

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 Development 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-trimoxazole 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).

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.