18	–	–	2 910	64	–	–	292	6	–	–	–
Cyprus	63	9	28	4	96	14	6	≤ 1	42	5	–	–	19	2	–	–	49	6	–	–	4	≤ 1	–	–	–
Czech Republic	2 143	21	964	9	2 239	22	242	2	1 007	10	6	≤ 1	452	4	2	≤ 1	1 049	10	3	≤ 1	114	1	≤ 1	≤ 1	0.6
Denmark	779	15	349	7	628	12	81	2	444	8	13	≤ 1	198	4	5	≤ 1	356	7	7	≤ 1	46	≤ 1	2	≤ 1	3.0
Estonia	500	32	225	14	791	50	65	4	519	39	95	7	224	17	33	2	535	40	47	4	84	6	20	2	18
Finland	874	18	393	8	680	14	87	2	287	5	4	≤ 1	129	2	1	≤ 1	222	4	2	≤ 1	29	≤ 1	≤ 1	≤ 1	1.4
France	14 810	26	6 607	12	11 951	21	1 542	3	8 630	14	532	≤ 1	3 830	6	186	≤ 1	6 845	11	266	≤ 1	904	1	62	≤ 1	6.2
Georgia	2 106	39	948	17	2 893	53	383	7	3 736	84	10	≤ 1	1 680	38	4	≤ 1	3 731	84	5	≤ 1	407	9	2	≤ 1	0.3
Germany	15 522	20	6 967	9	12 047	15	1 553	2	5 370	6	98	≤ 1	2 407	3	34	≤ 1	4 151	5	49	≤ 1	537	≤ 1	9	≤ 1	1.8
Greece	3 404	33	1 527	15	3 085	30	425	4	2 008	18	55	≤ 1	898	8	19	≤ 1	1 804	16	27	≤ 1	253	2	9	≤ 1	2.7
Hungary	4 254	41	1 914	18	7 018	68	576	6	1 904	19	4	≤ 1	857	9	2	≤ 1	2 162	21	2	≤ 1	254	3	≤ 1	≤ 1	0.2
Iceland	15	6	7	3	12	5	2	≤ 1	13	4	≤ 1	≤ 1	6	2	≤ 1	≤ 1	10	3	≤ 1	≤ 1	1	≤ 1	≤ 1	≤ 1	5.2
Ireland	861	24	386	11	668	19	86	2	555	13	22	≤ 1	247	6	8	≤ 1	444	11	11	≤ 1	58	1	3	≤ 1	4.0
Israel	641	14	288	6	497	11	64	1	521	8	13	≤ 1	233	3	5	≤ 1	402	6	7	≤ 1	52	≤ 1	1	≤ 1	2.6
Italy	7 864	14	3 502	6	6 288	11	889	2	4 393	7	319	≤ 1	1 945	3	111	≤ 1	3 444	6	159	≤ 1	496	≤ 1	35	≤ 1	7.3
Kazakhstan	9 647	58	4 341	26	15 736	95	1 339	8	19 961	130	108	≤ 1	8 971	59	38	≤ 1	21 757	142	54	≤ 1	2 669	17	19	≤ 1	0.5
Kyrgyzstan	2 412	55	1 085	25	3 961	90	365	8	6 454	123	28	≤ 1	2 901	55	10	≤ 1	7 189	137	14	≤ 1	943	18	5	≤ 1	0.4
Latvia	916	34	412	15	1 504	56	138	5	1 312	57	53	2	585	26	19	≤ 1	1 369	60	27	1	193	8	10	≤ 1	4.1
Lithuania	1 472	40	663	18	2 396	65	198	5	2 102	62	13	≤ 1	944	28	5	≤ 1	2 095	61	7	≤ 1	229	7	2	≤ 1	0.6
Luxembourg	88	23	39	10	71	19	9	2	57	12	1	≤ 1	26	6	≤ 1	≤ 1	46	10	≤ 1	≤ 1	6	1	≤ 1	≤ 1	2.5
Malta	41	11	18	5	35	10	5	1	25	6	≤ 1	≤ 1	11	3	≤ 1	≤ 1	20	5	≤ 1	≤ 1	3	≤ 1	≤ 1	≤ 1	2.1
Monaco	1	4	≤ 1	2	1	3	≤ 1	≤ 1	≤ 1	2	–	–	≤ 1	1	–	–	≤ 1	2	–	–	≤ 1	≤ 1	–	–	–
Montenegro	–	–	–	–	–	–	–	–	194	32	–	–	87	15	–	–	296	49	–	–	26	4	–	–	–
Netherlands	2 115	14	947	6	1 637	11	212	1	1 249	8	41	≤ 1	558	3	14	≤ 1	961	6	20	≤ 1	125	≤ 1	4	≤ 1	3.3
Norway	443	10	199	5	359	8	46	1	263	6	4	≤ 1	118	3	1	≤ 1	203	4	2	≤ 1	26	≤ 1	≤ 1	≤ 1	1.6
Poland	19 858	52	8 933	23	33 586	88	2 895	8	9 462	25	40	≤ 1	4 254	11	14	≤ 1	10 387	27	20	≤ 1	1 268	3	7	≤ 1	0.4
Portugal	6 735	67	2 985	30	5 207	52	673	7	3 382	32	468	4	1 475	14	164	2	2 502	24	234	2	337	3	45	≤ 1	14
Republic of Moldova	2 832	65	1 274	29	4 620	105	393	9	5 404	141	20	≤ 1	2 430	63	7	≤ 1	5 890	154	10	≤ 1	722	19	3	≤ 1	0.4
Romania	17 068	74	7 680	33	28 145	121	2 383	10	27 533	128	93	≤ 1	12 381	57	33	≤ 1	30 053	140	47	≤ 1	3 765	17	18	≤ 1	0.3
Russian Federation	66 955	45	30 129	20	106 507	72	12 731	9	152 797	107	5 803	4	68 178	48	2 031	1	178 928	125	2 902	2	24 335	17	1 259	≤ 1	3.8
San Marino	3	12	1	5	2	9	≤ 1	1	2	6	–	–	≤ 1	3	–	–	2	5	–	–	≤ 1	≤ 1	–	–	–
Serbia	6 010	59	2 705	27	10 317	102	971	10	3 183	32	21	≤ 1	1 430	15	7	≤ 1	3 994	41	11	≤ 1	471	5	6	≤ 1	0.7
Slovakia	2 085	40	938	18	2 848	54	344	7	829	15	–	–	373	7	–	–	964	18	–	–	129	2	–	–	–
Slovenia	824	43	371	19	1 270	66	98	5	261	13	–	–	117	6	–	–	304	15	–	–	37	2	–	–	–
Spain	21 644	56	9 563	25	17 182	44	2 266	6	13 179	30	1 209	3	5 810	13	423	≤ 1	10 330	24	604	1	1 385	3	141	≤ 1	9.2
Sweden	594	7	266	3	461	5	59	≤ 1	549	6	16	≤ 1	246	3	5	≤ 1	423	5	8	≤ 1	55	≤ 1	2	≤ 1	2.9
Switzerland	1 253	18	560	8	970	14	125	2	500	7	33	≤ 1	222	3	12	≤ 1	380	5	16	≤ 1	50	≤ 1	3	≤ 1	6.6
Tajikistan	5 927	112	2 667	50	10 357	195	1 165	22	13 532	204	104	2	6 079	92	37	≤ 1	19 764	298	52	≤ 1	2 605	39	37	≤ 1	0.8
TFYR Macedonia	1 023	54	460	24	1 752	92	214	11	596	29	–	–	268	13	–	–	674	33	–	–	103	5	–	–	–
Turkey	28 324	49	12 746	22	47 702	83	4 886	9	21 752	29	–	–	9 788	13	–	–	23 875	32	–	–	3 448	5	–	–	–
Turkmenistan	2 356	64	1 060	29	3 870	105	356	10	3 175	65	–	–	1 429	29	–	–	3 833	78	–	–	463	9	–	–	–
Ukraine	21 320	41	9 582	19	35 235	68	3 089	6	49 308	106	2 862	6	21 902	47	1 002	2	52 917	114	1 431	3	6 762	15	521	1	5.8
United Kingdom	6 722	12	3 018	5	5 224	9	672	1	9 358	15	335	≤ 1	4 177	7	117	≤ 1	7 188	12	167	≤ 1	935	2	32	≤ 1	3.6
Uzbekistan	14 026	68	6 311	31	23 458	114	2 092	10	32 778	121	208	≤ 1	14 729	55	73	≤ 1	39 021	145	104	≤ 1	4 561	17	44	≤ 1	0.6
EUR	**318 540**	**37**	**142 953**	**17**	**446 679**	**53**	**46 898**	**6**	**433 261**	**49**	**12 842**	**1**	**193 683**	**22**	**4 495**	**≤ 1**	**478 332**	**54**	**6 421**	**≤ 1**	**62 197**	**7**	**2 335**	**≤ 1**	**3.0**

– indicates no estimate.

* Incidence, prevalence and mortality estimates include patients with HIV. Estimates labelled "HIV+" are estimates of TB in HIV-positive people (all ages). 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 187 for further details. Data can be downloaded from www.who.int/tb

Table A3.2 Case notifications and case detection rates, DOTS and non-DOTS combined, Europe, 2006

	Notified TB cases, DOTS and non-DOTS combined															Incidence and case detection rates				Proportions			
					New pulmonary			New extra-	Other	Re-treatment cases					New pulm.	Estimated incidence		Case detection rate		ss+	ss+	Extrapulm.	Re-treat.
	Population	All notified	New and relapse		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	3 172	502	469	15	186	6	106	175		2		1	32		197	598	269	78	69	64	40	37	7
Andorra	74	13	12	16	8	11	2	2					1		8	14	6	84	125	80	67	17	8
Armenia	3 010	2 155	1 767	59	580	19	694	324		169	72	63	253		580	2 177	977	73	59	46	33	18	26
Austria	8 327	873	855	10	213	3	507	135					18		485	1 046	466	82	46	30	25	16	2
Azerbaijan	8 406	7 498	5 705	68	1 454	17	2 278	697		1 276			1 793	0	1 454	6 484	2 915	68	50	39	25	12	41
Belarus	9 742	6 065	5 142	53	1 072	11	3 709	361					923		2 086	5 989	2 690	86	40	22	21	7	15
Belgium	10 430	1 127	1 043	10	343	3	370	330					84		603	1 389	620	75	55	48	33	32	7
Bosnia & Herzegovina	3 926	1 800	1 778	45	562	14	910	215		91			22		993	2 005	902	84	62	38	32	12	6
Bulgaria	7 693	3 232	3 136	41	1 307	17	1 377	327		125			96		1 307	3 101	1 396	97	94	49	42	10	7
Croatia	4 556	1 135	1 029	23	396	9	520	113					106		583	1 832	824	56	48	43	38	11	9
Cyprus	846	37	36	4	8	1	22	6				1			21	42	19	85	42	27	22	17	3
Czech Republic	10 189	973	941	9	257	3	480	204					32		520	1 007	452	93	57	35	27	22	3
Denmark	5 430	377	341	6	123	2	123	95					35	1	201	444	198	77	62	50	36	28	9
Estonia	1 340	455	422	31	147	11	195	31		49	0	10	23		267	519	224	72	66	43	35	7	18
Finland	5 261	299	280	5	84	2	110	86					19		187	287	129	98	65	43	30	31	6
France	61 330	5 336	4 817	8	1 911	3	1 626	1 280					349	170	2 780	8 630	3 830	56	50	54	40	27	7
Georgia	4 433	6 311	4 554	103	1 831	41	1 231	1 261		231	217	231	1 308	1	1 831	3 736	1 680	116	109	60	40	28	31
Germany	82 641	5 402	5 021	6	1 303	2	2 537	1 027		154	2	7	250	122	2 957	5 370	2 407	91	54	34	26	20	8
Greece	11 123	681	580	5	210	2	286	84					63	38	314	2 008	898	29	23	42	36	14	10
Hungary	10 058	1 894	1 687	17	422	4	1 067	86		112	0	3	204		708	1 904	857	83	49	28	25	5	17
Iceland	298	13	13	4	4	1	3	6							6	13	6	103	71	57	31	46	
Ireland	4 221	458	416	10	133	3	180	99		4			17	25	219	555	247	74	54	42	32	24	5
Israel	6 810	386	384	6	72	1	237	74		1			2		220	521	233	74	31	23	19	19	1
Italy	58 779	4 387	4 145	7	1 377	2	1 473	1 295					242		1 881	4 393	1 945	94	71	48	33	31	6
Kazakhstan	15 314	43 204	23 728	155	6 205	41	11 029	3 640		2 854	1 119	1 151	14 600	2 606	7 227	19 961	8 971	105	69	36	26	15	49
Kyrgyzstan	5 259	6 656	6 174	117	1 833	35	2 132	1 761		448			482		1 833	6 454	2 901	89	63	46	30	29	14
Latvia	2 289	1 328	1 290	56	498	22	522	124		146	1	29	8		787	1 312	585	87	85	49	39	10	14
Lithuania	3 408	2 559	2 365	69	1 029	30	754	316		266	43	106	45		1 304	2 102	944	100	109	58	44	13	18
Luxembourg	461	33	33	7	22	5	10	1							32	57	26	58	86	69	67	3	
Malta	405	30	30	7	4	1	20	6							11	25	11	122	36	17	13	20	
Monaco	33															1	0						
Montenegro	601	171	167	28	58	10	74	21		14	0	1	3		101	194	87	79	66	44	35	13	11
Netherlands	16 379	1 021	1 002	6	203	1	441	341		17			19		493	1 249	558	79	36	32	20	34	4
Norway	4 669	294	276	6	46	1	131	99					17	1	140	263	118	105	39	26	17	36	6
Poland	38 140	8 593	8 017	21	2 835	7	4 102	690		390			576		4 342	9 462	4 254	81	67	41	35	9	11
Portugal	10 579	3 423	3 218	30	1 300	12	959	813		146	1	26	172	6	1 865	3 382	1 475	91	88	58	40	25	10
Republic of Moldova	3 833	6 118	4 990	130	1 679	44	2 112	597		602	250	206	672	0	1 679	5 404	2 430	81	69	44	34	12	28
Romania	21 532	27 319	24 295	113	9 814	46	7 254	3 665		3 562	1 106	492	1 426		11 124	27 533	12 381	75	79	57	40	15	24
Russian Federation	143 221	152 265	124 689	87	32 335	23	73 252	12 059		7 043	6 287		21 289		46 491	152 797	68 178	77	47	31	26	10	23
San Marino	31															2	1						
Serbia	9 851	3 272	3 146	32	1 136	12	1 260	543		207	14	17	95		1 470	3 183	1 430	92	79	47	36	17	10
- Serbia (without Kosovo)		2 150	2 024		843		749	276		156	14	17	95		1 177					53	42	14	13
- Kosovo		1 122	1 122		293		511	267		51					293					36	26	24	5
Slovakia	5 388	730	673	12	160	3	344	122		47	2	1	54		310	829	373	76	43	32	24	18	14
Slovenia	2 001	215	207	10	83	4	81	38		5			8		146	261	117	77	71	51	40	18	6
Spain	43 887	8 029	7 815	18	2 006	5	4 234	1 376		199			214		3 419	13 179	5 810	58	35	32	26	18	5
Sweden	9 078	497	489	5	106	1	203	176		4			7	1	256	549	246	88	43	34	22	36	2
Switzerland	7 455	520	461	6	112	2	231	118					46	13	308	500	222	92	51	33	24	26	9
Tajikistan	6 640	6 671	5 362	81	2 051	31	1 613	1 562		136	64	52	1 190	3	2 051	13 532	6 079	39	34	56	38	29	22
TFYR Macedonia	2 036	627	561	28	178	9	218	133		32	3	11	52		212	596	268	89	66	45	32	24	16
Turkey	73 922	20 526	19 629	27	7 866	11	5 069	5 609		1 085	81	226	590		9 142	21 752	9 788	85	80	61	40	29	10
Turkmenistan	4 899	3 369	3 223	66	1 155	24	1 339	630		99			146		1 155	3 175	1 429	98	81	46	36	20	7
Ukraine	46 557	41 265	41 265	89	14 206	31	20 226	4 452		2 381					14 206	49 308	21 902	79	65	41	34	11	6
United Kingdom	60 512	8 498	8 157	13	1 767	3	2 832	3 558					237	104	3 436	9 358	4 177	87	42	38	22	44	3
Uzbekistan	26 981	25 310	23 900	89	7 211	27	10 301	5 600		788	376	113	921		7 211	32 778	14 729	71	49	41	30	23	9
EUR	**887 455**	**423 952**	**359 735**	**41**	**109 901**	**12**	**170 786**	**56363**	**0**	**22 685**	**9 638**	**2 747**	**48 741**	**3 091**	**141 159**	**433 261**	**193 683**	**78**	**57**	**39**	**31**	**16**	**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 187 for further details. Data can be downloaded from www.who.int/tb

Table A3.3 **DOTS coverage, case notifications and case detection rates, Europe, 2006**

		TB cases reported from DOTS services													Estimated incidence and case detection rate				Proportions			
	DOTS coverage	New and relapse		New pulmonary ss+		ss- / unk.	New extra-pulmonary	Other new	Re-treatment cases: Relapse	After failure	After default	Other re-treat.	Other	New pulm. lab. confirm.	Estimated incidence all forms	ss+	Case detection rate all new	new ss+	ss+ (% of pulm.)	ss+ (% of new+relapse)	Extrapulm. (% of new+relapse)	Re-treat. (% of new+re-treat.)
	%	number	rate	number	rate	number	number	number	number	number	number	number	number	number	number	number	%	%				
Albania	50	246	8	99	3	48	97		2		1	7		108	598	269	41	37	67	40	39	4
Andorra	100	12	16	8	11	2	2					1		8	14	6	84	125	80	67	17	8
Armenia	100	1 767	59	580	19	694	324		169	72	63	253		580	2 177	977	73	59	46	33	18	26
Austria	100	855	10	213	3	507	135					18		485	1 046	466	82	46	30	25	16	2
Azerbaijan	100	5 705	68	1 454	17	2 278	697		1 276			1 793	0	1 454	6 484	2 915	68	50	39	25	12	41
Belarus	100	5 142	53	1 072	11	3 709	361					923		2 086	5 989	2 690	86	40	22	21	7	15
Belgium	100	1 043	10	343	3	370	330					84		603	1 389	620	75	55	48	33	32	7
Bosnia & Herzegovina	100	1 778	45	562	14	910	215		91			22		993	2 005	902	84	62	38	32	12	6
Bulgaria	100	3 136	41	1 307	17	1 377	327		125			96		1 307	3 101	1 396	97	94	49	42	10	7
Croatia	25														1 832	824						
Cyprus	100	36	4	8	1	22	6				1			21	42	19	85	42	27	22	17	3
Czech Republic	100	941	9	257	3	480	204					32		520	1 007	452	93	57	35	27	22	3
Denmark	100	341	6	123	2	123	95					35	1	201	444	198	77	62	50	36	28	9
Estonia	100	422	31	147	11	195	31		49	0	10	23		267	519	224	72	66	43	35	7	18
Finland	0														287	129						
France	0														8 630	3 830						
Georgia	100	4 554	103	1 831	41	1 231	1 261		231	217	231	1 308	1	1 831	3 736	1 680	116	109	60	40	28	31
Germany	100	5 021	6	1 303	2	2 537	1 027		154	2	7	250	122	2 957	5 370	2 407	91	54	34	26	20	8
Greece	0														2 008	898						
Hungary	100	1 687	17	422	4	1 067	86		112	0	3	204		708	1 904	857	83	49	28	25	5	17
Iceland	100	13	4	4	1	3	6							6	13	6	103	71	57	31	46	
Ireland	0														555	247						
Israel	100	384	6	72	1	237	74		1			2		220	521	233	74	31	23	19	19	1
Italy	65	4 145	7	1 377	2	1 473	1 295					242		1 881	4 393	1 945	94	71	48	33	31	6
Kazakhstan	100	23 254	152	6 151	40	10 663	3 592		2 848	1 052	1 102	11 372	7	7 166	19 961	8 971	102	69	37	26	15	45
Kyrgyzstan	100	6 174	117	1 833	35	2 132	1 761		448			482		1 833	6 454	2 901	89	63	46	30	29	14
Latvia	100	1 290	56	498	22	522	124		146	1	29	8		787	1 312	585	87	85	49	39	10	14
Lithuania	96	2 365	69	1 029	30	754	316		266	43	106	45		1 304	2 102	944	100	109	58	44	13	18
Luxembourg	100	2	0	1	0	1								2	57	26	4	4	50	50		
Malta	100	30	7	4	1	20	6							11	25	11	122	36	17	13	20	
Monaco															1	0						
Montenegro	0														194	87						
Netherlands	100	1 002	6	203	1	441	341		17			19		493	1 249	558	79	36	32	20	34	4
Norway	100	276	6	46	1	131	99					17	1	140	263	118	105	39	26	17	36	6
Poland	100	8 017	21	2 835	7	4 102	690		390			576		4 342	9 462	4 254	81	67	41	35	9	11
Portugal	100	3 218	30	1 300	12	959	813		146	1	26	172	6	1 865	3 382	1 475	91	88	58	40	25	10
Republic of Moldova	100	4 990	130	1 679	44	2 112	597		602	250	206	672	0	1 679	5 404	2 430	81	69	44	34	12	28
Romania	100	24 295	113	9 814	46	7 254	3 665		3 562	1 106	492	1 426		11 124	27 533	12 381	75	79	57	40	15	24
Russian Federation	84	102 997	72	29 989	21	56 713	9 502		6 793	6 287		6 185		44 145	152 797	68 178	63	44	35	29	9	17
San Marino															2	1						
Serbia	100	3 146	32	1 136	12	1 260	543		207	14	17	95		1 470	3 183	1 430	92	79	47	36	17	10
Serbia (without Kosovo)		2 024		843		749	276		156	14	17	95		1 177					53	42	14	13
Kosovo		1 122		293		511	267		51					293					36	26	24	5
Slovakia	100	673	12	160	3	344	122		47	2	1	54		310	829	373	76	43	32	24	18	14
Slovenia	100	207	10	83	4	81	38		5			8		146	261	117	77	71	51	40	18	6
Spain	0														13 179	5 810						
Sweden	0														549	246						
Switzerland	0														500	222						
Tajikistan	79	4 619	70	1 986	30	1 237	1 292		104	64	27	1 190	3	1 986	13 532	6 079	33	33	62	43	28	23
TFYR Macedonia	100	561	28	178	9	218	133		32	3	11	52		212	596	268	89	66	45	32	24	16
Turkey	50	19 629	27	7 866	11	5 069	5 609		1 085	81	226	590		9 142	21 752	9 788	85	80	61	40	29	10
Turkmenistan	80	2 073	42	830	17	888	256		99			146		830	3 175	1 429	62	58	48	40	12	11
Ukraine	100	41 265	89	14 206	31	20 226	4 452		2 381					14 206	49 308	21 902	79	65	41	34	11	6
United Kingdom	0														9 358	4 177						
Uzbekistan	100	22 845	85	7 093	26	9 913	5 055		784	376	113	903		7 093	32 778	14 729	67	48	42	31	22	9
EUR	**67**	**310 156**	**35**	**100 102**	**11**	**142 303**	**45 579**	**0**	**22 172**	**9 571**	**2 672**	**29 305**	**141**	**126 522**	**433 261**	**193 683**	**66**	**52**	**41**	**32**	**15**	**18**

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 187 for further details. Data can be downloaded from www.who.int/tb

Table A3.4 **Laboratory services, collaborative TB/HIV activities and management of MDR-TB, Europe, 2005–2006**

	Laboratory services, 2006				Collaborative TB/HIV activities								Management of MDR-TB, 2006				
					2005				2006								
	number of labs working with NTP			smear 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	15	3	1	0	81	1			51	3			1	140	1	5	0
Andorra	8	8	8										0	8	0	0	0
Armenia	46	2	1	46	270	6	5	2	332	25	25	11	215	524	65	346	150
Austria	9	9	9									17	10	500	8	11	2
Azerbaijan	69	8	8	1									398	404	97	369	301
Belarus						139							651	1 920	224	1 194	427
Belgium		160	17	0	937	52			927	55							
Bosnia & Herzegovina			5										7	993	3	93	4
Bulgaria	33			31	23					6			53	1 108	24	221	29
Croatia													3	614	1	82	2
Cyprus	1	1			0	0	0	0	0	0	0	0					
Czech Republic	45	45	14	45	189	2			163	4			9	552	6	15	3
Denmark				0		8				11			3	286	3	22	0
Estonia	9	3	2	9	490	33	0		414	41			52	279	36	68	16
Finland					3	3			6	6			2	250	1	15	1
France	310	0											30	1 368	19	110	11
Georgia	30	1	1	30	674	13	7	13	649	17	10	9	266	1 297	111	587	155
Germany	240	185	75	240									78	3 258	65	243	13
Greece													13	507	13	0	0
Hungary	18	18	11	10									14	478	11	77	3
Iceland	1	1			10	1	1	1	10	2	0	1	0	12	0	0	0
Ireland	13	13	3	13	28	11			27	7			3	145	2	6	1
Israel						22							19	264	18	2	1
Italy													28	847	28		
Kazakhstan	471	20	16		31 187	183	75	14	43 204	234	90	37	4 117	7 835	1 028	7 898	3 089
Kyrgyzstan							0	4			0		336	962	248	155	88
Latvia	24	8	1	24	1 226	53		29	1 128	46		36	143	796	85	171	57
Lithuania						7				13			332	1 346	128	440	204
Luxembourg													0	33	0		
Malta	0	0	0	0	1	0	0	0	1	2	1	1	2	14	2	0	0
Monaco																	
Montenegro	1	1	1		8	0	0	0	17	1	0	1	2	90	0	15	2
Netherlands	78	43	15		252	61			185	41			5	645	3	76	2
Norway	19	13	3	19	0				0				3	216	1	9	2
Poland	105	75	70	105													
Portugal	60	60	16	0	2 485	571			1 823	474			17	1 120	14	97	3
Republic of Moldova	57	4	4	44	6 469	9			5 523	20			1 040	1 051	242	1 655	798
Romania	57	109	62	49	10 860	160			8 402	60					33		106
Russian Federation	4 953	978	302	998	85 537	3 533			87 041	1 979		1 037	3 949	25 804	2 942	4 396	1 007
San Marino																	
Serbia	58	0	9	34	3	3	13	12	5	5	0	15	10	990	0	140	10
Slovakia	16	11	5	11	720	1	0	1	708	0	0	0	7	340	3	61	4
Slovenia					107	0	0	0	70	1	1	1	1	176	1	8	0
Spain									3 566				50	1 265	36	54	14
Sweden	5	5	5	5	0				0				3	377	2	23	1
Switzerland	25	15	15	11									4	382	4	41	0
Tajikistan	99	0	0	53	670	1	0	0	1 148	3	0	0	0	0	0	0	0
TFYR Macedonia	13	13	1	10	2	2	0	2	0	0	0	0	6	133	0	29	6
Turkey	175	22	7	4	0	0	0	0	0	0	0	0	249	4 112	133	700	116
Turkmenistan	29	1	1	0									16	0	0	103	16
Ukraine						1 526	0			1 987	0						
United Kingdom													52	4 677	39	255	13
Uzbekistan	317	2	2	317	35 801	147	0	0	37 565	238	154	9	83	206	29	89	54
EUR	**7 409**	**1 837**	**690**	**2 109**	**178 033**	**6 548**	**101**	**78**	**192 965**	**5 281**	**281**	**1 175**	**12 282**	**68 324**	**5 709**	**19 881**	**6 711**

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 187 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 A3.5 **Treatment outcomes, Europe, 2005 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	69	69	100	64	13	3	1	7	0	12	77	127	127	100	32	47	5	2	4	0	10	80	7	71	0	0	0	14	0	14	71
Andorra	5	5	100	80	0	0	0	0	20	0	80																				
Armenia	581	581	100	59	13	3	5	14	3	2	72												327	13	28	7	12	37	2	2	41
Austria	234	230	98	17	58	7	0	7	0	11	75												10	20	60	0	0	10	0	10	80
Azerbaijan	1 561	1 561	100	48	11	4	4	12	16	6	59												1 314	28	9	6	6	13	20	18	37
[1] Belarus	2 247	2 247	100		73	10	11	2	4	0	73																				
[2] Belgium	380	304	80	21	45	10	0	0	1	23	66												21	14	24	33	0	0	0	29	38
[1] Bosnia & Herzegovina	1 035	1 035	100	93	3	1	0	0	1	1	97												106	85	8	4	1	2	1	0	92
[1] Bulgaria	1 214	1 342	111	82	3	4	2	7	1	0	86												122	62	4	5	12	15	2	0	66
Croatia												372	391	105	40	7	7	0	1	1	44	46									
Cyprus	9	8	89	38	25	13	0	0	13	13	63																				
Czech Republic	308	315	102	62	10	6	0	2	1	19	72												13	23	23	0	0	0	0	54	46
Denmark	129	128	99	44	39	6	1	2	3	5	83												7	29	71	0	0	0	0	0	100
Estonia	162	162	100	70	2	8	1	10	0	10	72												39	26	5	5	5	26	3	31	31
Finland												130																			
France												1 941																			
Georgia	1 509	1 489	99	60	13	3	5	13	6	1	73												1 087	37	12	9	15	21	5	2	48
[2] Germany	1 379	1 199	87	39	32	9	0	2	0	18	71												113	39	27	13	0	3	0	19	65
Greece	0											197																			
Hungary	423	412	97	32	13	13	12	9	4	16	45	0											93	25	9	13	23	12	5	14	33
Iceland	2	2	100	0	100	0	0	0	0	0	100	0																			
Ireland	0											130	107	82	3	62	9	3	1	0	22	64									
[1] Israel	205	213	104	65	14	12	1	3	5	0	78	0											17	53	29	6	0	6	0	6	82
[1] Italy	1 778	265	15	37	37	9	0	8	9	0	74	0											34	29	15	21	3	6	26	0	44
Kazakhstan	6 911	6 884	100	70	1	5	12	5	2	5	71												4 085	46	1	13	14	6	3	16	47
Kyrgyzstan	1 901	1 897	100	81	4	3	5	5	2	0	85	71											411	68	7	7	10	8	1	0	74
Latvia	536	536	100	72	1	11	1	7	0	8	74	0											137	50	1	12	1	9	1	26	50
Lithuania	964	958	99	70	0	11	3	11	0	5	70	0											360	28	0	28	4	21	1	18	28
Luxembourg	14											0	13		0	0	0	0	0	0	100	0									
Malta	5	5	100	0	100	0	0	0	0	0	100	0																			
Monaco																															
Montenegro												64	63	98	10	21				2	68	30									
[2] Netherlands	237	208	88	9	75	7	0	1	4	4	84	0											9	11	0	11	0	11	11	56	11
Norway	48	47	98	62	30	2	0	4	2	0	91	0											3	0	33	67	0	0	0	0	33
Poland	2 823	2 823	100	65	12	5	1	9	2	6	77	0											418	36	9	7	1	39	2	7	45
Portugal	1 302	1 393	107	13	76	6	0	4	1	0	89	0											179	10	68	7	1	8	3	3	78
Republic of Moldova	1 696	1 690	100	60	2	9	11	11	5	2	62												1 282	30	5	13	19	19	10	4	35
Romania	10 801	10 929	101	71	11	5	4	6	1	3	82	0											5 239	41	8	11	11	15	1	13	49
Russian Federation	22 690	25 692	113	55	3	13	14	11	4	0	58	9 915											10 855	33	4	16	26	16	5	0	37
San Marino																															
Serbia	1 105	1 154	104	72	13	5	1	5	1	3	85												160	61	18	11	1	8	0	2	78
Slovakia	162	158	98	66	26	6	0	1	0	1	92	0											24	58	21	8	0	0	0	13	79
Slovenia	109	109	100	47	38	12	0	1	3	0	84	0											18	50	33	6	0	0	6	6	83
Spain	0											2 511																			
Sweden	134											0	133		0	74	6	1	1	2	16	74									
Switzerland	0											108																			
Tajikistan	1 294	1 286	99	84	2	4	6	3	1	0	86	451	443	98	44	27	5	7	18	0	0	71	758	66	5	13	12	3	1	0	70
TFYR Macedonia	178	179	101	62	22	2	0	14	0	0	84	0											45	51	16	7	4	18	0	4	67
Turkey	256	256	100	73	17	2	2	5	1	2	89	7 194	7 194	100	44	45	2	0	5	1	2	89	43	51	14	5	9	9	0	12	65
Turkmenistan	661	661	100	76	5	7	5	7	1	0	81	334	334	100	58	34	3	3	2	1	0	92	109	55	8	15	12	10	0	0	63
Ukraine																															
[2] United Kingdom	0											1 821	1 348	74	0	68	7	0	1	2	22	68									
Uzbekistan	5 259	5 336	101	72	9	6	6	7	1	0	81	436											2 420	46	17	11	11	15	1	0	63
EUR	**72 316**	**73 768**	**102**	**60**	**10**	**8**	**8**	**8**	**3**	**2**	**71**	**25 802**	**10 153**	**39**	**37**	**46**	**3**	**1**	**4**	**1**	**7**	**83**	**29 865**	**39**	**7**	**13**	**17**	**15**	**4**	**6**	**45**

[1] Indicates that the outcomes are for laboratory-confirmed cases, i.e. smear and/or culture-positive.
[2] Indicates that "notified cases" in this table included cases with "history unknown", whereas "registered cases" does not
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 2005 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 2005 is used, or the sum of outcomes if the latter is greater. Data can be downloaded from www.who.int/tb

Table A3.6 **Re-treatment outcomes, Europe, 2005 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	6	67	0	0	0	17	0	17	67																		
Andorra																											
Armenia	211	16	28	7	9	36	3	2	44																		
Austria																											
Azerbaijan	1 314	28	9	6	6	13	20	18	37																		
Belarus																											
Belgium																											
[1] Bosnia & Herzegovina	106	85	8	4	1	2	1	0	92																		
[1] Bulgaria	122	62	4	5	12	15	2	0	66																		
Croatia																											
Cyprus																											
Czech Republic																											
Denmark																											
Estonia	28	29	7	7	4	18	4	32	36	4	0	0	0		25	0	75	0	7	29	0	0	0		0	71	29
Finland																											
France																											
Georgia	205	50	10	8	16	13	3	0	60	173	30	4	13	28	17	5	2	34	291	28	12	8	14	29	5	4	40
Germany	64	47	25	14	0	2	0	13	72	8	25	13	13	0	0	0	50	38	12	33	50	8	0	0	0	8	83
Greece																											
Hungary	73	29	8	15	22	7	3	16	37																		
Iceland																											
Ireland																											
[1] Israel	9	44	33	0	0	11	0	11	78																		
[1] Italy	28	32	11	25	4	7	21	0	43	2	0	0	0	0	0		100	0									
Kazakhstan	3 145	49	1	14	14	6	3	13	50	940	35	1	12	17	7	3	26	36									
Kyrgyzstan	411	68	7	7	10	8	1	0	74																		
Latvia	108	45	1	16	2	4	1	31	46	2	100	0	0	0	0	0	0	100	27	63	0	0	0		0	37	63
Lithuania	205	38	0	25	4	16	1	16	38	45	18	0		9	27	0	47	18	110	14	0		3	28	0	55	14
Luxembourg																											
Malta																											
Monaco																											
Montenegro																											
Netherlands	6	0	0	0	0	0	17	83	0																		
Norway																											
Poland	249	42	9	5	1	37	2	5	51																		
Portugal	92	14	73	7	0	5	1	0	87	8	0		13	13	0		75	0	34	3	56	6	3	21	6	6	59
Republic of Moldova	634	39	3	12	18	15	9	3	42	369	27	6	12	21	12	16	6	33	213	15	2	17	24	33	7	2	17
Romania	3 118	51	9	10	10	13	1	7	59	1 383	24	5	13	15	16	1	25	29	459	29	12	11	8	30	1	10	40
Russian Federation	4 094	42	5	15	22	12	5	0	46																		
San Marino																											
Serbia	141	62	18	11	1	7	0	1	80	3	33	0		0	0	0	67	33	9	56	22	0	0		0	22	78
Slovakia	22	59	23	5	0	0	0	14	82	2	50	0		0	0	0	50	50									
Slovenia	14	43	43	7	0	0	7	0	86										4	75	0	0	0	0	0	25	75
Spain																											
Sweden																											
Switzerland																											
Tajikistan	85	76	0	8	13	2	0	0	76	34	41	6	24	24	3	3	0	47	23	43	0		30	13	4	9	43
TFYR Macedonia	41	56	15	5	5	17	0	2	71																		
Turkey	36	61	17	3	6	8	0	6	78	5	0	0		20	0	0	80	0	2	0	0	0		50	0	50	0
Turkmenistan	42	57	2	26	10	5	0	0	60																		
Ukraine																											
United Kingdom																											
Uzbekistan	1 670	57	9	10	8	14	1	0	66	309	34	13	17	21	13	2	0	46	441	15	48	9	11	17	0	0	63
EUR	**16 279**	**45**	**6**	**12**	**13**	**12**	**4**	**8**	**52**	**3 287**	**29**	**5**	**13**	**18**	**13**	**4**	**20**	**33**	**1 632**	**22**	**20**	**12**	**12**	**26**	**2**	**6**	**43**

[1] Indicates that the outcomes are for laboratory-confirmed 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 2005 is used a 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.ir

Table A3.7 **DOTS treatment success and case detection rates, Europe, 1994–2006**

	DOTS new smear-positive treatment success (%)												DOTS new smear-positive case detection rate (%)											
	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Albania								98	90	91	78	77							25	30	31	35	24	37
Andorra					100	67	50	100	100	100	100	80			224	14	58	15	46	31	109	47	78	125
Armenia		83	77	82	81	88	87	90	79	77	70	72	12	25	44	44	41	47	29	30	43	48	60	59
Austria						77	73	64	78	68	69	75						62	52	44	56	45	50	46
Azerbaijan			86	87	86	88	91	66	84	70	60	59	5	9	7	7	7	6	0	46	29	47	54	50
Belarus										73	74	73									38	41	46	40
Belgium								64	69	73	72	66							65	62	56	64	62	55
Bosnia & Herzegovina				93	88	90	94	98	95	94	98	97				38	67	71	80	53	51	95	70	62
Bulgaria								87	86	91	80	86						24	11	49	90	96	88	94
Croatia																								
Cyprus					42			92	75	79	20	63				91	43			40	72	52	47	42
Czech Republic	73	60	66	69	65	78	70	73	73	79	73	72	52	64	53	64	57	60	62	57	63	60	64	57
Denmark									77	84	88	83									69	72	64	62
Estonia						63	70	64	67	70	71	72						64	57	62	68	75	65	66
Finland																								
France																								
Georgia		58		65	78	61	63	67	65	66	68	73	18	35		34	45	34	58	57	58	78	90	109
Germany				54	54	58	77	67	69	71	68	71			63	62	62		53	57	54	54	52	54
Greece																								
Hungary					80		64	46	55	48	54	45					36	25	36	39	40	49	42	49
Iceland								67	100	100	50	100							68	60	31	58	44	71
Ireland																								
Israel							78	79	81	80	80	78						7	73	69	64	39	42	31
Italy		80	82	69	72	71	74	40	79	95		74		14	9	13	56	31	10	60	73	53	65	71
Kazakhstan					79	79	79	78	78	75	72	71				4	79	94	93	95	87	81	74	69
Kyrgyzstan			88	76	82	83	82	81	82	84	85	85		3	4	31	58	42		48	56	61	66	63
Latvia		61	64	65	71	74	72	73	76	74	73	74		71	70	72	64	72	76	77	84	83	83	85
Lithuania					79	84	92	75	72	74	72	70					3	2	30	56	86	85	99	109
Luxembourg																			41	63	118	77	54	4
Malta		100	100	100	100	75	100	100	60	100	100	100		35	22	45	71	41	25	42	18	18	45	36
Monaco																								
Montenegro																								
Netherlands	81	72	81	80	65	79	76		68	86	83	84	77	49	44	37	47	46	51	55	49	63	42	36
Norway		77	80	44	69	77	70	87	80	97	89	91		68	67	34	15	28	47	25	43	42	40	39
Poland					75	69	72	77	86	78	79	77				2	3	4	3	56	57	57	62	67
Portugal	48	69	74	78	74	85	79	78	82	84	84	89	78	77	66	86	82	91	101	101	94	90	82	88
Republic of Moldova							83	66	61	65	62	62							41	22	41	63	70	69
Romania				72	85	78	80	78	76	80	82	82				87	4	9	10	42	40	43	83	79
Russian Federation		65	62	67	68	65	68	67	67	61	59	58		0	1	1	2	5	6	7	9	15	33	44
San Marino				100											101			113						
Serbia								88	91	89	91	85							26	23	37	31	76	79
Slovakia	96	64	73	67	85	79	82	87	85	87	88	92	80	85	34	40	35	37	37	34	38	34	39	43
Slovenia		90	87	82	78	88	84	82	85	85	90	84		79	58	65	74	71	73	75	75	63	84	71
Spain																								
Sweden							79	62	73	83	64								56	59	58	56	58	
Switzerland																								
Tajikistan									79	86	84	86								2		11	23	33
TFYR Macedonia							86	88	79	84	84	84							54	49	49	72	65	66
Turkey										93	91	89									5	3	3	80
Turkmenistan							69	75	77	82	86	81						17	36	42	43	33	44	58
Ukraine																								65
United Kingdom																								
Uzbekistan					78	79	80	76	80	81	78	81				0	2	4	7	22	21	29	37	48
EUR	**68**	**69**	**72**	**72**	**76**	**77**	**77**	**75**	**76**	**75**	**74**	**71**	**3**	**3**	**5**	**11**	**11**	**12**	**14**	**22**	**23**	**26**	**36**	**52**

Treatment success, sum of cured and completed; DOTS new smear-positive case detection rate, notified new smear-positive 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 A3.8 **New smear-positive case notification by age and sex, absolute numbers, DOTS and non-DOTS, Europe, 2006**

	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+	
Albania	5	24	19	22	21	19	20	2	12	8	7	7	7	13	7	36	27	29	28	26	33	2.3
Andorra	0	1	1	2	0	1	1	0	0	1	0	1	0	0	0	1	2	2	1	1	1	3.0
Armenia	0	113	116	96	98	38	17	3	28	29	16	15	7	4	3	141	145	112	113	45	21	4.7
Austria	1	9	25	36	39	19	19	2	12	12	16	5	3	15	3	21	37	52	44	22	34	2.3
Azerbaijan	6	241	362	365	120	78	30	2	51	66	66	44	15	8	8	292	428	431	164	93	38	4.8
Belarus		61	134	217	260	96	71	1	32	38	43	43	18	58	1	93	172	260	303	114	129	3.6
Belgium	4	26	52	38	45	27	42	6	25	25	18	6	7	22	10	51	77	56	51	34	64	2.1
Bosnia & Herzegovina	0	40	58	47	53	42	66	0	41	50	24	29	20	88	0	81	108	71	82	62	154	1.2
Bulgaria	6	86	146	170	184	133	123	12	76	96	86	34	24	59	18	162	242	256	218	157	182	2.2
Croatia	0	20	23	58	69	30	48	2	16	26	16	22	7	59	2	36	49	74	91	37	107	1.7
Cyprus	0	0	1	1	0	1	0	0	2	3	0	0	0	0	0	2	4	1	0	1	0	0.6
Czech Republic	0	6	19	39	56	38	25	0	4	12	12	10	6	30	0	10	31	51	66	44	55	2.5
Denmark	0	8	13	15	27	10	8	1	6	12	9	5	5	4	1	14	25	24	32	15	12	1.9
Estonia	0	4	19	24	40	12	7	0	3	9	10	9	4	6	0	7	28	34	49	16	13	2.6
Finland	0	5	6	5	9	6	20	0	2	4	3	4	1	19	0	7	10	8	13	7	39	1.5
France	17	137	214	238	209	153	278	15	112	158	91	67	44	170	32	249	372	329	276	197	448	1.9
Georgia	3	315	392	300	241	86	72	5	115	110	71	60	26	34	8	430	502	371	301	112	106	3.3
Germany	2	78	138	169	189	103	199	7	66	109	77	39	24	102	9	144	247	246	228	127	301	2.1
Greece	0	11	32	22	24	22	27	0	13	12	8	5	6	24	0	24	44	30	29	28	51	2.0
Hungary	2	10	31	71	98	54	33	3	17	16	19	28	11	29	5	27	47	90	126	65	62	2.4
Iceland	0	0	0	0	0	0	1	0	0	2	0	0	0	1	0	0	2	0	0	0	2	0.3
Ireland	0	8	18	17	11	16	13	0	11	20	8	4	3	3	0	19	38	25	15	19	16	1.7
Israel	0	3	12	14	4	6	10	0	1	5	4	4	2	7	0	4	17	18	8	8	17	2.1
Italy	7	113	201	197	105	75	152	9	88	165	82	48	16	88	16	201	366	279	153	91	240	1.7
Kazakhstan	11	888	981	848	744	287	169	30	741	636	370	234	116	150	41	1 629	1 617	1 218	978	403	319	1.7
Kyrgyzstan	3	245	298	245	179	75	75	13	228	203	107	75	32	65	16	473	501	352	254	107	140	1.5
Latvia	2	27	78	82	105	51	26	0	17	27	33	28	9	13	2	44	105	115	133	60	39	2.9
Lithuania	0	38	120	207	211	107	74	0	25	48	56	52	38	53	0	63	168	263	263	145	127	2.8
Luxembourg	0	0	3	2	3	2	3	0	2	3	2	0	1	1	0	2	6	4	3	3	4	1.4
Malta	0	1	0	2	0	0	1	0	0	0	0	0	0	0	0	1	0	2	0	0	1	
Monaco																						
Montenegro	0	0	7	7	12	9	3		3	4	4	4	3	2	0	3	11	11	16	12	5	1.9
Netherlands	0	25	23	31	23	17	19	3	15	17	12	5	3	10	3	40	40	43	28	20	29	2.1
Norway	0	5	10	5	3	3	1	1	5	5	2	2	1	3	1	10	15	7	5	4	4	1.4
Poland	1	92	215	390	649	357	285	1	83	142	112	118	72	318	2	175	357	502	767	429	603	2.4
Portugal	7	80	211	259	190	94	108	4	56	107	85	33	22	41	11	136	318	344	223	116	149	2.7
Republic of Moldova	2	175	302	349	312	106	32	7	91	108	72	67	25	31	9	266	410	421	379	131	63	3.2
Romania	30	748	1 306	1 624	1 738	847	580	37	669	763	448	334	224	465	67	1 417	2 069	2 072	2 072	1 071	1 045	2.3
Russian Federation	18	2 445	5 774	5 923	6 342	2 440	1 120	40	1 514	2 207	1 703	1 492	560	757	58	3 959	7 981	7 626	7 834	3 000	1 877	2.9
San Marino																						
Serbia	6	87	91	107	167	83	144	7	78	74	43	44	44	152	13	165	165	150	211	127	296	1.5
Slovakia	4	8	11	18	27	29	17	0	6	6	7	4	3	20	4	14	17	25	31	32	37	2.5
Slovenia	0	3	5	9	12	7	6	0	5	7	4	2	4	19	0	8	12	13	14	11	25	1.0
Spain	18	142	332	311	232	105	175	17	122	264	137	48	19	77	35	264	596	448	280	124	252	1.9
Sweden	0	4	15	14	5	3	16	1	12	14	9	1	2	10	1	16	29	23	6	5	26	1.2
Switzerland	1	11	15	11	8	7	12	1	10	16	11	5	1	2	2	21	31	22	13	8	14	1.4
Tajikistan																						
TFYR Macedonia	0	15	15	25	37	18	7	3	16	9	9	6	7	11	3	31	24	34	43	25	18	1.9
Turkey	40	1 212	1 391	1 003	1 045	575	473	56	769	507	235	155	149	256	96	1 981	1 898	1 238	1 200	724	729	2.7
Turkmenistan	0	140	273	191	120	33	18	5	107	115	72	34	24	23	5	247	388	263	154	57	41	2.0
Ukraine	8	926	2 522	2 979	2 714	1 087	568	16	600	909	704	446	246	481	24	1 526	3 431	3 683	3 160	1 333	1 049	3.2
United Kingdom	9	173	244	213	148	88	191	22	168	192	112	60	42	97	31	341	436	325	208	130	288	1.5
Uzbekistan	19	568	807	717	565	268	329	41	544	597	346	327	224	421	60	1 112	1 404	1 063	892	492	750	1.3
EUR	**232**	**9 377**	**17 081**	**17 735**	**17 493**	**7 763**	**5 734**	**375**	**6 619**	**7 968**	**5 381**	**4 065**	**2 127**	**4 321**	**607**	**15 996**	**25 049**	**23 116**	**21 558**	**9 890**	**10 055**	**2.4**

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 187 for further details. Data can be downloaded from www.who.int/tb

Table A3.9 **New smear-positive case notification rates by age and sex, DOTS and non-DOTS, Europe, 2006**

	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	1	8	9	11	11	15	15	1	4	3	3	4	6	9	1	6	6	7	7	10	12
Andorra																					
Armenia	0	38	63	56	50	45	12	1	9	13	7	6	6	2	0	23	36	28	26	23	6
Austria	0	2	5	5	7	4	3	0	2	2	2	1	1	2	0	2	3	4	4	2	2
Azerbaijan	1	27	60	61	24	43	12	0	6	10	9	8	7	2	0	17	34	33	16	24	6
Belarus		8	18	32	37	24	16	0	4	5	6	5	4	6	0	6	12	18	20	13	9
Belgium	0	4	8	5	6	5	6	1	4	4	2	1	1	2	1	4	6	4	3	3	4
Bosnia & Herzegovina	0	15	19	16	20	21	29	0	15	17	8	11	9	27	0	15	18	12	15	15	28
Bulgaria	1	16	25	32	35	28	22	2	15	17	16	6	4	8	2	16	21	24	20	16	14
Croatia	0	7	7	18	20	12	16	1	6	8	5	6	3	12	0	6	8	12	13	7	14
Cyprus	0	0	2	2	0	2	0	0	3	5	0	0	0	0	0	2	3	1	0	1	0
Czech Republic	0	1	2	6	8	6	4	0	1	1	2	1	1	3	0	1	2	4	5	3	4
Denmark	0	3	4	4	7	3	2	0	2	3	2	1	1	1	0	2	4	3	4	2	1
Estonia	0	4	20	28	46	19	9	0	3	10	11	9	5	4	0	3	15	19	26	11	6
Finland	0	1	2	1	2	2	6	0	1	1	1	1	0	4	0	1	2	1	2	1	5
France	0	3	5	5	5	4	7	0	3	4	2	2	1	3	0	3	5	4	3	3	4
Georgia	1	84	132	104	84	50	29	1	32	34	21	18	12	9	1	58	81	60	49	29	17
Germany	0	2	3	2	3	2	3	0	1	2	1	1	1	1	0	1	3	2	2	1	2
Greece	0	2	4	3	3	4	3	0	2	1	1	1	1	2	0	2	3	2	2	2	2
Hungary	0	2	4	11	14	10	6	0	3	2	3	4	2	3	0	2	3	7	9	5	4
Iceland	0	0	0	0	0	0	6	0	0	10	0	0	0	5	0	0	5	0	0	0	6
Ireland	0	2	5	6	4	8	6	0	4	6	3	2	1	1	0	3	5	4	3	5	3
Israel	0	1	2	3	1	2	3	0	0	1	1	1	1	2	0	0	2	2	1	1	2
Italy	0	4	5	4	3	2	3	0	3	4	2	1	0	1	0	3	4	3	2	1	2
Kazakhstan	1	58	82	83	85	69	40	2	50	51	34	23	20	19	1	54	67	57	51	41	26
Kyrgyzstan	0	43	72	76	72	71	63	2	41	49	32	27	26	35	1	42	60	54	49	47	46
Latvia	1	15	48	52	70	47	21	0	10	17	20	16	6	5	1	12	33	36	41	23	10
Lithuania	0	14	52	83	96	71	41	0	10	21	21	21	19	15	0	12	36	51	56	41	24
Luxembourg	0	0	9	5	9	8	11	0	7	9	5	0	4	3	0	4	9	5	5	6	6
Malta	0	3	0	8	0	0	4	0	0	0	0	0	0	0	0	2	0	4	0	0	2
Monaco																					
Montenegro	0	0	17	19	30	34	8		6	9	10	9	10	4	0	3	13	14	19	21	6
Netherlands	0	3	2	2	2	2	2	0	2	2	1	0	0	1	0	2	2	2	1	1	1
Norway	0	2	3	1	1	1	0	0	2	2	1	1	0	1	0	2	2	1	1	1	1
Poland	0	3	7	16	22	19	15	0	3	5	5	4	3	10	0	3	6	10	13	10	12
Portugal	1	12	25	33	27	17	14	0	9	13	11	5	3	4	1	10	19	22	16	10	8
Republic of Moldova	1	44	115	150	124	69	20	2	24	42	30	22	12	11	1	35	79	88	69	37	15
Romania	2	45	73	106	120	80	44	2	42	44	30	22	19	25	2	44	59	68	70	47	33
Russian Federation	0	20	53	60	60	43	18	0	13	20	16	12	7	6	0	16	37	37	34	22	10
San Marino																					
Serbia	1	12	12	16	24	17	23	1	11	10	7	6	8	18	1	11	11	11	15	12	20
Slovakia	1	2	2	5	7	11	7	0	1	1	2	1	1	5	0	2	2	3	4	6	6
Slovenia	0	2	3	6	8	6	5	0	4	5	3	1	3	10	0	3	4	4	4	5	8
Spain	1	5	9	9	8	5	6	1	5	7	4	2	1	2	1	5	8	6	5	3	3
Sweden	0	1	3	2	1	0	2	0	2	2	1	0	0	1	0	1	3	2	1	0	2
Switzerland	0	2	3	2	1	2	2	0	2	3	2	1	0	0	0	2	3	2	1	1	1
Tajikistan																					
TFYR Macedonia	0	9	9	17	26	18	7	2	10	6	6	4	7	8	1	10	8	12	15	12	8
Turkey	0	18	21	19	27	26	25	1	11	8	5	4	6	11	0	15	15	12	16	16	17
Turkmenistan	0	26	69	61	55	36	20	1	20	29	22	14	22	17	0	23	49	41	33	29	18
Ukraine	0	25	74	95	85	53	22	0	17	27	21	12	9	10	0	21	50	57	45	28	14
United Kingdom	0	4	6	5	4	3	5	0	4	5	2	2	1	2	0	4	6	4	3	2	3
Uzbekistan	0	19	38	44	48	55	62	1	19	28	20	26	42	57	1	19	33	32	37	48	59
EUR	**0**	**14**	**26**	**27**	**30**	**18**	**12**	**0**	**10**	**12**	**8**	**6**	**5**	**6**	**0**	**12**	**19**	**18**	**18**	**11**	**8**

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 A3.10 **Number of TB cases notified, Europe, 1980–2006**

	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	2006
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	469
Andorra										12	23	24	21	15	24		17	19	8	10	12	10	5	10	7	10	12
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	1 767
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	855
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	5 705
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	5 142
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	1 043
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	1 778
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	3 136
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	1 029
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	36
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	941
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	341
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	422
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	280
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	4 817
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	4 554
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	5 021
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	580
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	1 687
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	13
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	416
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	384
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	4 145
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	23 728
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	6 174
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	1 290
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	2 365
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	33
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	30
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	167
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	1 002
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	276
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	8 017
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	3 218
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	4 990
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	24 295
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	124 689
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	3 146
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	673
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	207
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	7 815
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	489
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	461
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	5 362
TFYR Macedonia													1 602	1 712	728	786	724	693	620	557	641	648	686	653	644	598	561
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	19 629
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	3 223
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	41 265
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	8 157
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	23900
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**	**359 735**
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	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	96

From 1995 on, number shown is all notified new and relapse cases (DOTS and non-DOTS). For notifications including re-treatment cases in years prior to 2006 please see www.eurotb.org. This 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 A3.11 **Case notification rates, Europe, 1980–2006**

	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	2006
Albania	39	35	35	31	34	31	33	29	24	21	20	19			22	20	24	21	22	24	20	18	19	17	17	16	15
Andorra										23	44	44	36	25	38		26	29	12	15	18	15	7	14	10	14	16
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	59
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	10
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	68
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	53
Belgium	27	29	27	22	22	20	19	18	16	17	16	15	13	15	15	14	13	12	12	11	13	13	12	10	11	10	10
Bosnia & Herzegovina	113	111	117	111	115	113	110	106	94	96	95	85	15	18	45	62	65	83	76	79	65	64	44	45	60	54	45
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	41
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	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	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	9
Denmark	8	8	7	7	6	6	6	6	6	6	7	6	7	8	10	9	9	11	10	11	11	9	8	7	7	7	6
Estonia	42	38	38	39	36	35	34	29	30	27	27	26	26	36	43	43	48	53	59	55	58	52	46	41	40	36	31
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	5
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	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	103
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	6
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	5
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	17
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	4
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	10
Israel	7	6	6	6	6	9	6	4	5	4	5	11	7	8	8	7	7	7	11	8	9	9	8	8	8	6	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	7
Kazakhstan	97	92	91	87	81	79	82	82	83	81	66	66	66	64	65	71	89	104	135	166	173	176	184	179	175	169	155
Kyrgyzstan	54	56	54	51	51	52	52	50	51	49	52	57	58	54	60	74	88	110	119	131	125	133	131	121	118	122	117
Latvia	48	45	43	42	41	47	38	36	35	32	34	36	37	39	45	62	72	82	90	79	83	85	77	72	68	61	56
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	69
Luxembourg	19	12	11	11	13	11	12	13	4	12	13	12	6	9	8	8	10	9	10	9	10	7	7	12	7	8	7
Malta	7	8	4	7	4	3	4	4	3	4	4	7	8	7	7	3	7	3	4	6	4	4	6	2	4	5	7
Monaco	4	0	0	0	0	4	7	7	3	3	3	0	3		3	3	0	0	0	9	0	0	0				
Montenegro																										26	28
Netherlands	12	12	11	10	10	9	8	8	9	9	9	9	10	10	12	10	11	9	9	9	8	9	8	8	8	7	6
Norway	12	11	11	10	9	9	8	7	7	6	7	7	7	6	6	5	5	5	6	5	5	6	5	7	6	6	6
Poland	73	67	65	64	61	58	55	52	49	43	42	43	43	44	43	41	40	36	35	32	28	26	26	25	23	21	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	30
Republic of Moldova	69	70	78	69	61	65	71	65	58	52	39	43	42	55	60	67	67	68	62	65	71	88	93	91	122	133	130
Romania	61	61	61	60	57	56	56	58	61	63	70	67	78	89	94	103	107	106	115	117	124	130	136	130	132	121	113
Russian Federation	54	53	51	52	52	45	50	48	46	43	34	34	36	43	47	57	75	80	75	91	95	90	88	85	84	89	87
San Marino											4	4		12	8	8	0	4	0	0	4	0	4	3	0		
Serbia	65	66	65	66	66	63	62	61	56	50	41	44	36	36	34	26	37	37	28	24	27	42	40	37	34	33	32
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	12
Slovenia	59	51	53	50	48	49	43	42	40	40	37	30	33	33	27	27	29	24	23	21	19	18	17	14	12	13	10
Spain	13	15	21	24	26	28	36	25	22	21	20	23	25	24		22	21	24	23	21	20	17	18	17	14	17	18
Sweden	11	11	9	10	9	8	8	6	6	7	7	6	7	7	6	6	6	5	5	5	5	4	4	4	5	6	5
Switzerland	18	19	18	17	15	15	13	15	18	16	19	16	14	13	13	12	11	10	10	10	7	7	8	8	7	7	6
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	83	81
TFYR Macedonia													83	88	37	40	37	35	31	28	32	32	34	32	32	29	28
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	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	66
Ukraine	52	51	49	48	48	47	45	43	40	39	32	32	35	39	40	42	46	56	56	67	67	76	84	78	81	84	89
United Kingdom	19	16	15	14	12	12	12	10	10	11	10	11	11	11	11	11	11	11	11	11	11	10	12	11	12	14	13
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	89
EUR	**44**	**43**	**40**	**39**	**38**	**36**	**36**	**35**	**33**	**32**	**29**	**27**	**29**	**28**	**28**	**33**	**37**	**41**	**40**	**43**	**43**	**42**	**43**	**41**	**40**	**41**	**41**

Rates are per 100 000 population. From 1995 on, number shown is notification rate of new and relapse cases. For notification rates including re-treatment cases in years prior to 2006 please see www.eurotb.org. 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 A3.12 **New smear-positive cases notified, numbers and rates, Europe, 1993–2006**

	Number of cases														Rate (per 100 000 population)													
	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Albania		250	139	173	241	212	168	171	171	225	211	201	196	186		8	4	6	8	7	5	6	6	7	7	6	6	6
Andorra	15	24		8	17	1	4	1	3	2	7	3	5	8	25	38		12	26	2	6	2	4	3	10	4	7	11
Armenia		319	436	327	400	475	576	621	572	511	575	602	581	580		10	14	10	13	15	19	20	19	17	19	20	19	19
Austria			467	442	434	381	323	324	262	220	269	216	234	213			6	5	5	5	4	4	3	3	3	3	3	3
Azerbaijan	499	513	669	990	981	727	763	890	927	1 661	1 161	1 472	1 561	1 454	7	7	9	13	12	9	9	11	11	20	14	18	19	17
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	1 072	15	17	18	21	22	50	27	25	23		10	11	13	11
Belgium	484	427	400	364	434	418	403	409	472	419	362	391	380	343	5	4	4	4	4	4	4	4	5	4	4	4	4	3
Bosnia & Herzegovina			865	927	803	640	786	759	800	526	493	889	640	562			25	27	23	18	21	20	21	14	13	23	16	14
Bulgaria		3 096	1 087	903	1 037	1 325	1 697	2 524	897	1 007	1 254	1 315	1 214	1 307		37	13	11	13	16	21	32	11	13	16	17	16	17
Croatia			1 204	1 228	1 073	1 129	748	0	421	437	438	416	372	396			26	26	23	25	17	0	9	10	10	9	8	9
Cyprus			6	3	19	20	9	4	0	8	14	10	9	8			1	0	3	3	1	1	0	1	2	1	1	1
Czech Republic	548	524	487	586	481	545	449	420	391	329	338	302	308	257	5	5	5	6	5	5	4	4	4	3	3	3	3	3
Denmark	243	120	128	97	114	132	172	171	127	135	143	146	129	123	5	2	2	2	2	2	3	3	2	3	3	3	2	2
Estonia	303	347	369	240	269	299	274	255	212	203	201	203	162	147	20	24	26	17	19	22	20	19	16	15	15	15	12	11
Finland			244	240	186	188	179	205	150	130	138	124	130	84			5	5	4	4	3	4	3	2	3	2	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	1 911	8	6	6	5	4		4	3	4	4	4	3	3	3
Georgia			221	482	595	547	746	601	1 014	987	989	1 311	1 509	1 831			4	10	12	11	16	13	22	21	22	29	34	41
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	1 303	6	5	5	5	4	4	4	0	2	2	2	2	2	2
Greece					285	313	143	235	213	212	234	176	197	210					3	3	1	2	2	2	2	2	2	2
Hungary	1 905	1 357	796	1 066	702	667	660	412	546	556	526	560	423	422	18	13	8	10	7	6	6	4	5	5	5	6	4	4
Iceland		6	2	1	4	2	2	1	3	2	1	2	2	4		2	1	0	1	1	1	0	1	1	0	1	1	1
Ireland				339	123	116	117	138	123	100	141	127	130	133				9	3	3	3	4	3	3	4	3	3	3
Israel	150	129		147	207	221	170	17	172	164	150	91	98	72	3	2		3	4	4	3	0	3	3	2	1	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	1 377		3	2	3	3	4	2	1	2	2	3	2	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	6 205			19	27	28	41	46	60	61	63	58	52	45	41
Kyrgyzstan		681	832	991	1 536	830	1 642	1 296	0	1 587	1 643	1 761	1 972	1 833		15	18	21	33	17	34	26	0	31	32	34	38	35
Latvia	470		504	575	634	668	588	637	661	636	641	582	536	498	18		20	23	26	28	25	27	28	27	28	25	23	22
Lithuania	688		979	1 121	1 200	787	787	776	935	822	912	863	964	1 029	19		27	31	34	22	22	22	27	24	26	25	28	30
Luxembourg				29	31	24		21	11	17	31	20	14	22				7	7	6		5	2	4	7	4	3	5
Malta	13	6	5	5	3	6	9	5	3	5	2	2	5	4	4	2	1	1	1	2	2	1	1	1	1	0	1	1
Monaco				0	0	0	2	0	0	0								0	0	0	6	0	0	0				
Montenegro													64	58													11	10
Netherlands	1 063		575	358	312	254	308	289	307	330	282	360	237	203	7		4	2	2	2	2	2	2	2	2	2	1	1
Norway		86	62	103	100	49	21	37	59	31	52	50	48	46		2	1	2	2	1	0	1	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	2 835	20	10	18	18	9	9	8	8	8	8	8	7	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	1 300		21	20	19	16	20	18	18	20	19	17	14	12	12
Republic of Moldova	615	704	665	219	397	477	609	651	1 060	1 146	1 214	1 536	1 696	1 679	14	16	15	5	9	11	14	16	26	28	31	39	44	44
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	9 814	41	46	46	46	52	49	46	46	51	49	48	50	50	46
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	32 335		20	25	29	28	28	15	19	18	19	20	21	23	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	1 136			14	16	16	17	23	0	4	4	6	12	11	12
Slovakia	882	409	788	760	283	303	246	236	226	202	200	157	162	160	17	8	15	14	5	6	5	4	4	4	4	3	3	3
Slovenia	361	294	303	221	156	157	165	145	139	130	116	89	109	83	19	15	15	11	8	8	8	7	7	7	6	4	5	4
Spain			2 605			1 906		3 423	2 456	3 317	2 876	2 082	2 511	2 006			7			5		9	6	8	7	5	6	5
Sweden	312	106	102	90	94	97	117	118	105	109	109	120	134	106	4	1	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	112	8	7	3	2	2	2	1	2	2	2	1	2	1	2
Tajikistan			1 042	232	373	435	0	434	719	687	0	1 058	1 745	2 051			18	4	6	7	0	7	12	11	0	16	27	31
TFYR Macedonia			319	209	192	179	122	167	164	200	200	200	178	178			16	11	10	9	6	8	8	10	10	10	9	9
Turkey			4 383	2 816	3 439	3 692	4 124	4 315	4 444	0	5 816	5 870	7 450	7 866			7	4	5	6	6	6	6	0	8	8	10	11
Turkmenistan	472		544	557	764	790	964	1 017	1 243	1 254	1 197	1 103	995	1 155	12		13	13	18	18	22	23	27	27	25	23	21	24
Ukraine	8 314	8 471	8 263	7 827	9 533	10 586	10 412	10 738	0	0	12 785	0		14 206	16	17	16	15	19	21	21	22	0	0	27	0		31
United Kingdom	283	270		4 147	844	1 342	797	1 204	946	1 365	1 455	1 693	1 821	1 767	0	0		7	1	2	1	2	2	2	2	3	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	7 211		33	12	14	14	15	16	15	18	19	18	20	21	27
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**	**109 901**	**5**	**10**	**12**	**13**	**12**	**13**	**10**	**11**	**10**	**9**	**12**	**10**	**11**	**12**

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

Azerbaijan

The numbers shown under "DST new cases" and "Re-treatment DST" in table A3.4 include only those cases for whom samples were sent to the supranational laboratory in Germany.

Denmark

Data for Denmark exclude Greenland. A total of 73 TB cases were notified in Greenland for 2006 (128 per 100 000 population). No MDR-TB cases were identified in Greenland.

Italy

Notification data not available for re-treatment cases.

Treatment outcomes were reported by only 5 regions (Emilia-Romagna, Friuli-Venezia Giulia, Marche, Piemonte and Veneto), which together account for 34% of the TB notifications in Italy.

Montenegro

Outcome monitoring is incomplete as reporting system was in pilot phase.

Russian Federation

Number of new smear-positive cases registered under DOTS (shown in table A3.5) is more than number notified for 2005; included are cases registered for treatment in parts of the country which were classified as DOTS for the first time in 2006.

SOUTH-EAST ASIA

WESTERN PACIFIC

South-East Asia

NTP MANAGER (OR EQUIVALENT); PERSON FILLING OUT DATA COLLECTION FORM (IF DIFFERENT)	
Bangladesh	Mohammed Abdul Awal Miah; Roksana Hafiz
Bhutan	Pandup Tshering; Kinzang Namgyal
DPR Korea	Han Man Gap
India	L.S. Chauhan
Indonesia	Carmelia Basri; M. Epid; Sudarman
Maldives	Shameema Hussain
Myanmar	Win Maung; Thandar Lwin
Nepal	Pushpa Malla; Badri Nath Jnawali
Sri Lanka	Chandra Sarukkali
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.

Table A3.1 **Estimated burden of TB, South-East Asia, 1990 and 2006**

	Incidence, 1990				Prevalence, 1990		TB mortality, 1990		Incidence, 2006.								Prevalence, 2006				TB mortality, 2006				HIV prevalence in 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	298 205	264	134 192	119	701 637	621	83 581	74	350 641	225	156	≤ 1	157 773	101	55	≤ 1	609 968	391	78	≤ 1	70 254	45	66	≤ 1	≤ 0.05
Bhutan	1 134	207	510	93	1 338	244	95	17	621	96	2	≤ 1	279	43	≤ 1	≤ 1	620	96	≤ 1	≤ 1	45	7	≤ 1	≤ 1	0.3
DPR Korea	35 810	178	16 115	80	86 802	431	11 790	59	42 147	178	142	≤ 1	18 952	80	50	≤ 1	42 591	180	71	≤ 1	3 370	14	15	≤ 1	0.3
India	1 443 567	168	649 237	75	4 883 882	568	362 424	42	1 932 852	168	23 283	2	867 455	75	8 149	≤ 1	3 444 685	299	11 642	1	325 172	28	6 833	≤ 1	1.2
Indonesia	626 867	343	282 090	154	800 073	438	163 842	90	534 439	234	3 143	1	240 183	105	1 100	≤ 1	578 410	253	1 571	≤ 1	88 113	38	1 078	≤ 1	0.6
Maldives	299	139	134	62	317	147	16	8	136	45	3	≤ 1	61	20	≤ 1	≤ 1	163	54	1	≤ 1	12	4	≤ 1	≤ 1	2.0
Myanmar	68 616	171	30 695	76	164 959	411	19 940	50	82 687	171	2 145	4	36 994	76	751	2	81 614	169	1 073	2	6 054	13	215	≤ 1	2.6
Nepal	46 445	243	20 895	109	119 535	625	9 707	51	48 772	176	702	3	21 877	79	246	≤ 1	67 425	244	351	1	6 365	23	158	≤ 1	1.4
Sri Lanka	10 353	60	4 659	27	18 426	108	1 725	10	11 620	60	18	≤ 1	5 227	27	6	≤ 1	15 422	80	9	≤ 1	1 512	8	5	≤ 1	0.2
Thailand	77 232	142	33 599	62	184 486	340	15 118	28	90 252	142	9 961	16	39 617	62	3 486	5	125 291	197	4 981	8	12 710	20	2 435	4	11
Timor-Leste	4 112	556	1 850	250	8 940	1 208	928	125	6 187	556	≤ 1	≤ 1	2 784	250	≤ 1	≤ 1	8 789	789	≤ 1	≤ 1	1 093	98	≤ 1	≤ 1	≤ 0.05
SEAR	**2 612 643**	**200**	**1 173 978**	**90**	**6 970 394**	**533**	**669 167**	**51**	**3 100 355**	**180**	**39 556**	**2**	**1 391 204**	**81**	**13 844**	**≤≤**	**≤**	**≤**	**≤**						

– indicates no estimate.

* Incidence, prevalence and mortality estimates include patients with HIV. Estimates labelled "HIV+" are estimates of TB in HIV-positive people (all ages). 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 187 for further details. Data can be downloaded from www.who.int/tb

Table A3.2 **Case notifications and case detection rates, DOTS and non-DOTS combined, South-East Asia, 2006**

	Notified TB cases, DOTS and non-DOTS combined															Incidence and case detection rates				Proportions			
					New pulmonary			New extra-	Other	Re-treatment cases					New pulm.	Estimated incidence		Case detection rate		ss+	ss+	Extrapulm.	Re-treat.
	Population	All notified	New and relapse		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	155 991	145 186	145 186	93	101 967	65	24 565	14 436	0	4 218					101 967	350 641	157 773	40	65	81	70	10	3
Bhutan	649	934	917	141	312	48	238	326	0	41	6	11	0	0	370	621	279	141	112	57	34	36	6
DPR Korea	23 708	51 877	44 558	188	18 435	78	19 610	5 012		1 501	2 210	1 186	3 923		18 435	42 147	18 952	102	97	48	41	11	17
India	1 151 751	1 397 965	1 228 827	107	553 851	48	400 680	183 203	1 188	89 905	19 491	76 688	72 959	0	553 851	1 932 852	867 455	59	64	58	45	15	19
Indonesia	228 864	277 589	277 589	121	175 320	77	91 029	7 013	0	4 227					175 320	534 439	240 183	51	73	66	63	3	2
Maldives	300	100	99	33	53	18	16	26	0	4	0	1	0	0	53	136	61	70	87	77	54	26	5
Myanmar	48 379	126 445	122 472	253	40 241	83	42 741	34 495		4 995	2 852	1 121			46 598	82 687	36 994	142	109	48	33	28	7
Nepal	27 641	33 207	32 670	118	14 028	51	9 170	7 089	0	2 383	285	252	0	0	33 207	48 772	21 877	62	64	60	43	22	9
Sri Lanka	19 207	8 946	8 510	44	4 442	23	1 905	1 936		227	72	136		228	5 119	11 620	5 227	71	85	70	52	23	5
Thailand	63 444	58 828	56 230	89	29 081	46	17 607	7 800		1 742	665	772		1 161	29 081	90 252	39 617	60	73	62	52	14	6
Timor-Leste	1 114	3 596	3 586	322	907	81	2 144	503		32	2	8			907	6 187	2 784	57	33	30	25	14	1
SEAR	**1 721 049**	**2 104 673**	**1 920 644**	**112**	**938 637**	**55**	**609 705**	**261839**	**1188**	**109 275**	**25 583**	**80 175**	**76 882**	**1 389**	**964 908**	**3 100 355**	**1 391 204**	**58**	**67**	**61**	**49**	**14**	**14**

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 187 for further details. Data can be downloaded from www.who.int/tb

Table A3.3 **DOTS coverage, case notifications and case detection rates, South-East Asia, 2006**

		TB cases reported from DOTS services													Estimated incidence and case detection rate				Proportions			
	DOTS coverage	New and relapse		New pulmonary ss+		New pulmonary ss- / unk.	New extra-pulmonary	Other new	Re-treatment cases Relapse	After failure	After default	Other re-treat.	Other	New pulm. lab. confirm.	Estimated incidence all forms	Estimated incidence ss+	Case detection rate all new	Case detection rate new ss+	ss+ (% of pulm.)	ss+ (% of new+relapse)	Extrapulm. (% of new+relapse)	Re-treat. (% of new+re-treat.)
	%	number	rate	number	rate	number	number	number	number	number	number	number	number	number	number	number	%	%				
Bangladesh	100	145 186	93	101 967	65	24 565	14 436	0	4 218					101 967	350 641	157 773	40	65	81	70	10	3
Bhutan	90	917	141	312	48	238	326		41	6	11	0	0	370	621	279	141	112	57	34	36	6
DPR Korea	100	44 558	188	18 435	78	19 610	5 012		1 501	2 210	1 186	3 923		18 435	42 147	18 952	102	97	48	41	11	17
India	100	1 228 589	107	553 797	48	400 496	183 203	1 188	89 905	19 491	76 688	72 959	0	553 797	1 932 852	867 455	59	64	58	45	15	19
Indonesia	98	277 589	121	175 320	77	91 029	7 013	0	4 227					175 320	534 439	240 183	51	73	66	63	3	2
Maldives	100	99	33	53	18	16	26	0	4	0	1	0	0	53	136	61	70	87	77	54	26	5
Myanmar	95	122 472	253	40 241	83	42 741	34 495		4 995	2 852	1 121			46 598	82 687	36 994	142	109	48	33	28	7
Nepal	100	32 670	118	14 028	51	9 170	7 089	0	2 383	285	252	0	0	33 207	48 772	21 877	62	64	60	43	22	9
Sri Lanka	98	8 475	44	4 431	23	1 883	1 934		227	72	136		221	5 108	11 620	5 227	71	85	70	52	23	5
Thailand	100	56 230	89	29 081	46	17 607	7 800		1 742	665	772		1 161	29 081	90 252	39 617	60	73	62	52	14	6
Timor-Leste	100	3 586	322	907	81	2 144	503		32	2	8			907	6 187	2 784	57	33	30	25	14	1
SEAR	**100**	**1 920 371**	**112**	**938 572**	**55**	**609 499**	**261 837**	**1 188**	**109 275**	**25 583**	**80 175**	**76 882**	**1 382**	**964 843**	**3 100 355**	**1 391 204**	**58**	**67**	**61**	**49**	**14**	**14**

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 187 for further details. Data can be downloaded from www.who.int/tb

Table A3.4 **Laboratory services, collaborative TB/HIV activities and management of MDR-TB, South-East Asia, 2005–2006**

	Laboratory services, 2006				Collaborative TB/HIV activities								Management of MDR-TB, 2006				
					2005				2006								
	number of labs working with NTP			smear 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	687	3	0	679	0												
Bhutan	29	1	0	1	250	1	0	0	0				0	0	0	0	0
DPR Korea	285			285													
India	11 968	8	8	9 422	29 488	6 411			59 654	8 785			21	0	0	26	21
Indonesia	4 855	41	11	4 855									59				
Maldives	24	1	0	1									1	1	1	4	4
Myanmar	391	2	1	50	2 109	611	305	190	2 626	642	489	282	666			844	652
Nepal	401	3	2	0	0				0				0	0	0	0	0
Sri Lanka	176	1	1	26		2	0	0					16	613	3	336	13
Thailand	937	65	18	864					24 859	6 493	4 188	2 053					
Timor-Leste	19	0	0	19	0		0	0			0	0					
SEAR	**19 772**	**125**	**41**	**16 202**	**31 847**	**7 025**	**305**	**190**	**87 139**	**15 920**	**4 677**	**2 335**	**763**	**614**	**4**	**1 210**	**690**

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 187 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 A3.5 **Treatment outcomes, South-East Asia, 2005 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	84 848	84 848	100	91	1	4	1	2	2	0	91												3 876	73	6	4	2	5	4	5	80
Bhutan	308	340	110	84	7	5	3	1	0	0	91												52	65	10	6	8	2	8	2	75
DPR Korea	17 796	17 796	100	84	5	2	4	2	2	0	89												9 116	70	6	3	12	5	4	0	76
India	506 852	507 204	100	83	2	5	2	7	1	0	86	2 038											224 143	47	24	7	4	16	1	0	71
Indonesia	158 640	158 640	100	83	8	2	1	4	2	0	91												4 812	63	15	3	4	8	7	0	78
Maldives	66	70	106	86	0	6	0	3	6	0	86												8	50	13	0	0	0	0	38	63
Myanmar	36 541	34 859	95	78	7	5	2	5	2	0	85												6 039	59	13	9	6	7	5	0	73
Nepal	14 617	14 617	100	87	1	5	1	3	2	0	88												2 973	81	2	4	6	4	3	0	83
Sri Lanka	4 841	4 841	100	83	3	5	1	6	1	0	86	27											504	67	5	5	2	18	2	1	72
Thailand	29 762	29 919	101	70	5	8	2	7	3	6	75												2 285	52	6	12	5	7	4	13	58
Timor-Leste	1 035	1 035	100	61	21	5	1	11	2	0	82												56	96	0	2	0	2	0	0	96
SEAR	**855 306**	**854 169**	**100**	**83**	**4**	**4**	**2**	**6**	**1**	**0**	**87**	**2 065**	**0**	**0**							**100**		**253 864**	**49**	**22**	**7**	**5**	**15**	**2**	**0**	**72**

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 2005 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 2005 is used, or the sum of outcomes if the latter is greater. Data can be downloaded from www.who.int/tb

Table A3.6 **Re-treatment outcomes, South-East Asia, 2005 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	3 876	73	6	4	2	5	4	5	80																		
Bhutan	41	66	10	7	7	2	7	0	76	7	71	14	0		0	0	14	86	4	50	0	0	0	0		50	50
DPR Korea	1 364	73	6	3	11	4	3	0	79	1 524	66	7	4	14	5	4	0	73	1 018	68	7	3	13	5	4	0	75
India	75 278	67	6	7	5	14	1	0	73	17 783	52	7	8	14	18	1	0	59	72 298	59	8	8	4	19	2	0	67
Indonesia	4 446	65	14	3	3	8	7	0	79																		
Maldives	5	80	20	0	0	0	0	0	100	0	0	0	0	0	0	0		0	2	0	0	0	0	0	0	100	0
Myanmar	4 458	65	11	9	5	6	4	0	76	1 581	44	21	10	10	10	6	0	65									
Nepal	2 344	84	2	3	6	2	3	0	86	316	66	1	9	16	5	2	1	67									
Sri Lanka	263	76	5	5	1	11	1	1	81	55	65	4	4	7	9	5	5	69	186	55	5	5	2	31	1	1	60
Thailand	1 790	52	6	12	4	6	4	17	57	495	55	6	13	9	11	6	0	61									
Timor-Leste																											
SEAR	**93 865**	**67**	**7**	**7**	**5**	**12**	**2**	**1**	**74**	**21 761**	**52**	**8**	**8**	**14**	**16**	**2**	**0**	**61**	**73 508**	**59**	**8**	**8**	**4**	**19**	**2**	**0**	**67**

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 2005 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 A3.7 **DOTS treatment success and case detection rates, South-East Asia, 1994–2006**

	DOTS new smear-positive treatment success (%)												DOTS new smear-positive case detection rate (%)											
	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Bangladesh	73	71	72	78	80	81	83	84	84	85	90	91	6	14	18	23	23	24	26	30	35	40	54	65
Bhutan	71	97	96	85	90	85	90	93	86	90	83	91	99	87	83	81	96	108	114	118	119	120	107	112
DPR Korea					91	94	91	91	88	88	89	89					2	25	52	77	88	98	94	97
India	83	79	79	82	84	82	84	85	87	86	86	86	0	1	1	2	7	12	23	30	43	55	59	64
Indonesia	94	91	81	54	58	50	87	86	86	87	90	91	1	4	7	12	19	20	21	30	37	52	65	73
Maldives	95	97	93	94	94	94	97	97	95	91	95	86	105	102	96	94	99	77	74	79	95	97	103	87
Myanmar		66	79	82	82	81	82	81	81	81	84	85		26	27	29	33	49	58	68	76	86	100	109
Nepal			85	87	89	87	86	88	86	87	87	88		5	11	16	44	57	58	61	66	67	67	64
Sri Lanka	77	79	80	76	76	84	77	80	81	81	85	86	62	60	70	75	77	67	72	71	71	76	93	85
Thailand			78	62	68	77	69	75	74	73	74	75		0	5	22	40	47	74	67	73	73	76	73
Timor-Leste								73	81	81	80	82								49	43	40	39	33
SEAR	**80**	**74**	**77**	**72**	**72**	**73**	**83**	**84**	**85**	**85**	**87**	**87**	**1**	**4**	**5**	**8**	**14**	**18**	**27**	**34**	**44**	**55**	**62**	**67**

Treatment success, sum of cured and completed; DOTS new smear-positive case detection rate, notified new smear-positive 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 A3.8 **New smear-positive case notification by age and sex, absolute numbers, DOTS and non-DOTS, South-East Asia, 2006**

	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+	
Bangladesh	607	9 937	12 166	12 889	13 378	10 283	9 513	850	8 164	8 048	6 395	5 020	2 982	1 735	1 457	18 101	20 214	19 284	18 398	13 265	11 248	2.1
Bhutan	0	65	55	22	20	12	11	5	61	27	10	9	6	9	5	126	82	32	29	18	20	1.5
DPR Korea	157	1 498	2 393	3 219	2 301	1 479	591	87	725	1 373	2 051	1 373	791	397	244	2 223	3 766	5 270	3 674	2 270	988	1.7
India	3 566	68 346	79 037	82 939	71 621	49 320	28 716	6 963	47 702	47 420	31 128	18 870	11 752	6 417	10 529	116 048	126 457	114 067	90 491	61 072	35 133	2.3
Indonesia	899	16 285	22 752	20 332	20 059	15 869	7 348	985	14 377	17 628	14 421	12 376	8 786	3 203	1 884	30 662	40 380	34 753	32 435	24 655	10 551	1.4
Maldives	0	8	9	3	4	3	6	0	6	3	4	3	2	2	0	14	12	7	7	5	8	1.7
Myanmar	113	3 572	6 328	6 536	5 143	2 988	2 033	171	2 453	3 338	2 820	2 282	1 448	1 016	284	6 025	9 666	9 356	7 425	4 436	3 049	2.0
Nepal	125	1 914	1 651	1 640	1 688	1 695	808	179	1 164	1 001	788	613	519	243	304	3 078	2 652	2 428	2 301	2 214	1 051	2.1
Sri Lanka	8	342	496	600	816	563	402	13	301	248	178	189	157	129	21	643	744	778	1 005	720	531	2.7
Thailand	43	1 276	3 732	4 664	4 055	3 084	3 732	65	884	1 542	1 379	1 349	1 287	1 989	108	2 160	5 274	6 043	5 404	4 371	5 721	2.4
Timor-Leste	1	128	115	103	75	48	49	8	102	76	82	63	34	23	9	230	191	185	138	82	72	1.3
SEAR	**5 519**	**103 371**	**128 734**	**132 947**	**119 160**	**85 344**	**53 209**	**9 326**	**75 939**	**80 704**	**59 256**	**42 147**	**27 764**	**15 163**	**14 845**	**179 310**	**209 438**	**192 203**	**161 307**	**113 108**	**68 372**	**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 187 for further details. Data can be downloaded from www.who.int/tb

Table A3.9 **New smear-positive case notification rates by age and sex, DOTS and non-DOTS, South-East Asia, 2006**

	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	61	96	131	197	265	354	3	53	68	69	79	77	59	3	57	82	101	140	171	200
Bhutan	0	82	93	56	72	69	72	5	87	57	31	38	40	59	2	84	77	45	56	55	65
DPR Korea	5	78	135	159	180	138	79	3	39	80	105	108	68	30	4	59	108	132	144	102	47
India	2	59	84	113	127	149	104	4	45	55	46	36	36	21	3	52	70	81	83	93	60
Indonesia	3	75	115	125	173	237	128	3	68	89	89	109	119	45	3	72	102	107	141	175	82
Maldives	0	21	36	17	35	49	100	0	17	13	26	26	33	36	0	19	25	21	31	41	69
Myanmar	2	75	147	195	208	225	167	3	53	77	81	86	99	68	2	64	112	137	145	159	112
Nepal	2	67	83	121	173	279	185	3	43	49	50	55	72	42	3	55	65	83	110	166	103
Sri Lanka	0	19	37	43	65	69	70	1	17	17	12	15	18	19	0	18	27	28	40	43	42
Thailand	1	25	76	98	93	117	173	1	18	30	26	28	46	68	1	22	52	60	60	80	113
Timor-Leste	0	113	159	207	196	219	334	3	95	115	153	166	140	147	2	104	138	179	181	177	238
SEAR	**2**	**61**	**91**	**118**	**140**	**170**	**129**	**4**	**48**	**61**	**55**	**52**	**54**	**32**	**3**	**54**	**76**	**87**	**97**	**112**	**77**

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 A3.10 **Number of TB cases notified, South-East Asia, 1980–2006**

	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	2006
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	145 186
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	917
DPR Korea									0									11 050	1 152	12 287	34 131	29 284	40 159	41 810	44 602	42 722	44 558
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	1 228 827
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	277 589
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	99
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	122 472
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	32 670
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	8 510
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	56 230
Timor-Leste	0																						2 760	2 760	3 716	3 767	3 586
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	1 920 644
Number reporting	10	9	9	9	9	9	9	8	10	9	9	9	8	9	9	9	9	10	10	10	10	10	11	11	11	11	11
% reporting	91	82	82	82	82	82	82	73	91	82	82	82	73	82	82	82	82	91	91	91	91	91	130	100	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 A3.11 **Case notification rates, South-East Asia, 1980–2006**

	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	2006
Bangladesh	45	47	53	55	47	42	44	43	41	41	43	48	27	45	39	45	49	48	54	58	54	54	57	60	65	80	93
Bhutan	364	612	162	223	193	223	319	118	212	281	211	183	26	21	226	256	250	234	244	216	204	181	184	169	159	158	141
DPR Korea																		50	5	54	149	127	173	179	190	181	188
India	102	109	128	146	147	152	162	174	177	179	177	177	125	118	119	128	133	114	109	119	107	102	98	98	102	102	107
Indonesia	17	21	21	20	20	11	10		55	59	41	33	52	33	26	18	12	11	20	33	40	43	71	79	94	113	121
Maldives	46	69	66	83	69	50	59	59	42	97	70	55	40	74	103	93	84	67	67	57	48	50	44	48	41	41	33
Myanmar	38	37	35	31	31	29	29	31	24	28	31	37	41	45	37	42	51	39	33	43	67	92	122	161	203	223	253
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	118
Sri Lanka	42	41	48	43	40	37	41	39	37	38	39	36	39	38	34	33	29	36	37	38	45	40	47	47	45	48	44
Thailand	98	104	100	133	138	153	101	99	94	83	86	80	86	88	84	79	69	51	27	49	56	81	80	88	88	92	89
Timor-Leste																							308	289	367	353	322
SEAR	**79**	**85**	**97**	**110**	**110**	**112**	**117**	**124**	**133**	**135**	**131**	**131**	**97**	**93**	**92**	**97**	**100**	**88**	**84**	**95**	**90**	**89**	**92**	**94**	**101**	**105**	**112**

Rates are per 100 000 population. From 1995 on, number shown is notification rate of new and relapse 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 A3.12 **New smear-positive cases notified, numbers and rates, South-East Asia, 1993–2006**

	Number of cases													Rate (per 100 000 population)											
	1993	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**
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	101 967	16	1	16	23	25	28	28	28	29	32	36	42	55	65
Bhutan		352	367	308	284	270	315	347	359	364	360	356	308	312		69	72	61	55	51	58	62	63	62	59	57	48	48
DPR Korea					3 980	403	5 073	16 440	14 429	18 576	17 392	18 479	17 796	18 435					18	2	22	72	62	80	74	79	75	78
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	553 851	25	24	28	30	28	28	34	33	36	37	39	44	45	48
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	175 320	33	26	16	6	10	16	24	25	25	35	42	58	70	77
Maldives	126	125	114	106	95	88	88	65	59	60	68	66	66	53	53	52	46	42	37	33	33	24	21	21	24	23	22	18
Myanmar		946	8 681	9 716	9 695	10 089	11 458	17 254	21 161	24 162	27 448	31 408	36 541	40 241		2	20	22	22	22	25	38	46	52	58	66	76	83
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	14 028	32	49	40	47	50	48	56	56	55	54	55	55	54	51
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	4 442	19	19	17	16	19	20	21	23	23	23	23	23	25	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	29 081		36	35	29	22	13	25	29	46	41	46	45	47	46
Timor-Leste										1 090	1 027	1 014	1 035	907										122	108	100	97	81
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**	**938 637**	**23**	**22**	**25**	**25**	**25**	**25**	**31**	**32**	**35**	**37**	**41**	**47**	**51**	**55**

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

India

The population estimate used by the NTP (1114 million) is lower than that of the United Nations Population Division (1151 million). Using the smaller population estimate gives a notification rate for new smear-positive cases of 50 per 100 000 population, and a smear-positive case detection rate of 66%.

WESTERN PACIFIC

Western Pacific

NTP MANAGER (OR EQUIVALENT); PERSON FILLING OUT DATA COLLECTION FORM (IF DIFFERENT)	
American Samoa	Faatuai Faoa
Australia	Krissa O'Neil; Paul Roche
Brunei Darussalam	Hjh Kalsom Binti Abdul Latif; Bheemayya Badesab
Cambodia	Mao Tan Eang; Tieng Sivanna
China	Wang Lixia; Cheng Shiming
China; Hong Kong SAR	Cheuk-ming Tam
China; Macao SAR	Chou Kuok Hei
Cook Islands	Ngapoko Short; Tae Nootutai
Fiji	Joe Koroivueta
French Polynesia	Axel Wiegandt
Guam	Cecilia Teresa T. Arciaga
Japan	Satoru Miyake; Seiya Kato; Nobukatsu Ishikawa
Kiribati	Taketiau Beiriki; Monica Timan; Sno Bereka Reider
Lao PDR	Phannasinh Sylavanh; Phonenaly Chittamany
Malaysia	Abdul Rasid bin Kasri; Fuad bin Hashim
Marshall Islands	Kenner Briand; Risa J. Bukbuk
Micronesia	Mayleen Jack Ekiek
Mongolia	D. Khandaasuren; Naranbat Nymadawa; Tseveen Tserenbaljid
Nauru	Isabella Amwano
New Caledonia	Bernard Rouchon; Oksana Segur
New Zealand	Alison Roberts; Ingrid Hamilton
Niue	Kara Okesene Gafa; Minemaligi Pulu
Northern Mariana Is	Richard Brostrom; Susan Schorr
Palau	Henrietta Merei
Papua New Guinea	Paul K. Aia; Rajendra Yadav
Philippines	Rosalind Vianzon; Anna Marie Celina Garfin; Arlene Rivera
Rep. Korea	Jeoum Ja Kim; Hee Jin Kim
Samoa	Siniva Sinclair; Serafi Moa
Singapore	Wang Yee Tang; Khin Mar Kyi Win
Solomon Islands	Noel Itogo
Tokelau	Tekie Iosefa; Faimanifo M. Peseta
Tonga	Louise Fonua; Saia Penitani
Tuvalu	Nese Ituaso Conway
Vanuatu	Markleen Tagaro
Viet Nam	Dinh Ngoc Sy
Wallis & Futuna	

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.

Table A3.1 **Estimated burden of TB, Western Pacific, 1990 and 2006**

	Incidence, 1990				Prevalence, 1990		TB mortality, 1990		Incidence, 2006.								Prevalence, 2006				TB mortality, 2006				HIV prevalence in 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	28	1	3	6	9	–	–	3	4	–	–	8	12	–	–	≤ 1	≤ 1	–	–	–
Australia	1 120	7	502	3	1 140	7	112	≤ 1	1 329	6	33	≤ 1	595	3	12	≤ 1	1 341	7	17	≤ 1	133	≤ 1	3	≤ 1	2.5
Brunei Darussalam	193	75	86	33	301	117	35	14	317	83	28	7	140	37	10	3	377	99	14	4	43	11	7	2	8.9
Cambodia	56 806	586	24 707	255	88 702	915	11 549	119	70 949	500	6 841	48	31 243	220	2 394	17	94 433	665	3 420	24	13 054	92	2 279	16	9.6
China	1 338 563	116	602 288	52	3 695 881	322	275 833	24	1 311 184	99	4 135	≤ 1	589 619	45	1 447	≤ 1	2 658 377	201	2 068	≤ 1	200 820	15	1 170	≤ 1	0.3
China, Hong Kong SAR	5 355	94	2 410	42	5 475	96	461	8	4 433	62	–	–	1 995	28	–	–	4 533	64	–	–	381	5	–	–	–
China, Macao SAR	258	69	116	31	272	73	27	7	283	59	–	–	127	27	–	–	283	59	–	–	21	4	–	–	–
Cook Islands	4	22	2	10	7	39	≤ 1	3	2	16	–	–	≤ 1	7	–	–	3	24	–	–	≤ 1	3	–	–	–
Fiji	303	42	136	19	453	63	49	7	184	22	≤ 1	≤ 1	83	10	≤ 1	≤ 1	254	30	≤ 1	≤ 1	25	3	≤ 1	≤ 1	0.3
French Polynesia	145	74	65	33	290	148	30	15	68	26	–	–	31	12	–	–	75	29	–	–	9	3	–	–	–
Guam	69	51	31	23	137	103	14	11	64	37	–	–	29	17	–	–	83	49	–	–	10	6	–	–	–
Japan	58 085	47	26 123	21	76 348	62	7 033	6	28 330	22	118	≤ 1	12 736	10	41	≤ 1	37 490	29	59	≤ 1	3 486	3	13	≤ 1	0.4
Kiribati	369	513	166	231	834	1 162	83	115	348	372	–	–	157	168	–	–	376	402	–	–	42	45	–	–	–
Lao PDR	7 283	179	3 277	80	19 386	476	1 533	38	8 779	152	161	3	3 934	68	57	≤ 1	16 846	292	81	1	1 368	24	54	≤ 1	1.8
Malaysia	21 625	119	9 691	54	34 805	192	3 897	22	26 877	103	2 964	11	11 798	45	1 037	4	32 554	125	1 482	6	4 515	17	857	3	11.0
Marshall Islands	143	302	64	136	324	685	32	68	127	220	–	–	57	99	–	–	140	241	–	–	16	28	–	–	–
Micronesia	182	188	82	85	301	313	32	33	112	101	–	–	50	45	–	–	121	109	–	–	14	12	–	–	–
Mongolia	4 880	220	2 196	99	12 615	569	1 147	52	4 893	188	7	≤ 1	2 201	85	2	≤ 1	4 962	191	4	≤ 1	398	15	≤ 1	≤ 1	0.1
Nauru	13	146	6	66	30	330	3	33	11	106	–	–	5	48	–	–	14	134	–	–	2	15	–	–	–
New Caledonia	156	91	70	41	196	114	22	13	63	27	–	–	28	12	–	–	83	35	–	–	9	4	–	–	–
New Zealand	346	10	155	5	352	10	35	1	352	9	4	≤ 1	158	4	2	≤ 1	358	9	2	≤ 1	35	≤ 1	≤ 1	≤ 1	1.3
Niue	1	59	≤ 1	26	3	133	≤ 1	13	≤ 1	43	–	–	≤ 1	19	–	–	1	85	–	–	≤ 1	9	–	–	–
Northern Mariana Islands	45	103	20	46	102	233	9	21	61	75	–	–	28	34	–	–	74	90	–	–	8	10	–	–	–
Palau	11	70	5	32	13	89	≤ 1	6	10	51	–	–	5	23	–	–	10	51	–	–	≤ 1	4	–	–	–
Papua New Guinea	10 307	250	4 636	112	32 639	790	2 803	68	15 473	250	618	10	6 901	111	216	3	31 830	513	309	5	3 006	48	164	3	4.0
Philippines	206 099	337	92 741	151	501 677	819	48 946	80	247 740	287	151	≤ 1	111 468	129	53	≤ 1	372 841	432	75	≤ 1	38 995	45	49	≤ 1	0.1
Rep. of Korea	70 946	165	31 918	74	94 666	221	8 024	19	42 359	88	314	≤ 1	19 030	40	110	≤ 1	59 219	123	157	≤ 1	4 790	10	34	≤ 1	0.7
Samoa	51	32	23	14	71	44	8	5	36	19	–	–	16	9	–	–	47	25	–	–	5	3	–	–	–
Singapore	1 493	50	671	22	1 560	52	169	6	1 128	26	31	≤ 1	505	12	11	≤ 1	1 113	25	15	≤ 1	98	2	3	≤ 1	2.7
Solomon Islands	915	292	412	131	2 072	661	205	65	655	135	–	–	295	61	–	–	939	194	–	–	111	23	–	–	–
Tokelau	≤ 1	56	≤ 1	25	2	127	≤ 1	9	≤ 1	56	–	–	≤ 1	25	–	–	2	112	–	–	≤ 1	12	–	–	–
Tonga	32	34	14	15	51	54	6	6	24	25	–	–	11	11	–	–	34	34	–	–	3	3	–	–	–
Tuvalu	48	508	22	229	108	1 150	10	106	31	295	–	–	14	133	–	–	53	504	–	–	6	55	–	–	–
Vanuatu	140	94	63	42	318	213	32	21	128	58	–	–	58	26	–	–	144	65	–	–	17	8	–	–	–
Viet Nam	133 986	202	60 239	91	293 649	444	25 750	39	148 918	173	7 416	9	66 271	77	2 596	3	193 946	225	3 708	4	19 819	23	1 910	2	5.0
Wallis & Futuna	9	63	4	28	20	143	2	14	7	46	–	–	3	21	–	–	9	60	–	–	1	7	–	–	–
WPR	**1 919 985**	**127**	**862 944**	**57**	**4 864 814**	**322**	**387 894**	**26**	**1 915 285**	**109**	**22 823**	**1**	**859 596**	**49**	**7 988**	**≤ 1**	**3 512 972**	**199**	**11 412**	**≤ 1**	**291 240**	**17**	**6 545**	**≤ 1**	**1.2**

– indicates no estimate.

* Incidence, prevalence and mortality estimates include patients with HIV. Estimates labelled "HIV+" are estimates of TB in HIV-positive people (all ages). 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 187 for further details. Data can be downloaded from www.who.int/tb

Table A3.2 Case notifications and case detection rates, DOTS and non-DOTS combined, Western Pacific, 2006

	Notified TB cases, DOTS and non-DOTS combined															Incidence and case detection rates				Proportions			
					New pulmonary			New extra-	Other	Re-treatment cases					New pulm.	Estimated incidence		Case detection rate		ss+	ss+	Extrapulm.	Re-treat.
	Population	All notified	New and relapse		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	4	4	6	3	5		1							3	6	3	69	115	100	75	25	
Australia	20 530	1 203	1 159	6	269	1	405	451	2	32	0	4	36	4	602	1 329	595	85	45	40	23	39	6
Brunei Darussalam	382	202	202	53	128	34	15	35	12	12					144	317	140	60	91	90	63	17	6
Cambodia	14 197	35 466	34 660	244	19 294	136	6 875	7 800		691	71	26	709		19 294	70 949	31 243	48	62	74	56	23	4
China	1 320 864	1 011 388	940 889	71	468 291	35	382 492	38 294	4 286	47 526	3 003	3 800	23 689	40 007	468 291	1 311 184	589 619	68	79	55	50	4	8
China, Hong Kong SAR	7 132	5 773	5 356	75	1 547	22	2 900	699	0	210	0	13	404	0	3 236	4 433	1 995	116	78	35	29	13	11
China, Macao SAR	478	437	374	78	144	30	174	45	0	11	0	4	20	39	281	283	127	128	113	45	39	12	9
Cook Islands	14	1	1	7	0	0	0	1	0	0	0	0	0	0	0	2	1	47	0			100	
Fiji	833	114	114	14	73	9	22	18	0	1	0	0	0	0	73	184	83	61	88	77	64	16	1
French Polynesia	259	69	69	27	24	9	28	15	0	2	0	0	0	0	51	68	31	98	78	46	35	22	3
Guam	171	44	44	26	21	12	15	8	0	0	0	0	0	0	21	64	29	69	73	58	48	18	
Japan	127 953	26 384	25 304	20	10 159	8	9 098	5 203		844			1 080		10 159	28 330	12 736	86	80	53	40	21	7
Kiribati	94	379	378	404	129	138	121	124		4	0	0	1	0	129	348	157	107	82	52	34	33	1
Lao PDR	5 759	3 994	3 958	69	3 041	53	457	325	0	135	18	18	0		3 183	8 779	3 934	44	77	87	77	8	4
Malaysia	26 114	16 665	16 051	61	9 414	36	4 336	1 920	0	381	23	164	427		15 311	26 877	11 798	58	80	68	59	12	6
Marshall Islands	58	148	138	238	45	78	43	41		9			9	1	45	127	57	101	79	51	33	30	12
Micronesia	111	113	104	94	41	37	37	23	0	3	3	0	6	0	54	112	50	90	82	53	39	22	11
Mongolia	2 605	5 216	5 049	194	2 129	82	724	1 922	0	274	91	35	41	0	2 129	4 893	2 201	98	97	75	42	38	8
Nauru	10	12	12	118	2	20	4	4	2	0	0	0	0	0	2	11	5	112	42	33	17	33	
New Caledonia	238	50	48	20	9	4	22	10	0	7	0	0	0	2	27	63	28	65	32	29	19	21	15
New Zealand	4 140	355	344	8	97	2	103	105	30	9	0	0	11	0	156	352	158	95	61	49	28	31	6
Niue	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0				
Northern Mariana Islands	82	51	51	62	15	18	32	4	0	0	0	0	0	0	18	61	28	83	54	32	29	8	
Palau	20	12	12	59	6	30	2	4	0	0	0	0	0	0	6	10	5	116	129	75	50	33	
Papua New Guinea	6 202	13 532	12 620	203	1 948	31	5 969	4 575		128			912		2 076	15 473	6 901	81	28	25	15	36	8
Philippines	86 264	148 217	147 305	171	85 740	99	55 964	1 445	0	4 156	74	52	786	0	86 308	247 740	111 468	58	77	61	58	1	3
Rep. of Korea	48 050	46 284	37 861	79	11 513	24	18 804	5 044		2 500	147	356	3 699	4 221	16 584	42 359	19 030	83	60	38	30	13	16
Samoa	185	26	25	13	13	7	8	2	0	2	1	0	0	0	13	36	16	64	80	62	52	8	12
Singapore	4 382	1 420	1 314	30	538	12	525	183	0	68	4	9	83	10	889	1 128	505	110	107	51	41	14	12
Solomon Islands	484	371	371	77	124	26	168	74	0	5	0	0	0	0	124	655	295	56	42	42	33	20	1
Tokelau	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0				
Tonga	100	18	18	18	14	14	3	1	0	0	0	0	0	0	15	24	11	74	127	82	78	6	
Tuvalu	10	9	9	86	4	38	3	2	0	0	0	0	0	0	4	31	14	29	29	57	44	22	
Vanuatu	221	132	126	57	42	19	37	47	0	0	1	1	0	4	42	128	58	98	73	53	33	37	2
Viet Nam	86 206	98 284	97 363	113	56 437	65	16 645	17 711		6 570	558	363			56 437	148 918	66 271	61	85	77	58	18	8
Wallis & Futuna	15															7	3						
WPR	**1 764 231**	**1 416 373**	**1 331 333**	**75**	**671 254**	**38**	**506 031**	**86136**	**4332**	**63 580**	**3 994**	**4 845**	**31 913**	**44 288**	**685 707**	**1 915 285**	**859 596**	**66**	**78**	**57**	**50**	**6**	**8**

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 187 for further details. Data can be downloaded from www.who.int/tb

Table A3.3 **DOTS coverage, case notifications and case detection rates, Western Pacific, 2006**

		TB cases reported from DOTS services													Estimated incidence and case detection rate				Proportions			
	DOTS coverage	New and relapse		New pulmonary ss+		New pulmonary ss- / unk.	New extra-pulmonary	Other new	Re-treatment cases Relapse	After failure	After default	Other re-treat.	Other	New pulm. lab. confirm.	Estimated incidence all forms	Estimated incidence ss+	Case detection rate all new	Case detection rate new ss+	ss+ (% of pulm.)	ss+ (% of new+relapse)	Extrapulm. (% of new+relapse)	Re-treat. (% of new+re-treat.)
	%	number	rate	number	rate	number	number	number	number	number	number	number	number	number	number	number	%	%				
American Samoa	100	4	6	3	5		1							3	6	3	69	115	100	75	25	
Australia	97	1 053	5	238	1	361	423	1	30	0	4	36	4	527	1 329	595	77	40	40	23	40	6
Brunei Darussalam	100	202	53	128	34	15	35	12	12					144	317	140	60	91	90	63	17	6
Cambodia	100	34 660	244	19 294	136	6 875	7 800		691	71	26	709		19 294	70 949	31 243	48	62	74	56	23	4
China	100	940 889	71	468 291	35	382 492	38 294	4 286	47 526	3 003	3 800	23 689	40 007	468 291	1 311 184	589 619	68	79	55	50	4	8
China, Hong Kong SAR	100	3 785	53	1 116	16	2 045	482	0	142	0	12	303	0	2 207	4 433	1 995	82	56	35	29	13	11
China, Macao SAR	100	374	78	144	30	174	45	0	11	0	4	20		281	283	127	128	113	45	39	12	9
Cook Islands	80	1	7	0	0	0	1	0	0	0	0	0	0	0	2	1	47	0			100	
Fiji	100	114	14	73	9	22	18	0	1	0	0	0	0	73	184	83	61	88	77	64	16	1
French Polynesia	100	69	27	24	9	28	15	0	2	0	0	0	0	51	68	31	98	78	46	35	22	3
Guam	100	44	26	21	12	15	8	0	0	0	0	0	0	21	64	29	69	73	58	48	18	
Japan	99	25 060	20	10 068	8	9 012	5 143		837			1 070		10 068	28 330	12 736	86	79	53	40	21	7
Kiribati	100	378	404	129	138	121	124		4	0	0	1	0	129	348	157	107	82	52	34	33	1
Lao PDR	100	3 958	69	3 041	53	457	325		135	18	18			3 183	8 779	3 934	44	77	87	77	8	4
Malaysia	100	16 051	61	9 414	36	4 336	1 920	0	381	23	164	427		15 311	26 877	11 798	58	80	68	59	12	6
Marshall Islands	100	138	238	45	78	43	41		9			9	1	45	127	57	101	79	51	33	30	12
Micronesia	98	104	94	41	37	37	23	0	3	3	0	6	0	54	112	50	90	82	53	39	22	11
Mongolia	100	5 049	194	2 129	82	724	1 922	0	274	91	35	41	0	2 129	4 893	2 201	98	97	75	42	38	8
Nauru	100	12	118	2	20	4	4	2	0	0	0	0	0	2	11	5	112	42	33	17	33	
New Caledonia	100	48	20	9	4	22	10	0	7	0	0	0	2	27	63	28	65	32	29	19	21	15
New Zealand	100	344	8	97	2	103	105	30	9	0	0	11	0	156	352	158	95	61	49	28	31	6
Niue	100	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0				
Northern Mariana Islands	100	51	62	15	18	32	4	0	0	0	0	0	0	18	61	28	83	54	32	29	8	
Palau	100	12	59	6	30	2	4	0	0	0	0	0	0	6	10	5	116	129	75	50	33	
Papua New Guinea	40	8 165	132	1 481	24	3 241	3 315		128					1 609	15 473	6 901	52	21	31	18	41	2
Philippines	100	147 305	171	85 740	99	55 964	1 445	0	4 156	74	52	786	0	86 308	247 740	111 468	58	77	61	58	1	3
Rep. of Korea	100	9 982	21	3 431	7	5 442	145		964	0	95	950	969	4 892	42 359	19 030	21	18	39	34	1	18
Samoa	100	25	13	13	7	8	2	0	2	1	0	0	0	13	36	16	64	80	62	52	8	12
Singapore	100	1 314	30	538	12	525	183	0	68	4	9	83	10	889	1 128	505	110	107	51	41	14	12
Solomon Islands	100	371	77	124	26	168	74	0	5	0	0	0	0	124	655	295	56	42	42	33	20	1
Tokelau	0														1	0						
Tonga	100	18	18	14	14	3	1	0	0	0	0	0	0	15	24	11	74	127	82	78	6	
Tuvalu	100	9	86	4	38	3	2	0	0	0	0	0	0	4	31	14	29	29	57	44	22	
Vanuatu	100	126	57	42	19	37	47	0	0	1	1	0	4	42	128	58	98	73	53	33	37	2
Viet Nam	100	97 363	113	56 437	65	16 645	17 711		6 570	558	363			56 437	148 918	66 271	61	85	77	58	18	8
Wallis & Futuna															7	3						
WPR	**100**	**1 297 078**	**74**	**662 152**	**38**	**488 956**	**79 672**	**4 331**	**61 967**	**3 847**	**4 583**	**28 141**	**40 997**	**672 353**	**1 915 285**	**859 596**	**64**	**77**	**58**	**51**	**6**	**7**

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 187 for further details. Data can be downloaded from www.who.int/tb

Table A3.4 **Laboratory services, collaborative TB/HIV activities and management of MDR-TB, Western Pacific, 2005–2006**

	Laboratory services, 2006				Collaborative TB/HIV activities								Management of MDR-TB, 2006				
					2005				2006								
	number of labs working with NTP			smear labs	TB pts		HIV+	HIV+	TB pts		HIV+	HIV+					
	smear	culture	DST	included in EQA	tested for HIV	TB pts HIV-positive	TB pts CPT	TB pts ART	tested for HIV	TB pts HIV-positive	TB pts CPT	TB pts ART	Lab-confirmed MDR	DST in new cases	MDR in new cases	Re-treatment DST	Re-treatment MDR
American Samoa					0												
Australia	127	33	6	127	448	22	2	0	439	22	3	1	27	951	17	69	10
Brunei Darussalam	1	1		1	163	2	0	0	202	1							
Cambodia	186	3	1	186	1 044	86			3 547	342	239	120	0	0	0	0	0
China	3 010	360	90	2 770					1 350	18	26	60	2	0	0	10	2
China, Hong Kong SAR	1	1	1	1	4 209	35	17	19	4 511	33	19	15	35	3 338	27	388	8
China, Macao SAR	8	1	1	1	378	1	0	1	398	5	0	2	7	251	7	27	0
Cook Islands	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Fiji	4	1	0	4	132	1	0	0	114	3	2	2	0	43	0	1	0
French Polynesia	4	2	2	0	30	0	0	0	26	0	0	0	0	40	0	2	0
Guam	3	2	2	3	46	0	0	0	40	0	0	0	1	34	1	0	0
Japan																	
Kiribati	1	0	0	0	44	2	0	0									
Lao PDR	155	0	0	135					404	51							
Malaysia	241	1	1		11 661	1 468			13 039	1 438			42				
Marshall Islands					86	0			103	0			2	38		3	
Micronesia	5	0	0	4	7	0	0	0	55	0	0	0	2	21	2	2	2
Mongolia	36	1	1	36	1	1	1	1	1	1	1	1	98	48	9	250	89
Nauru	2	2			0	0	0	0	0		0	0	0	0	0	0	0
New Caledonia	3	3	1	1	21	0	0	0	25	0	0	0	1	41	1	0	0
New Zealand	10	10	3	10	140	8			129	10			1	250	1	16	0
Niue					0	0	0	0	0	0	0	0	0	0	0	0	0
Northern Mariana Islands	1	0	0	1	56	0	0	0	50	0	0	0	2	18	2	0	0
Palau	1	0	0	1	9	0	0	0	9	0	0	0	0	0	0	0	0
Papua New Guinea	60	1	1	15										0		0	
Philippines	2 374	3	3	2 374									403	33	19	424	384
Rep. of Korea	260	12	1														
Samoa	1	0	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0
Singapore	4	2	2	4									6	861	3	101	3
Solomon Islands	9	1	1	9	0	0	0	0	0	0	0	0	0	364	0	5	0
Tokelau	0	0	0	0	0	0	0	0	0								
Tonga	1	0	0	1													
Tuvalu	1		0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Vanuatu	6	0	3	6	0	0	0	0	0	0	0	0					
Viet Nam	874	18	2	740	14 128	595			14 230	708							
Wallis & Futuna						0											
WPR	**7 390**	**458**	**122**	**6 433**	**32 605**	**2 221**	**20**	**21**	**38 672**	**2 632**	**290**	**201**	**629**	**6 331**	**89**	**1 298**	**498**

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 187 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 A3.5 **Treatment outcomes, Western Pacific, 2005 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	3	4	133	75					25	0	75												1	0	100	0	0	0	0	0	100
Australia	219	219	100	12	68	9		2	9	0	80	22	22	100	14	68	18				0	82	39	18	56	3	0	5	18	0	74
Brunei Darussalam	101	101	100	66	5	7	0	2	20	0	71												5	40	40	20	0	0	0	0	80
Cambodia	21 001	21 001	100	89	4	3	0	2	2	0	93												1 306	49	27	9	2	3	4	7	76
China	472 719	472 719	100	92	2	2	1	1	1	2	94												89 239	85	5	3	3	1	1	3	90
China, Hong Kong SAR	1 266	1 266	100	74	3	5	11	3	2	1	77	295	295	100	3	1	3	1	0	0	93	3	568	50	23	5	11	8	2	2	73
China, Macao SAR	136	136	100	93	0	4	0	1	1	1	93												37	51	24	11	0	0	3	11	76
Cook Islands	1	1	100	100	0	0	0	0	0	0	100												0							0	
Fiji	63	68	108	71	0	10	0	10	1	7	71												0							0	
French Polynesia	21	18	86		89	11	0	0	0	0	89												4	0	75	25	0	0	0	0	75
Guam	27	27	100	85	0	11	0	0	4	0	85												2	50	0	0	0	50	0	0	50
Japan	9 297	10 819	116	38	22	11	3	1		26	60	1 634	112	7	24	21	4	5	2		44	46	1 980	29	16	8	2	2	0	43	45
Kiribati	124	123	99	62	31	7	0	1	0	0	93												3	100	0	0	0	0	0	0	100
Lao PDR	2 806	2 802	100	85	5	5	1	3	1	0	90												181	75	12	6	2	5	0	1	87
Malaysia	8 446	8 446	100	69	1	9	0	5	6	10	70												1 056	46	9	8	1	9	8	19	55
Marshall Islands	48	47	98	85	2	2		2	9	0	87												20	60	10	0	0	0	30	0	70
Micronesia	32	20	63	75	5	10	5	0	5	0	80												9	11	89	0	0	0	0	0	100
Mongolia	1 868	1 868	100	82	6	3	5	3	2	0	88												443	39	34	9	11	4	2	0	73
Nauru	0	3		0	67	33	0	0	0	0	67												1	0	0	0	0	0	0	100	0
New Caledonia	16	16	100	88	6	6	0	0	0	0	94												7	86	0	14	0	0	0	0	86
New Zealand	83	84	101	0	60	6	0	1	6	27	60												18	0	67	0	0	0	22	11	67
Niue	0	0																					0							0	
Northern Mariana Islands	15	15	100	73	0	0	0	0	27	0	73												0							0	
Palau	3	3	100	100	0	0	0	0	0	0	100												0							0	
Papua New Guinea	1 346	1 292	96	57	14	4	1	19	5	0	71	459											65	42	14	15	6	20	3	0	55
Philippines	81 647	81 125	99	82	7	2	1	4	2	0	89																				
Rep. of Korea	3 758	3 752	100	81	2	1	1	4	11	0	83	7 880											3 331	72	3	2	0	6	18	0	75
Samoa	11	11	100	91	0	9	0	0	0	0	91	0											0							0	
Singapore	552	548	99		83	14	0	2	1	1	83												149	0	79	15	0	5	0	1	79
Solomon Islands	169	169	100	56	30	8	0	4	2	0	85												5	20	40	20	20	0	0	0	60
Tokelau												0																			
Tonga	11	11	100	73	0	18	0	0	9	0	73												0							0	
Tuvalu	5	6	120	100	0	0	0	0	0	0	100												0							0	
Vanuatu	35	42	120	64	17	10	7	2	0	0	81												0							0	
Viet Nam	55 492	55 492	100	90	2	3	1	1	2	0	92												7 374	79	4	5	6	3	3	0	83
Wallis & Futuna	1																														
WPR	**661 322**	**662 254**	**100**	**89**	**3**	**2**	**1**	**1**	**1**	**2**	**92**	**10 290**	**429**	**4**	**9**	**10**	**4**	**2**	**0**	**0**	**75**	**18**	**105 843**	**81**	**6**	**3**	**3**	**2**	**2**	**4**	**87**

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 2005 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 2005 is used, or the sum of outcomes if the latter is greater. Data can be downloaded from www.who.int/tb

Table A3.6 **Re-treatment outcomes, Western Pacific, 2005 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																											
Australia	16	13	63				25	0	75	2		50				50	0	50									
Brunei Darussalam	5	40	40	20	0	0	0	0	80	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0		0
Cambodia	718	75	6	9	1	3	4	2	81	62	34	5	6	23	3	2	27	39	46	39	24	9	4	13	7	4	63
China	49 707	85	5	3	3	1	1	3	89																		
China, Hong Kong SAR	177	69	7	4	10	4	3	2	76	0	0	0	0	0	0	0		0	24	33	4	4	17	38	0	4	38
China, Macao SAR	14	79	0	7	0	0	0	14	79										5	20	40	20	0	0	0	20	60
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	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0		0
French Polynesia	4		75	25				0	75																		
Guam	1	100	0	0	0	0	0	0	100	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0		0
Japan	862	41	22	10	3	2		23	62																		
Kiribati	3	100						0	100																		
Lao PDR	140	78	10	6	1	4	0	1	88	15	47	33	7	7	7	0	0	80	26	77	12	0	0		0	12	88
Malaysia	332	50	11	7	0	6	8	18	60	29	41	3	0		0	0	55	45	239	44	7	10	1	12	10	15	51
Marshall Islands	13	85	15					0	100																		
Micronesia	1		100					0	100										1	100						0	100
Mongolia	216	53	21	11	9	5	2	0	74	94	30	35	10	20	1	2	2	65	31	39	23	6	13	10	10	0	61
Nauru	1	0	0	0	0	0	0	100	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0		0
New Caledonia	1	100	0	0	0	0	0	0	100	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0		0
New Zealand	10	0	60	0	0	0	30	10	60	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0		0
Niue	0	0	0	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	0	0	0	0	0		0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0		0
Palau	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0		0	0	0	0	0		0	0		0
Papua New Guinea	65	42	14	15	6	20	3	0	55																		
Philippines																											
Rep. of Korea	1 074	65	3	2	1	6	24	0	68	5	20	20	0		0		60	40	125	49	2	2	2	20	25	0	51
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	60		80	18	0	0	0	2	80										8		63	13	0		0	25	63
Solomon Islands	5	20	40	20	20	0	0	0	60	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0		0
Tokelau																											
Tonga	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0		0
Tuvalu	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0		0
Vanuatu	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0		0
Viet Nam	6 325	81	4	5	5	2	3	0	85	577	64	3	5	19	5	4	0	68	399	67	5	7	5	11	5	0	72
Wallis & Futuna																											
WPR	**59 750**	**83**	**5**	**3**	**3**	**1**	**2**	**3**	**88**	**784**	**56**	**8**	**6**	**18**	**4**	**4**	**4**	**64**	**904**	**55**	**8**	**7**	**4**	**13**	**9**	**5**	**62**

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 2005 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 A3.7 **DOTS treatment success and case detection rates, Western Pacific, 1994–2006**

	DOTS new smear-positive treatment success (%)												DOTS new smear-positive case detection rate (%)											
	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
American Samoa		100			50	100	100	100	100	100	67	75			232		117	78	78	39	78	77	116	115
Australia				66	75	84	74	66	78	82	85	80				22	29	23	19	25	9	32	39	40
Brunei Darussalam					85	76	63	56	84	60	71	71					91	91	91	91	91	91	91	91
Cambodia	84	91	94	91	95	93	91	92	92	93	91	93	40	34	45	48	54	50	48	57	62	62	68	62
China	94	96	96	96	97	96	95	96	93	94	94	94	15	29	32	32	30	31	31	30	43	64	80	79
China, Hong Kong SAR					85	78	76	78	79	78	80	77					64	67	61	65	66	64	61	56
China, Macao SAR	75			81		78	89	86	89	88	89	93	88	136	164	150		95	98	90	99	101	107	113
Cook Islands	100	100	100	100		67			100			100	126	65	136				165	87		95	99	
Fiji	90	86	86	91	90	92	85	85	78	86		71	57	60	59	68	62	61	74	78	85	70	74	88
French Polynesia		67	95	100	74	85	97	80	82	83	80	89		74	86	75	76	70		75	59	89	65	78
Guam						94	93	71	68	96	100	85						147	161	106		76	94	73
Japan						76	70	75	76	76	57	60						23	32	37	46	51	67	79
Kiribati					83	88	91	86	94	88	94	93			7	33	37	34	40	52	63	90	79	82
Lao PDR		70	55	65	80	79	77	76	75	79	86	90		24	33	40	45	40	41	47	48	57	72	77
Malaysia		69				90	78	79	76	72	56	70	64	68				73	73	70	69	67	72	80
Marshall Islands					83	82	91	86	100	90	90	87				18	29	19	26	31	35	68	84	79
Micronesia	64	80				95	93	100	91	92	80	50	12	19				24	13	38	47	65	62	82
Mongolia			78	86	84	86	87	87	87	87	88	88	7	6	31	61	68	63	74	76	70	82	85	97
Nauru						50	25	100	50			67						74	38	39	20			42
New Caledonia	62	75			70	77	89	84	85	75	94	94	43	55			49	50	50	75	43	60	60	32
New Zealand							30	9	60	36	68	60						40	41	51	62	65	50	61
Niue									100											273				
Northern Mariana Islands						80	81	74	71	75	88	73						103	72	78	59	51	55	54
Palau	64	67	75					100	38	80	100	100	184	81	141					183	103	104	64	129
Papua New Guinea				93	72	66	63	67	53	58	65	71			1	7	8	7	8	15	16	17	20	21
Philippines	80		82	83	84	87	88	88	88	88	87	89	0	0	3	10	20	48	56	61	67	72	74	77
Rep. of Korea	71	76	71	82					83	82	80	83	30	60	56	62					26	23	20	18
Samoa	50	80	100		86	94	92	77	84		100	91	73	44	71		89	70	60	107	69	65	66	80
Singapore	88	86				95	85	88	87	77	81	83	62	27				16	28	51	57	87	102	107
Solomon Islands		65	73	92	92		81	89	90	87	87	85		25	31	40	27	32	36	33	44	49	56	42
Tokelau																								
Tonga	89	75	82	75	94	80	93	92	83			73	67	106	85	126	80	123	67	196	95	70	98	127
Tuvalu											100	100											35	29
Vanuatu						88	88	88	79	75	90	81					40	44	81	53	68	101	60	73
Viet Nam	91	91	90	85	93	92	92	93	92	92	93	92	30	59	78	82	83	82	83	87	85	89	84	85
Wallis & Futuna								100	100		100								29	30	213		32	
WPR	**90**	**91**	**93**	**93**	**95**	**94**	**92**	**93**	**90**	**91**	**91**	**92**	**16**	**28**	**32**	**33**	**32**	**37**	**39**	**39**	**50**	**65**	**77**	**77**

Treatment success, sum of cured and completed; DOTS new smear-positive case detection rate, notified new smear-positive 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 A3.8 **New smear-positive case notification by age and sex, absolute numbers, DOTS and non-DOTS, Western Pacific, 2006**

	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	1	33	35	23	21	16	43	2	18	27	14	7	9	21	3	51	62	37	28	25	64	1.8
Brunei Darussalam	2	10	11	12	13	10	11	1	5	11	8	11	4	9	3	15	22	20	24	14	20	1.4
Cambodia	50	791	1 486	2 205	1 902	1 689	1 665	44	749	1 330	1 839	2 072	1 915	1 557	94	1 540	2 816	4 044	3 974	3 604	3 222	1.0
China	1 023	44 528	48 232	56 733	54 301	53 746	68 557	1 408	30 904	26 526	24 564	18 775	17 782	21 212	2 431	75 432	74 758	81 297	73 076	71 528	89 769	2.3
China, Hong Kong SAR	3	73	86	136	175	161	443	9	59	98	74	55	41	134	12	132	184	210	230	202	577	2.3
China, Macao SAR	0	15	6	17	32	19	19	1	7	8	9	4	3	4	1	22	14	26	36	22	23	3.0
Cook Islands	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Fiji	0	8	11	4	7	5	4	1	12	5	6	4	6	0	1	20	16	10	11	11	4	1.1
French Polynesia	1	1	1	3	3	1	1	1	6	1	0	0	2	3	2	7	2	3	3	3	4	0.8
Guam	0	1	1	2	3	2	6	0	0	0	1	1	2	2	0	1	1	3	4	4	8	2.5
Japan	3	175	436	529	743	1 388	3 728	5	179	361	280	213	256	1 863	8	354	797	809	956	1 644	5 591	2.2
Kiribati	3	18	18	16	18	3	7	5	15	5	5	1	8	3	8	33	23	21	19	11	10	2.0
Lao PDR	12	145	245	340	406	345	354	13	109	196	221	228	222	205	25	254	441	561	634	567	559	1.5
Malaysia	15	507	855	734	678	443	496	3	30	300	403	321	257	161	18	537	1 155	1 137	999	700	657	2.5
Marshall Islands		4	3	4	6	3	2	2	2	3	3	7	4	2	2	6	6	7	13	7	4	1.0
Micronesia	14	21	3	6	8	6	1	5	23	5	7	4	6	4	19	44	8	13	12	12	5	1.1
Mongolia	7	317	335	241	157	64	41	16	372	265	180	81	24	29	23	689	600	421	238	88	70	1.2
Nauru	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	1	0	0	0	1.0
New Caledonia	0	0	3	1	1		1	0	1	0	0	0	0	2	0	1	3	1	1	0	3	2.0
New Zealand	5	14	5	8	4	3	7	1	12	12	12	3	6	4	6	26	17	20	7	9	11	0.9
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	2	3	1	0	0	0	2	2	3	1	0	1	0	2	4	6	2	0	1	0.7
Palau	1	0	1	2	1	0	0	0	0	1	0	0	0	0	1	0	2	2	1	0	0	5.0
Papua New Guinea	32	221	220	122	84	48	3	41	226	215	142	75	24	3	73	447	435	264	159	72	6	1.0
Philippines	419	7 878	11 697	13 478	12 733	8 074	4 640	379	4 337	5 746	5 630	5 007	3 485	2 237	798	12 215	17 443	19 108	17 740	11 559	6 877	2.2
Rep. of Korea	19	652	1 109	1 223	1 406	955	1 698	27	579	859	507	403	371	1 705	46	1 231	1 968	1 730	1 809	1 326	3 403	1.6
Samoa		3	2	1	1	1	2		3			1				6	2	1	2	1	2	2.5
Singapore	2	7	31	67	107	75	106	0	19	22	22	22	27	31	2	26	53	89	129	102	137	2.8
Solomon Islands	1	13	11	4	4	14	8	4	16	14	9	14	8	4	5	29	25	13	18	22	12	0.8
Tokelau																						
Tonga	0	1	0	0	1	2	4	0	1	1	2	0	0	2	0	2	1	2	1	2	6	1.3
Tuvalu	0	1	0	0	0	0	0	0	1	0	1	1	0	0	0	2	0	1	1	0	0	0.3
Vanuatu	1	5	3	1	4	4	0	2	7	9	2	4	0	0	3	12	12	3	8	4	0	0.8
Viet Nam	49	3 761	7 549	8 931	8 717	5 037	7 408	62	1 827	2 381	2 036	2 283	1 996	4 400	111	5 588	9 930	10 967	11 000	7 033	11 808	2.8
Wallis & Futuna																						
WPR	**1 663**	**59 204**	**72 397**	**84 846**	**81 537**	**72 114**	**89 255**	**2 032**	**39 521**	**38 404**	**35 981**	**29 600**	**26 458**	**33 598**	**3 695**	**98 725**	**110 801**	**120 827**	**111 137**	**98 572**	**122 853**	**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 187 for further details. Data can be downloaded from www.who.int/tb

Table A3.9 **New smear-positive case notification rates by age and sex, DOTS and non-DOTS, Western Pacific, 2006**

	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	0	1	1	0	2	2	1	1	1	2
Brunei Darussalam	3	29	30	42	57	92	177	2	15	28	28	63	60	151	3	22	29	35	60	80	164
Cambodia	2	46	163	303	397	604	1071	2	45	143	221	343	483	527	2	46	153	259	367	533	714
China	1	39	45	47	63	96	139	1	30	26	22	23	34	40	1	34	36	35	44	66	87
China, Hong Kong SAR	1	16	17	24	29	46	111	2	13	17	10	9	12	29	1	15	17	16	19	29	67
China, Macao SAR	0	37	20	46	71	81	120	3	17	22	17	9	16	20	1	27	21	29	40	52	64
Cook Islands																					
Fiji	0	9	17	8	16	19	25	1	15	8	12	9	21	0	0	12	13	10	13	20	11
French Polynesia	3	4	5	14	20	11	15	3	24	5	0	0	25	42	3	14	5	7	10	18	29
Guam	0	7	8	15	29	31	113	0	0	0	8	10	32	33	0	4	4	12	20	31	70
Japan	0	2	5	6	9	15	34	0	3	4	3	3	3	12	0	3	4	5	6	9	22
Kiribati																					
Lao PDR	1	23	59	119	201	363	396	1	17	46	73	109	203	182	1	20	52	95	154	277	277
Malaysia	0	20	41	41	49	56	92	0	1	15	23	24	34	26	0	11	28	32	37	45	57
Marshall Islands																					
Micronesia	64	157	42	117	176	249	53	24	189	73	129	88	243	173	45	172	57	123	132	246	119
Mongolia	2	105	141	132	142	122	93	4	126	113	96	70	43	49	3	116	127	114	105	81	68
Nauru																					
New Caledonia	0	0	16	6	7		14	0	5	0	0	0	0	22	0	2	8	3	4	0	18
New Zealand	1	5	2	3	1	1	3	0	4	4	4	1	3	1	1	4	3	3	1	2	2
Niue																					
Northern Mariana Islands																					
Palau																					
Papua New Guinea	2	36	47	34	37	40	4	3	38	46	39	34	20	4	3	37	46	37	35	30	4
Philippines	3	90	172	270	362	383	310	3	51	86	113	139	160	120	3	71	130	191	249	269	205
Rep. of Korea	0	18	27	29	39	43	87	1	18	22	13	11	16	61	1	18	25	21	25	29	72
Samoa		16	17	8	13	25	52		19			15				17	9	4	14	13	23
Singapore	0	2	11	17	27	32	60	0	7	8	5	6	12	15	0	5	9	11	16	22	36
Solomon Islands	1	25	27	16	26	145	110	4	34	38	37	91	85	56	3	29	32	26	58	115	83
Tokelau																					
Tonga	0	9	0	0	33	83	136	0	10	16	45	0	0	56	0	9	8	22	15	37	92
Tuvalu																					
Vanuatu	2	21	19	8	50	79	0	5	32	57	16	51	0	0	3	26	38	12	50	41	0
Viet Nam	0	42	104	152	215	256	332	1	21	33	34	55	96	171	0	31	68	92	134	174	246
Wallis & Futuna																					
WPR	**1**	**39**	**51**	**56**	**74**	**96**	**129**	**1**	**28**	**28**	**25**	**28**	**36**	**42**	**1**	**34**	**40**	**41**	**51**	**67**	**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 A3.10 **Number of TB cases notified, Western Pacific, 1980–2006**

	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	2006
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	4
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	1 046	1 159
Brunei Darussalam	196	285	245	276	256	238	212	189	126	128	143		180	160				160		272	307	216	230	206	176	163	202
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	34 660
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	940 889
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	5 660	5 356
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	374
Cook Islands	8	2	12	15	3	8	3	2	0	2	0	1	6	5	4	2	1	2	0	3	1	2	1	0	1	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	114
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	69
Guam	55	41	49	48	54	37	49	34	41	75			60	70	94						54	63	51	22	50	63	44
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	25 304
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	378
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	3 958
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	16 051
Marshall Islands	6	7	12	15	12	15	37	32	11	7		26	52	61			59		49	41	34	56	51	60	117	111	138
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	104
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	4 601	5 049
Nauru	0	2	8	0	0	0	8	6	8	0	7				4					2	4	3	5	3		11	12
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	47	48
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	344
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	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	51
Palau	17	10	17	14	20	26	13	38	17	3		6	4	25	41	19	5	15		32			11	9	5	10	12
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	12 620
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	147 305
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	37 861
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	25
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	1 314
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	371
Tokelau	0	1	0	0	0	2	0	9	1	0	1	1	1		0	2	0			0	0	0		0		0	0
Tonga	64	49	45	50	54	49	35	24	14	36	23	20	29	33	23	20	22	21	30	22	24	12	29	16	12	18	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	9
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	126
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	94 916	97 363
Wallis & Futuna	23	24	5	17	14	14		34	1	30		22	4	11	11	6	8	14				1	19	15		7	
WPR	**356 452**	**355 337**	**461 550**	**462 181**	**540 985**	**615 153**	**651 840**	**655 006**	**716 427**	**741 913**	**894 073**	**760 863**	**754 463**	**718 783**	**724 290**	**824 954**	**873 425**	**870 920**	**834 599**	**820 469**	**786 285**	**805 105**	**811 482**	**980 890**	**1 160 130**	**1 274 124**	**1 331 333**
Number reporting	36	33	36	36	36	36	35	36	36	35	32	31	35	33	33	29	31	31	30	32	34	35	35	36	32	36	35
% reporting	100	92	100	100	100	100	97	100	100	97	89	86	97	92	92	81	86	86	83	89	94	97	97	100	89	100	97

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 A3.11 **Case notification rates, Western Pacific, 1980–2006**

	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	2006
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	6
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	6
Brunei Darussalam	102	143	120	131	118	107	92	80	52	51	56		66	57				52		84	92	63	66	58	48	44	53
Cambodia	38	29	114	102	132	125	123	104	118	84	67	109	155	124	137	128	127	130	138	154	148	147	186	209	225	255	244
China			10	11	14	21	24	23	27	27	33	30	27	29	30	42	41	38	36	36	36	37	36	47	61	68	71
China, Hong Kong SAR	160	150	144	137	145	138	135	131	126	119	114	109	111	109	104	100	103	111	118	85	90	101	92	86	81	80	75
China, Macao SAR	437	226	87	163	229	186	131	117	92	76	92	86	75	72		98	136	136	108		102	104	85	80	66	75	78
Cook Islands	45	11	68	85	17	45	17	11	0	11	0	6	33	28	22	11	6	11	0	18	6	13	7	0	7	7	7
Fiji	33	28	24	27	24	32	28	24	23	30	31	34	32	24	30	26	26	22	21	24	18	23	18	23	16	16	14
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	27
Guam	52	38	44	42	46	31	40	27	32	57			43	50	66						35	40	32	13	30	37	26
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	20
Kiribati	267	333	335	214	182	164	200	166	304	172	95	124	135	132	332		417	582	340	309	300	221	225	320	343	361	404
Lao PDR	246		145	141	191	121	42	93	190	75	45	46	23	47	25	18	30	39	43	47	43	45	49	50	57	67	69
Malaysia	82	78	83	78	69	67	67	67	64	61	65	59	60	63	58	57	60	62	64	66	65	62	59	63	59	60	61
Marshall Islands	20	22	36	43	33	39	92	76	25	15		54	105	122			115		95	79	65	106	95	110	211	196	238
Micronesia			86	91	90	77	68	109	84	72	381	354	110	146	163	160	117	99	114		85	97	118	91	108	89	94
Mongolia	70	64	76	84	89	157	143	120	121	103	75	71	66	61	73	116	169	148	119	136	126	142	153	155	178	178	194
Nauru	0	26	104	0	0	0	96	70	91	0	77				41					20	40	30	50	30		109	118
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	20	20
New Zealand	15	14	14	13	13	11	10	9	9	9	10	10	9	8	10	11	9	9	10	12	9	10	8	10	9	8	8
Niue	29	0	64	100	35	0	190	0	125		0		89	44	88	0	91	0	0	51	0	0	228	0	0	0	0
Northern Mariana Islands		139	355	308	214	213	49	157	70	68	64		135		83	83	85	149	150	99	109	81	72	59	68	71	62
Palau	139	80	134	108	150	191	94	269	118	21		39	25	155	247	111	29	83		169			56	45	25	50	59
Papua New Guinea	79	77	82	86	99	95	77	59	109	84	60	80	58	167	116	171	66	161	221	248	195	229	198	221	215	207	203
Philippines	234	237	207	205	286	278	275	287	314	363	518	331	368	272	268	174	236	273	222	195	157	138	149	164	158	162	171
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	79
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	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	30
Solomon Islands	116	132	132	119	128	139	104	116	125	160	122	96	110	107	94	97	80	83	75	71	73	68	58	65	74	84	77
Tokelau	0	64	0	0	0	126	0	559	62	0	62	63	64		0	135	0			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	31	22	24	12	29	16	12	18	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	86
Vanuatu	152	77	141	156	146	94	97	65	83	99	94	150	122	70	90	46	72	103	98	65	80	90	51	51	55	35	57
Viet Nam	81	80	93	76	76	79	79	90	83	81	76	88	82	75	72	76	100	103	114	114	114	113	117	112	117	112	113
Wallis & Futuna	200	200	40	130	104	101		243	7	216		158	29	78	77	42	55	96				7	127	100		46	
WPR	**27**	**27**	**34**	**34**	**39**	**44**	**46**	**45**	**49**	**50**	**59**	**50**	**49**	**46**	**46**	**51**	**54**	**53**	**50**	**49**	**47**	**47**	**47**	**57**	**67**	**73**	**75**

Rates are per 100 000 population. From 1995 on, number shown is notification rate of new and relapse 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 A3.12 **New smear-positive cases notified, numbers and rates, Western Pacific, 1993–2006**

	Number of cases														Rate (per 100 000 population)													
	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
American Samoa	1	4		0	6	2	3	2	2	1	2	2	3	3	2	8		0	11	4	5	4	3	2	3	3	5	5
Australia	557				226	203	285	251	228	210	113	285	241	269	3				1	1	2	1	1	1	1	1	1	1
Brunei Darussalam	68				0		102	84	95	112	121	115	101	128	24				0		31	25	28	32	34	31	27	34
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	19 294		100	97	103	106	113	126	116	110	130	140	138	150	136
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	468 291	7	9	11	17	19	16	16	16	16	15	21	29	36	35
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	1 561	1 547	41		0	28	30	32	23	29	28	28	26	24	22	22
China, Macao SAR	108		141	258	325	276		160	157	147	138	128	136	144	27		34	62	77	64		36	35	32	30	27	29	30
Cook Islands	5	4	2	1	2	0	0	0	2	1	0	1	1	0	28	22	11	6	11	0	0	0	13	7	0	7	7	0
Fiji	61	62	68	69	66	74	65	62	73	74	78	62	63	73	8	8	9	9	8	9	8	8	9	9	10	8	8	9
French Polynesia		38		37	41	34	33	29	0	28	21	30	21	24		18		17	18	15	14	12	0	11	8	12	8	9
Guam		40						43	47	31	0	22	27	21		28						28	30	19	0	13	16	12
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	10 159	14	13	11	10	11	9	10	9	9	8	8	8	9	8
Kiribati	99	184		144	50	52	59	54	64	82	99	142	124	129	132	241		184	63	64	71	64	75	94	112	157	135	138
Lao PDR			478	886	1 234	1 494	1 706	1 526	1 563	1 829	1 866	2 226	2 806	3 041			10	18	25	30	33	29	29	34	34	40	50	53
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	9 414	36	34	32	34	35	35	36	35	35	33	32	31	33	36
Marshall Islands	12			12		11	17	11	15	18	20	39	48	45	24			23		21	33	21	28	34	37	70	85	78
Micronesia			9	14	9	14		15	8	22	26	35	32	41			8	13	8	13		14	7	20	24	32	29	37
Mongolia	0	145	455	769	1 171	1 356	1 513	1 389	1 631	1 670	1 541	1 808	1 868	2 129	0	6	19	32	48	56	62	56	66	67	61	71	72	82
Nauru		2					2	4	2	2	1		0	2		20					20	40	20	20	10		0	20
New Caledonia	16	28	21	26	24	26	22	20	19	21	12	15	16	9	9	15	11	13	12	13	10	9	9	9	5	7	7	4
New Zealand	91	61	78	90	83	106	94	74	68	88	106	111	83	97	3	2	2	2	2	3	2	2	2	2	3	3	2	2
Niue	0	0	0	1	0	0	1	0	0	1	0	0	0	0	0	0	0	45	0	0	51	0	0	57	0	0	0	0
Northern Mariana Islands			14	26	21	26	15	27	19	21	16	14	15	15			24	43	34	40	22	39	27	29	21	18	19	18
Palau	8	11	9	4	7		20			9	5	5	3	6	50	66	53	23	39		106			46	25	25	15	30
Papua New Guinea			1 652	447	1 195	2 107	2 140	1 933	1 351	1 345	2 310	1 896	1 805	1 948			35	9	24	41	41	36	24	24	40	32	30	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	85 740	141	130	138	124	112	95	98	88	76	82	90	94	97	99
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	11 513	38	30	26	25	22	22	21	18	25	24	23	24	24	24
Samoa	21	18	15	9	14	7	17	13	11	19	12	11	11	13	13	11	9	5	8	4	10	7	6	11	7	6	6	7
Singapore	513	861	455	519	436	482	465	248	357	549	583	501	552	538	16	26	13	14	12	13	12	6	9	13	14	12	13	12
Solomon Islands	155	114	109	90	113	140	93	109	118	108	138	152	169	124	45	32	30	24	30	36	23	26	28	25	31	33	36	26
Tokelau		0	1	0			0	0	0		0		0	0		0	68	0			0	0	0		0		0	0
Tonga	16	17	9	14	11	16	10	15	8	23	11	8	11	14	17	18	9	14	11	16	10	15	8	23	11	8	11	14
Tuvalu	2	1	6				0	0	0	0	0		5	4	21	10	61				0	0	0	0	0		48	38
Vanuatu		62	30	50	66	38	43	63	57	38	40	59	35	42		37	17	28	37	21	23	33	29	19	20	28	16	19
Viet Nam			37 550	48 911	50 016	54 889	53 805	53 169	54 238	56 698	55 937	58 394	55 492	56 437			51	66	66	71	69	67	68	70	68	70	65	65
Wallis & Futuna			3	3	1				1	1	7		1				21	21	7				7	7	47		7	
WPR	**222 813**	**241 737**	**314 271**	**388 142**	**416 954**	**379 698**	**383 613**	**376 109**	**371 806**	**372 528**	**453 812**	**579 566**	**671 612**	**671 254**	**14**	**15**	**20**	**24**	**25**	**23**	**23**	**22**	**22**	**22**	**26**	**33**	**38**	**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

Brunei Darussalam

Breakdown by age and sex provided for cases in nationals only.

China, Macao SAR

39 cases treated outside public sector, with site and history of treatment unspecified were reported as "other", non-DOTS.

Japan

The number of cases registered for treatment is different from the number of cases reported for 2005 due to changes in the jurisdiction of some public health centres. Treatment outcomes are only available for pulmonary TB patients treated under standardized regimens (with isoniazid and rifampicin).

Republic of Korea

There is no mechanism for follow-up of treatment outcomes for patients who transfer from the public sector (DOTS) to the private sector (non-DOTS).

ANNEX 4

Surveys of tuberculosis infection and disease, and death registrations, by country and year

Table A4.1 National and subnational surveys of prevalence of tuberculosis disease

Table A4.1.1 National surveys[1]

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 Jamahiriya	1976
Malaysia	2003
Mauritius	1958
Myanmar	2006
Netherlands	1970
Nigeria	1957
Pakistan	1959, 1987
Philippines	1981, 1997, 2007
Rep. of Korea	1965, 1970, 1975, 1980, 1985, 1990, 1995
Samoa	1975
Sierra Leone	1958
Somalia	1956
Sri Lanka	1970
Thailand	2007
Uganda	1958
Viet Nam	2007

Table A4.1.2 Subnational surveys[1]

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
Eygpt	2007
India	1948–1993 (numerous surveys), 2007
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 Republic	1960
Thailand	1962, 1970, 1977, 1983, 1987, 1991
Tunisia	1957, 1961
Turkey	1971
Uganda	2000
UR Tanzania	1958
Viet Nam	1961
Zambia	1980, 2006

Table A4.1.3 Planned or recommended surveys (national or subnational)[2]

Afghanistan	2010
Bangladesh[3]	2008
Cambodia[3]	2010
China[3]	2010
Djibouti[4]	2010
Gambia	
Ghana[3]	2009
Indonesia[3]	2011
Kenya[3]	2009
Laos	2009
Malawi[3]	2009
Mali[3]	2008
Myanmar[3]	2010
Mozambique[3]	
Nigeria[3]	2007
Pakistan[3]	2009
Philippines[3]	
Rwanda[3,4]	2009
Sierra Leone[3]	
South Africa[3]	2009
Syrian Arab Republic[4]	2012
Thailand[3]	
UR Tanzania[3]	2008
Uganda[3,4]	2009
Viet Nam[3]	
Zambia[3]	2009

[1] 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/global_report. References to surveys done in 2006 and 2007 have generally not yet been published in peer reviewed journals, but will be added to the website when they are published.

[2] Not included here are countries which indicated on the data collection form that they are planning to undertake a prevalence of disease survey in the near future but for which this information has not been confirmed. These tables will be updated as the information is confirmed. See www.who.int/tb/global_report

[3] The WHO Task Force on TB Impact Measurement has recommended that these 21 countries should carry out two prevalence of TB disease surveys between now and 2015 (or one more survey if at least one survey was done between 1990 and 2007). These surveys are needed as part of an effort to produce credible regional and global assessments of progress towards the 2015 impact targets, as well as for demonstrating the impact of control programmes on the burden of TB (see Chapter 1 for definition of the impact targets and Chapter 2 for a fuller explanation of how the 21 countries were selected). For those countries which already have concrete plans (protocols and funding) to carry out at least one survey in the near future the expected year when the survey will start is provided.

[4] Funding for surveys in these countries has been approved by the Global Fund.

Table A4.2 **National and subnational surveys of prevalence of tuberculosis infection**

Table A4.2.1 National surveys[1]

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	2000,2007
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, 2007
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, 2007

Table A3.2.3 Planned surveys (national or subnational)[2]

Afghanistan	2010
Armenia	
Cambodia	2010
China	2010
Ghana	
India	2007
Nigeria	2007
Philippines	2007
South Africa	
UR Tanzania	2007
Viet Nam	

Table A4.2.2 Subnational surveys[1]

Afghanistan	1985, 1989, 2005
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
Sudan	2006
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

[1]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/global_report. References to surveys done in 2006 and 2007 have generally not yet been published in peer reviewed journals, but will be added to the website when they are published.

2 Not included here are countries which indicated on the data collection form that they are planning to undertake a prevalence of disease survey in the near future but for which this information has not been confirmed. These tables will be updated as the information is confirmed. See www.who.int/tb/global_report

Table A3.3 **Availability of death registrations by cause-of-death, WHO Mortality Database, 2006**

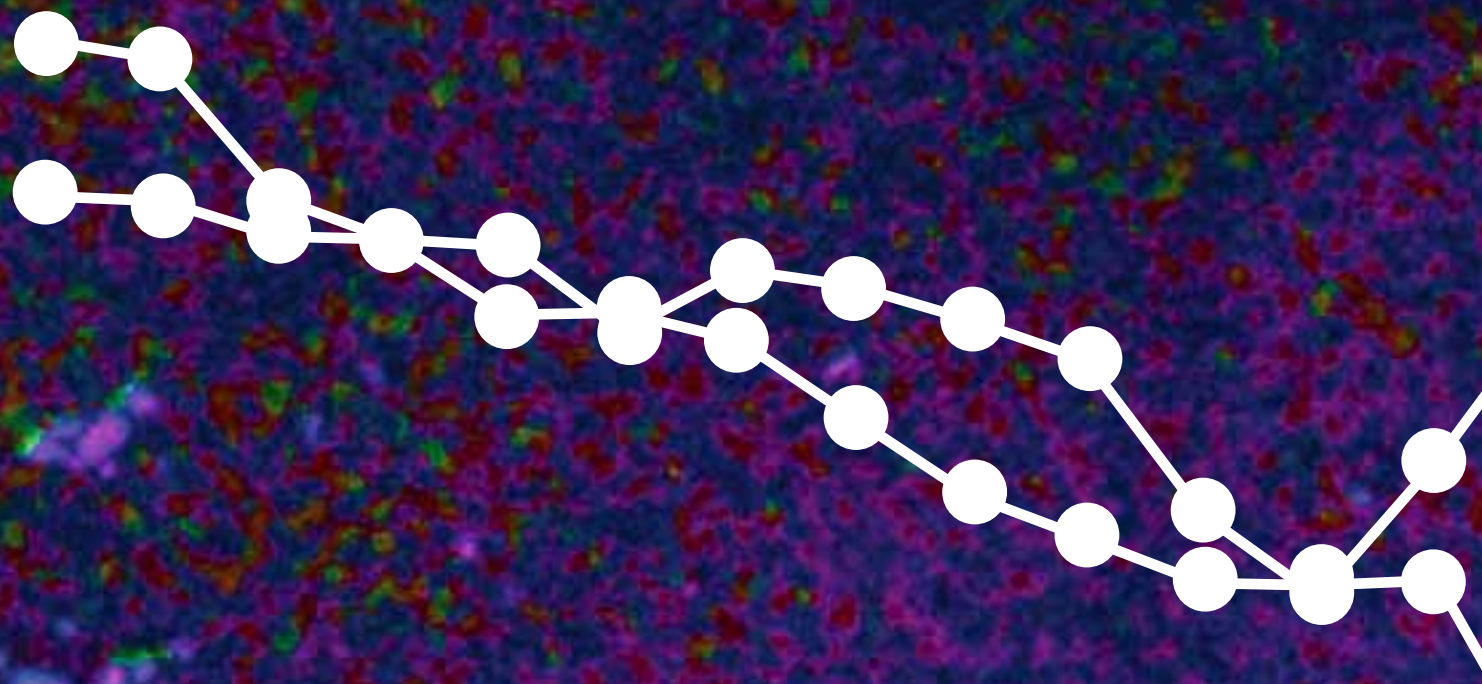
	Cov/qual[1]		
Albania	73	L	1987–1989, 1992–2003
Anguilla			1985–1995, 2000–2001, 2004
Antigua & Barbuda	74		1985–1995, 2000–2002
Argentina	100	L	1985–2003
Armenia	63	L	1985–2003
Australia	100	H	1985–2003
Austria	99	M	1985–2005
Azerbaijan	68	M	1985–2002
Bahamas	83	H	1985, 1987, 1993–2000
Bahrain	87	L	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 epidemic and evaluates surveillance, planning and financial data in support of national TB control programmes.



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