Tuberculosis in the Region of the Americas 2009

REGIONAL REPORT

EPIDEMIOLOGY, CONTROL AND FINANCING

Pan American Health Organization

Regional office of the World Health Organization

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Table of Contents

Abbreviations

AIDS	Acquired Immunodeficiency Syndrome
ART	Antiretroviral Therapy
CDR	Case Detection Rate
CNR	Case Notification Rate
CPT	Co-Trimoxazole Preventive Therapy
DOT	Directly Observed Treatment
DOTS	The Basic Package That Underpins the Stop TB Strategy
DRS	Drug Resistance Surveillance or Survey
DST	Drug Susceptibility Testing
EQA	External Quality Assurance
GLC	Green Light Committee
GNI	Gross National Income
HIV	Human Immunodeficiency Virus
IPT	Isoniazid Preventive Therapy
MDG	Millennium Development Goal
MDR-TB	Multidrug-Resistant Tuberculosis
NTP	National Tuberculosis Control Programme or equivalent
TB	Tuberculosis
UNAIDS	Joint United Nations Programme on HIV/AIDS
WHO	World Health Organization
XDR-TB	Extensively Drug-Resistant TB

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Summary / Key Points

This report is intended to provide a comprehensive and up-to-date assessment of the burden of tuberculosis and the situation of TB control in the Americas. Its main results are as follows:

1. In 2009, there were an estimated 272,000 incident TB cases in the Region of the Americas, equivalent to 29 cases per 100,000 population. The number of incident TB cases was 9,000 less than in 2008. Both, absolute number and rate of incident TB cases in 2009 were lowest in the Americas compared to all other WHO regions. More than two-third (69%) of the Region's estimated number of TB cases in 2009 occurred in South America (Andean countries: 39%; other countries: 30%); 14% occurred in the Caribbean, 12% in Mexico and Central America and only 5.4% in Northern America.
2. In 2009, there were an estimated 36,400 HIV positive incident TB cases in the Americas, 13% of all incident TB cases. More than half of the incident HIV positive TB cases in the Region occurred in Brazil. At country level, HIV prevalence varied between 0.2% and 32% of incident TB cases.
3. There were an estimated 6,300 MDR-TB cases among notified TB cases in the Region of the Americas in 2009. Six countries (Peru, Brazil, Mexico, Ecuador, Dominican Republic and Haiti) accounted for 80% of all estimated MDR-TB cases in the region. At country level, the estimated prevalence of MDR-TB varied between 1% and 7% of notified new TB cases and between 4% and 27% of notified re-treatment cases. By the end of 2009, at least one case of extensively drug-resistant TB (XDR-TB) was reported in eight countries.
4. In 2009, a total of 228,000 TB cases were notified in the Americas, of whom 168,000 were new pulmonary TB (PTB) cases. Of these, 134,000 (80%) were confirmed by any laboratory method and 119,000 (52%) were new sputum smear-positive PTB cases. The proportion of new PTB cases with bacteriological confirmation varied considerably at country level.
5. A total of 9,900 new TB cases notified in 2009 were children (age 0-14 years), 4.8% of all new TB cases notified. Nearly one fifth of all childhood TB cases were smear-positive.
6. A total of 109,000 new sputum smear-positive TB cases were treated in the 2008 cohort. Of those, 77% were successfully treated (i.e. cured or treatment completed). The proportion of unfavourable treatment outcomes (i.e. death, failure or default) varied at country level between 8% and 33% of TB cases treated in the 2008 cohort.
7. A total of 17 countries reported data on laboratory capacity and external quality assurance (EQA) of laboratories for 2009. All reporting countries except Jamaica had at least one or more laboratories providing smear microscopy available per 100,000 population. Capacity for culture testing was below target (i.e. at least one laboratory providing culture testing per 1,000,000 population) in 8 out of 17 reporting countries, and capacity for drug susceptibility testing (DST) was below target (i.e. at least one laboratory providing DST per 5,000,000 population) in most of the reporting countries. Laboratory inclusion in external quality assessment varied considerable and performance in most of the labs included was reasonable.
8. Data for 2009 submitted by 14 countries indicate that the overall proportion of TB cases who received DST was 16% of notified new and 32% of notified re-treatment TB cases. There was a linear association between the coverage of DST and the detection of MDR-TB in re-treatment cases. DST resulted in 2,900 MDR-TB cases detected in the Americas, 46% of MDR-TB cases that were estimated among notified TB cases. More than 85% of MDR-TB cases were notified in South America (Andean: 66%; Other: 20%). In the Caribbean, diagnostic capacity for MDR-TB is still low and no case reports were submitted from Haiti and Dominican Republic in 2009, which may explain the low number of MDR cases detected in this subregion. By the end of 2009, 3,200 MDR-TB cases received second-line treatment (GLC: 1,100).
9. In 2009, around 90,000 TB cases notified in the Americas were tested or knew their HIV status, 43% of all notified TB cases for whom data were available. A total of 15,200 notified TB cases were HIV positive, 17% of those tested or with known HIV status. South America

(countries other than Andean) accounted for the highest total number of HIV positive TB cases, whereas the proportion of HIV positive TB cases was highest in the Caribbean. The proportion of HIV positive TB cases receiving antiretroviral treatment (ART) has consistently increased over the past five years – up to 83% in 2009. In 2008, at least 47,800 HIV positive people were screened for TB in the Americas. Data from 12 countries suggest that 4.0% of HIV positive people were screened for TB and nearly 1.8% received isoniazid preventive therapy. Reliable assessment of trends for TB screening and IPT among people living with HIV will require better data completeness and improved reporting.

10. The target for incidence has been met in the Americas as a whole as incidence is has been declining in all five subregions over the past five years. The target of halving prevalence relative to the year 1990 has been met in all subregions, except for the Caribbean, where it is expected to be met shortly after 2015. The target of halving mortality has been met in all subregions. Case detection is constantly increasing in the Americas reaching 79% in 2009. The range of progress towards the target for treatment success varies widely in the Americas. There are currently 16 countries in the Americas making limited or no progress in treatment success rates.
11. Poverty is an important driver of the burden of tuberculosis – in the Americas and globally. There is a consistent negative log-linear relationship between Gross national income (GNI) per-capita and estimated TB incidence in the countries in 2009.
12. Countries have been increasingly reporting data on financial aspects in recent years. For 2010, 27 countries reported on budget and 24 on expenditures. Most included the use of general health services (hospitalization and supervised treatment at health centers).
13. Available funds for TB control increased until 2009 in the 16 countries included in the financial analysis, followed by a small decline in 2010 but preliminary budgets for 2011 envision an increase to USD 235 million, due to important increases in Brazil, Peru and Mexico. Most funding is channeled to the DOTS component of the Stop TB Strategy followed by MDR-TB, with low proportions to TB/HIV. Funding sources are mainly governments (85%) followed by the Global Fund (12%). In four countries (Chile, Colombia, Honduras and Jamaica) 100% of the financing is domestic. Haiti and Paraguay are the ones most dependent on external financing.
14. Despite availability of more funds, there is a funding gap for TB activities in the Region of USD 20 million across all aspects except acquisition of first-line drugs. The trend in some countries is for the gap to narrow (e.g. Colombia, Guatemala and Honduras) and in others the contrary (e.g. Bolivia and Panama).
15. The cost per treated patient in the Region varies widely (USD 68 in Haiti vs. USD 4,662 in Jamaica). The influencing factors identified are the country's income level (higher income countries are more costly), the treatment model (out-patient vs. in-patient) and the number of patients treated. Further analysis is needed including cost-effectiveness. ■

Introduction

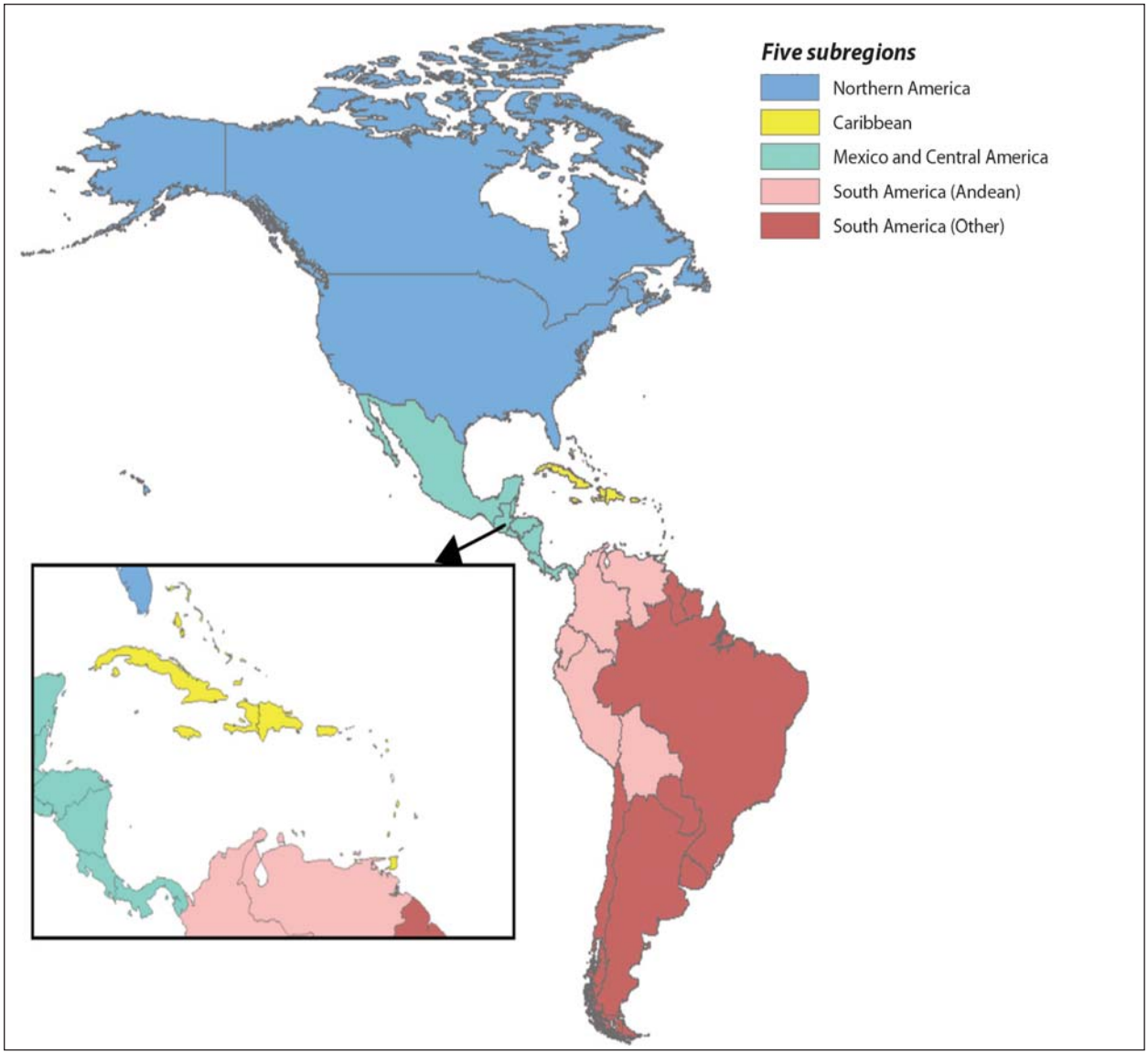
The purpose of this report is to provide a comprehensive and up-to-date assessment of the burden of tuberculosis (TB) and the situation of TB control in the Americas. It is produced by the Regional TB Program of the Pan American Health Organization (PAHO).

The report is structured in six chapters where the Regional TB burden and trends are presented, the progress in TB control and to global targets is reported, TB and poverty discussed, a financial analysis done and conclusions drawn.

The analysis for this report is based on the TB data submitted by countries of the Americas to PAHO and WHO during the 2010 TB data collection for the Global Tuberculosis Control Report. The financial analysis was done taking into consideration 16 countries that have reported data more or less consecutively from 2006 on. They represent 85% of the TB burden in the Region.

An overview of the Region of the Americas and the five subregions used in this report are shown on the following page (10). ■

Subregions of the Americas for the present report



Country population by subregion, the Americas 2009

NORTHERN AMERICA (EXCEPT MEXICO)	**TOTAL (2 countries)**	**348.232.000**
	Canada	33.573.000
	United States	314.659.000
CARIBBEAN	**TOTAL (13 countries)**	**40.488.000**
	Antigua and Barbuda	88.000
	Bahamas	342.000
	Barbados	256.000
	Cuba	11.204.000
	Dominican Republic	10.090.000
	Grenada	104.000
	Haiti	10.033.000
	Jamaica	2.719.000
	Puerto Rico	3.982.000
	Saint Kitts and Nevis	52.000
	Saint Lucia	172.000
	Saint Vicent and the Grenadines	109.000
	Trinidad and Tobago	1.339.000
MEXICO AND CENTRAL AMERICA	**TOTAL (8 countries)**	**151.348.000**
	Belize	307.000
	Costa Rica	4.579.000
	El Salvador	6.163.000
	Guatemala	14.027.000
	Honduras	7.466.000
	Mexico	109.610.000
	Nicaragua	5.743.000
	Panama	3.454.000
SOUTH AMERICA (ANDEAN)	**TOTAL (5 countries)**	**126.896.000**
	Bolivia (Plurinational State of)	9.863.000
	Colombia	45.660.000
	Ecuador	13.625.000
	Peru	29.165.000
	Venezuela (Bolivarian Republic of)	28.583.366
SOUTH AMERICA (OTHERS)	**TOTAL (7 countries)**	**261.972.000**
	Argentina	40.276.000
	Brazil	193.734.000
	Chile	16.970.000
	Guyana	762.000
	Paraguay	6.349.000
	Suriname	520.000
	Uruguay	3.361.000

Chapter 1:
Regional Burden and Trends of Tuberculosis

This chapter is intended to provide an up-to-date overview of the regional burden of tuberculosis (TB) in the Americas in 2009. It is divided into five sections: Incidence, Prevalence, Mortality, MDR-TB and TB/HIV.

The section on incidence describes the burden of TB in terms of estimated numbers of incident TB cases at regional subregional and country level. It includes an overview of the Top 10 countries with the highest absolute number of estimated incident TB cases and of the Top 10 countries with the highest rate of TB cases per 100,000 of the population. Further, a detailed overview of the 1990-2009 trends in estimated incidence at country level is provided in this section.

The section on TB prevalence provides a brief snapshot of estimated numbers of prevalent TB cases in the region.

TB mortality remains an important indicator of disease burden. The section shows absolute numbers and rates of deaths due to TB among HIV negative TB cases as well as an estimate of additional TB deaths occurring among people living with HIV/AIDS. Further, trends in absolute numbers of deaths due to TB in five countries with the highest number of incident TB cases are presented.

The section on MDR-TB/XDR-TB describes the burden of multi- and extensively drug-resistant TB in the Region of the Americas.

Besides presenting the MDR-TB burden estimates based on estimated incident TB cases (2008), this report focuses on proportions of MDR-TB among notified TB cases in 2009. This is in line with a recent policy shift by the WHO, which takes account of the fact that estimates on MDR-TB on the basis of notification data are more useful for drug-resistant TB planning and management purposes.

The section includes an overview of the Top 10 countries with the highest estimated absolute number of MDR-TB cases among notified TB cases and those with the highest proportion (rate) of MDR-TB among notified TB cases.

Finally, the section on TB/HIV includes an estimate of the number of incident HIV positive TB cases in the Region. This section includes an overview of the Top 10 countries with the highest absolute number of incident HIV positive TB cases and those with the highest estimated prevalence of HIV among incident TB cases. It further includes a description of the relationship between the prevalence of HIV in TB cases and the prevalence of HIV in the general population

1.1. Incidence

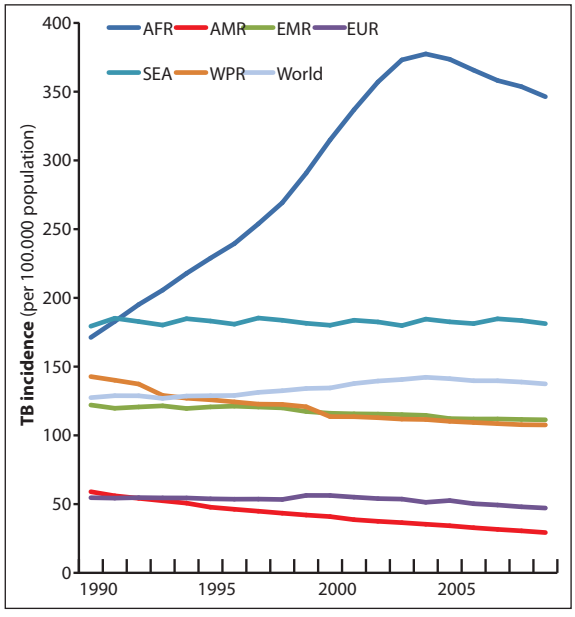
In 2009, there were an estimated 272,000 incident TB cases in the Region of the Americas (equivalent to 29 cases per 100,000 population). TB incidence decreased between 2008 and 2009 by approximately 9,000 incident cases. This reflects a continuation of the decreasing trend in regional TB incidence in the region observed since the 1990s. Both, absolute number of incident cases and incidence rate are lowest compared to all other WHO regions (Figure 1).

In 2009, more than two-thirds (69%) of the region's estimated number of TB cases occurred in South America (Andean: 39%; other countries: 30%); 14% occurred in the Caribbean, 12% in Mexico and Central America and 5.4% in Northern America.

The estimated rate of incident TB cases per 100,000 of the population was highest in the Caribbean (79 per 100,000) and lowest in Northern America (4 per 100,000). During the recent years, incidence rates are declining in all 5 subregions (Figure 2).

FIGURE 1

Trends in TB incidence in six WHO regions and globally



The geographical distribution of estimated TB incidence in the Americas is shown in Figure 3.

Eight countries accounted for 80% of all incident TB cases in the Americas in 2009 (see: Box 1). Incidence rates were higher than 100 per 100,000 in Haiti, Bolivia, Suriname, Peru and Guyana (Figure 4).

FIGURE 2

Trends in TB incidence in five subregions of the Americas

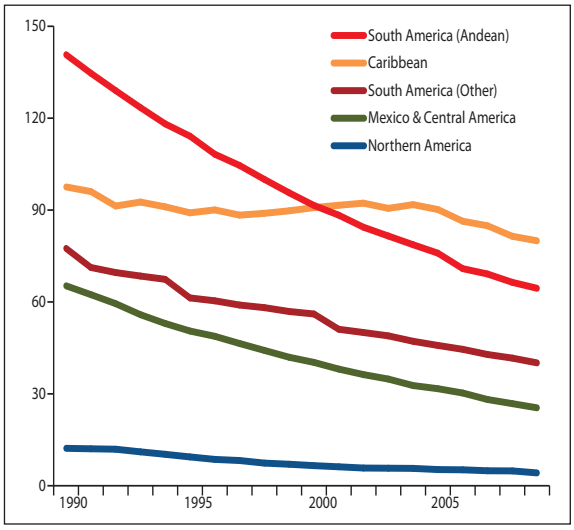
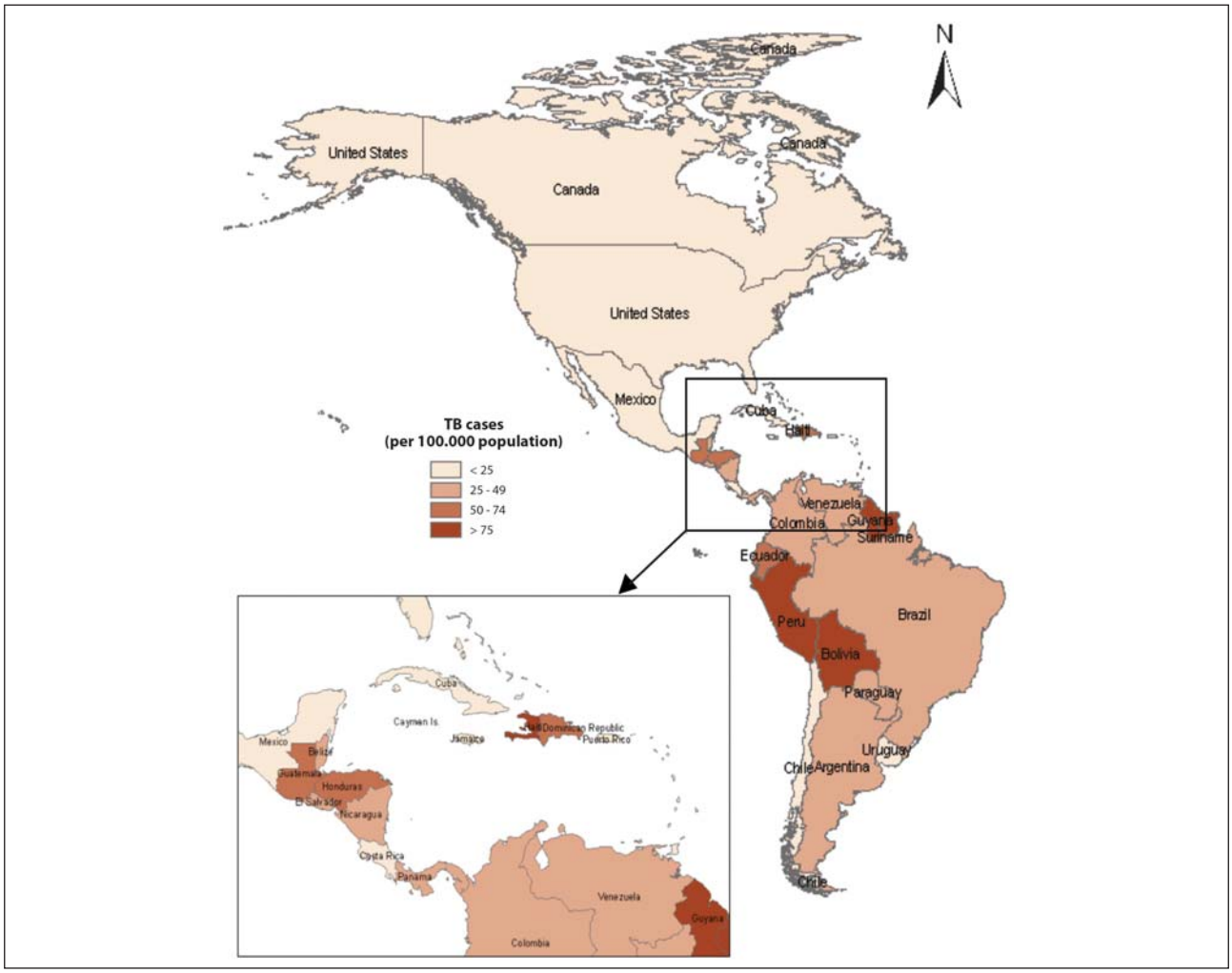


FIGURE 3

Estimated TB incidence in the Region of the Americas, 2009



BOX 1

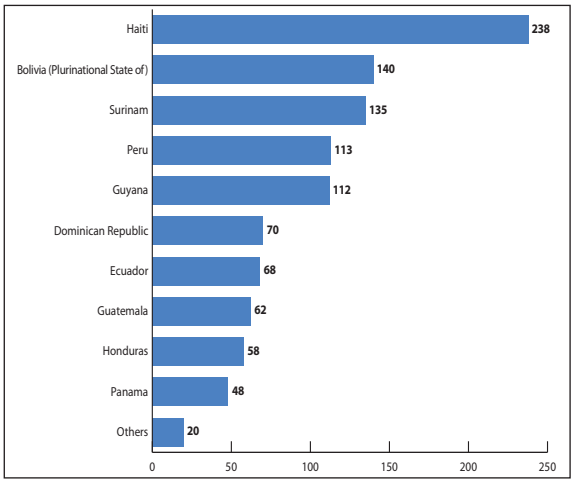
Top 10 countries by estimated (absolute) numbers of incident TB cases

(Highlighted in red: 80% of the regional burden)

	Country	Incident TB cases	%	Cumulative
1.	Brazil	87.000	32%	32%
2.	Peru	33.000	12%	44%
3.	Haiti	24.000	9%	53%
4.	Mexico	19.000	7%	60%
5.	Colombia	16.000	6%	66%
6.	Bolivia	14.000	5%	71%
7.	USA	13.000	5%	76%
8.	Argentina	11.000	4%	80%
9.	Venezuela	9.500	3%	83%
10.	Ecuador	9.300	3%	87%
	Others	36.577	13%	100%

FIGURE 4

Top 10 countries by estimated TB incidence per 100,000 population

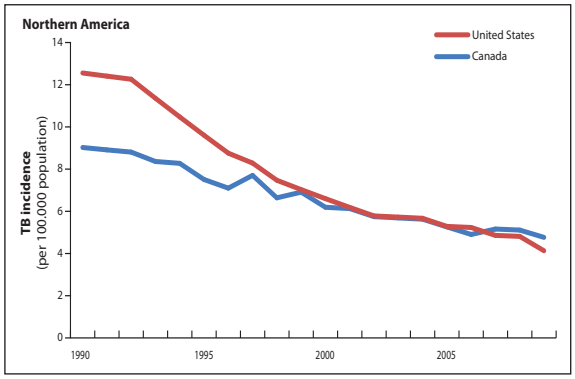


Trends in TB incidence varied considerably at country level, and there is uncertainty of trends in TB over time in some of the countries (Figure 5 a-f). Incidence seems falling or stable since the 1990s in the majority of the countries, whereas few countries witnessed an increase in estimated incidence. Among those were Surinam, Guyana (until 2006) and Trinidad and Tobago (Figure 5 d-f).

FIGURE 5

Estimated TB incidence in countries by subregions of the Americas, 2009

5a)



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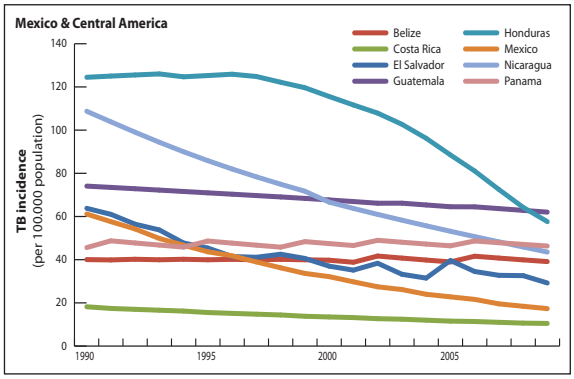

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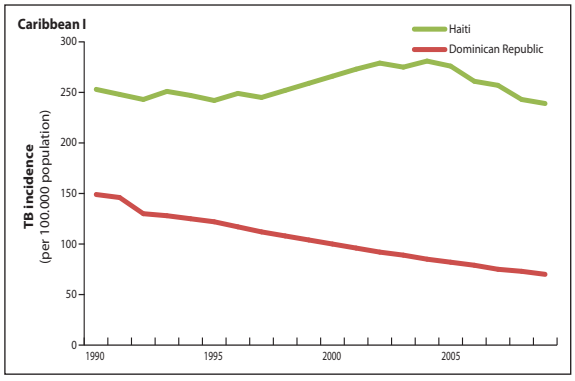

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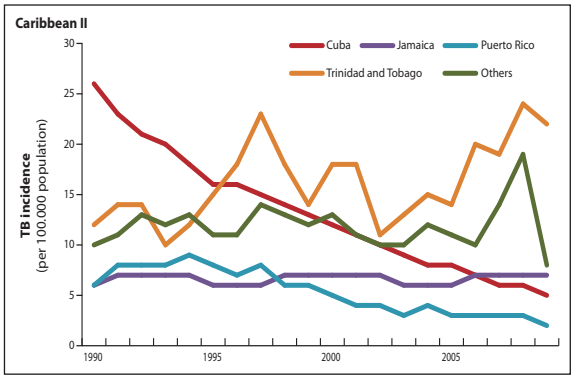
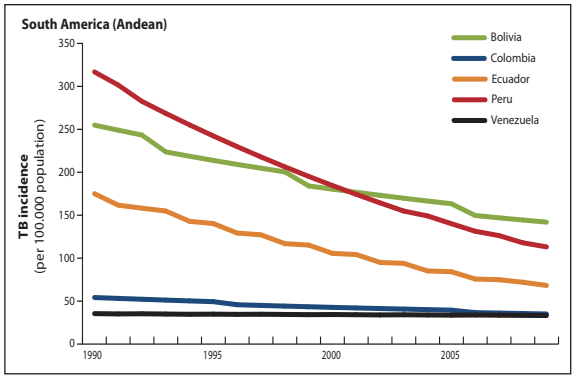
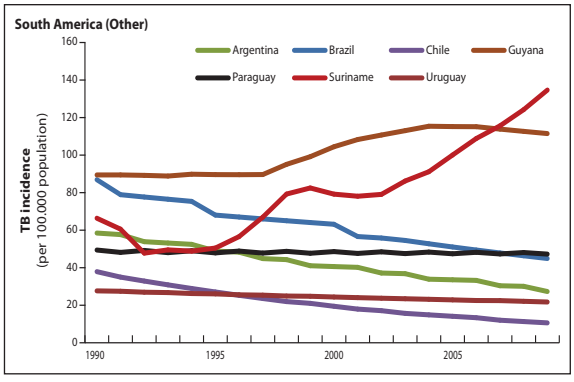


5e)



5f)



1.2. Prevalence

In 2009, there were an estimated 340,000 prevalent TB cases in the Americas, equivalent to 37 per 100,000 population.

The estimated number of prevalent TB cases was 122,000 (36% of the total regional estimate) in the South America Andean subregion, 109,000 (32%) in the other countries of South America, 50,000 (15%) in Mexico & Central America, 44,000 (13%) in the Caribbean and 16,000 (5%) in Northern America.

1.3. Mortality

In 2009, an estimated 19,000 deaths occurred among HIV negative TB cases in the Region of the Americas, 2.1 per 100,000 population, respectively.

The mortality rate was 10.3 per 100,000 in the Caribbean – nearly 5 times that of the total regional estimate (Figure 6).

Sixty percent of all estimated deaths due to TB (12,000) occurred in South America.

In most of the countries with a high per-capita burden of TB, the trend in estimated TB deaths is declining since the early 1990s (Figure 7). Mortality in Haiti has not been declining since 1990 and the current decline is uncertain.

In addition to deaths due to TB in HIV negative people, there were an estimated 4,600 deaths among HIV positive TB cases in the region. Thus, the total number of TB deaths in the Americas was nearly 25,000, or 2.7 deaths per 100,000 population, respectively.

Data on estimated TB incidence, prevalence and mortality in the Region of the Americas are summarised in Table 1.

FIGURE 6

Trends in estimated mortality in five subregions of the Americas

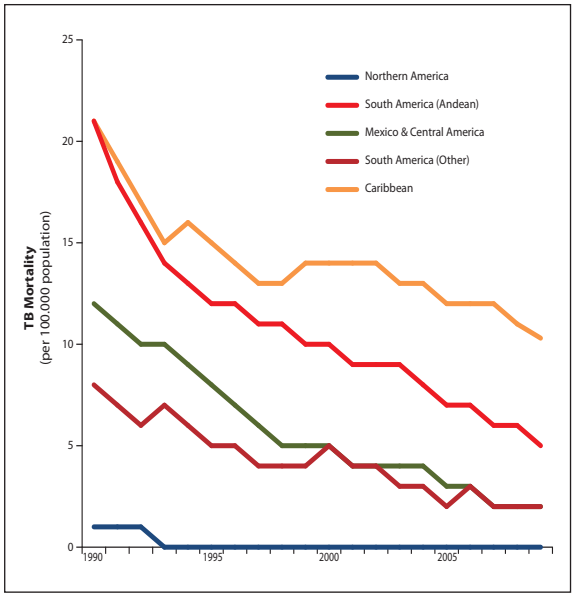
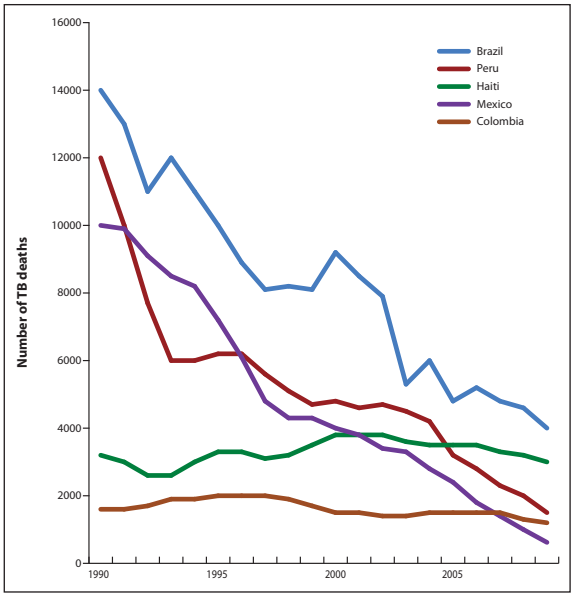


FIGURE 7

Trends in estimated numbers of TB deaths in selected countries with high TB burden



1.4. MDR-TB / XDR-TB

In 2009, there were an estimated 6,300 MDR-TB cases among notified TB cases in the Region of the Americas. The estimated prevalence of MDR-TB among notified pulmonary TB cases was 3%.

Six countries (Peru, Brazil, Mexico, Ecuador, Dominican Republic and Haiti) accounted for 80% of all estimated MDR-TB cases in the region (Box 2).

BOX 2

Top 10 countries by estimated MDR-TB cases among notified TB cases (new and re-treatment), 2009

(Highlighted in red: 80% of the regional burden)

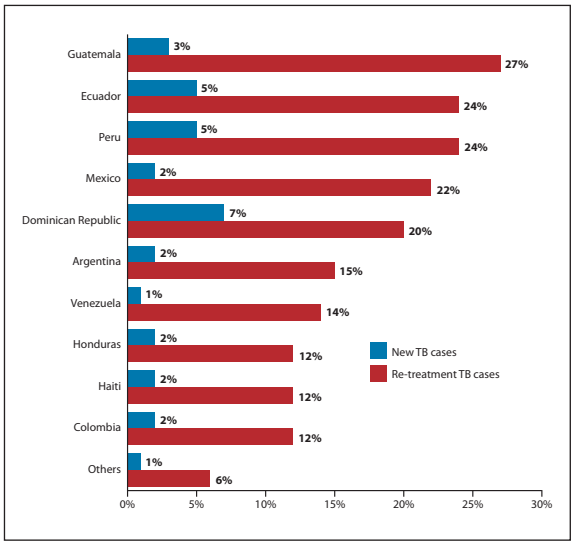
	Country	Est. MDR-TB cases	%	Cumulative %
1.	Peru	2300	36%	36%
2.	Brazil	1100	17%	54%
3.	Mexico	700	11%	65%
4.	Ecuador	360	6%	71%
5.	Dominican Republic	310	5%	76%
6.	Haiti	331	5%	81%
7.	Argentina	270	4%	85%
8.	Colombia	210	3%	88%
9.	Bolivia	110	2%	90%
10.	USA	91	1%	92%
	Others	526	8%	100%

At country level, the estimated prevalence of MDR-TB varied between 1% and 7% of new TB cases and between 4% and 27% of re-treatment cases (Figure 8).

By the end of 2009, at least one case of extensively drug-resistant TB (XDR-TB) was reported in 8 countries: Argentina, Brazil, Canada, Colombia, Ecuador, Mexico, Peru and the United States.

FIGURE 8

Top 10 countries by estimated prevalence of MDR-TB among notified TB cases, 2009



1.5. TB/HIV

In 2009, there were an estimated 36,400 HIV positive incident TB cases in the Region of the Americas, 13% of all incident TB cases. The rate of HIV positive incident TB cases was 3.9 per 100,000 population.

More than half of all incident HIV positive TB cases occurred in Brazil (Box 3).

The estimated prevalence of HIV among incident TB cases was 21% in the Caribbean, 20% in the subregion of South America (other than Andean), 9% in the subregions of Northern America and Mexico/Central America and 5% in the subregion of South America (Andean).

At country level, HIV prevalence varied between 0.2% and 32% of estimated incident TB cases in 2009. It was 25% or higher in five countries: Suriname, Jamaica, Trinidad and Tobago, Guyana and Haiti (Figure 9).

The prevalence of HIV correlated linearly with the estimated prevalence of HIV/AIDS in the overall population (Figure 10; page 18), suggesting that the burden of TB/HIV is closely related to the overall burden of HIV in the countries, and underlining the importance of TB and HIV inter-program collaboration. ■

BOX 3

Top 10 countries by estimated numbers of HIV positive incident TB cases, 2009

(Highlighted in red: 80% of the regional burden)

	Country	Est. TB-HIV cases	%	Cumulative %
1.	Brazil	19000	52%	52%
2.	Haiti	5900	16%	68%
3.	Guatemala	1600	4%	73%
4.	Colombia	1500	4%	77%
5.	USA	1300	4%	81%
6.	Mexico	960	3%	83%
7.	Venezuela	960	3%	86%
8.	Ecuador	820	2%	88%
9.	Argentina	740	2%	90%
10.	Dominicana Republic	610	2%	92%
	Others	3007	8%	100%

FIGURE 9

Top 10 countries by estimated prevalence of HIV among incident TB cases, 2009

(Countries with at least n=100 incident TB cases only)

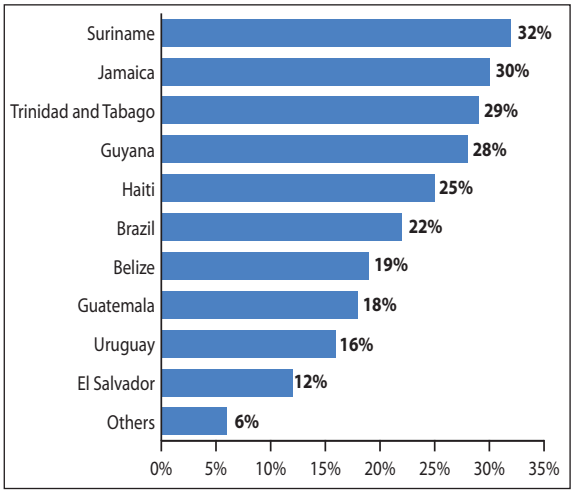


FIGURE 10

Correlation between estimated HIV prevalence in the general population and estimated HIV prevalence in incident TB cases, 2009

(Highlighted in red: countries with est. HIV prevalence >1% in the general population)

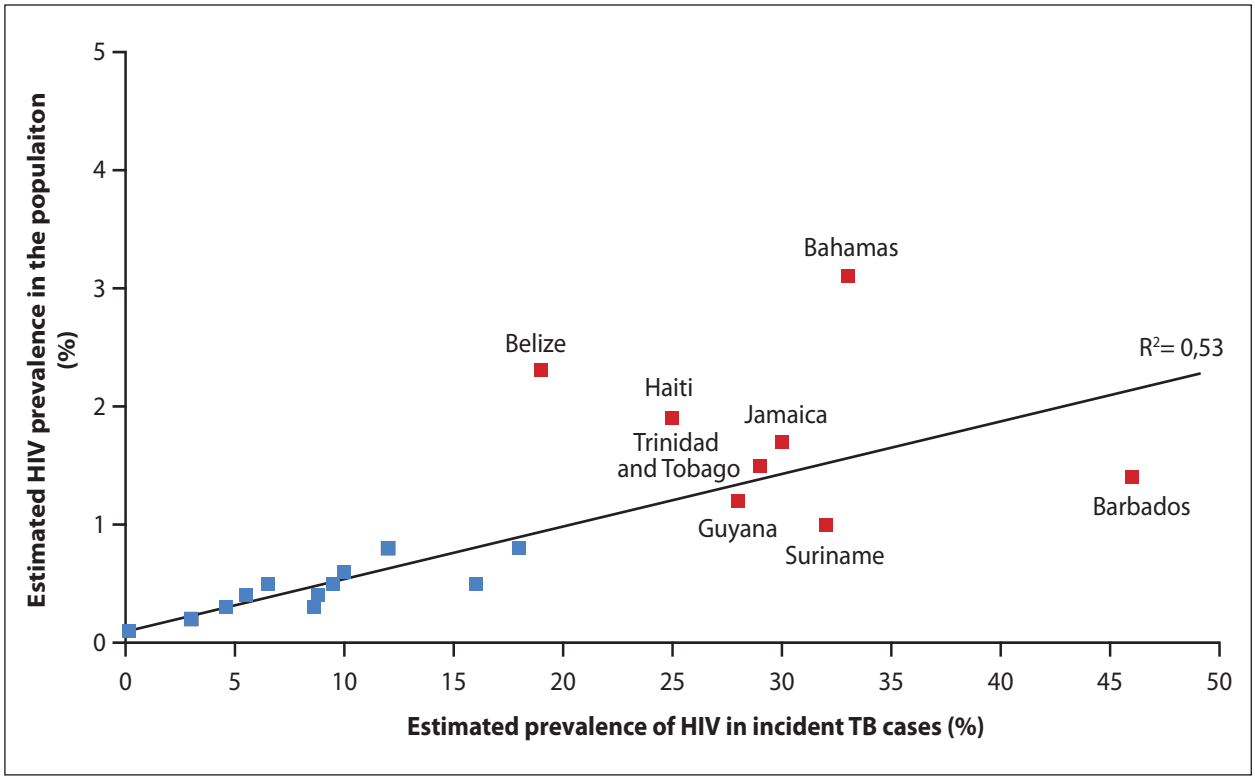


TABLE 1

Estimated epidemiological burden of TB, 2009

A) Per absolute numbers in thousands

	Incidence		Prevalence	Mortality	MDR-TB	MDR-TB
	All forms	HIV-positive	All forms	HIV-negative	Incident Cases (2008)	Notified Cases
Northern America (except Mexico)	15	1,4	16	0,6	0,2	0,1
Caribbean	32	6,7	44	4,2	1,3	0,7
Mexico & Central America	39	3,6	50	2,3	1,2	1,0
South America (Andean)	82	4,2	109	6,6	3,9	3,1
South America (Other)	105	21	122	5,4	2,1	1,5
Americas	**272**	**36**	**340**	**19**	**8,7**	**6,3**
AFR	2.855	988	3.739	407	63	27
EMR	664	13	1.065	107	22	13
EUR	420	23	568	62	81	58
SEAR	3.233	183	4.981	480	136	95
WPR	1.937	37	2.942	246	124	80
World	**9.382**	**1.280**	**13.634**	**1.320**	**427**	**280**

B) Per 100 000 population

			Incidence	Prevalence	Mortality	MDR-TB
	All forms	HIV-positive	All forms	HIV-negative	Incident Cases (2008)	Notified Cases
Northern America (except Mexico)	4,2	0,4	4,6	0,2	1,2	1,0
Caribbean	80	17	108	10	3,9	3,7
Mexico & Central America	25	2,4	33	1,5	3,0	3,6
South America (Andean)	65	3,3	86	5,2	4,7	5,6
South America (Other)	40	7,8	46	2,1	1,9	1,8
Americas	**29**	**3,9**	**37**	**2,1**	**3,1**	**3,2**
AFR	346	120	454	49	2,2	1,8
EMR	111	2,1	179	18	3,4	3,1
EUR	47	2,6	64	7,0	19	16
SEAR	181	10	279	27	4,2	4,1
WPR	108	2,0	163	14	6,5	5,8
World	**137**	**19**	**200**	**19**	**4,6**	**4,5**

Chapter 2:
Progress in TB control

This chapter presents data on the current situation and recent progress of TB control in the Region of the Americas. It is divided into six subsections: Case notification, Case Detection, Treatment Outcomes, Laboratory strengthening, Management of drug-resistant TB and TB/HIV collaborative activities.

Trends in tuberculosis case notification are driven by various factors including changes in case finding efforts (e.g. increase in the number of health facilities that provide TB services), changes in recording and reporting systems (e.g. changes in case definitions, expanding reporting to the private sector) and underlying TB incidence (e.g. HIV-driven increase in TB case notifications).

If carefully collected and analysed, notification data can provide valuable insights into the occurrence and the characteristics of TB in different groups of cases (i.e. by TB site, smear result, sex and age groups), which may have important implications for TB control. A particular subsection is devoted to the notification of childhood TB in the Americas.

The case detection rate (CDR), defined as the ratio of notified TB cases and the number of estimated incident TB cases is used to estimate the proportion of incident TB cases with access to TB control under the DOTS strategy. It is one of the major target indicators for global TB control. The WHO has recently moved away from reporting CDR among sputum smear-positive TB cases. Instead, estimates of case detection rates for all forms of TB are used for reporting, and this report follows this change.

Monitoring of treatment outcomes is one of the major components of the Stop TB strategy. The corresponding section in this report focuses on treatment outcomes at the regional, subregional and country level. Treatment outcomes at the regional level are stratified by site of TB (i.e. pulmonary vs. extra-pulmonary), HIV status and MDR-TB. Rather than using treatment success rate, the rate of unfavourable treatment outcomes is used to allow for country comparison. This takes into account the fact that the proportion of undocumented or not evaluated treatment outcomes differs between countries, which has a greater impact on treatment success rates than on rates of unfavourable outcomes.

The chapter ends with sections for two major challenges to TB control. The section on management of drug-resistant TB focuses on the scale-up of MDR-TB control measures (trainings, guidelines) at country-level, the coverage of drug-susceptibility testing (DST), case detection of MDR-TB, and the provision of second-line treatment. The section on collaborative TB/HIV activities considers both, progress in reducing the burden of HIV/AIDS among TB cases through provision of HIV testing, co-trimoxazol preventive therapy (CPT) and antiretroviral treatment (ART), and the progress in reducing the burden of TB among HIV positive individuals through screening and provision of isoniazid-preventive therapy.

2.1. Case notification

In 2009, a total of 228,000 TB cases were notified in the Region of the Americas, equivalent to a rate of 24 per 100,000 population. A breakdown of TB cases notified in 2009 is shown in Figure 11.

2.1.1. Cases by treatment history

Of all TB cases notified in 2009, around 206,000 (90%) were new cases and 22,000 (10%) were re-treatment cases, classified as relapse cases (10,000), re-treatment after failure (6,000), re-treatment after default (1,000) or other types of re-treatment (5,000).

The proportion of notified re-treatment TB cases varied at country level[1] between 3% and 27% (Figure 12).

2.1.2. Cases by site of disease

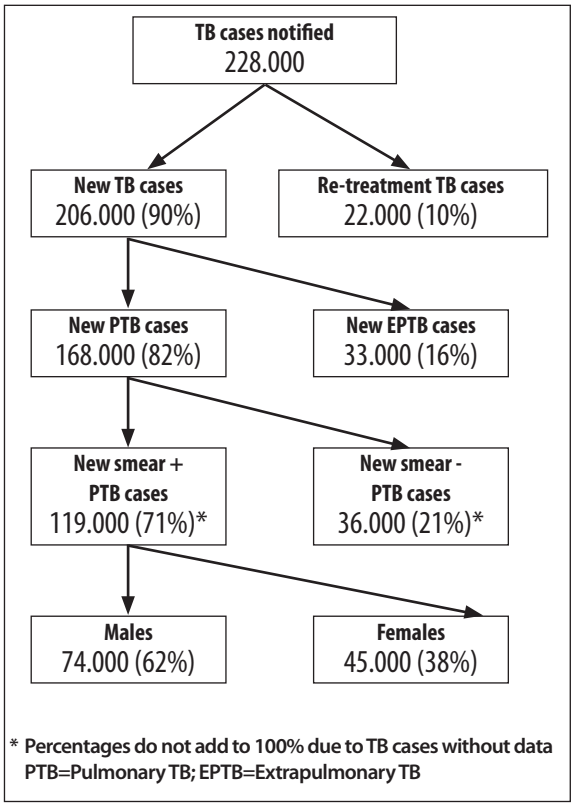
Of the 206,000 new TB cases notified in 2009 in the Americas, 168,000 (82%) were pulmonary TB (PTB) cases and 33,000 (16%) were extra-pulmonary TB (EPTB) cases. For the remaining 5,000 TB cases (2%), the site of the disease was not reported.

The proportion of new EPTB cases was higher than average in Northern America (22%; Canada: 32%), whereas new TB cases in the Caribbean were more frequently PTB cases (88%). The proportion of EPTB cases varied at country level between 4% and 32% (Figure 13).

The high variation in the proportion of EPTB cases across countries may be due to differences in case definitions or diagnostic capacity.

FIGURE 11

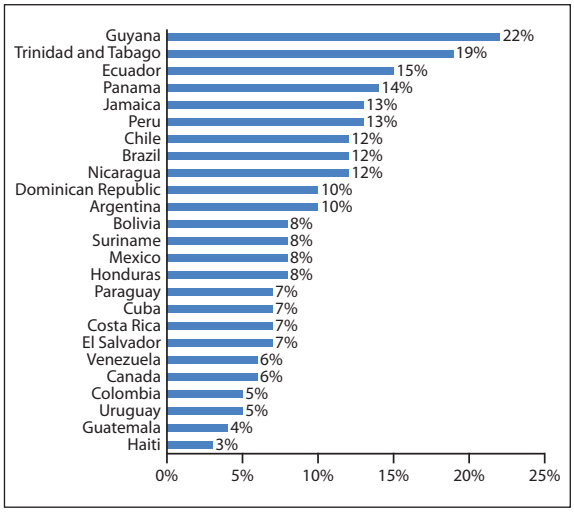
Overview of TB cases notified in the Region of the Americas, 2009



* Percentages do not add to 100% due to TB cases without data
PTB=Pulmonary TB; EPTB=Extrapulmonary TB

FIGURE 12

Proportion of notified re-treatment TB cases by country1, 2009



1 Countries with at least 100 TB cases notified in 2009

2.1.3. Cases by bacteriology

Of the 168,000 new PTB cases notified the Americas in 2009, nearly 134,000 (80%) were confirmed by any laboratory method. Of those, 119,000 were new smear-positive PTB cases, equivalent to a notification rate of new smear-positive PTB cases of 13 per 100,000 population.

At subregional level, the proportion of PTB cases with bacteriologically confirmation was lowest in the Caribbean and South America (other) subregion (each 68%). It was very high in the South American Andean subregion, suggesting either data error, over-reporting of smear-and culture positive PTB cases or underreporting of smear-/culture negative PTB cases (Figure 14).

At country-level, the proportion of new pulmonary TB cases with bacteriological confirmation varied between 62% and 107% of new PTB cases (Figure 14).

Countries approaching or exceeding 100% might be subject to data error, probably due to inclusion of lab-confirmed extra-pulmonary TB cases in the numerator.

FIGURE 13

Proportion of notified extrapulmonary TB cases of all TB cases by country, 2009

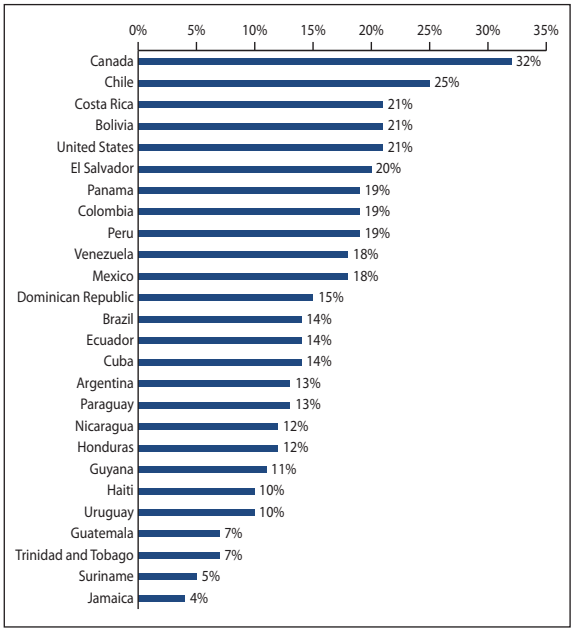
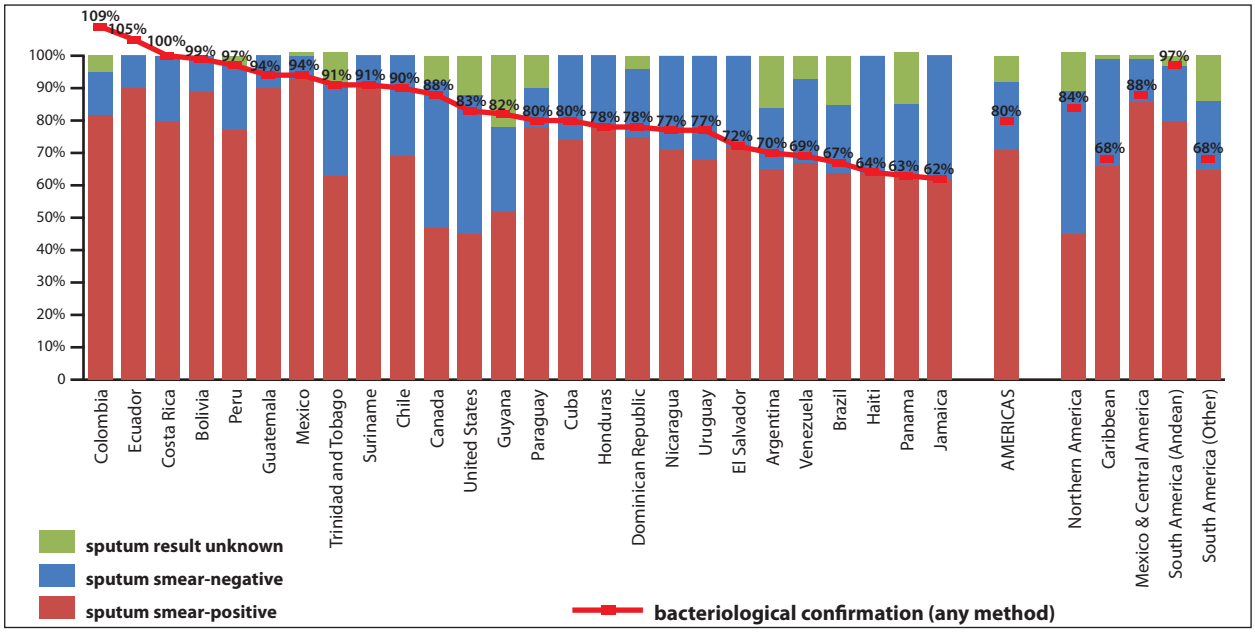


FIGURE 14

Sputum smear results 2009, percentages of all new pulmonary TB cases notified, 2009*

(Countries sorted by % of cases with bacteriological confirmation)



*Two countries exceeding 100% - probably due to inclusion of extrapulmonary cases in the numerator: Columbia 109%; Ecuador 105%

2.1.4. Cases by sex and age group

Of the 119,000 new sputum smear-positive TB cases notified in the Region of the Americas in 2009, nearly 74,000 (62%) were male and 45,000 (38%) were female.

Figure 15 shows the age and sex distribution of TB cases in the Americas in absolute numbers and relative per 100,000 of the population.

Numbers of sputum smear-positive TB cases in men and women are highest in younger age groups, i.e. between 15 and 34 years. The rate of TB in men remains high with increasing age in adulthood whereas in women, TB occurs at highest rates in young adult age.

The age and sex distribution of TB varies considerably by subregion (Figure 16). In Northern, Mexico & Central and South America (Andean and Other combined), rates of tuberculosis increase with age or show a second peak in old age, whereas in the Caribbean, TB is predominantly a disease of young adults of working age. In Northern America, the rates of smear-negative disease and smear-positive disease are comparable, whereas in the other subregions smear-positive TB is much more common than smear-negative TB (Figure 16).

Looking at the percent decline in sputum smear-positive TB notification rates in different age groups suggests that the dynamics of TB over time vary in different parts of the Americas (Figure 17). In South America (Andean and Other combined), the decline in TB rates between the time periods 1997-1999 and 2007-2009 was higher in younger age groups than in the old. This might indicate both, reduced transmission in the young and a shift of the TB epidemic from younger towards older age (Figure 17). In the Caribbean, the decline in TB notification rates occurs mainly in children and older age groups, whereas in young age groups the decline is negligible, indicating that transmission has not been reduced in the young. The dual HIV-TB epidemic might be an underlying factor of this finding. Of note, TB notification rates have increased in young women aged 15-24 in the Caribbean (Figure 17).

The percent-decline of smear-positive TB in Northern America and Mexico & Central America was highest in mid-adult age (i.e. ≥ 35 years; data not shown).

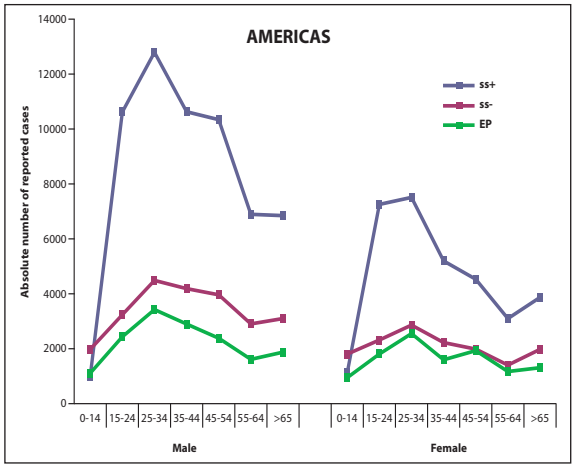
FIGURE 15

Age and sex distribution of smear+, smear- and extrapulmonary TB cases in the Americas, 2009

(a: absolute number of TB cases by age and sex; b: TB cases per 100,000 individuals of the same sex and age group)

Note: The three case types in absolute numbers (left side) may not be comparable due to different numbers of countries reporting.

15a)



15b)

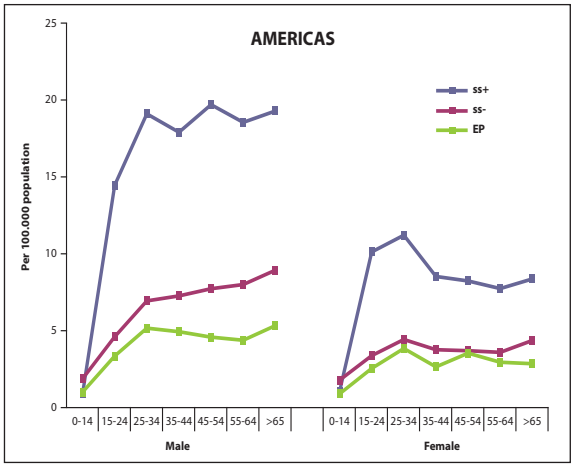
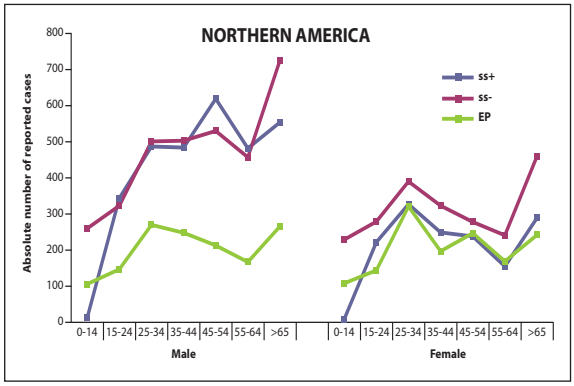


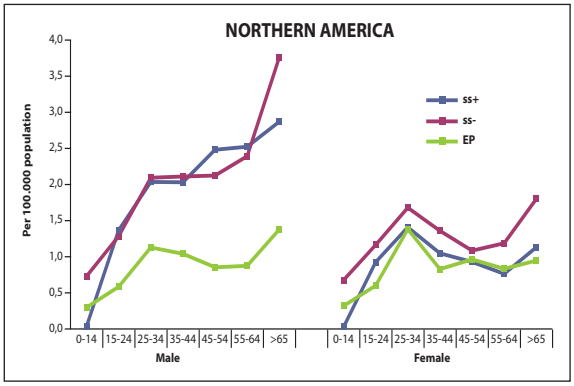
FIGURE 16

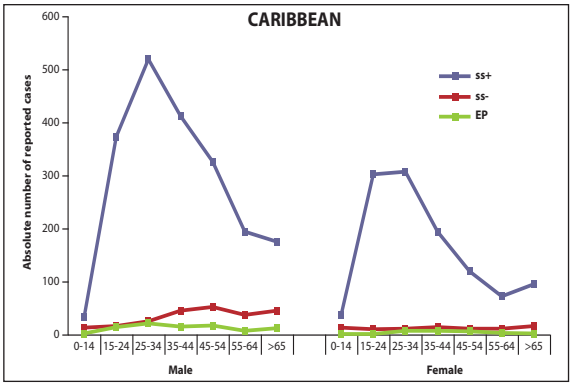
Sex and age distribution of new smear-positive TB cases in subregions of the Americas, 2009

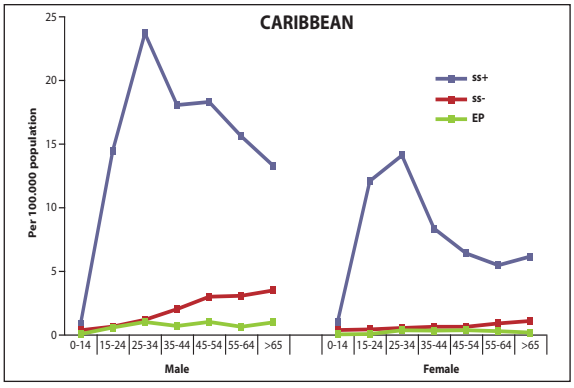
(a: absolute number of TB cases by age and sex; b: TB cases per 100,000 individuals of the same sex and age group)

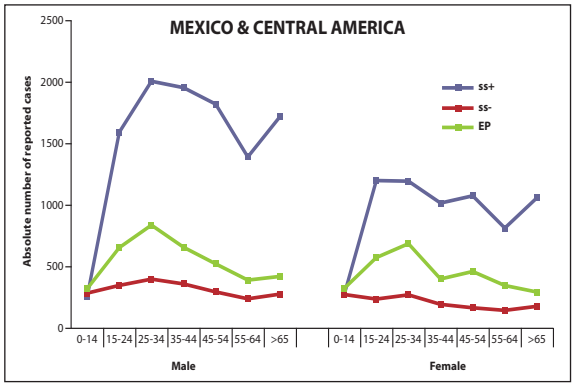
Note: The three case types in absolute numbers (left side) may not be comparable due to different numbers of countries reporting.

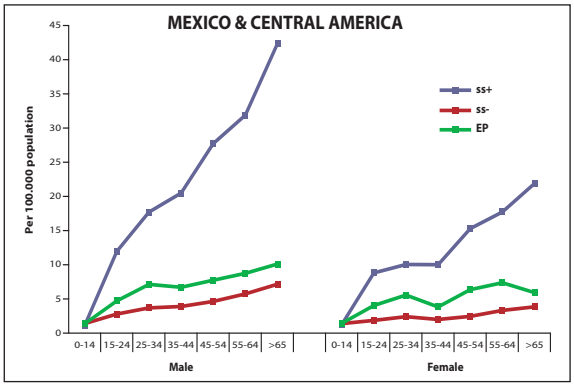


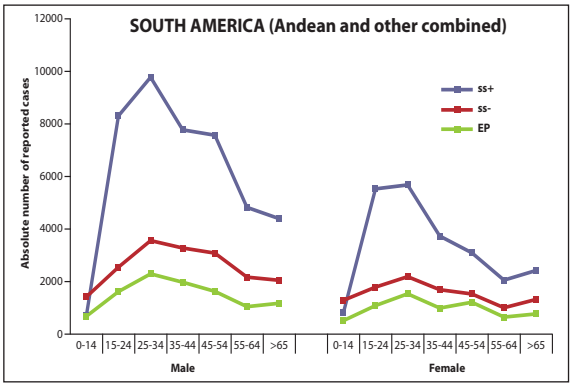












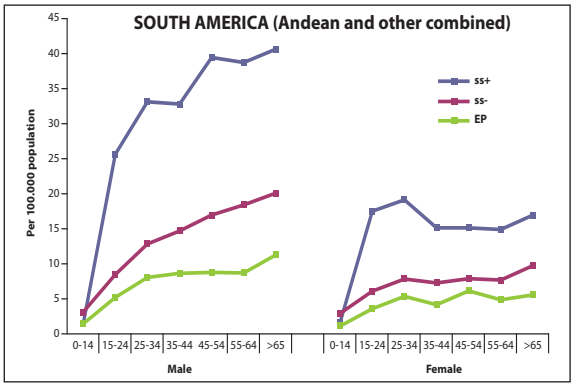
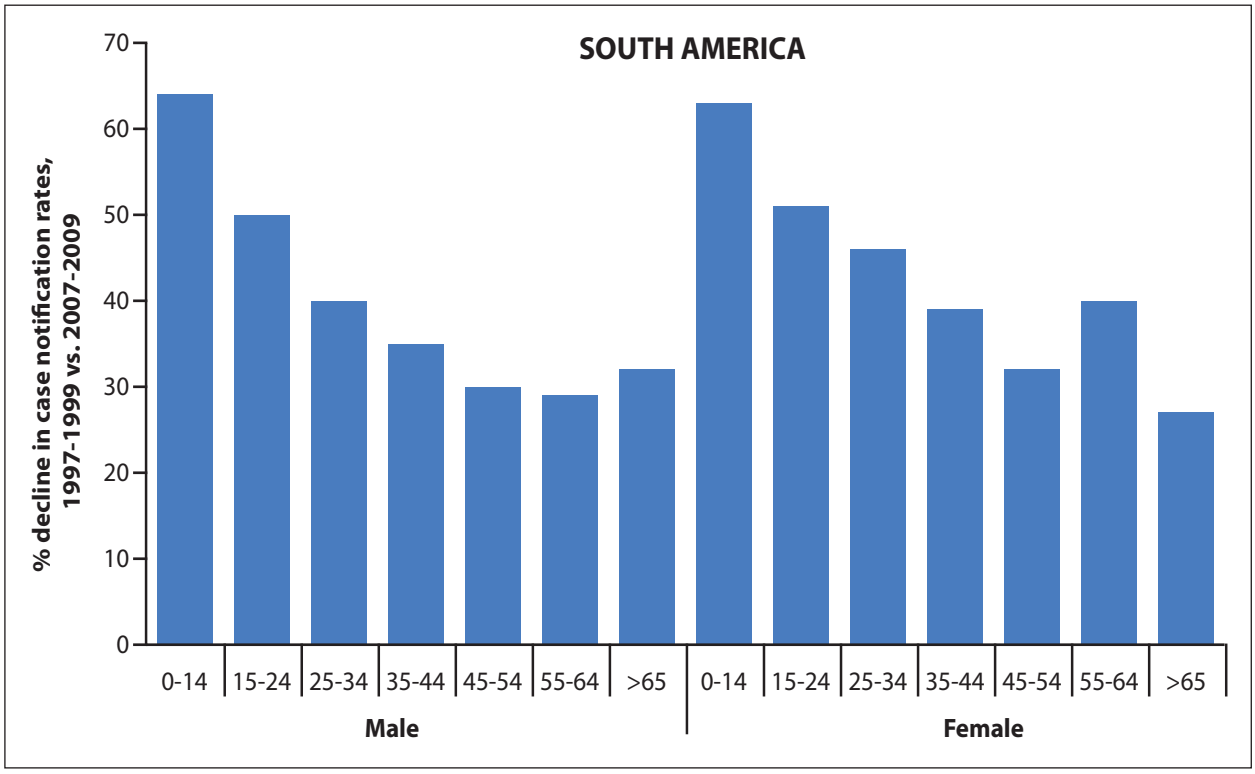


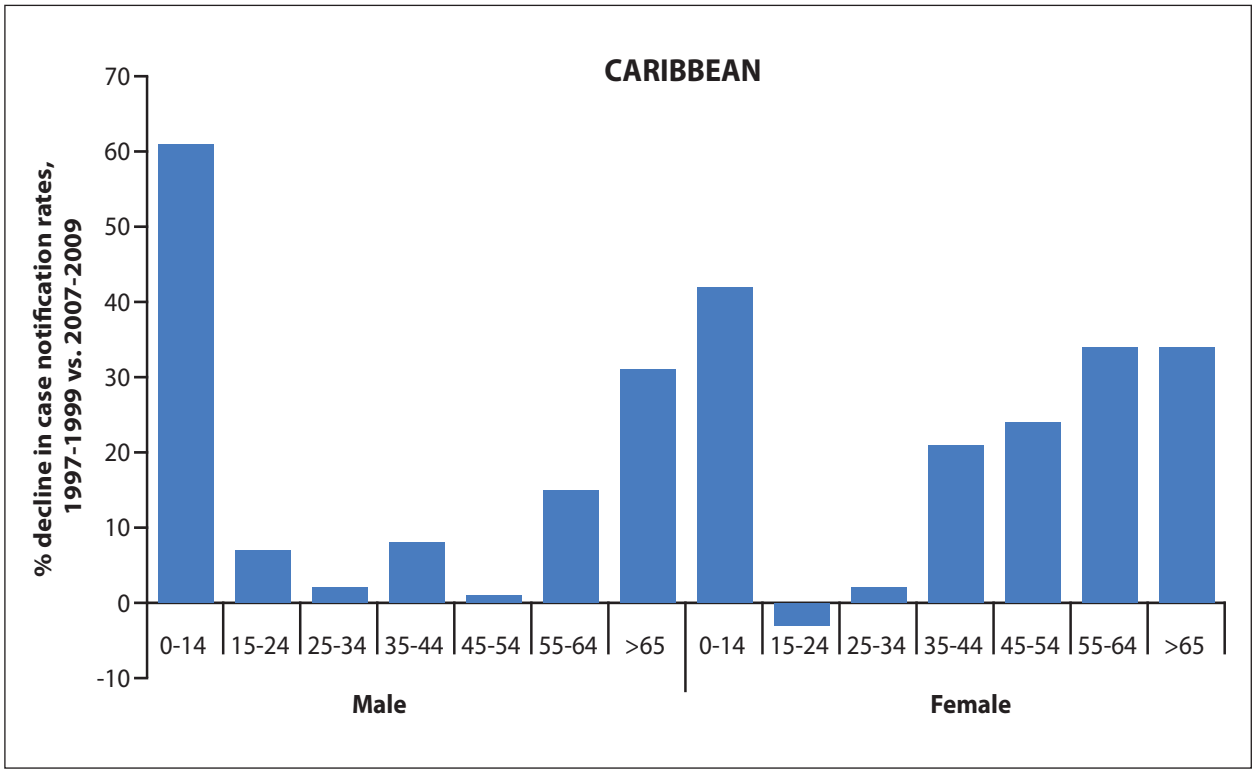
FIGURE 17

Relative decline in smear-positive TB case notification rates in the time period 2007-2009 vs. 1997-1999 (pooled) in South America (Andean & Other combined; 17a) compared to the Caribbean (17b)

17a)



17b)



2.1.5. Childhood Tuberculosis

In 2009, a total of 9,900 new TB cases in children (age 0-14 years) were notified in the Region of the Americas, equivalent to 5% of all new TB cases notified.

More than half of the children were notified in South America (Andean: 1,800/ 18%; Other: 3,700/37%). In the Caribbean, 1,900 children (19%) were notified with TB, of which Haiti accounted for 1,800 (18%) cases. In Mexico & Central America 1,700 (17%) and in Northern America 700 (7%) childhood TB cases were notified.

Nearly one fifth, 19%, of the TB cases notified in children was smear-positive, 57% of the cases were smear-negative, and 24% were extra-pulmonary TB cases.

The notification rate of childhood TB in the Americas was 4.3 per 100,000 children. In the Caribbean, the notification rate of childhood TB per 100,000 children was highest compared to all other subregions in the Americas and 4 times higher than the regional rate (Figure 18).

The proportion of notified childhood TB cases varied at the country level between 1 and 20% of all new cases, and between 0% and 15% of all new smear-positive TB cases, respectively (Figure 19a,b). The variation in the proportion of childhood TB cases across the countries may reflect differences in case finding practice (e.g. contact tracing) as well as under- or over-diagnosis of childhood (and/ or adult) TB.

FIGURE 18

Notification rates of childhood TB in the Region of the Americas and five subregions, 2009

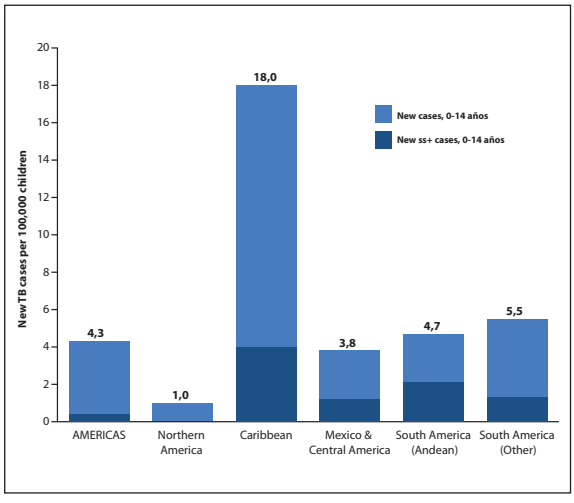
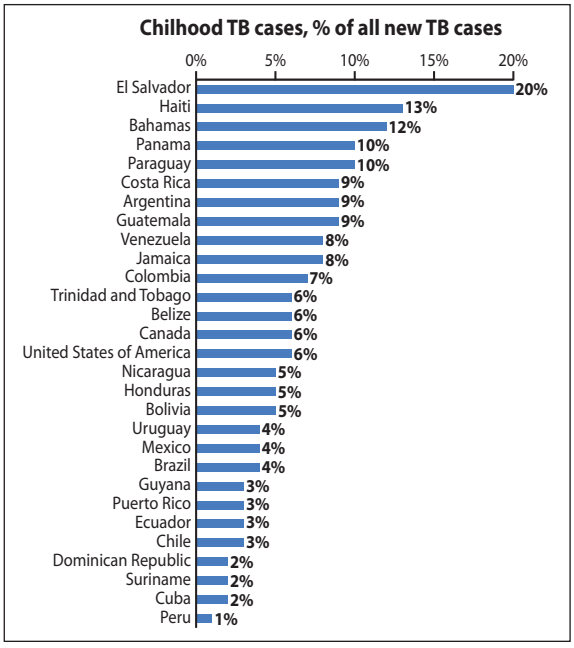


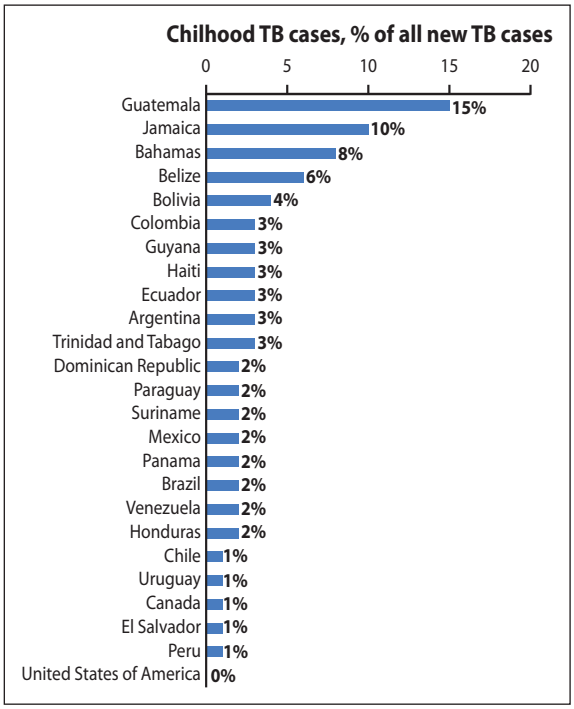
FIGURE 19

Childhood TB cases as proportion of all new TB cases notified, 2009

19a: All new TB cases



19b: New smear-positive TB cases



2.2. Case Detection

The case detection rate (CDR) for all TB cases has been steadily increasing in the Region of the Americas over the past years, i.e. from 69% in 1995 to 79% in 2009 (Table 2; Figure 20).

The estimate for CDR in 2009 was highest in Northern America (89%) and lowest in the Caribbean* (62%; Table 2).

Case detection at country level varied considerably in 2009 (Figure 21).

Very high CDRs, especially those exceeding 100% (e.g. Chile, Cuba), might be due to a scale-up in case finding efforts to find prevalent cases or rather indicate under-estimation (and the need for revision) of TB incidence.

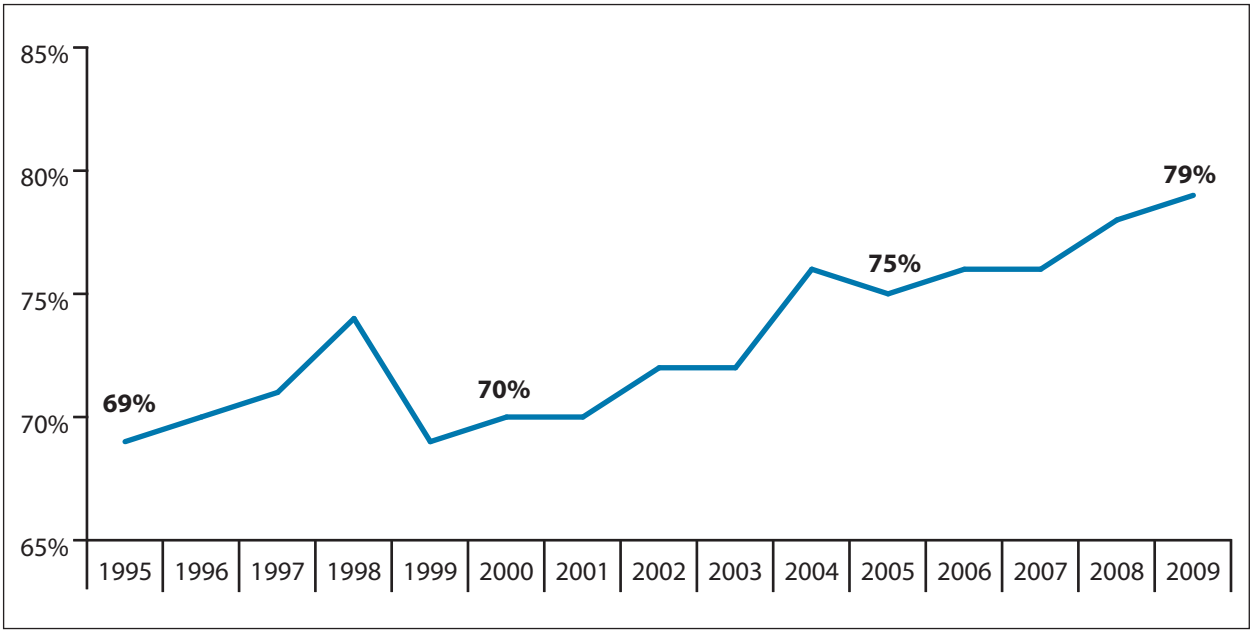
TABLE 2

Case detection rates (%) for all TB cases, 1995-2009

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Northern America (except Mexico)	87	88	86	87	87	86	88	89	87	85	88	86	88	86	89
Caribbean	40	47	55	52	50	52	48	50	57	57	58	58	58	62	62
Mexico & Central America	43	57	62	62	60	62	63	62	60	60	68	69	73	77	80
South America (Andean)	72	68	69	71	71	73	73	73	70	72	71	76	74	77	77
South America (Other)	78	74	73	79	72	72	74	77	76	81	78	80	79	80	82
AMERICAS	**69**	**70**	**71**	**74**	**69**	**70**	**70**	**72**	**72**	**76**	**75**	**76**	**76**	**78**	**79**
AFR	38	41	38	41	40	38	38	40	41	43	42	44	45	47	48
EMR	23	27	24	41	30	25	28	32	34	38	47	51	59	60	62
EUR	62	69	76	76	76	76	77	79	76	79	79	81	80	79	78
SEAR	53	56	47	46	52	50	48	50	53	55	58	62	63	64	66
WPR	41	43	43	41	41	41	42	42	51	60	66	69	71	71	70
World	**46**	**49**	**46**	**46**	**47**	**45**	**45**	**47**	**49**	**53**	**56**	**59**	**60**	**61**	**62**

FIGURE 20

Case Detection Rate (all cases) in the Region of the Americas, 1995 - 2009

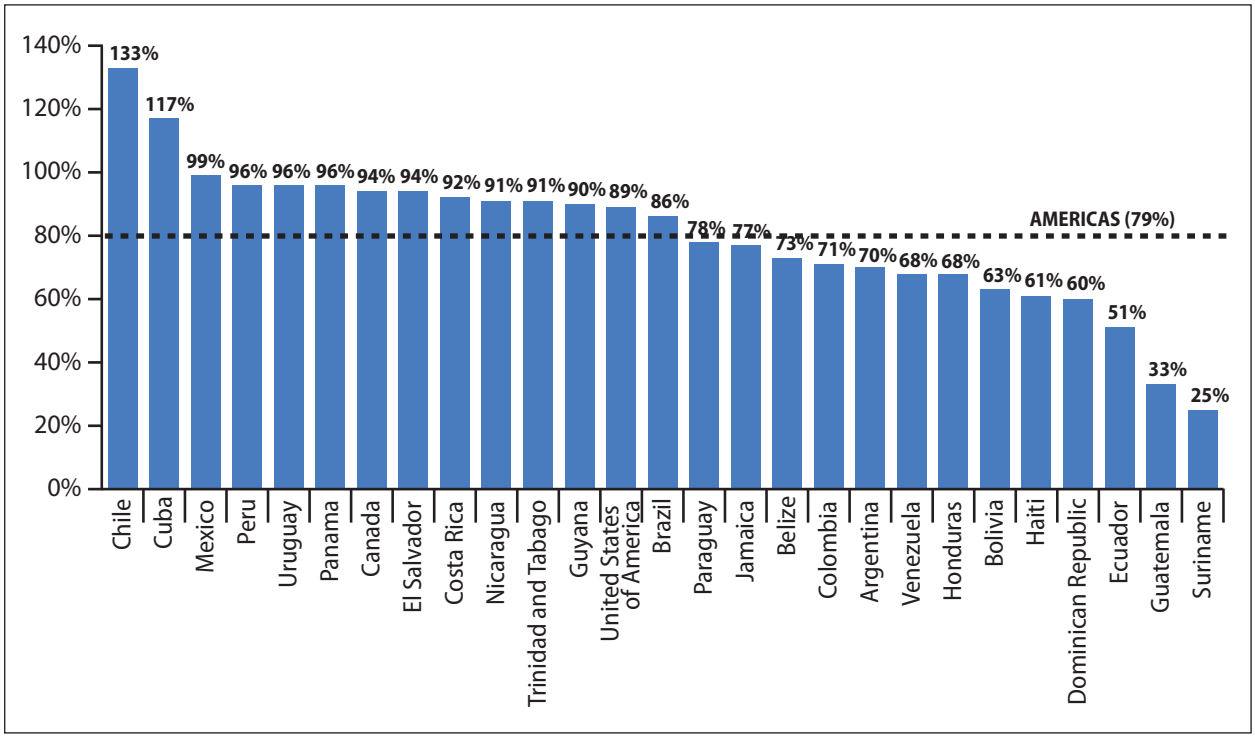


**Low case detection rate in the Caribbean was due mainly to the low case detection rate in Haiti and in the Dominican Republic (see: Figure 21)*

FIGURE 21

Case Detection Rate (all cases) in countries of the Americas, 2009

(Countries with at least n=100 incident TB cases only)



2.3. Treatment outcomes

In the Region of the Americas, a total of 109,000 new sputum smear-positive TB cases were treated in the 2008 cohort.

Of those, 77% were successfully treated (i.e. cured or treatment completed). Trends in treatment outcomes in the Region remained relatively stable over the past years (Figure 23).

In Northern America, the treatment success rate was 83%. Only 2.4% of successfully treated cases were reported as "cured", whereas 81% were reported as "completed" (Table 3).

Mexico & Central America reached a treatment success rate of 85% - highest in the Americas. The treatment success rate was lowest in the South America (other than Andean) subregion (70%), with cure rates of 35% only (Table 3).

The proportion of unfavourable treatment outcomes (i.e. death, failure or default) varied at country level between 8% and 33% of TB cases (Figure 22).

Stratified analysis of treatment outcomes by sputum smear, HIV and MDR-TB status revealed that death and treatment default rates are high particularly among HIV positive TB cases in the Region (2007 cohort; Figure 24).

Of note, in the Americas, only 91% of cases notified were included in the 2008 treatment cohort, and inclusion was very low in Haiti (29%, Table 3). This suggests that overall treatment success might be lower and higher inclusion should be ensured in the future, in order to obtain valid estimates on treatment outcomes.

FIGURE 22

Top 10 countries by unfavourable treatment outcome rates (%), 2008 cohort

(Countries with cohort size less than 100 cases excluded)

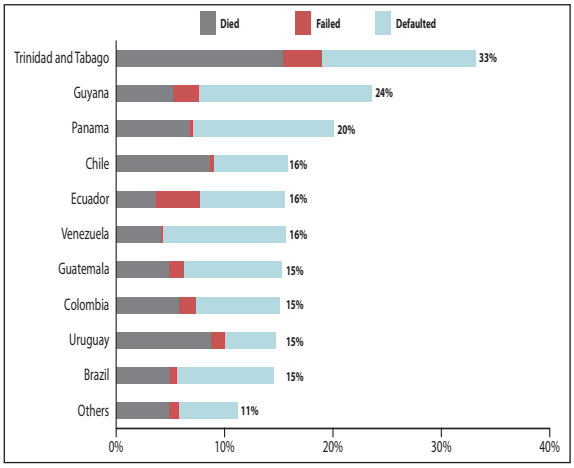


FIGURE 23

Region of the Americas: Trend in new smear-positive treatment outcome, 1994-2008

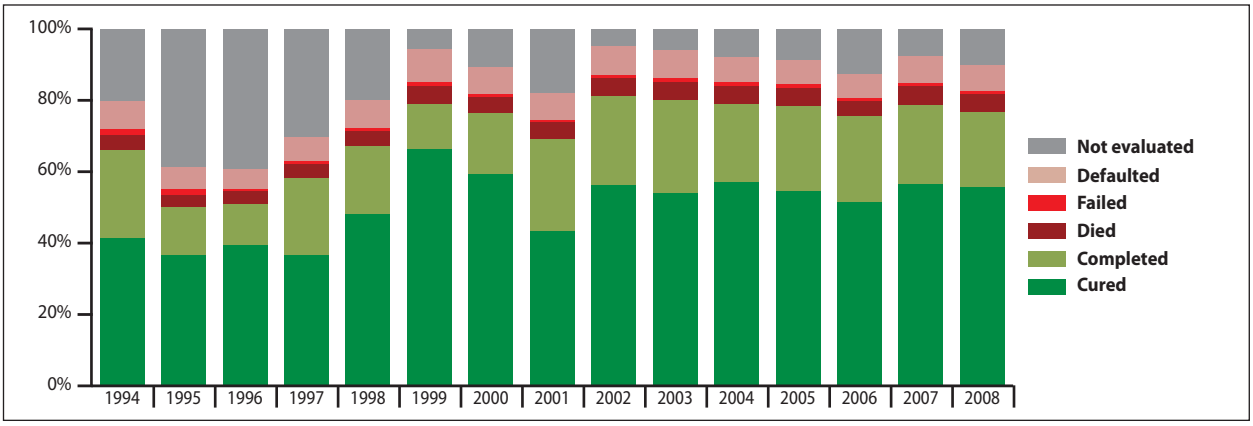


TABLE 3

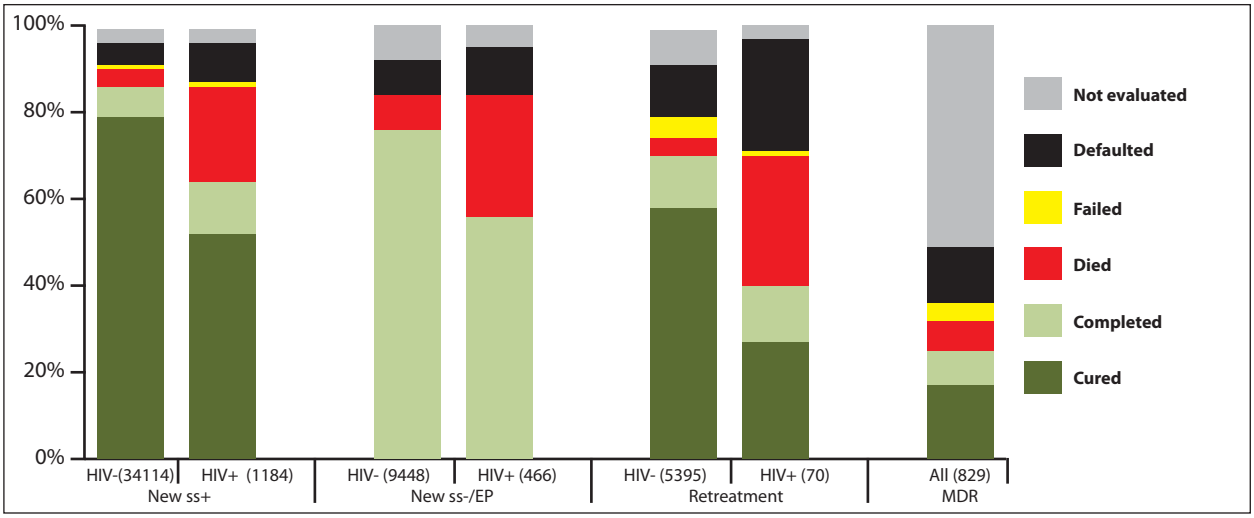
New smear-positive treatment outcomes of the 2008 cohort

	Nº notified	Nº registered	% registered	Cured	Completed	Died	Failed	Defaulted	Not evaluated
Northern America (except Mexico)	5230	4628	88%	2,4%	81%	8,9%	0%	1,7%	6,2%
Caribbean	11498	3312	29%	70%	6,3%	5,0%	1,5%	7,4%	9,8%
Mexico & Central America	19448	19509	100%	80%	5,3%	5,7%	1,1%	5,8%	2,3%
South America (Andean)	37957	34822	92%	76%	4,3%	3,9%	1,4%	6,9%	7,2%
South America (Other)	45726	46733	102%	35%	35%	5,1%	0,5%	8,6%	16%
AMERICAS	**119.859**	**109.004**	**91%**	**56%**	**21%**	**5,0%**	**0,9%**	**7,2%**	**10%**
AFR	595.184	576.775	97%	70%	10%	5,5%	1,7%	6,7%	5,9%
EMR	166558	166.719	100%	74%	13%	2,4%	0,9%	5,2%	4,0%
EUR	105238	127.087	121%	49%	14%	7,3%	9,0%	5,7%	15%
SEAR	1.007.382	1.011.353	100%	84%	3,8%	4,0%	1,7%	4,9%	1,4%
WPR	661923	656.570	99%	89%	3,2%	2,0%	0,7%	1,3%	3,9%
World	**2.656.147**	**2.647.511**	**100%**	**79%**	**6,9%**	**3,9%**	**1,7%**	**4,5%**	**4,2%**

FIGURE 24

Region of the Americas: Matched analysis of treatment outcomes by smear status, HIV status and MDR, 2007 cohort

(N=17 countries reporting all case types; cohort size is shown on x-axis next to case category)



2.4. Laboratory strengthening

Strengthening of laboratory capacity and performance is a priority for TB control in the Region of the Americas and elsewhere. Regional targets for laboratory capacity are shown in Box 4. A total of 17 countries reported data on laboratory capacity and external quality assurance (EQA) of laboratories for 2009 (Figure 25), accounting for 73% of all estimated incident TB cases in the region.

Smear microscopy

All reporting countries except Jamaica had at least one or more laboratories providing smear microscopy available per 100,000 population (Table 4). The proportion of smear microscopy laboratories with external quality assurance (EQA) varied between 9% and 100% (Figure 25a). Performance of laboratories was acceptable in most countries except Venezuela, were only 34% of laboratories included in EQA showed adequate results (Table 4).

Culture testing

Capacity for culture testing was below target in 8 out of 17 reporting countries (Table 4). EQA was fully implemented in five countries, partially in two and marginally in three of the 17 reporting countries. Most of the labs included in EQA showed adequate performance in 2009 (Figure 25b).

DST

Capacity for drug-susceptibility testing was below target in most of the reporting countries. Eleven out of 17 countries had in total one laboratory providing DST available. 2009 (Figure 25c).

BOX 4

Region of the Americas: Targets for TB laboratory capacity in the countries

At least **1** laboratory providing smear microscopy **per 100,000** population

At least **1** laboratory providing culture testing **per 1,000,000** population

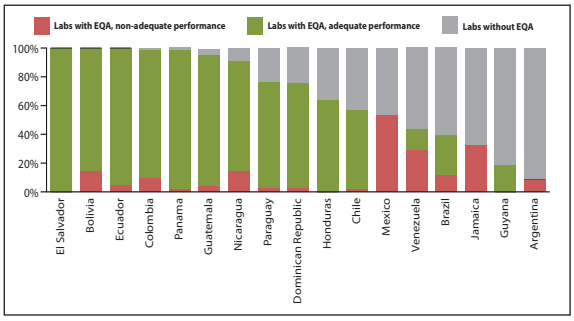
At least **1** laboratory providing DST **per 5,000,000** population

FIGURE 25

EQA coverage and results in TB laboratories providing smear microscopy (a), culture (b) and DST (c; page 27), 2009

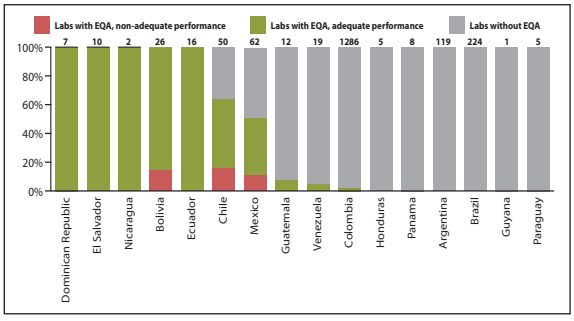
(17 ountries with available data)

25 a) Smear microscopy*



**The labels above the bars show total numbers of smear laboratories.*
The bars in dark grey show the percentage of laboratories included in EQA in countries that did not report performance results.

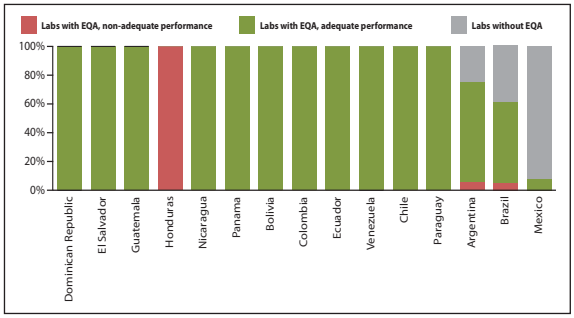
25 b) Culture*



**The labels above the bars show total numbers of culture laboratories; Jamaica not included, because no labs providing culture available.*

DST performance was adequate in all these laboratories in 2009, except for the one in Honduras (Figure 25c). Colombia had four DST laboratories available showing good performance. Several laboratories were available in Argentina, Brazil and Mexico, with partial inclusion in EQA (Figure 25c). In 2009, laboratories providing DST were not yet available in Jamaica and Guyana.

25 c) Drug susceptibility testing (DST)



**The labels above the bars show the total number of DST laboratories.*

TABLE 4

Laboratory capacity for smear microscopy, culture and DST in the Americas, 2009

Notes:
- *no data available for countries in Northern America*
- *highlighted in red: estimates for laboratory below the criteria set for the Region (see: bow 4, p. 26)*
- *percentage of labs with adequate performance refers to all labs that were included in EQA*

	Country	Smear microscopy			Culture			DST		
		# labs per 100,000 population	% labs with EQA	% labs with adequate perfor-mance	# labs per 1,000,000 population	% labs with EQA	% labs with adequ. performance	# labs per 5,000,000 population	% labs with EQA	% labs with adequate performance
Caribbean	Dominican Rep.	2,0	75%	97%	0,7	100%	100%	0,5	100%	100%
	Jamaica	0,1	33%	0%	-	-	-	-	-	-
Mexico & Central America	El Salvador	3,2	100%	100%	1,6	100%	100%	0,8	100%	100%
	Guatemala	1,7	96%	96%	0,9	8%	100%	0,4	100%	100%
	Honduras	1,9	64%	100%	0,7	0%	-	0,7	100%	0%
	Mexico	1,1	54%	no data	0,6	52%	78%	0,6	8%	100%
	Nicaragua	3,3	91%	84%	0,3	100%	100%	0,9	100%	100%
	Panama	1,7	98%	98%	2,3	0%	-	1,4	100%	100%
South America (Andean)	Bolivia	5,2	100%	85%	2,6	100%	85%	0,5	100%	100%
	Colombia	5,3	99%	90%	28,2	2%	100%	0,4	100%	100%
	Ecuador	2,3	100%	95%	1,2	100%	100%	0,4	100%	100%
	Venezuela	2,0	43%	34%	0,7	5%	100%	0,2	100%	100%
South America (Other)	Argentina	1,8	9%	0%	3,0	0%	-	2,0	75%	92%
	Brazil	2,1	39%	70%	1,2	0%	-	1,1	61%	93%
	Chile	1,7	57%	96%	2,9	64%	75%	0,3	100%	100%
	Guyana	2,8	19%	100%	1,3	0%	-	-	-	-
	Paraguay	1,6	77%	96%	0,8	0%	-	0,8	100%	100%
	Total	**2,2**	**61%**	**75%**	**3,6**	**9%**	**88%**	**0,9**	**63%**	**93%**

2.5. Management of drug-resistant (MDR-) TB

Prevention and control of drug-resistant TB is one of the objectives of the Regional Strategic Plan, targeting that 100% of the countries are engaged in detecting and treating 85% of MDR-TB cases in integrated management within DOTS by the year 2015.

By the end of 2009, NTP in 16 countries in the Region of the Americas had conducted trainings and 15 had published national guidelines specifically for the management of drug-resistant TB (table 5).

Progressive implementation of drug susceptibility testing for previously treated TB cases is a priority for all countries, especially those with medium to high prevalence of MDR-TB.

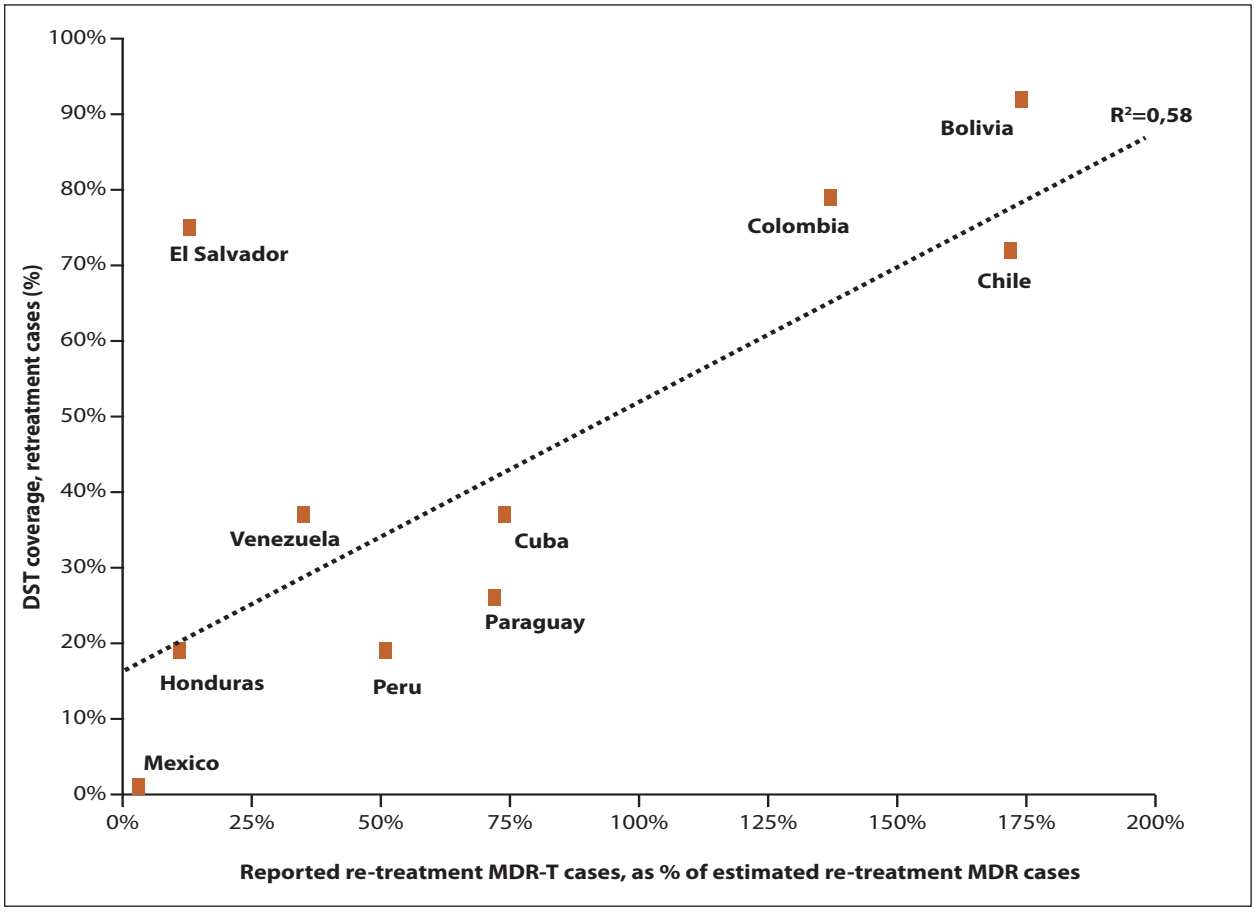
Data for 2009 submitted by 14 countries indicate that the proportion of TB cases who received DST was 16% of notified new and another 32% of notified re-treatment TB cases. Data on DST submitted by 11 countries suggest a linear association between the coverage of DST in re-treatment cases and the case detection* of MDR-TB (Figure 26).

There are currently three groups of countries in the region: One group that does not perform DST (or does not have data available) in re-treatment cases; the 2nd where DST coverage is still less than 50% of re-treatment cases associated with low case detection rates* of MDR-TB; and the 3rd where DST coverage is high: Those countries report more re-treatment MDR cases than estimated (Figure 26).

This implies that improving DST coverage among re-treatment cases results in higher case detection of MDR-TB cases: DST among re-treatment cases should be top priority in order to detect MDR-TB cases and treat them accordingly.

FIGURE 26

DST coverage and MDR-TB case detection rate* in re-treatment cases, 2009



*Case detection rate of MDR-TB cases is here expressed as the number of MDR-TB cases reported divided by the number of MDR-cases estimated among notified TB cases. Note that CDR is usually based on estimated incident cases as the denominator.

In 2009, DST resulted in 2,900 MDR-TB cases in the Americas, 46% of the 6,300 MDR-TB cases that were estimated among notified TB cases, respectively.

Of these 2,900 MDR-TB cases, 1,000 (34%) were new and 1,100 (38%) were re-treatment cases. Treatment history was not reported in the remaining 800 (28%).

More than 85% of the MDR-TB cases were notified in South America (Andean: 66%; Other: 20%). In the Caribbean, diagnostic capacity for MDR-TB is still low (see: 2.4.) and no case reports were submitted from Haiti and Dominican Republic in 2009, which explains the low number of MDR cases in this subregion (Figure 27).

By the end of 2009, second-line treatment was approved by the Green Light Committee (GLC) in 15 countries of the Americas[3]. In 2009, around 3,200 MDR-TB cases received second-line treatment (GLC: 1,100). The number of MDR-TB cases in whom second-line treatment was started is higher than the number of reported MDR-TB cases due to the fact that second-line treatment in some countries was newly introduced and offered to cases notified in previous years.

An overview of TB cases estimated, reported and enrolled in second-line treatment in the countries is given in Figure 28 & Table 5.

Case detection and the proportion of patients receiving second-line drugs are still low in some countries with high estimated numbers of MDR-TB cases in 2009. Among those were Brazil, Mexico, Dominican Republic, Haiti and Argentina.

FIGURE 27

Numbers of MDR-TB cases estimated and reported in the five subregions, 2009*

**Red percentages: MDR case detection rate*

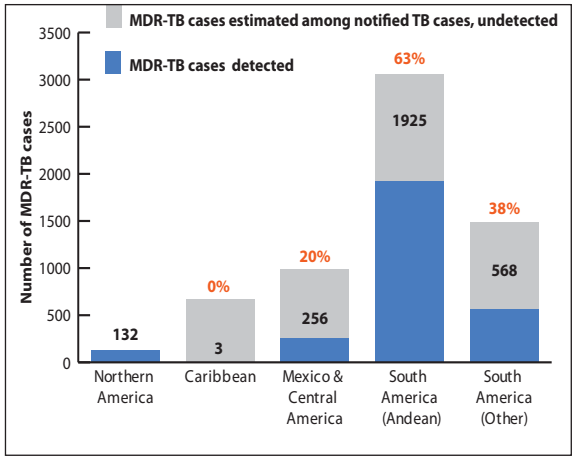
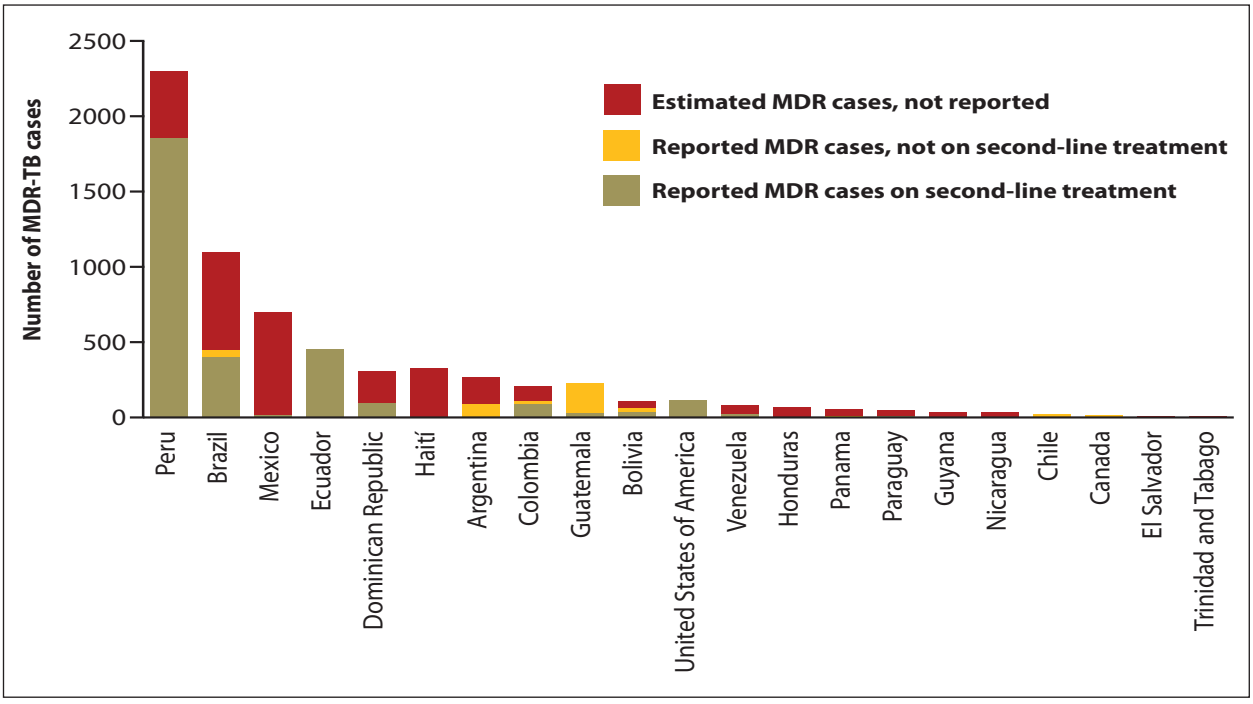


FIGURE 28

MDR-TB cases estimated among notified TB cases, reported and treated, 2009



3 Belize, Bolivia, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Haiti, Honduras, Mexico, Nicaragua, Paraguay, Peru and Uruguay

TABLE 5

MDR-TB cases estimated among notified TB cases, reported and enrolled in second-line treatment, availability of MDR guidelines, trainings and DST in the countries, 2009

	Source of estimate	Est. MDR-TB cases among notified cases	MDR-TB cases reported	% of estimate	MDR TB cases on second-line treatment	MDR guidelines	MDR trainings	DST available
Peru	DRS, 2006	2549	1578	62%	1856	NO	YES	YES
Brazil	DRS, 1996	1175	449	38%	398	YES	YES	YES
Mexico	DRS, 1997	779	11	1%	18	YES	YES	YES
Ecuador	DRS, 2002	393	156	40%	452	YES	YES	YES
Dominican Rep.	DRS, 1995	352	0	0%	93	YES	YES	YES
Haitíi	model	331	0	0%	0	NO	NO	NO
Argentina	DRS, 2005	289	89	31%		YES	YES	YES
Colombia	DRS, 2000	240	110	46%	90	NO	YES	YES
Guatemala	DRS, 2002	118	230	195%	28	YES	YES	YES
Bolivia	DRS, 1996	135	60	44%	37	NO	YES	YES
United States	DRS, 2007	127	114	90%	114	YES	YES	YES
Venezuela	DRS, 1999	89	21	24%	21	YES	YES	YES
Honduras	DRS, 2004	77	4	5%	5	YES	YES	YES
Panama	model	58	8	14%	0	YES	YES	YES
Paraguay	DRS, 2001	54	6	11%	7	YES	YES	NO
Guyana	model	39	0	0%	0	NO	NO	NO
Nicaragua	DRS, 2006	35	0	0%	0	YES	NO	YES
Chile	DRS, 2001	27	23	85%		YES	YES	YES
Canada	DRS, 2008	16	18	113%		NO	NO	NO
El Salvador	DRS, 2001	13	2	15%	2	YES	YES	YES
Trinidad and Tobago	model	12	0	0%	0	NO	NO	NO
Costa Rica	DRS, 2005	8	0	0%		NO	NO	NO
Suriname	model	5	1	20%	1	NO	NO	NO
Jamaica	model	5	0	0%	0	YES	NO	NO
Belize	model	3	1	33%		NO	NO	NO
Cuba	DRS, 2005	3	3	100%		NO	NO	NO
Uruguay	DRS, 2005	2	0	0%	1	NO	NO	NO
Bahamas	model	1	0	0%		NO	NO	NO
Saint Lucia	model	1	0	0%	0	NO	NO	NO

2.6. Collaborative TB/HIV activities

The growing HIV epidemic represents a great challenge to TB control programs in the Region of the Americas. The Regional Strategic Plan aims at strengthening TB and HIV/AIDS collaborative activities in order to improve monitoring and evaluation, decreasing the TB burden in people living with HIV and decreasing the burden of HIV in patients with TB. For the latter, provision of voluntary counseling and HIV testing for TB patients is one of the major priorities.

In 2009, around 90,000 TB cases notified in the Americas were tested or knew their HIV status, 43% of all notified TB cases for whom data were available. Testing rates remained relatively stable between 39% and 44% over the past years (Figure 29).

In 2009, a total of 15,200 notified TB cases were HIV positive, 17% of those tested.

Rates of TB/HIV co-infection have likewise remained stable over the past 5 years (Figure 29).

South America (countries other than Andean) accounted for the highest total number of HIV positive TB cases, whereas the proportion of HIV positive TB cases was highest in the Caribbean (Figure 30).

The proportion of TB cases tested was highest in the Caribbean (63%) and in Northern America (58%), where the rate of HIV positive TB cases was lowest (10%; Figure 30).

The highest absolute number of HIV positive TB cases was reported from Brazil. Some countries with high numbers of notified TB cases had low HIV test coverage, such as Mexico, Bolivia and Argentina (Figure 34)

FIGURE 29

HIV testing and test results in TB cases notified in the Americas, 2005 - 2009

The numbers under each year show the numbers of countries reporting data on HIV testing followed by the % of estimated HIV positive TB cases accounted for by reporting countries.

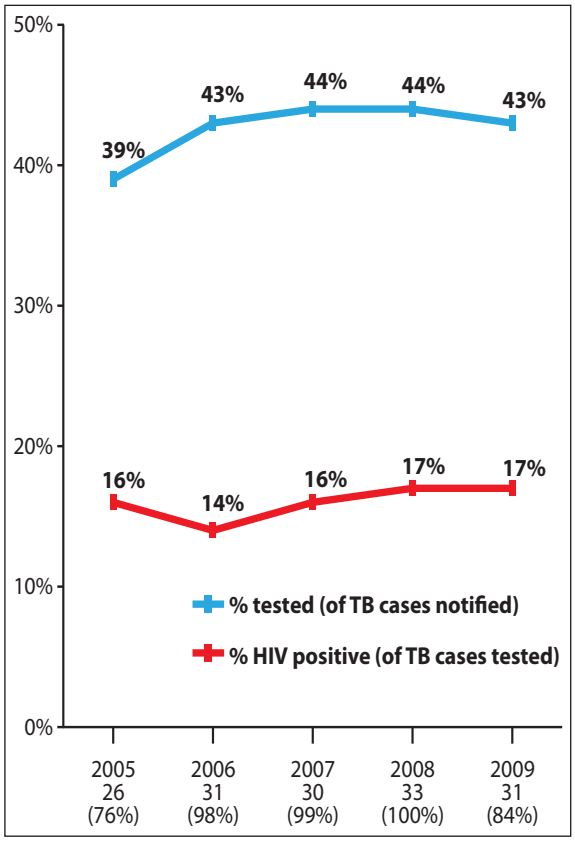
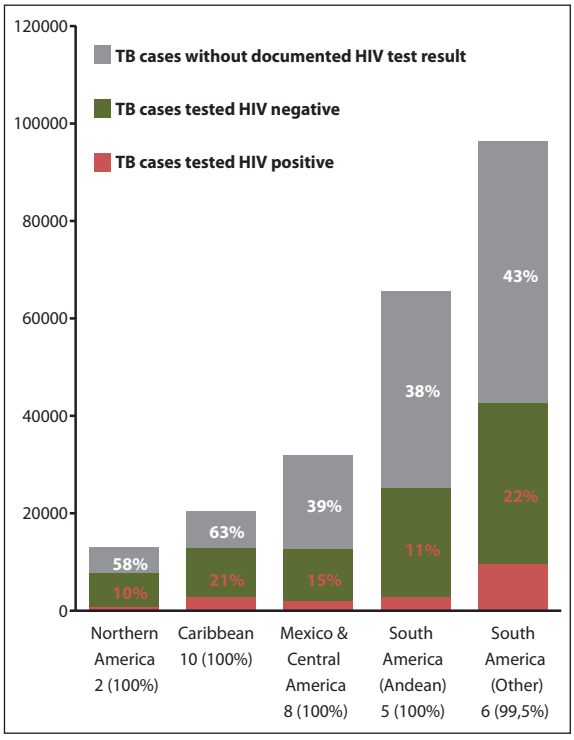


FIGURE 30

HIV testing and test results for TB cases in five subregions of the Americas, 2009

Black percentages: Proportion of TB cases tested among notified TB cases. Red percentages: Proportion of HIV positive TB cases among tested TB cases. The numbers under each region shows the numbers of countries reporting data on HIV testing followed by the % of estimated HIV positive TB cases accounted for by reporting countries (Haiti 2008 data included)



In 2009, the proportion of HIV positive TB cases receiving antiretroviral treatment (ART) in the Americas was 73% (Figure 31). Data submitted by 13 countries suggest that the proportion of HIV positive TB cases receiving co-trimoxazol preventive therapy (CPT) has increased over the past five years – up to 83% in 2009. However, data on CPT are difficult to interpret, given the low number of countries reporting (Figure 31). Data on ART and CPT by subregions indicate that the coverage of both is very low in the Caribbean (CPT: 10%; ART 12%) and low in the Andean countries of South America (CPT: 21%; ART 35%; Figure 32). However, there is a considerable uncertainty of the estimates given the low numbers of countries reporting data.

Screening for TB among people living with HIV is a further priority for TB control in the Americas and worldwide. In 2008, at least 47,800 HIV positive people were screened for TB in the Region of the Americas. Data from 12 countries suggest that 4 % of HIV positive people were screened for TB and nearly 2% received isoniazid preventive therapy (IPT; Figure 33). The rate of estimated HIV positive people screened for TB was highest in Cuba (18%), Haiti (15%) and Guyana (15%), and less than 3% in all other countries with available data.

The lower rate of HIV positive people screened for TB in 2009 is due to missing data from Haiti (Figure 33).

Reliable assessment of trends for TB screening and IPT among people living with HIV will require better data completeness and improved reporting by countries in the forthcoming years. ■

FIGURE 31

Provision of CPT and ART among HIV positive TB cases notified in the Americas, 2005 - 2009*

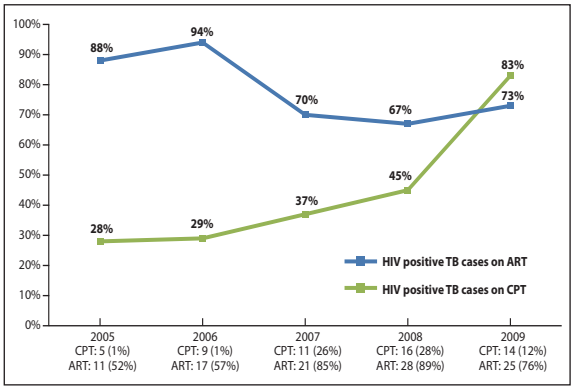


FIGURE 32

Provision of CPT and ART among HIV positive TB cases in five subregions, 2009*

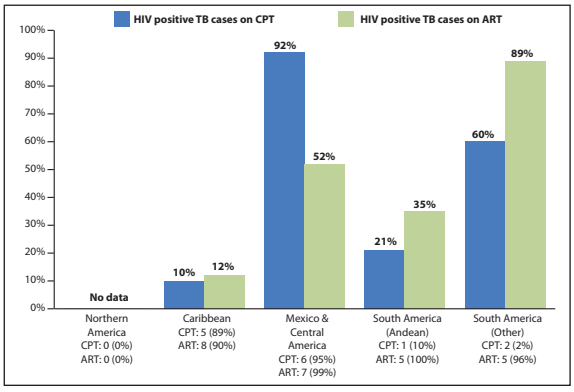
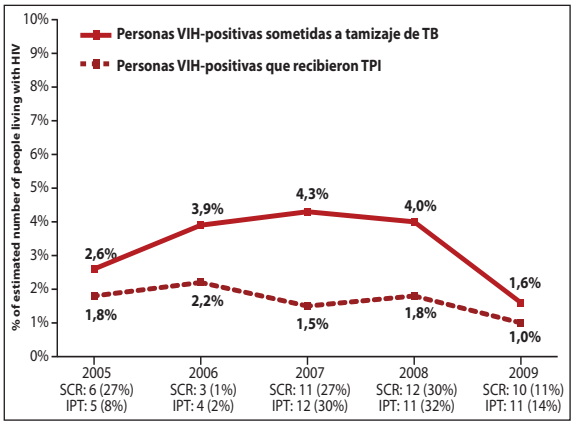


FIGURE 33

Screening for TB and IPT in people living with HIV/ AIDS in the Americas, 2005 – 2009*

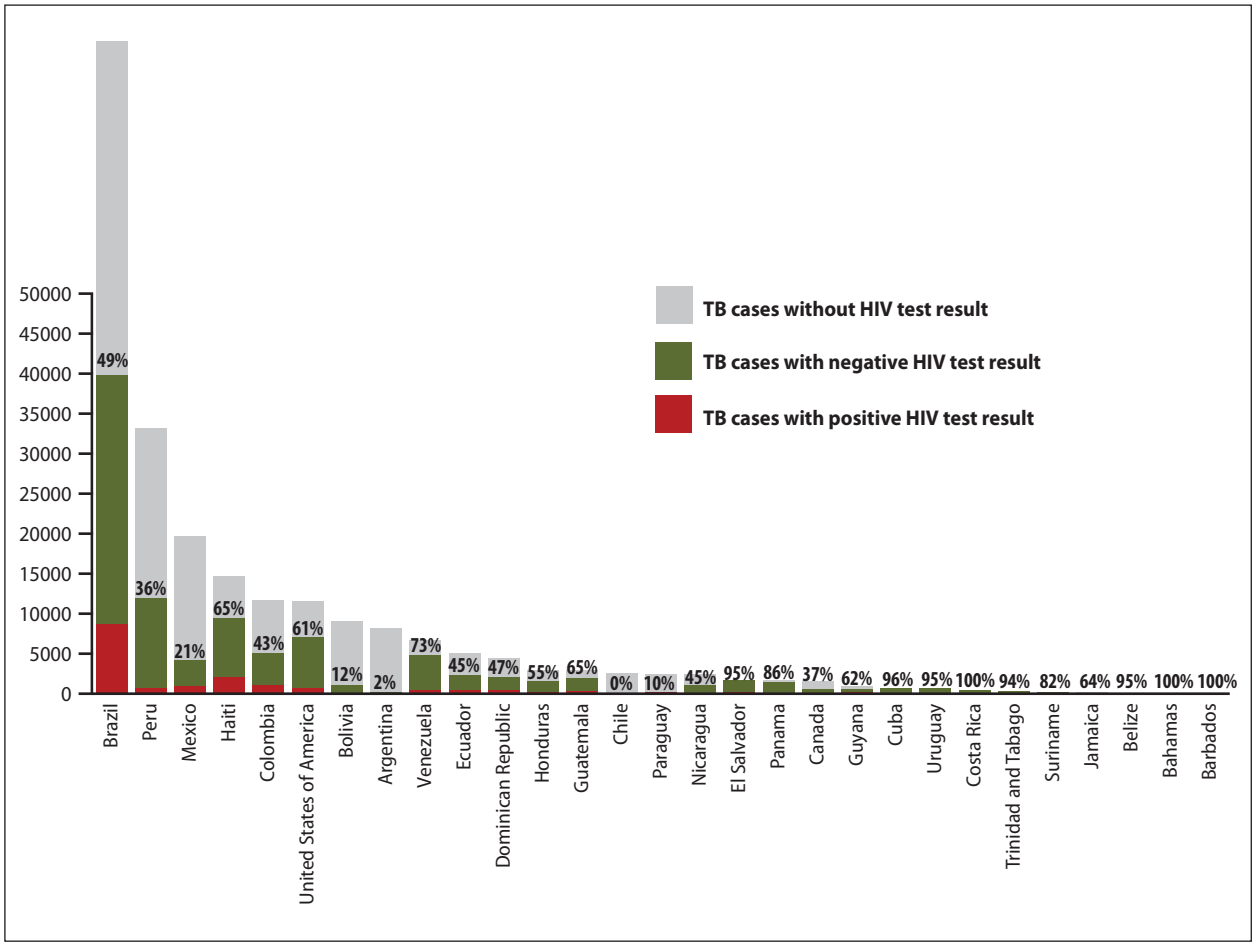


** The numbers under each year or region (horizontal axis) show the numbers of countries reporting data followed by the percentage of estimated HIV positive TB cases accounted for by reporting countries.*

FIGURE 34

HIV testing and test results in TB cases notified in the Americas, 2005 - 2009*

Percentages: Proportion of notified TB cases with a documented HIV test result



Chapter 3:
Progress towards Global Targets for Reductions in Disease Burden

The purpose of this chapter is to provide a recent update on the regional, subregional and country progress towards the international targets for TB control in the Americas, specified in the Millennium Development Goal 6 and the Stop TB Partnership (Table 6). The chapter shows a 2015 projection of TB incidence, prevalence and mortality in the Region of the Americas as a whole and at the level of the five subregions, including a projection of when these targets had been met or will probably be met in the future.

The chapter further shows a detailed overview on the country-specific progress towards the targets for incidence, prevalence, mortality, case detection rate and treatment success rate. However, judgment on country-specific progress is complex and any interpretation on the basis of the classification given should be made with caution.

TABLE 6

International Targets for TB control (Source: Stop TB Partnership)

Millennium Develoment Goal (MDG) 6: Relevant targets and indicators	Stop Tuberculosis Targets
MDG 6: Combat HIV/AIDS, malaria and other Diseases **Target 6c:** To have halted by 2015 and begun to reverse the incidence of malaria and other major diseases **Indicator 6.9:** Prevalence and death rates associated with tuberculosis **Indicator 6.10:** Proportion of tuberculosis cases detected and cured under DOTS	**By 2015:** The global burden of TB (disease prevalence and deaths) will be reduced by 50% relative to their 1990 levels. DOTS: Case detection rate (CDR; for all cases and smear-positive cases specifically) will be 84% and treatment success rate will be 87%. **By 2050:** The global incidence of TB disease will be less than 1 case per million population per year.

3.1. Incidence

Between 2005 and 2009, TB incidence has been decreasing at an annual rate of 3.8% in the Region of the Americas as a whole and between 3.0% and 5.6% in the five subregions (Figure 35a). Incidence has been declining or stable in all countries except for Suriname where incidence increased between 2005 and 2009 at an annual rate of 7.5% (Table 7).

3.2. Prevalence

There is a continuous decline of TB prevalence in the Region of the Americas. The target of halving prevalence relative to the year 1990 has been met in all subregions, except for the Caribbean, where it is expected to be met shortly after 2015 assuming a constant rate of decline (Figure 35b). Limited or no progress towards the target for prevalence was made in 13 countries (Table 7).

3.3. Mortality

TB associated mortality in HIV negative TB cases is constantly declining in the Americas and by 2009 all subregions have met the target for 2015 (Figure 35c). Limited or no progress towards the target for mortality was made in 11 countries (Table 7).

3.4. Case detection

By 2009, most countries have met the target or made considerable progress towards the target for case detection. Limited or no progress was made in 11 countries (Table 7).

3.5. Treatment success

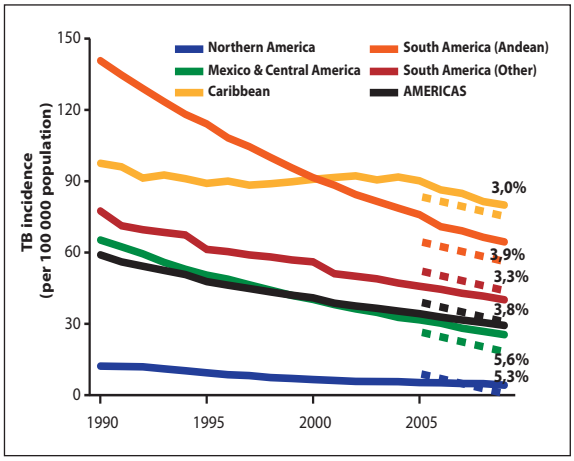
The range of progress towards the target for treatment success varies widely in the Americas. There are currently 13 countries making limited or no progress in treatment success (2008 cohort; Table 7). ■

FIGURE 35

Projection of TB incidence (a), prevalence (b) and mortality (c) in the Americas

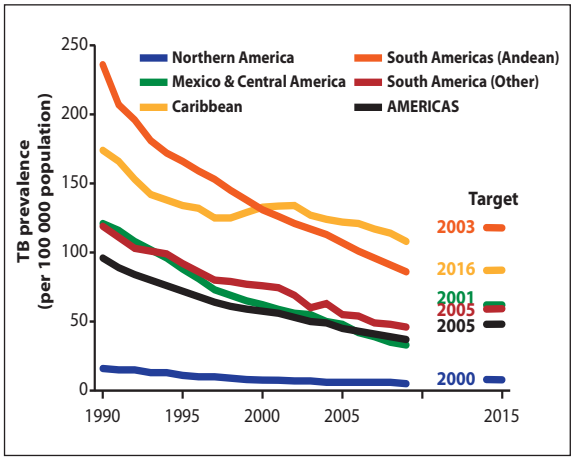
35a)

Percentages indicate the 2005-2009 annual decline in TB incidence, assuming a constant rate of decline.



35b)

Right: Year in which the target had been (or will be) met.



35c)

Right: Year in which the target had been (or will be) met.

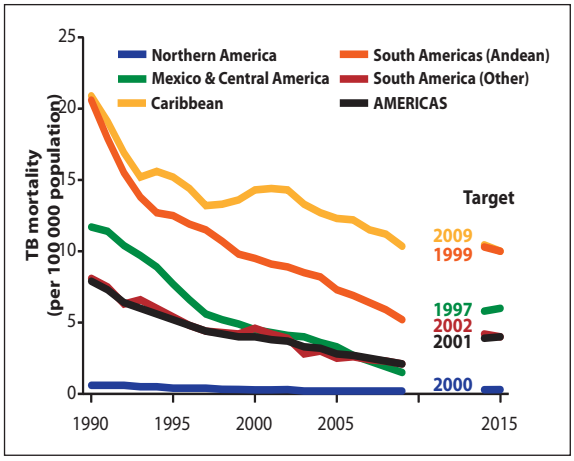


TABLE 7

Overview of country progress towards the targets for TB control in 2009

(See footnotes for definitions and explanations.)

Goal	Reverse TB incidence by 2015	Halve TB prevalence rate, from 1990 to 2015	Halve TB mortality rate, from 1990 to 2015	Detect 84% of TB cases	Successfully treat ≥87% of TB cases
Indicator	**% annual change in TB incidence, 2005 to 2009**	**% of the 2015 target met**	**% of the 2015 target met**	**% CDR (all forms), 2009**	**% treatment success rate (new smear-positive cases, 2008)**
Antigua and Barbuda	0,0	-251	-247	67	100
Argentina	-3,9	115	128	67	44
Bahamas	-4,3	78	76	89	74
Barbados	0,0	151	168	89	100
Belize	0,0	-22	-169	72	83
Bolivia	-3,0	89	89	64	84
Brazil	-3,3	126	155	86	71
Canada	-2,2	103	100	93	78
Chile	-6,5	138	139	130	72
Colombia	-2,2	79	88	70	76
Costa Rica	-3,6	137	181	93	89
Cuba	-8,2	173	193	120	88
Dominican Republic	-4,0	132	149	60	75
Ecuador	-4,9	129	134	51	78
El Salvador	-5,9	132	163	92	91
Grenada	0,0	115	180	120	33
Guatemala	-1,1	44	33	33	83
Guyana	-0,7	49	120	90	69
Haiti	-3,4	42	67	-	-
Honduras	-10,9	111	113	68	85
Jamaica	0,0	-17	-64	78	64
Mexico	-7,0	169	191	99	85
Nicaragua	-4,8	139	166	90	89
Panama	0,0	41	110	94	79
Paraguay	0,0	-32	-300	78	81
Peru	-5,4	153	182	97	82
Puerto Rico	0,0	135	136	89	63
Saint Kitts and Nevis	-0,5	108	170	84	80
Saint Lucia	0,0	40	10	41	94
Saint Vincent and the Grenadines	0,0	124	143	34	100
Suriname	7,5	-104	-100	25	59
Trinidad and Tobago	0,0	-107	-70	89	67
United States	-5,9	144	147	89	85
Uruguay	0,0	52	64	96	83
Venezuela	0,0	8	-7	68	83

Have met the target	
Considerable progress	
Limited progress	
No progress	
No data	

FOOTNOTES:

- *For TB incidence (all forms), "Have met the target" is defined as a statistically significant decline between 2005 and 2009, no progress is defined as a statistically significant increase between 2005 and 2009*
- *For TB prevalence and mortality (excluding TB deaths in HIV-co-infected patients, where HIV is the underlying cause of death), "Have met the target" is defined as having met 100 percent or more of the 2015 target; "considerable progress" as having reached 75-99 percent; "limited progress" as having met 50-74 percent; and "no progress" as having met less than 50 percent of the 2015 target; a negative percentage indicates that prevalence is higher in 2009 than it was in 1990. A percentage above 100 indicates that the target was exceeded already.*
- *For the TB case detection rate (all forms), "Have met the target" is defined as a rate of at least 84 percent (equal to the 2015 target); "considerable progress" as a rate between 70 (equal to the 2005 target for case detection) and 83 percent; "limited progress" as a rate between 50 and 69 percent; and "no progress" as a rate below 50 percent.*
- *For TB treatment success (new smear-positive cases), "Have met the targets" is defined as a rate of at least 87 percent (equal to the 2015 target); "considerable progress" as a rate between 80 and 87 percent, "limited progress" as a rate between 60 and 85 percent; and "no progress" as a rate below 60 percent.*
- *(-) indicates missing data or no cases.*

Chapter 4:
Tuberculosis and Poverty

Poverty is an important driver of the burden of tuberculosis – in the Region of the Americas and globally. Public Health measures aiming to reduce poverty are therefore likely to reduce TB incidence. The net effect of reducing poverty on the trend in TB incidence is difficult to predict, given that other risk factors for TB infection and disease, such as urbanization, smoking, diabetes, HIV/AIDS and air pollution differ widely and are now increasing in many countries.[4]

It has been shown that the DOTS strategy, as intervention, is an important tool for reducing TB mortality and prevalence.

However, its effect on TB incidence remains uncertain. It has been shown that in some countries in Latin America, the decrease in incidence coincided with the implementation of TB control programs.* However, a direct relationship between the DOTS strategy and TB incidence is difficult to establish because of overlapping effects of social and economic development in the countries.* Therefore, unless poverty and vulnerable people's lives are improved, TB incidence will unlikely continue to (rapidly) decline.

GNI per capita and TB incidence

In the Region of the Americas, there is a consistent negative log-linear relationship between Gross national income (GNI) per-capita and the estimated TB incidence in the countries in 2009 (Figure 36).

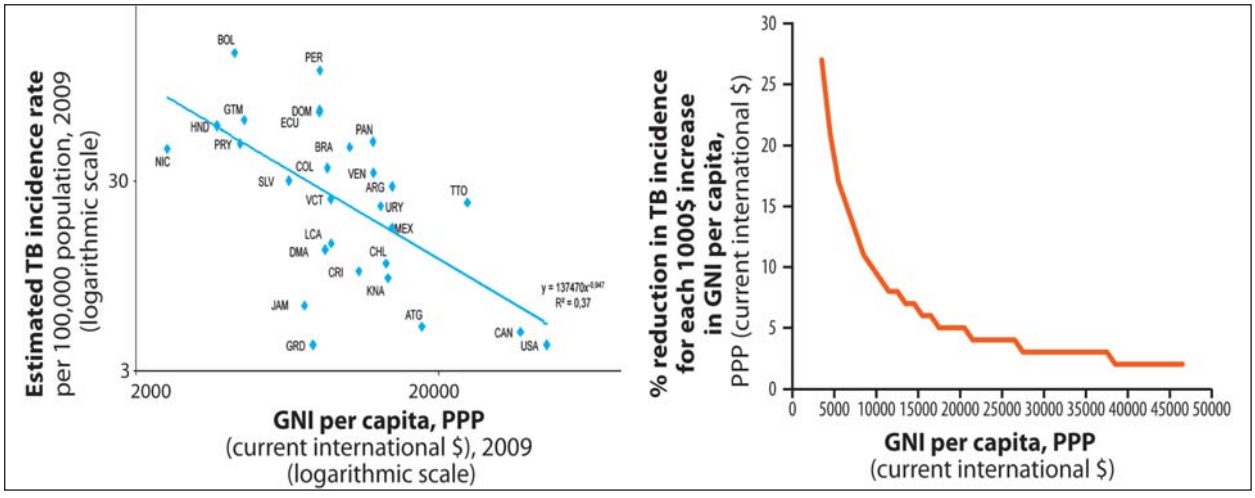
The data suggest that there is no association between GNI per-capita and each of the following: smear-positive case detection rate (Figure 37a) and treatment success rate (Figure 37b). ■

FIGURE 36

Relation between GNI per capita, PPP (current international $) and estimated TB incidence rate per 100,000 population (left), and expected reduction in TB incidence by increase in GNI per capita (right), 2009*

Note: GNI per capita based on purchasing power parity (PPP). PPP GNI is gross national income (GNI) converted to international dollars using purchasing power parity

Source: World Bank, International Comparison Program database



**USA - United States of America; CAN - Canada; TTO - Trinidad and Tobago; ATG - Antigua and Barbuda; MEX – Mexico; ARG - Argentina; KNA - Saint Kitts and Nevis; CHL - Chile; URY - Uruguay; VEN - Venezuela; PAN - Panama; CRI - Costa Rica; BRA - Brazil; LCA - Saint Lucia; VCT - Saint Vincent and the Grenadines; COL - Colombia; DMA - Dominica; PER - Peru; DOM - Dominican Republic; ECU - Ecuador; GRD - Grenada; JAM - Jamaica; SLV - El Salvador; GTM - Guatemala; PRY - Paraguay; BOL - Bolivia; HND - Honduras; NIC - Nicaragua*

4 See:
- Dye et al., Trends in tuberculosis incidence and their determinants in 134 countries, Bulletin WHO 2009 Sep
- Lönnroth et al., Drivers of tuberculosis epidemics: the role of risk factors and social determinants, Soc Sci Med. 2009 Jun

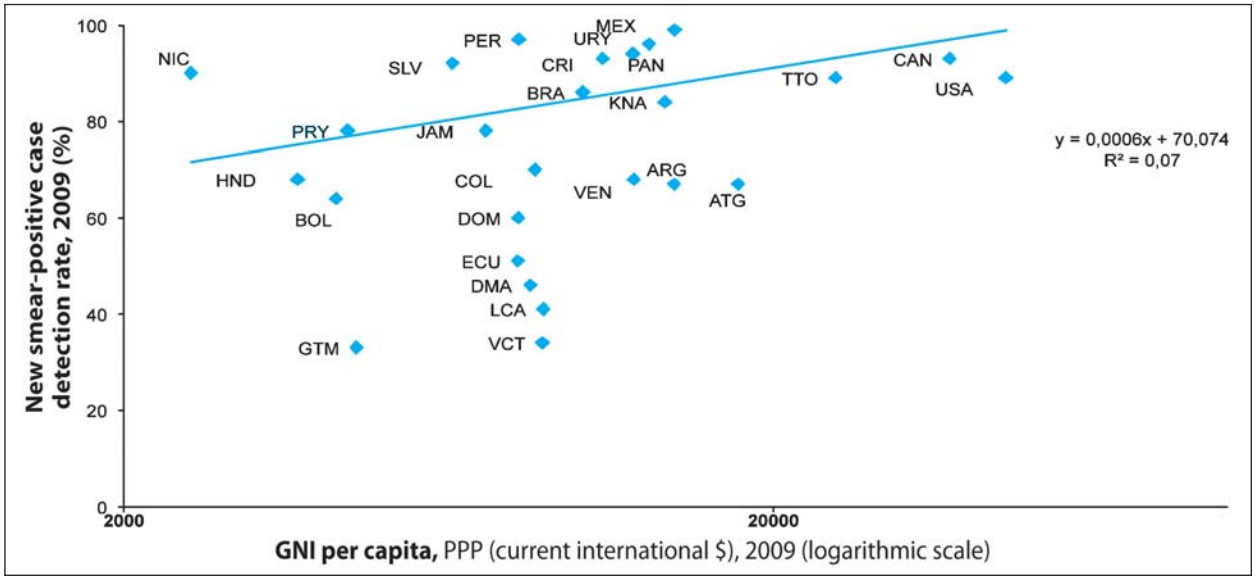
FIGURE 37

Relation between GNI per capita, PPP (current international $) and (a) Case detection rate (new smear-positive cases* (b) Treatment success rate (new smear-positive cases)*

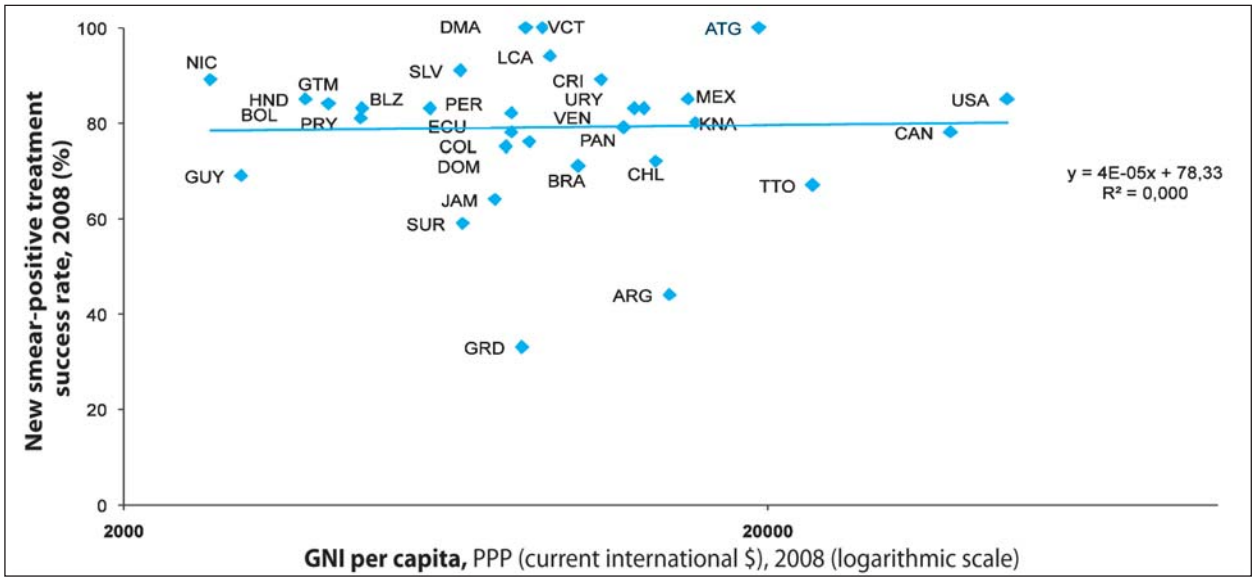
Note: GNI per capita based on purchasing power parity (PPP). PPP GNI is gross national income (GNI) converted to international dollars using purchasing power parity

Source: World Bank, International Comparison Program database

37a



37b



** USA - United States of America; CAN - Canada; TTO - Trinidad and Tobago; ATG - Antigua and Barbuda; MEX – Mexico; ARG - Argentina; KNA - Saint Kitts and Nevis; CHL - Chile; URY - Uruguay; VEN - Venezuela; PAN - Panama; CRI - Costa Rica; BRA - Brazil; LCA - Saint Lucia; VCT - Saint Vincent and the Grenadines; COL - Colombia; DMA - Dominica; PER - Peru; DOM - Dominican Republic; ECU - Ecuador; GRD - Grenada; JAM - Jamaica; SLV - El Salvador; GTM - Guatemala; PRY - Paraguay; BOL - Bolivia; HND - Honduras; NIC - Nicaragua*

Chapter 5:
Financing for TB control

Since 2004, WHO has been collecting tuberculosis control budget data for the 36 countries of the Region of the Americas through the PAHO regional office. The number of countries that have sent financial data has risen since 2004 from 21 (58% of the total) to 34 (94%) in 2009 and 2010 (Table 8). These 34 countries account for 99% of the Region's tuberculosis burden.

TABLE 8

Budget data received, cost and use of general health-care services, The Americas 2004-2010

Year of data collection	Number of countries	Financial reports received*	Budget				Cost				Use of general health-care services
			Year	Complete	Partial	None	Year	Complete	Partial	None	
2004	36	21	2004	17	3	1	2003	10	4	7	1
2005	36	26	2005	16	5	5	2004	15	3	8	14
2006	36	29	2006	19	3	7	2005	16	2	11	23
2007	36	28	2007	20	3	5	2006	19	3	6	22
2008	36	30	2008	18	7	5	2007	13	9	8	20
2009	36	34	2009	22	2	10	2008	20	1	13	27
2010	36**	34***	2010 2011****	27 23	4 6	3 5	2009	24	3	7	27

Notes:

*"Financial reports received" means any data reported in the financing sections of the electronic data collection form

**35 member states and Puerto Rico

***Dominica and Haiti did not submit financial reports in 2010.

****preliminary budget

Thanks to the efforts of the National Tuberculosis Programs (NTPs), many of which have adopted the WHO planning and budgeting tool, the number of countries with complete budget reports has risen from 17 in 2004 to 27 in 2010. The number of countries with complete expenditure reports has also risen from 10 in 2004 to 24 in 2010; however, the quality of these data could still be improved. Most (27) countries continue to report the use of general health services.

This report analyzes the funds available for tuberculosis control. TB control expenditures involve use of the available funds plus the cost of using the general health services. The available funds can come from a variety of sources, among them the government and other sources such as loans, the Global Fund, and other donor agencies, such as USAID, GDF, or DFID, and the figures are prospective data that generally reflect the NTPs' strategic plans.

The cost of using general health services reflects the cost for TB patients when they are hospitalized or go to a health facility to receive their medication during supervised treatment. Calculation of the costs of using the general health services is based on the information reported by the countries on the number of times that a TB patient must go to the health center during treatment (supervised treatment), the estimated percentage of patients hospitalized in a year, the estimated number of days that the patient remains hospitalized, and (if they exist) the number of hospital beds assigned exclusively to TB patients.

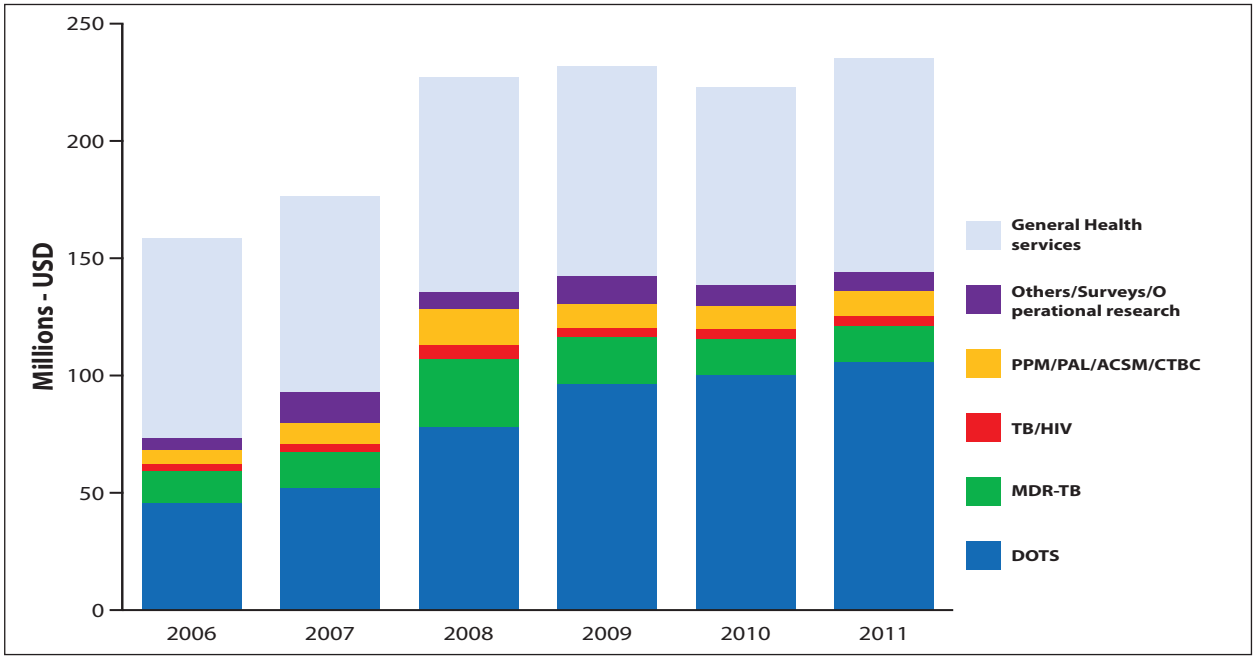
This report also analyzes the funding gap for TB control. A funding gap occurs when the required budget is greater than the amount of funds available. The required budget is defined as the one that reflects the total financial needs of the TB control program. The data are prospective, generally reflecting the NTPs' strategic plans and excluding the cost of using the general health services.

Available funds and funding gap in the Region

Given the existence of variations among the countries that report complete budget data every year, the regional data presented are based on the 16 countries that have reported data more or less consecutively from 2006 to 2011; the exceptions are shown in Figure 38. These 16 countries account for 85% of the Region's tuberculosis burden and are the object of this analysis.

FIGURE 38

Available Funds for TB Control, by strategic line, 16 selected countries, 2006-2011



The available funds for TB control increased until 2009, when they reached US$ 142 million--$ 232 million with expenditures for general health services (Figure 38). Despite a slight reduction in 2010, preliminary budgets anticipate an increase in 2011 and will reach US$ 235 million. It remains to be seen whether these budget figures will materialize in the current financial climate.

For these 16 countries, most financing for the NTPs is centered on the DOTS strategy, followed by MDR-TB (Figure 38). The relatively low proportion of funds available for collaborative TB-HIV activities may reflect the little importance that national TB and HIV programs give to coinfection. Although they are not part of the NTP budget, general health services represent a significant demand for resources.

Including the expenditures for general health services, governments are the principal source of financing for TB control (Figure 39 and Table 9)—corresponding to 86% of the total cost in 2010 and 2011. The Global Fund, which in 2004 financed just 8% of total costs, will finance 15% of them in 2010 and 2011. Donations from sources other than the Global Fund will be lower in 2010 and 2011 compared to previous years.

FIGURE 39

Available Funds for TB Control, by source of funding, 16 selected countries, 2006-2011

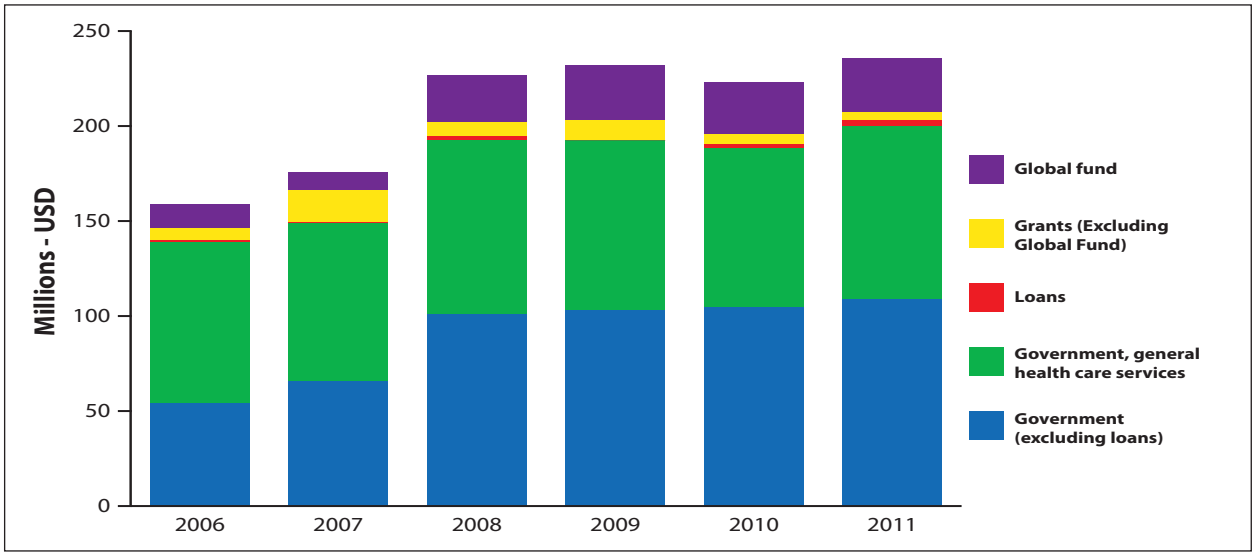


TABLE 9

NTP budget, available funding, costs of utilization of general health-care services and total TB control costs, 16 selected countries, 2011, US$ millions

Notas: – Incomplete or unavailable data

(a) All amounts are in nominal US$; amounts may therefore differ from the WHO Global TB Report 2010, in which many amounts were reported in constant 2010 US$.

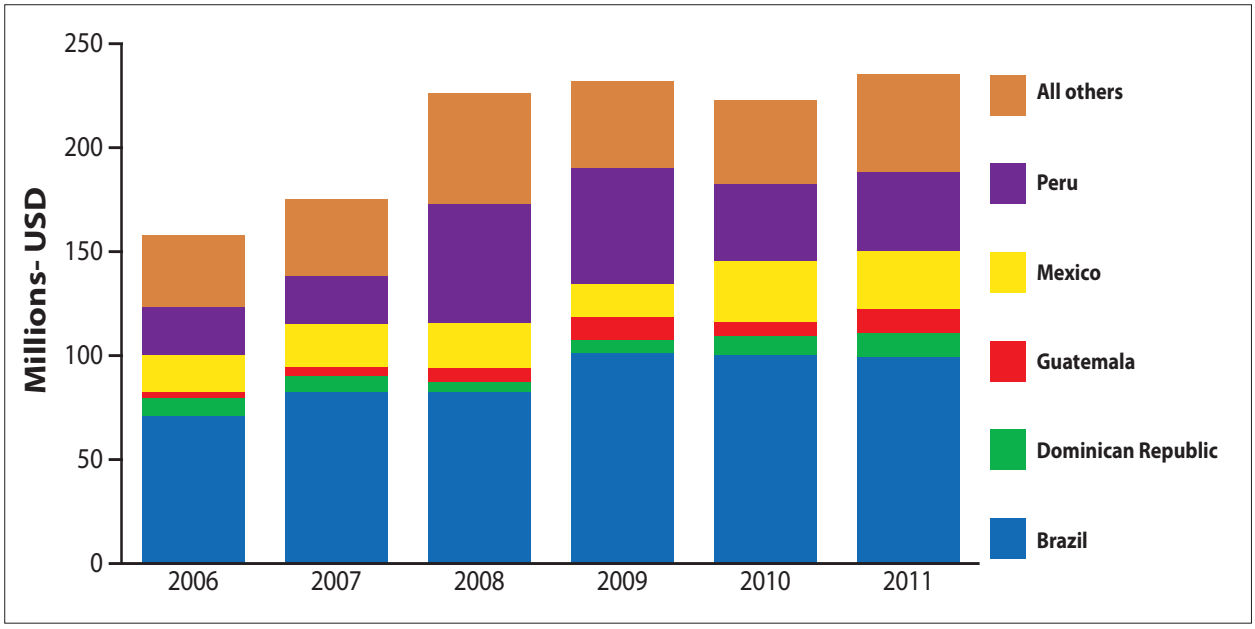
(b) Includes only the budget for first- and second-line drugs

	NTP budget	Avaliable funding				Gap	Costs of utilization of general health-care services	Total TB control Costs
		Government (excluding loans)	Loans	Grants (excluding Global Fund)	Global Fund			
Brazil	62.9	50.4	0.0	2.8	4.1	5.6	42.1	104.9
Mexico	14.2	11.7	0.0	0.0	0.0	2.5	16.2	30.4
Dominican Republic	9.5	2.1	0.0	0.1	2.6	4.7	6.5	16.1
El Salvador	6.1	3.0	0.0	0.0	0.0	3.1	1.1	7.2
Bolivia (Plurinational State of)	4.9	1.0	0.0	0.0	0.1	3.8	6.7	11.6
Colombia	4.9	4.5	0.0	0.0	0.0	0.4	4.6	9.5
Paraguay	4.3	0.9	0.0	0.0	1.0	2.4	0.8	5.1
Honduras	2.7	0.9	0.0	0.0	1.7	0.1	0.8	3.4
Panama	0.7	0.2	0.0	0.0	0.0	0.5	–	–
Nicaragua(b)	0.3	0.2	0.0	0.0	0.1	0.0	0.9	1.2
Jamaica	0.1	0.1	0.0	0.0	0.0	0.0	0.6	0.7
Chile	–	–	–	–	–	–	–	–
Ecuador	–	–	–	–	–	–	–	–
Guatemala	–	–	–	–	–	–	0.8	–
Haiti	–	–	–	–	–	–	–	–
Peru	–	–	–	–	–	–	1.4	–

In absolute terms, the US$ 77 million increase in available funds between 2006 and 2011 is due mainly to the almost US$ 28 million increase in Brazil (Figure 40). 2010 and 2011 Peru data show that country seems to pursue its TB control activities with significant funds, albeit less than in 2008 and 2009 perhaps. Mexico's expenditure in 2010 and 2011 will be almost double that of 2009, due, according to its reports, not to an increase in the NTP budget but to more extensive use of the general health services.

FIGURE 40

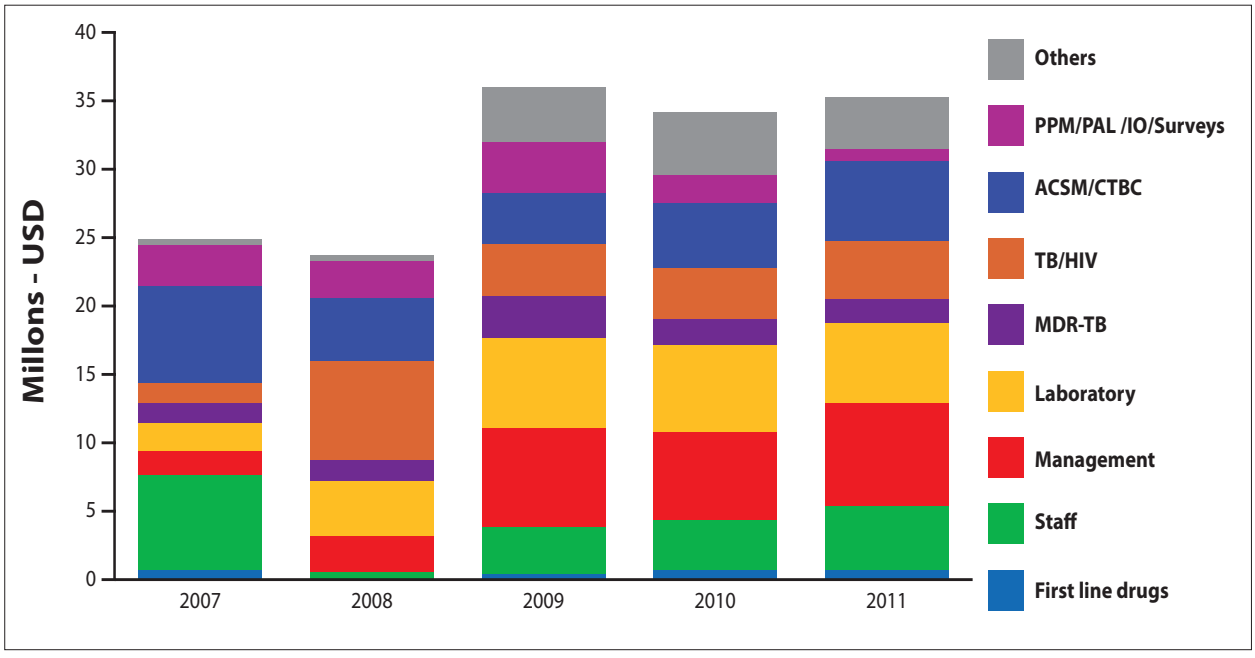
Available Funds for TB Control, by country, 16 selected countries, 2006-2011



Despite the progress that many countries have made in financing their NTPs, the Region is facing a funding gap of more than US$ 20 million per year (Figure 41). The gap applies to all categories except first-line tuberculosis medicines.

FIGURE 41

Funding gaps reported by NTPs, by strategic line, 16 selected countries, 2007-2011

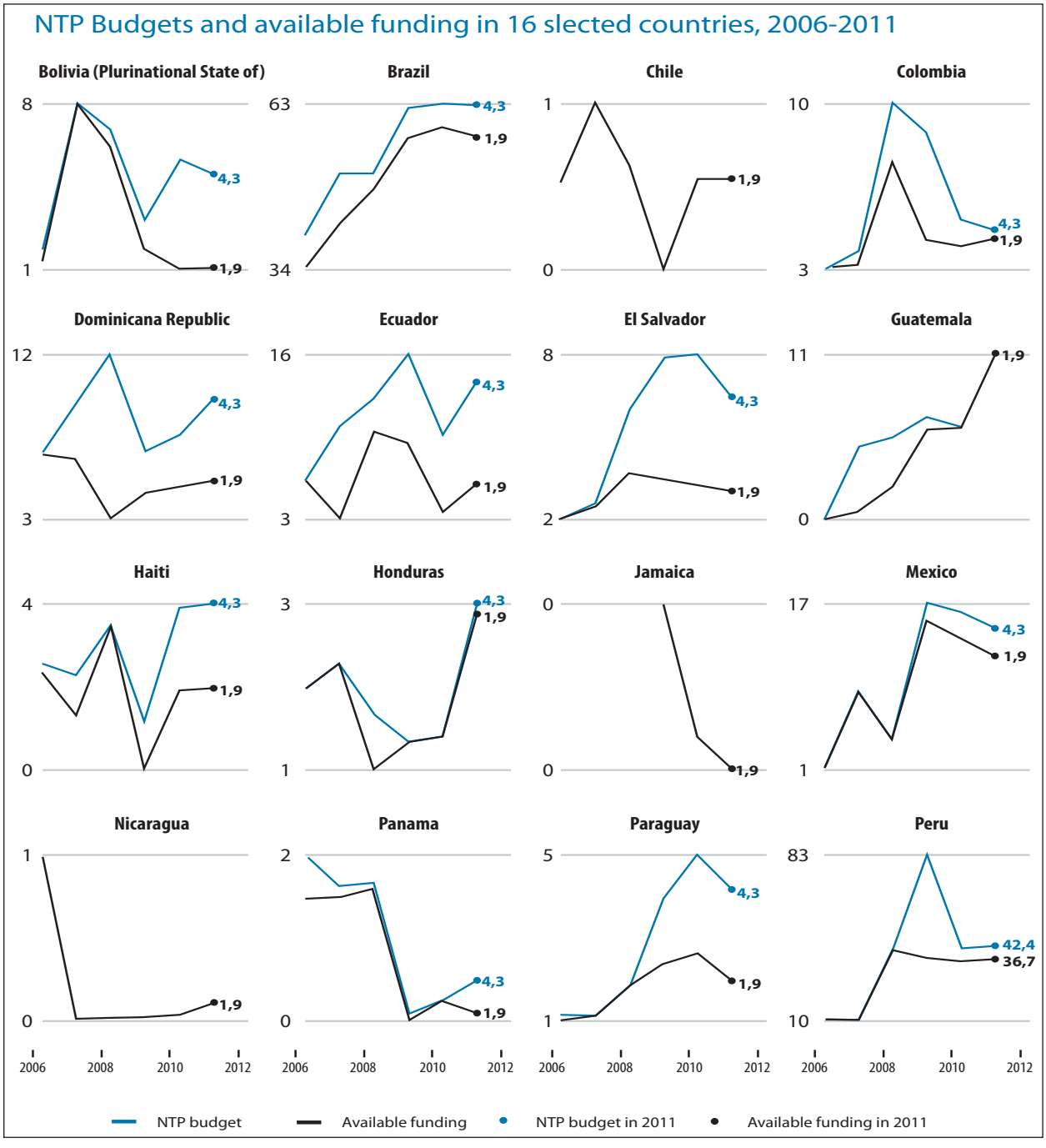


The trend in the available funds with respect to the required budget varies markedly within the Region (Figure 42). Colombia, Guatemala, and Honduras have been progressively narrowing the funding gap. For the rest of the countries selected, the gap persists or is widening. In Bolivia, for example, the availability of funding has been declining since 2007, leaving a gap of almost 76% of the budget in 2011; in Panama, the gap represents 71% of the 2011 budget.

According to the information provided by the countries, the required budgets and available funds in Chile, the Dominican Republic, Guatemala, Haiti, Honduras, and Nicaragua are expected to increase in 2010 and 2011. Mexico is expected to see reductions in the NTP budget and available funds for the same period. In Jamaica, the required budget and available funds have been declining since 2008.

FIGURE 42

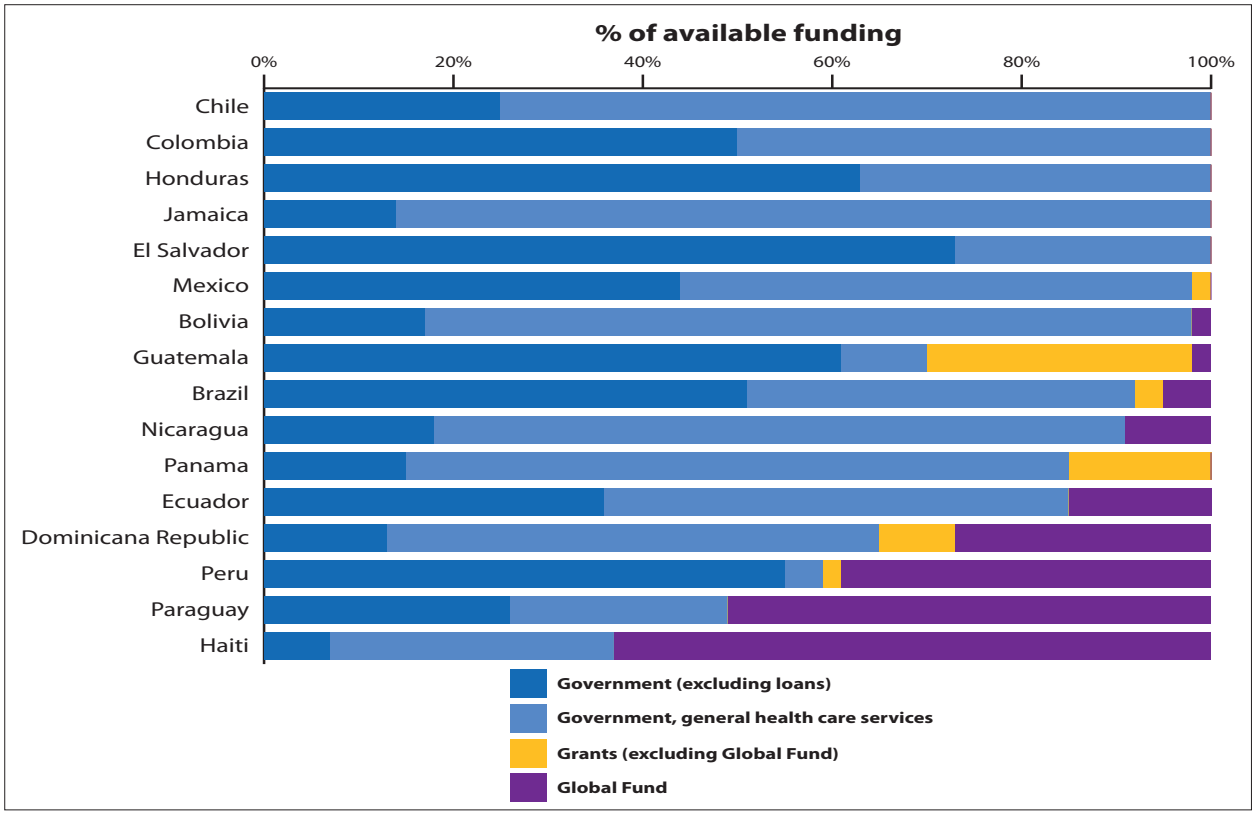
NTP Budgets and available funding in 16 slected countries, 2006-2011



In 2010, 14 out of the 16 selected countries resorted largely to domestic financing (Figure 43). Bolivia, Brazil, Ecuador, Guatemala, Mexico, Nicaragua, and Panama have domestic financing to cover over 80%; Chile, Colombia, Honduras, and Jamaica finance 100% domestically[5]. In 2010, the countries most dependent on external financing were Haiti and Paraguay. A breakdown of the preliminary 2011 budgets by funding source and gap is available in Table 9.

FIGURA 43

Sources of funding for TB control, 16 selected countries, 2010



c) This figures could be more than 100% in case that more funds were received after data reported on 2009

(d) Includes only the budget for first- and second-line drugs

(e) Includes only funds received for first- and second-line drugs and laboratory supplies

Close observation of the relationship between required budgets, available funds, and funds received in 2009 (Table 10) shows that the funds actually received substantially exceeded the available funds anticipated for Haiti; this points to a possible weakness in the country's planning and budgeting process. Conversely, in the case of Paraguay, only half of the anticipated funds were received; this could indicate problems in the mobilization of resources.

5 At the time of data collection

TABLE 10

NTP budget, Available funds and Received funds in 2009 (Millions -v USD)

Notes: – Incomplete or unavailable data

	NTP Budget	Avaliable Funds (a)	Received Funds (b)	Available Funds as % of the NTP budget	Received funds as % of available funds (c)
Peru	83.4	36.8	–	44%	–
Brazil	62.5	57.0	58.5	91%	103%
Mexico	16.8	15.1	11.1	90%	74%
Ecuador	16.2	9.2	–	57%	–
Colombia	9.2	4.4	3.9	48%	89%
El Salvador	7.5	3.4	3.4	45%	100%
Guatemala	7.0	6.1	4.2	87%	69%
Dominican Republic	6.6	4.1	4.1	62%	100%
Paraguay	4.1	2.4	1.3	59%	54%
Bolivia (Plurinational State of)	3.1	1.9	3.0	61%	158%
Haiti	1.3	0.2	0.5	15%	250%
Honduras	1.1	1.1	1.0	100%	91%
Nicaragua(d)	0.3	0.3	0.2	100%	67%
Panama	0.2	0.1	–	50%	–
Chile	0.1	0.1	–	100%	–
Jamaica(e)	0.1	0.1	0.1	100%	100%

a) Based on 2009 reported data

b) Based on received funds on 2009, reported in 2010.

c) This figures could be more than 100% in case that more funds were received after data reported on 2009

(d) Includes only the budget for first- and second-line drugs

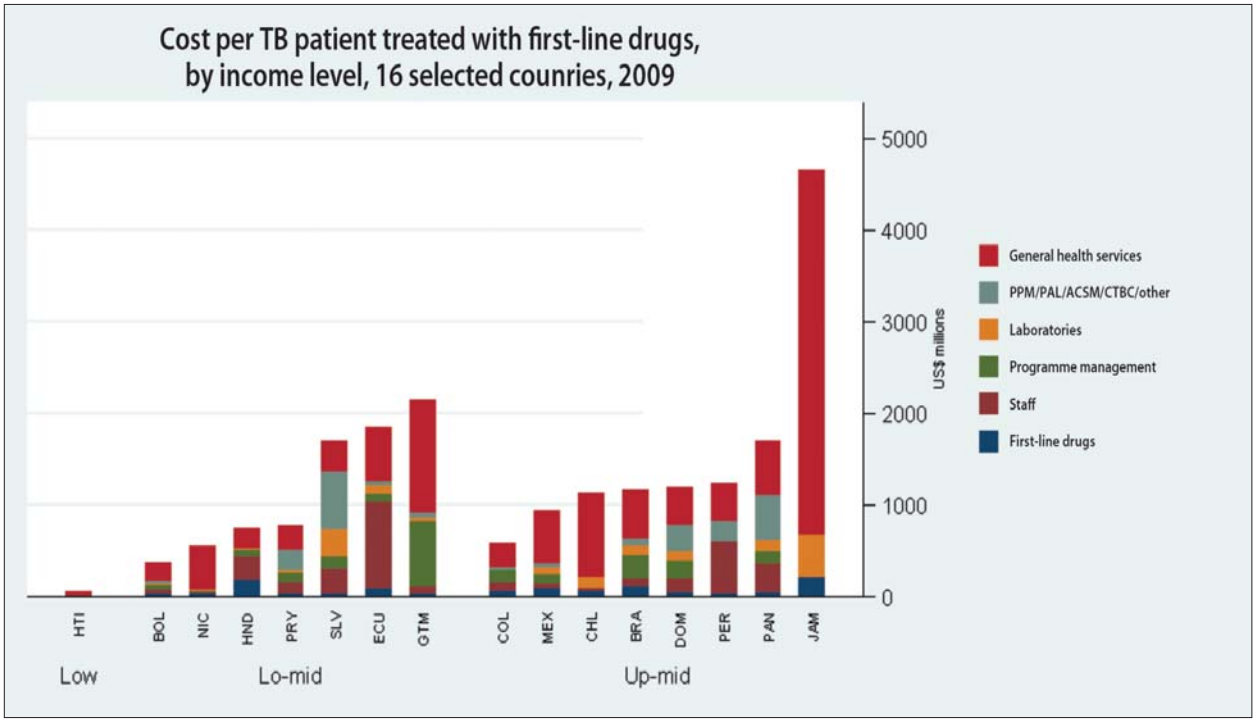
(e) Includes only funds received for first- and second-line drugs and laboratory supplies.

Cost per patient

The cost per treated patient (Figure 44) varies widely in the Region, from US$ 68 in Haiti to US$ 4,662 in Jamaica. These variations can be explained by a country's income level or treatment model (out-patient versus in-patient). In general, the cost of a TB patient is higher in the higher-income countries.

FIGURE 44

Cost per TB patient treated with first-line drugs, by income level, 16 selected countries, 2009



However, the number of treated patients also is important. Brazil, a high-income country (the Region's third highest after Chile and Mexico), has the Region's highest number of patients, and its average cost per patient is similar to that of medium-to-high–income countries.

The treatment model also influences the cost per patient. The countries with the highest cost per patient are Guatemala and Jamaica, where a high percentage of TB patients are hospitalized.

The cost per patient in Ecuador, the third highest in the group of countries shown in Figure 44, is due to high health-worker costs per patient. PPM, PAL, and ACSM activities represent an important part of the costs in El Salvador, Panama, and the Dominican Republic compared with the rest of the countries in the Region.

It is difficult to judge the cost per patient in isolation. A low cost per patient may point to good use of resources or a cost underestimate, while a high cost may point to general inefficiencies or a better quality of patient care. An analysis not only of the cost but of the cost-effectiveness ratio in low- and high-income countries could yield information on the most suitable approach for achieving the best possible results with the limited resources available for TB control in the Region. ■

Chapter 6:
Conclusions

This chapter summarizes the main conclusions on TB epidemiology, control and financing in the Americas that can be drawn from this report:

1. The current epidemiological burden of TB in the Americas is concentrated mainly in South America and the Caribbean (mainly Haiti and Dominican Republic). Of all countries in the region, Haiti currently witnesses by far the highest rate of incident TB cases per 100,000 population.
2. TB incidence, prevalence and mortality continue to decline in the Americas. However, some countries in South America and the Caribbean currently make little or no progress in reaching the targets for TB control. TB incidence is currently increasing in Suriname and Trinidad and Tobago. There is currently uncertainty of trends in TB over time in some countries. Strengthening recording and reporting systems in those countries is necessary in order to obtain more reliable data to evaluate trends of TB over time.
3. The prevalence of HIV in incident TB cases is higher than 20% in some countries with a high general prevalence of HIV/AIDS in the population. Especially these countries, many of which are situated in the Caribbean, require strengthening of TB and HIV/AIDS collaborative activities in order to fight the dual epidemic. Efforts to reach a higher coverage of voluntary counseling and testing of TB patients for HIV on one side and of TB screening and preventive therapy in HIV positive individuals on the other side are needed.
4. Progressive implementation of drug susceptibility testing for previously treated TB cases should be priority for all countries, especially those with estimated medium to high prevalence of MDR-TB. Improving DST coverage among re-treatment cases is likely to result in higher case detection of MDR-TB cases. Improved testing should go hand in hand with expanded second-line treatment and monitoring of treatment outcomes in MDR-TB cases in the forthcoming years.
5. There is a considerable variation in the countries with regard to the proportion of pulmonary TB cases with bacteriological confirmation in 2009. Strengthening of laboratory coverage and services for smear microscopy, culture and DST is required to ensure both: bacteriological confirmation and adequate treatment of TB cases.
6. Treatment success among sputum smear-positive TB cases in the Americas is still below the global target of 85%. Some countries report unexpected high rates of unfavorable treatment outcomes that deserve further investigation and action.
7. TB funding has been increasing in the Region but there is still a funding gap present that needs to be addressed. Governments are the main funders of TB activities some countries still have high dependency of external sources like the Global Fund. Distribution of funding is still uneven among the different components of the Stop TB strategy. Further analysis to better understand the wide variation of cost per patient costs and cost effectiveness are needed. ■