

Tuberculosis control

in the South-East Asia Region

Annual TB report
2015



World Health
Organization

Regional Office for South-East Asia

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WHO Library Cataloguing-in-Publication data

World Health Organization, Regional Office for South-East Asia.

Tuberculosis control in the South-East Asia Region: annual report 2015.

1. Tuberculosis – prevention and control
2. HIV
3. Health Resources
4. Data Collection.

ISBN 978-92-9022-476-1

(NLM classification: WU 30)

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Printed in India

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Printed in India

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Acronyms

ACSM	advocacy, communication and social mobilization
AIIMS	All India Institute of Medical Sciences, New Delhi, India
ART	antiretroviral treatment
ARTI	annual risk of tuberculosis infection
ASHA	accredited social and health activist
BMU	basic management unit
BRAC	Bangladesh Rural Advancement Committee
CBCI	Catholic Bishops' Conference of India
CDC	US Centers for Disease Control and Prevention, Atlanta, United States
CFR	case-fatality rate
CDH	chest disease hospital
CN	concept note
COD	causes of death
CPMDT	community-based programmatic management of drug-resistant TB
CPT	cotrimoxazole preventive therapy
CTB	child TB
DFID	United Kingdom Department for International Development
DHS	demographic health survey
DOTS	directly observed treatment, short course
DRS	drug resistance survey/surveillance
DR-TB	drug-resistant tuberculosis
DST	drug susceptibility testing
EQA	external quality assessment/assurance
EXPAND-TB	expanding access to new diagnostics for tuberculosis
FDC	fixed-dose combination
FHI	Family Health International

FLD	first-line anti-TB drugs
FIND	Foundation for Innovative New Diagnostics
GDF	Global Drug Facility
GENETUP	German–Nepal Tuberculosis Project
GF	Global Fund to Fight AIDS, Tuberculosis and Malaria
GFC	global focus countries
GF-TFM	Global Fund Transitional Funding Mechanism
GLC	Green Light Committee
GLI	Global Laboratory Initiative
HCW	health-care worker
HNPSPD	Health, Nutrition and Population Sector Development Programme
HPA	Health Protection Agency, Malé, Maldives
HQ	headquarters
HRD	human resources development
ICRC	International Committee of Red Cross
ICTC	integrated counselling and testing centre
IDSP	integrated disease surveillance project
IDU	intravenous drug use/r(s)
IEC	information, education and communication
IEDCR	Institute of Epidemiology, Disease Control and Research, Dhaka, Bangladesh
IMA	Indian Medical Association
IPT	isoniazid preventive treatment
IPAQT	Initiative for Promoting Affordable, Quality TB Tests
ISTC	international standards for tuberculosis care
IVMS	Institute of Veterinary and Medical Sciences, Australia
JATA	Japan Anti-TB Association
JICA	Japan International Cooperation Agency
JEMM	joint external monitoring mission

KAP	knowledge, attitude and practice
KNCV	Royal Dutch Tuberculosis Association
LPA	line probe assay
MDG(s)	Millennium Development Goal(s)
MDR-TB	multidrug-resistant tuberculosis
MIFA	managing information for action
MIS	management information system
MSH	Management Sciences for Health
MoU	memorandum of understanding
NCDC	National Centre for Disease Control
NFM	New Funding Model
NGO	nongovernmental organization
NIDCH	National Institute of Disease and Chest Hospital
NHSO	National Health Security Office
NIRT	National Institute of Research for Tuberculosis, Chennai, India
NITRD	National Institute of TB and Respiratory Diseases, New Delhi, India
NRL	national reference laboratory(ies)
NSA	national strategy application
NSP	national strategic plans
NTI	National Tuberculosis Institute, Bangalore, India
NTP	national tuberculosis programme
PAL	practical approach to lung health
PHC	primary health care
PHL	Public Health Laboratory, Thimpu, Bhutan
PITC	provider-initiated HIV testing and counselling
PLHIV	people living with HIV
PMDT	programmatic management of drug-resistant tuberculosis
PPM	public–private, public–public or private–private mix
PSI	Population Services International

PTB	pulmonary TB
QA	quality assurance
r-GLC	regional green light committee on MDR-TB
RNTCP	Revised National Tuberculosis Control Programme (India)
R&R	recording and reporting
RR/MDR-TB	Rifampicin resistant/multidrug-resistant TB
RTRL	regional TB reference laboratory
SEAR	(WHO) South-East Asia Region
SITT	integrated tuberculosis information system
SLD	second-line drugs (for MDR-TB)
SNRL	supranational reference laboratory
SOP	standard operating procedures
STD	sexually transmitted disease(s)
STI	sexually transmitted infection(s)
TB	tuberculosis
TBCM	tuberculosis clinical management
TB/HIV	tuberculosis and human immunodeficiency virus
TBTEAM	TB technical assistance mechanism
TFM	transitional funding model
ToT	training of trainers
The Union	International Union Against Tuberculosis and Lung Disease
UNITAID	
USAID	United States Agency for International Development
VCCT	voluntary confidential counselling and testing
VCTC	voluntary counselling and testing centre
VR	vital registration
WHA	World Health Assembly
WHO	World Health Organization
XDR-TB	extensively drug-resistant tuberculosis

Preface



The WHO South-East Asia Region continues to bear a significant burden of tuberculosis despite making significant progress in the global efforts to eliminate TB. Although notified TB cases have been steadily increasing, a decline in the prevalence is seen in all Member States, some reporting more than 50% decline since 1990. With good implementation of DOTS by Member States, the level of “multi-drug-resistant” (MDR) TB among newly-detected cases is low. The Region has achieved the target of halving the TB mortality rate, but we cannot be complacent at this stage, as we need to accelerate our efforts

to strengthen the TB control programmes in all Member States to achieve further reduction in mortality due to TB. This report is an excellent review of the current status and future plans for the control of TB in the SEA Region.

While the advancements in tuberculosis control over the past two decades are substantial, they are far from enough to ensure progress towards elimination of TB. Challenges of inadequate coverage and weak performance of health services limit access to high-quality tuberculosis care in some of the countries. Further, many public and private health-care providers remain delinked from national tuberculosis control efforts. In addition, tuberculosis is a disease of the poor and the absence of universal health coverage aggravates the economic burden of TB on the poor. This hardship is compounded by a lack of social protection mechanisms to address associated income loss and non-medical costs. The weaknesses in health systems have limited the linkages that are required across social sectors in order to address poverty, undernutrition and the risk factors that adversely influence the health outcomes of people afflicted by tuberculosis and their vulnerability to it. Childhood TB continues to be a neglected health concern in countries due to the non-availability of an explicit diagnostic tool to detect TB among children.

The strong support from the Global Fund (GF) is an opportunity that countries should not miss. With the resources that GF is making available to countries, this is the time to not only intensify TB control programmes, but also to strengthen the health systems so that future sustainability in a resilient health system is ensured.

WHO has released its post-2015 Global TB Strategy called “End TB Strategy” through resolution WHA67.1 endorsed by the Sixty-seventh World Health Assembly in May 2014. The new strategy aims to eliminate TB by 2035. To achieve this ambitious target, countries require stronger commitment, more concerted efforts and specific strategies and support to accelerate progress in preventing disease and deaths, and expand access to needed interventions and new tools.

This annual report is a compilation of regional and country-specific achievements, challenges and plans. WHO will continue to provide technical support to catalyse and accelerate the implementation of TB care and control in Member States through a range of activities as detailed in this report. I am sure that with the commitment of ministries of health and support from all partners and stakeholders, the Region will achieve the desired targets and lead the global fight against TB.



Dr Poonam Khetrpal Singh
Regional Director

Tuberculosis remains one of the major public health concerns in the South-East Asia Region of WHO. The Region accounts for 38% of the global burden of tuberculosis (TB) in terms of incidence. It is estimated that about 3.4 million new cases of TB occur each year and about 440 000 people died of this disease in 2013, most of these in five countries, namely, Bangladesh, India, Indonesia, Myanmar and Thailand, which are among the 22 high-TB-burden countries in the world. Levels of multidrug-resistance are lower than 2.2% among new cases and 16% among retreatment cases; however, this translates into nearly 89 000 estimated multi-drug-resistant TB (MDR-TB) cases among all TB cases notified in 2013. In 2013, 43% of TB patients knew their HIV status and HIV-positive TB patients were 6.1%. While 88% of HIV-positive TB patients were on cotrimoxazole preventive therapy, 81% were on antiretroviral therapy.

In terms of progress in TB control, all 11 Member States have sustained country-wide access to directly observed treatment, short-course (DOTS). Each year, more than 2 million TB cases are being registered for treatment and the treatment success rate among new smear-positive (NSP) pulmonary TB (PTB) cases has remained above 85% since 2005, and was 88% in the 2012 cohort. The TB mortality rate has decreased more than 50% since 1990 and the Region already achieved the global target of a 50% reduction by 2015. The decline in the prevalence is observed in all Member States with some reporting as over 50% decline.

National TB control programmes have also made progress in implementing the components of the Stop TB strategy. As a result of this concerted action by national TB control programmes and all partners, almost 22 million TB patients have been treated during the past 10 years; thereby averting several thousand deaths. A growing number of MDR-TB diagnosis and treatment sites are being established in the Region, and in 2013, almost 24 000 MDR-TB patients were put on treatment. However, this represents only a fraction of the estimated 89 000

MDR-TB cases in the Region. A regional green light committee on MDR-TB (r-GLC) has been established to provide technical guidance to countries of the Region to scale up drug-resistant TB (DR-TB) care and management. The collaboration between TB and HIV control programmes is improving. Several countries in the Region such as India and Thailand have submitted a joint TB/HIV concept note to the New Funding Model of the Global Fund in 2014, and where the dual burden of TB and HIV epidemic exists, many others will join in this combined effort between two vertical programmes. Private–public collaborative activities have been further expanded in medical colleges, private and large public hospitals, corporate sectors, prisons and nongovernmental organizations. Infection control policies and plans are being pursued in 10 countries. Newer diagnostics are being deployed with assistance from partners in all high-TB-burden countries as well as in low-TB-burden countries in the Region. The TB activities also included community mobilization to promote effective communication and participation among community members to generate demand for TB prevention, diagnosis, treatment and care services. In addition, recognizing that the success of TB control depends on strong health systems, health systems strengthening components were included in the national strategic plans. The annual meeting of the national TB control programme (NTP) managers and partners held in November 2014 provided a strategic forum for exchange of information on existing and new innovative approaches being applied in countries, discussed technical issues, and followed up on actions taken on the recommendations of previous meetings. The meeting resulted in providing valuable advice for developing policies, strategies and plans for implementation of TB control interventions in Member countries. The meeting also discussed various issues extensively, including future action in the respective countries specifically for effective adaptation and implementation of the global “End TB Strategy”. The meeting made important recommendations to Member States, technical and financial partners, and civil society for future actions to ensure universal access to quality-assured diagnosis and treatment for all persons with TB, scaling up programmatic management of drug resistant tuberculosis (PMDT), strengthened surveillance and impact measurement, and enhanced resource mobilization, through close multisectoral collaboration and engagement of diverse stakeholders ranging from relevant ministries to affected communities.

In terms of resources, national governments meet 50% of the budgets available to run national TB control programmes, while the Global Fund covers more than a third of funding. Countries in the Region are submitting concept

notes to the New Funding Model of the Global Fund based on revised national strategic plans and as per the need identified through in-depth analysis of country epidemiology. Additional support is received through several bilateral agreements with donor governments and agencies including USAID TBCARE I and II in Indonesia and Bangladesh respectively, through 3 MDG and USAID funds in Myanmar and USAID in India. Other global initiatives such as (UNITAID), the Global Drug Facility, the Global Laboratory Initiative, the EXPAND TB PROJECT, TB REACH and the Stop TB partnership are helping to mobilize resources for the diagnosis and treatment of all forms of TB towards achieving universal case detection and treatment.

While considerable progress continues to be made, national TB control programmes face a number of challenges that relate to uncertainties regarding sustainable financial and operational resources, limited technical and management capacity, weak procurement and supply management mechanisms, and national laboratory networks which, in turn, are slowing the planned expansion of early and enhanced case detection and interventions for TB/HIV and DR-TB. Though collaboration with other sectors is steadily increasing, the provision of care by all health-care providers is not sufficiently linked to national programmes to make an impact at the national level. Low community awareness and utilization of services hamper the uptake of services and it is increasingly being recognized that attention needs to be paid to addressing the social, economic and behavioural determinants that impact TB, if national efforts to combat TB are to succeed in the longer term.

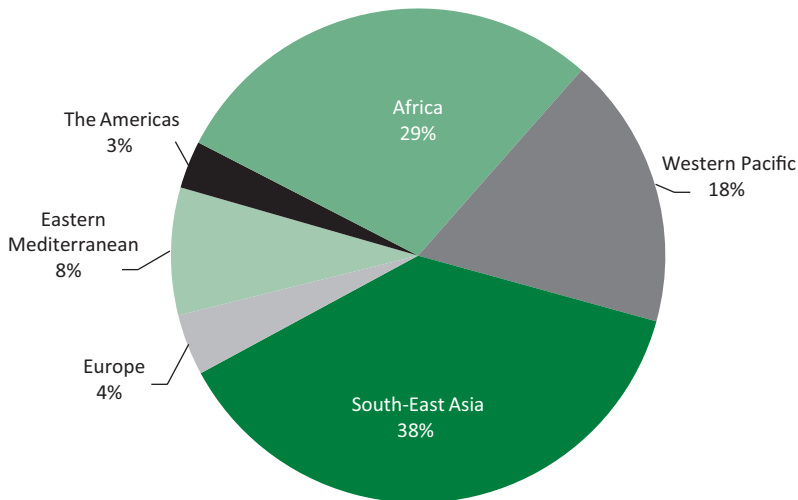
WHO has now released its post-2015 Global TB Strategy called “End TB Strategy” through resolution WHA67.1 endorsed by the Sixty-seventh World Health Assembly in May 2014. The new strategy aims to achieve elimination of TB by 2035. With this ambitious target, countries require stronger commitment, more concerted efforts and specific strategies and support to accelerate progress in preventing disease and deaths, and expand access to needed interventions and new tools.

2

The burden of disease caused by TB

The WHO South-East Asia Region (SEAR) with nearly one fourth of the world population accounts for 38% morbidity and 39% mortality of the global burden of tuberculosis, with an estimated 4.5 million prevalent and 3.4 million incident cases and 440 000 deaths in 2013 (Figures 1a and 1b). Five of the 11 Member countries in the Region are among the 22 high-burden countries, with India alone accounting for 23% of the world's incident cases and 21% of world deaths for TB. Among all new TB cases detected in 2013 in the Region, most cases occurred among young adults, particularly in the most productive age group of 25–34 years; males are more affected with a male-to-female ratio of 1:5.

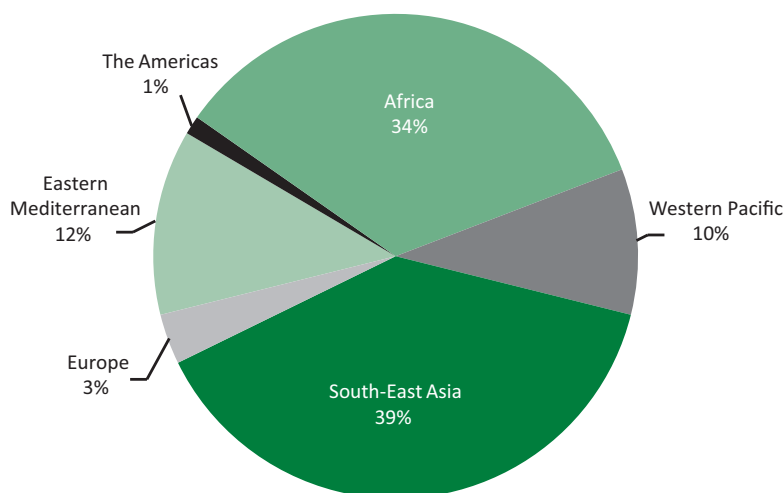
Figure 1a: Estimated incidence of all forms of TB, classified by WHO Region, 2013



Estimated global TB incidence = 9 000 000 (8 600 000 – 9 400 000) cases (all forms of TB)

Source: *Global Tuberculosis Control: WHO report 2014*, World Health Organization, Geneva 2014. WHO/HTM/TB/2014.08

Figure 1b: Estimated mortality of all forms of TB, classified by WHO Region, 2013



Estimated global TB mortality = 1 100 000 (980 000 – 1 300 000) cases (all forms of TB)

Source: *Global Tuberculosis Control: WHO report 2014*, World Health Organization, Geneva 2014. WHO/HTM/TB/2014.08

2.1 Estimated TB incidence, prevalence and mortality

2.1.1 Enhancement of TB burden estimates in South-East Asia Region (SEAR)

TB burden estimates for SEAR are calculated according to WHO methods¹ and are published as best estimates with uncertainty intervals that provide a range of plausible values. Their width is inversely proportional to the accuracy of the estimate, depending on quality and coverage of data source from countries in the Region.

Some of the country estimates are not officially endorsed by Member States, as revision of estimates is an ongoing process or estimates are considered to be based on poor assumptions. All countries are strongly encouraged to improve their TB burden estimates through available methods: in-depth analysis of available data, systematic assessment of the quality and coverage of surveillance

¹ Full details about the methods used are provided in the online Technical Appendix of “Global Tuberculosis Control: WHO report 2014”. http://www.who.int/tb/publications/global_report/gtbr14_online_technical_appendix.pdf

data, operational research, prevalence and mortality surveys. Besides short-term means to improve estimates, countries should strengthen TB surveillance and vital registration (VR) systems in order to achieve the ultimate goal of direct measurement of incidence and mortality using notification and vital registration data respectively.

Estimates of TB burden between 2009 and 2014 in all countries in the South-East Asia Region were discussed, during a regional workshop held in 2009 and additionally, during in-country workshops in some countries (in India two national consultations were organized in 2011 and 2012). These interactions were useful to collect information to estimate TB incidence through the indirect method based on estimated case-detection rate combined with notification data; this method was applied to most countries in the Region. Case-detection rate of all forms of TB was estimated through in-depth analysis of available surveillance data, of access to health and programmatic management of TB, and expert opinion on proportion of cases not detected or not captured by TB surveillance. Trends over time were calculated considering changes of case-detection rate in different years, except for Bhutan and India where results from repeat annual risk for tuberculosis infection (ARTI) surveys were used as well. For Thailand, incidence trends were estimated using mortality trends that are based on VR data; this approach was considered more accurate than derivation of trends using other parameters. For Myanmar and Thailand, models to calculate incidence based on results of prevalence survey (using estimated duration of disease) were elaborated; however, due to considerable uncertainty around estimates obtained with this method, incidence estimates rely on general method based on notification and case-detection rates. Information was inadequate for time series analysis for Bangladesh, Sri Lanka and Timor-Leste and the incidence trend was considered flat, “frozen” at the value of most recent point estimate.

India is an important focus country for better assessment of burden estimates due to its impact on regional as well as global estimates. For India, in addition to what is explained above, case-detection rate was estimated also with support of two sub-national inventory studies. However, national inventory studies are needed, in particular to better assess the number of TB cases detected in the private sector but not reported. In the analysis of trend over time, the trend was estimated to be flat between 1990 and 2001, due to absence of data and considering that Revised National Tuberculosis Control Programme (India) (RNTCP) started in 1999 only in part of the country. Between 2001 and 2013,

based on data from two national tuberculin surveys (conducted in 2000 and 2010) and annual notification data, the annual rate of decline in TB incidence was assessed to be progressively increasing from 0.5% in early 2000 to around 2.5% from 2007 onwards.

For most countries in the Region, prevalence was estimated using the indirect method, multiplying incidence by estimated duration of TB disease. This type of estimate is the most uncertain of the three TB burden indicators, because it is the product of two uncertain quantities, incidence and disease duration that cannot be measured directly, and leads to large uncertainty intervals in most of the countries. Prevalence was estimated based on results of prevalence survey (direct method) only for Myanmar and India. In Myanmar, the 2009 prevalence rate is based on the results of the prevalence survey, and estimates for 1990–2008 and 2010–2013 are based on survey-imputed data. In India, no nationwide prevalence survey was conducted, given the size of the country and logistics and cost implications; however, the India 2010 prevalence rate was calculated using results from pooled subnational surveys; similarly to Myanmar, 1990–2009 and 2011–2013 estimates are based on survey-imputed data. In the South-East Asia Region, other countries conducted prevalence surveys. Bangladesh conducted a survey in 2010, but the methodology used is not recommended by WHO and results were not considered accurate enough to directly measure prevalence rate. Thailand and Indonesia completed a prevalence survey in 2012 and 2013 respectively. However, at the time of writing this report, revised estimates based on survey results were not yet available and approved by respective governments. Estimates for Democratic People's Republic of Korea are based on data provided by the national TB programme.

TB-related mortality was estimated indirectly, multiplying incidence by estimated case fatality ratio, for seven countries in the Region because of lack of good quality VR or data from mortality surveys. VR data have been used to estimate TB related mortality for Maldives, Sri Lanka and Thailand. VR data were not available for all years and estimates based on data points available were calculated for the missing years. In Maldives, VR data were available for 2000–2011 while in Sri Lanka and Thailand, information was available from the early 1990s until 2006 and 2007 respectively, but more up-to-date data were missing. For all countries, TB mortality estimates were adjusted upwards to account for incomplete coverage of VR and ill-defined causes of death; width of uncertainty bound is, therefore, related to completeness and quality of national VR data.

For India, data from six large community-based subnational mortality surveys conducted between 2003 and 2008, using verbal autopsy and methodology endorsed by the Registrar General of India, were also used. Additional information on TB mortality has emerged from a community-based prospective mortality survey covering the period 2002–2007. All data were pooled to obtain a national estimate and to derive a complete time-series for 1990–2012 (estimates for 2013 were imputed based on this time series); current estimates are higher than previous indirect estimates. Further information will be available from a large nationally-representative community-based prospective all-causes mortality survey (the One Million Deaths study), accounting for deaths from 1998–2014, conducted by the Registrar General of India with the support of other partners.

In the Region, progress towards enhancement of burden estimates as well as strengthening TB surveillance is being made.

Nepal is planning to upgrade the OpenMRS platform used for drug-resistant cases for drug-susceptible TB in 2015. India successfully transitioned its electronic recording and reporting system (EPI Centre software) to a Windows- based platform and developed a case-based, web-based notification system (Nikshay), available also as a mobile application, that is being used widely also within the private sector; TB was made a mandatorily notifiable disease impacting completeness of TB case notification. Thailand rolled out a nationwide electronic database (TB Clinical Management - TBCM), developed to improve real time reporting and case management; the country is now focusing on its integration into the national HMIS system. Indonesia is transitioning to SITT (Integrated TB Information System), a national web- and case-based electronic recording and reporting system that was in place in 87% of districts by 2014; in the next implementation phase, health facilities are expected to upload their data directly into SITT. Indonesia is also scaling up its sample VR system. Bangladesh is replacing the paper-based information system with the eTB manager in a phased manner; the eTB manager has already been implemented in 210 districts and further expansion is ongoing.

By the end of 2014, three countries, Bangladesh, Indonesia and Thailand, successfully used the WHO “Checklist of standards and benchmarks for TB surveillance and vital registration systems” to identify gaps, corrective actions and funds needed in order to strengthen TB surveillance and VR.

In 2014, Thailand and Indonesia developed protocols for inventory studies, based on WHO guidelines², to improve their burden estimate by measuring the under-notification entity; these studies also provide valuable information about where efforts to collaborate with public and private sector providers are needed.

Sri Lanka conducted an in-depth analysis of data in 2010. In 2013, Timor-Leste conducted a comprehensive TB epidemiological assessment with the primary objective of evaluating the efficiency and reliability of case-finding under NTP and accuracy of notification data and to revise current burden estimates.

In the last few years, several countries in the Region were conducting or are planning population-based TB prevalence surveys to provide direct measurement of prevalence as well as useful information about why and to what extent people with TB are missed out. Among global focus countries (GFC), Thailand concluded field operations of its second national TB prevalence survey in 2012–2013 (the first was conducted in 2006); preliminary results from non-Bangkok clusters are available, but data are being further analysed and adjusted prior to publication of the final result. Indonesia concluded field operations in 2013 and final results are under discussion for official approval; new burden estimates are expected to have an impact on overall regional estimates as well as global estimates. Myanmar is planning to repeat the prevalence survey in 2017 (the first was conducted in 2009) to provide direct measurement of point prevalence and trend over time. Bangladesh is planning to start field implementation of the prevalence survey done according to WHO recommended methodology in 2015; study protocol, implementation plan, procurement and standard operation procedures were finalized by 2014. Among non-GFC, Nepal and Democratic People's Republic of Korea have both developed the protocol and implementation plan and field operations should start by 2015.

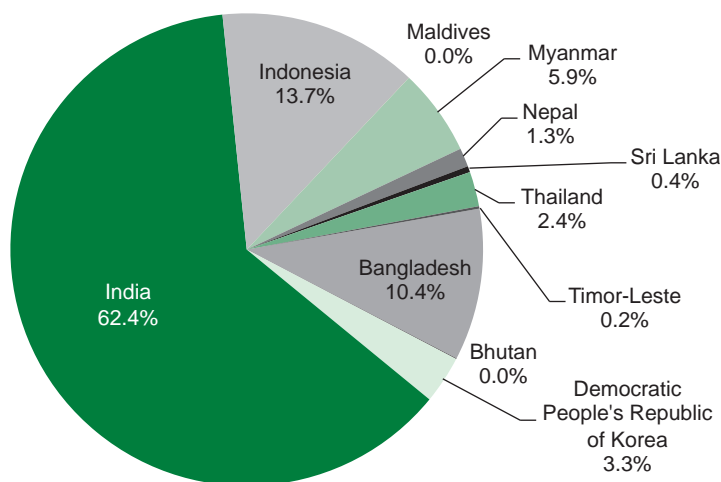
2.1.2 Estimated TB incidence, prevalence and mortality in South-East Asia Region

As indicated earlier, South-East Asia Region has a high burden of TB. Contribution of each country to the overall regional burden is uneven and India carries most of the incident and prevalent cases as well as deaths in the Region (Figures 2a, 2b and 2c)³; Bangladesh and Indonesia also contribute a high proportion of cases and the former contributes an important proportion of TB deaths.

² "Assessing tuberculosis underreporting through inventory studies". Geneva, World Health Organization, 2013 (WHO/HTM/TB/2012.12)

³ Source: Global Tuberculosis Control: WHO report 2014, World Health Organization, Geneva 2014. WHO/HTM/TB/2014.08

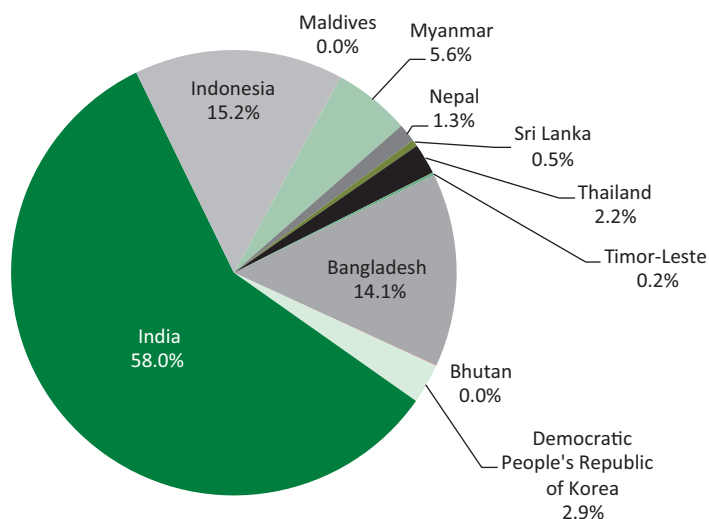
Figure 2a: Estimated incidence of all forms of TB in SEA Region, distributed by country, 2013



Estimated regional TB incidence = 3 264 000 (3 129 000 – 3 713 000) cases (all forms of TB)

Source: *Global Tuberculosis Control: WHO report 2014*, World Health Organization, Geneva 2014. WHO/HTM/TB/2014.08

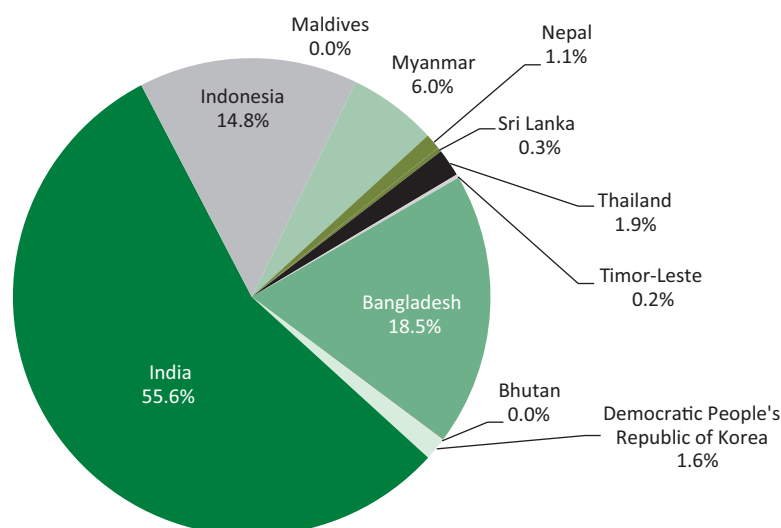
Figure 2b: Estimated prevalence of all forms of TB in SEA Region, distributed by country, 2013



Estimated regional TB prevalence = 4 480 000 (2 787 000 – 6 735 000) cases (all forms of TB)

Source: *Global Tuberculosis Control: WHO report 2014*, World Health Organization, Geneva 2014. WHO/HTM/TB/2014.08

Figure 2c: Estimated mortality for TB (excluded among HIV-positive patients) in SEA Region, distributed by country, 2013



Estimated regional TB mortality = 432 000 (265 000 – 625 000) deaths for TB excluding deaths among HIV positive patients

Source: *Global Tuberculosis Control: WHO report 2014*, World Health Organization, Geneva 2014. WHO/HTM/TB/2014.08

Although India certainly carries a high burden in terms of absolute numbers of TB cases and deaths, in terms of rates, other countries in the Region, such as Bangladesh, Democratic People's Republic of Korea, Myanmar and Timor-Leste carry a higher burden. The TB incidence, prevalence and mortality rates in Member States of the Region, estimated as discussed in paragraph 2.1.1., are presented in Table 1. New estimates for Indonesia, although not yet finalized and approved, suggest a greater burden than previously estimated, and consequently, are expected to have a significant impact on overall estimates for the Region.

For 2013, WHO provided estimates at regional level disaggregated by sex. In the SEA Region 40% of estimated TB incident cases are women (1.3 million; uncertainly interval 1.2–1.4 million) and 40% of TB deaths in HIV-negative patients occur among women (130 000 deaths; uncertainly interval 100 000–170 000); the Region accounts for 39% of all TB incident cases and TB deaths among women worldwide.

Table 1: Estimates of TB disease incidence, prevalence and mortality in Member States of the South-East Asia Region (rates per 100 000 population), 2013

Country	Population* (in thousands)	Incidence rate of all forms of TB (confidence intervals)	Prevalence rate of all forms of TB (confidence intervals)	Death rate for all forms of TB, excluding HIV (confidence intervals)
Bangladesh**	156 596	224 (199–253)	402 (210–656)	51 (33–69)
Bhutan	754	169 (156–190)	196 (67–393)	12 (6.9–23)
Democratic People's Republic of Korea ****	24 895	429 (401–456)	536 (146–1175)	27 (12–46)
India	1 252 140	171 (162–184)	211 (143–294)	19 (12–28)
Indonesia***	249 866	183 (164–207)	272 (138–450)	25 (14–37)
Maldives	345	40 (34–44)	57 (27–97)	2.2 (1.8–2.6)
Myanmar	53 259	373 (340–413)	473 (364–595)	49 (29–71)
Nepal	27 797	156 (139–178)	211 (99–365)	17 (7.4–27)
Sri Lanka	21 273	66 (59–75)	103 (53–170)	5.9 (4.7–7.3)
Thailand	67 011	119 (106–134)	149 (72–252)	12 (7.3–18)
Timor-Leste	1 133	498 (409–596)	802 (382–1375)	87 (48–141)
SEAR	1 855 068	183 (175–192)	244 (188–307)	23 (18–30)

* United Nations, Department of Economic and Social Affairs, Population Division (2013). World Population Prospects: The 2012 Revision, DVD Edition.

** The estimated incidence, prevalence and mortality rates should be considered provisional as they have not yet been officially approved by the National TB Programme of Bangladesh

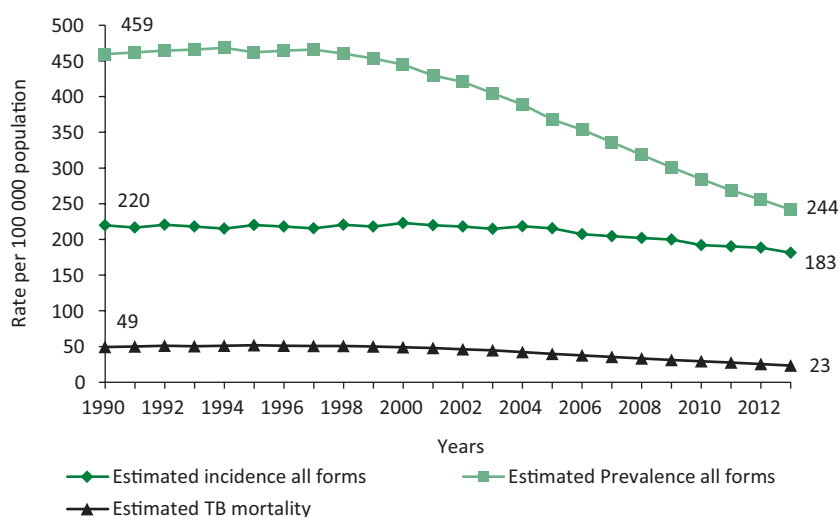
*** Burden estimates for Indonesia are being revised based on prevalence survey results; at the time of writing this report new estimates have not yet been officially released

**** Democratic People's Republic of Korea

Source: *Global tuberculosis report 2014*, World Health Organization, Geneva 2014. WHO/HTM/TB/2014.08

The trends of estimated prevalence, incidence and mortality rates in the Region as a whole are presented in Figure 3. Since 1990, the TB prevalence rate has decreased by 47% and the mortality rate by 53%. The decline in incidence is less perceptible (overall decrease by 17%), but the tendency began to revert. In the last five years, annual reduction is about 2%, 5% and 6.5% for incidence, prevalence and mortality respectively. However, the interpretation of trends should take into account the uncertainty bounds around each value (see Figures 6, 7 and 8). Uncertainty bounds are narrower around incidence (from early 2000s are around 5% deviation from best estimates, with slightly larger deviation in 2012–2013 especially for the upper bound) than prevalence and mortality (for both the deviation from best estimates is around 25%, slightly narrower after 2010).

Figure 3: Trends in estimated TB prevalence, incidence, and mortality rates from 1990 to 2013 in SEA Region

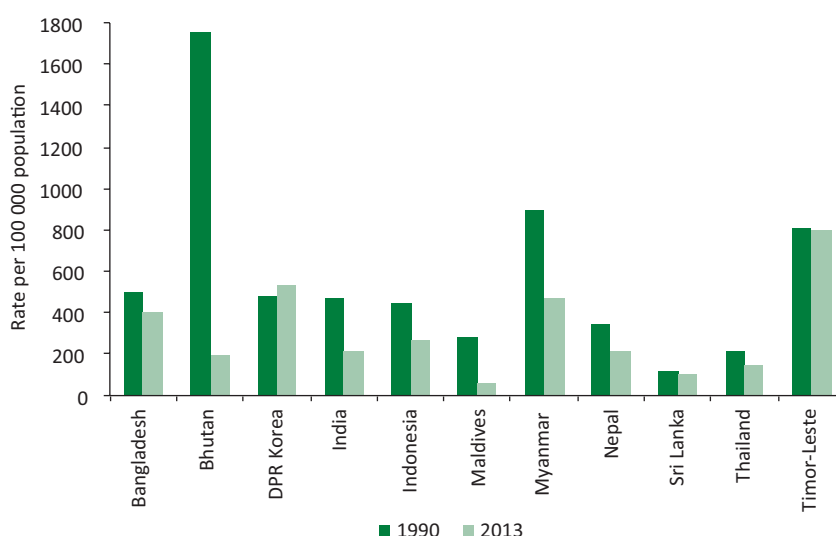


Source: Global Tuberculosis Control: WHO report 2014, World Health Organization, Geneva 2014. TB_burden_countries_2015-01-18.csv - <https://extranet.who.int/tme/generateCSV.asp?ds=estimates>

The regional profile described in Figure 3 is driven mainly by high-burden countries in the Region; however, although there is large variety in terms of rates and figures at country level, a declining trend in regional burden indicators is observed in most of the 11 Member States of the Region. Figures 4 and 5 summarize the comparison of the estimated TB prevalence and mortality rates

respectively per 100 000 population between 1990 and 2013 in each of the 11 Member States of the Region. For Timor-Leste, the baseline is set at 2002, due to non-availability of national data in 1990. As in Figure 3, this comparison takes into consideration only the best estimates of prevalence and mortality rates. Taking into account this limitation, a decline in the prevalence rates is observed in all Member States, except Democratic People's Republic of Korea, and in three countries it is very significant, beyond 50%, that is one of the Stop TB Partnership targets for 2015. A significant decline in the mortality rates is observed in all Member States and in seven countries, the decrease is already beyond 50% of the 1990 baseline. Further analysis of trend of burden estimates per country is available in the chapter "Millennium Development Goal Country Profiles".

Figure 4: Estimated prevalence rate (all forms of TB) in 1990* and 2013, by Member States of SEA Region

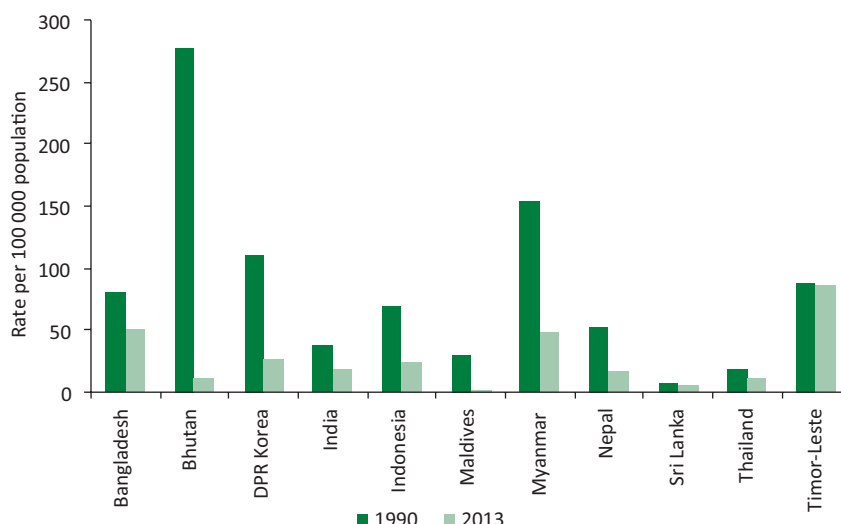


* For Timor-Leste, the baseline is 2002.

** Democratic People's Republic of Korea

Source: Global Tuberculosis Control: WHO report 2014, World Health Organization, Geneva 2014. WHO/HTM/TB/2014.08

Figure 5: Estimated mortality rate (excluding HIV) in 1990* and 2013, by Member States of SEA Region



*For Timor-Leste, the baseline is 2002.

** Democratic People's Republic of Korea

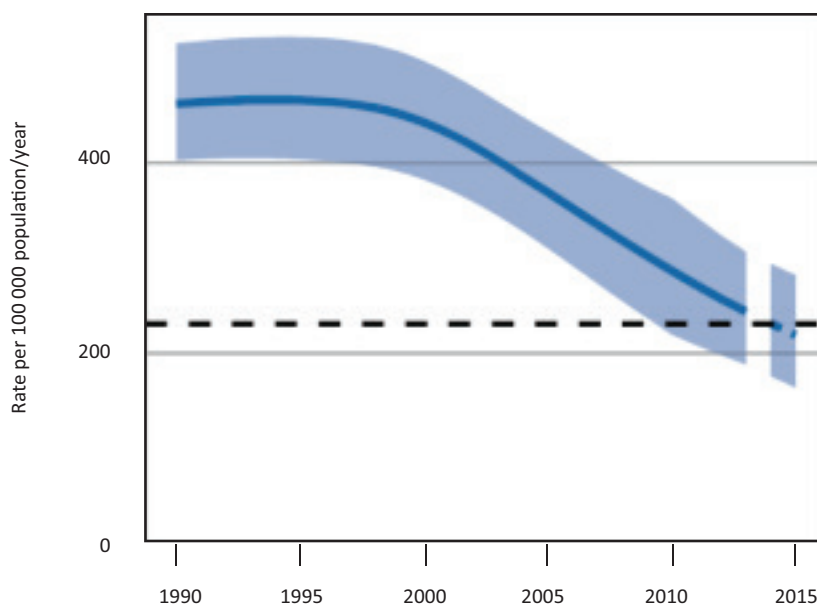
Source: Global Tuberculosis Control: WHO report 2014, World Health Organization, Geneva 2014. WHO/HTM/TB/2014.08

2.2 Reporting progress towards global targets

As showed in the previous section, SEAR is performing well in terms of reduction of TB burden. Analysis of progress towards the achievement of Millennium Development Goal (MDG) 6, to combat HIV/AIDS, malaria and other diseases, with regard to tuberculosis control, shows that the Region has achieved or is well on track to halt and begin to reverse the incidence of tuberculosis by 2015, and halve the TB death and prevalence rates by 2015, compared with 1990 levels.

Regarding the MDG targets of halving the prevalence rates compared to the 1990 baseline, the Region is on track to reach the targets. In fact, according to Figure 6, considering only the best estimate, in 2013, the prevalence rate decreased by 47%; according to the projections based on the assumption that the current trend will not change, the Region would reach 50% reduction of baseline data. However, almost the entire upper uncertainty bound would be over the target; more accurate estimates resulting from completed or planned prevalence surveys will be useful to confirm achievements in the Region beyond any doubt.

Figure 6: Trends in estimated TB prevalence rate 1990–2013 and forecast TB prevalence rate 2014–2015, SEA Region

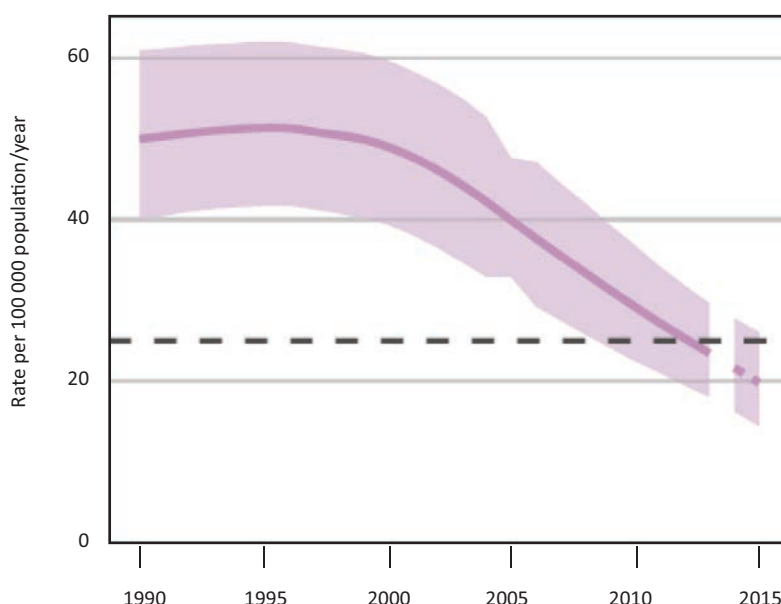


Note: shaded areas represent uncertainty bands. The horizontal dashed lines represent the Stop TB Partnership target of a 50% reduction in the prevalence rate by 2015 compared with 1990

Source: *Global Tuberculosis Control*: WHO report 2014, World Health Organization, Geneva 2014. WHO/HTM/TB/2014.08

Regarding the target of halving the mortality rate compared to the 1990 baseline, the Region had reached the target in 2013. In fact, according to Figure 7, considering only the best estimate, in 2013, the mortality rate decreased by 53%; according to the projections based on the assumption that the current trend will not change, the Region would sustain the achievement and even the upper uncertainly bound is expected to be almost entirely below the target.

Figure 7: Trends in estimated TB mortality rate 1990–2013 and forecast TB prevalence rate 2014–2015, SEA Region

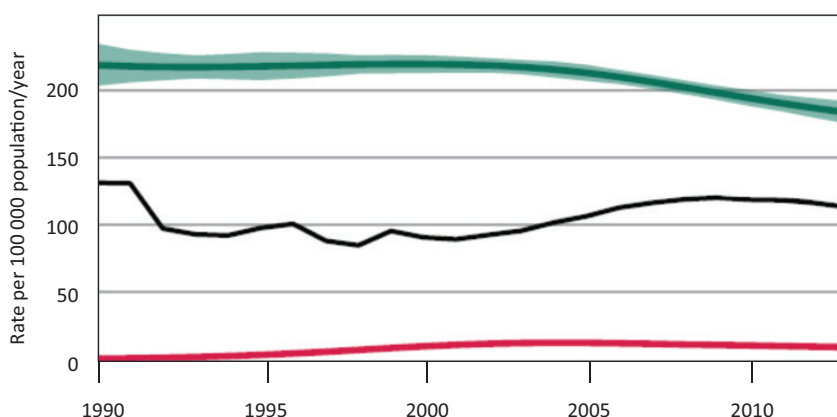


Note: shaded areas represent uncertainty bands. The horizontal dashed lines represent the Stop TB Partnership target of a 50% reduction in the prevalence rate by 2015 compared with 1990

Source: *Global Tuberculosis Control: WHO report 2014*, World Health Organization, Geneva 2014. WHO/HTM/TB/2014.08

The case-notification rate of all forms of TB has been steadily increasing since 2000, but in the last four years, minor decrease has been observed, from 119 to 113 per 100 000 population (Figure 8). Considering important case-finding efforts and strengthening of TB control activities in most countries in the Region, including India, this trend reflects a real decrease in incidence. The incidence does not follow a linear decreasing pattern. After a minor increase in the late 1990s, the decrease was observed starting from 2005. Even considering the relatively large upper uncertainty bound for incidence estimates in most recent years, there was a decline in TB incidence that, considering the best estimates, was about 17% in 2013 compared with the 1990 level. The overall notification rate in the Region is still below the target of 70% case-detection rate of estimated incident cases and even farther from the ideal goal of universal access; in 2013, the estimated case-detection rate of all TB cases was 62% (59–65%).

Figure 8: Estimated TB incidence and notification rate, SEA Region, 1990–2013



Source: *Global Tuberculosis Control: WHO report 2014*, World Health Organization, Geneva 2014. WHO/HTM/TB/2014.08

Besides the MDG goal, Table 2 includes information regarding the status of the Region toward the achievement of additional targets of the Global Plan to STOP TB 2011–2015. Further details are provided in the following sections.

2.3 TB case notification and treatment outcomes

By the end of 2007, full DOTS coverage, defined as the proportion of the population living in administrative areas with access to DOTS services, was reached in SEAR. Briefly, after 2006, all 11 Member States endorsed the Stop TB Strategy and started implementation of the broad spectrum of TB control activities. For the period 2015–2020, most Member States have already updated their national strategic plans including efforts towards universal access to TB care. Thanks to significant efforts at country level, the Region achieved good results in terms of case-finding and notification and treatment outcomes.

Table 2: Summary of situation towards MDG targets and Stop TB strategy targets for South-East Asia Region in 2013

Category	Indicator	Target	SEA Region
TB burden	Incidence rate (per 100 000 population)	1990 level falling	Target: <220 Result: 183
	Prevalence rate (per 100 000 population)	50% of 1990 level	Target: ≤230 Result: 244
	Mortality rate (per 100 000 population)	50% of 1990 level	Target: ≤25 Result: 23
Treatment	Treatment success rate (annual cohort)	≥85%	88%
Tb case detection	Number of cases notified and treated (all new and relapse)	N/A	2 098 170
	Case detection rate (all types)	≥70%	62%
TB/HIV	% of TB patients tested for HIV	100%	43%
	% of HIV-positive TB patients treated with ART	100%	81%
MDR-TB	% of estimated MDR-TB cases notified	≥50%	30%
	% of previously treated TB patients tested for MDR-TB	100%	6%
	% of new TB patients tested for MDR-TB	20%	1%
	Treatment success rate (annual cohort - 2011)	≥75%	54%
Laboratory	Number of laboratories with sputum smear microscopy per 100 000 pop.	≥1	0.8
	Number of laboratories with culture and DST per 5 million pop.	≥1	0.2

(N.B. for indicators that have confidence intervals, only the best estimate is shown)

Source: *Global Tuberculosis Control: WHO report 2014*, World Health Organization, Geneva 2014. WHO/HTM/TB/2014.08

In 2013, WHO issued an updated recording and reporting (R&R) framework⁴ including new definitions of TB cases that were necessary to improve aspects of the previous framework (i.e. more comprehensive reporting of TB cases among children) and accommodate diagnosis using Xpert MTB/RIF and other WHO-endorsed molecular tests. In this report, for the first time, data on notifications and outcomes are reported according to the new R&R framework. Most of the countries are still transitioning to the new R&R framework, but were able to report the majority of the requested information.

⁴ Definitions and reporting framework for tuberculosis – 2013 revision. Geneva, World Health Organization, 2013 (WHO/HTM/TB/2013.2)

2.3.1 Case notifications in 2013

Table 3 shows the absolute numbers of cases notified by type of TB, in each Member country for the year 2013. The 11 Member countries of SEAR altogether notified 2 297 033 cases of tuberculosis; of these 2 098 170 cases had a new episode of tuberculosis (new and relapses, all forms) which represents a case-notification rate of 113 per 100 000 population and 198 863 (9% of the total) were previously treated cases (already been diagnosed with TB but treatment was changed to a retreatment regimen). Of the new episodes of TB, 1 968 356 (94%) had TB for the first time (all new cases) and 129 814 (6%) experienced a recurrent episode of TB after being previously cured of the disease (relapse); of all new pulmonary cases and relapse, 50% were new bacteriologically confirmed PTB cases, 28% were new clinically diagnosed pulmonary TB cases and 16% were new extra-pulmonary TB cases. Five countries in the Region (Bangladesh, India, Indonesia, Myanmar and Thailand), which belong to the global list of 22 countries with the highest burden of TB (HBCs), notified a total of 2 142 188 cases, or 93% of all cases notified in the Region.

There was a decrease of 1.5% in the numbers of cases (all forms) notified in 2013 as compared to 2012 (Table 3); this small decrease is mainly driven by new pulmonary TB, clinically diagnosed.

About half of all notified new cases in the Region (54%) were new bacteriologically confirmed pulmonary TB cases (Figure 9). Bhutan (42%), Democratic People's Republic of Korea (37%), this proportion was considerably lower in Myanmar (33%); on the other hand, the proportion was substantially higher in Indonesia (62%) and Maldives (71%).

Amongst all new cases of pulmonary TB, 64% were bacteriologically confirmed in the Region as a whole, ranging from 38% in Myanmar to 78% in Bhutan.

Seventeen percent of all new cases in the Region were extra-pulmonary cases. This proportion varied largely in different countries, going from a minimum of 5% in Indonesia to a maximum of 46% in Bhutan (Figure 9).

Table 3: Estimated incidence (number in thousands) and cases notified (by type of TB patients) in Member States, SEA Region, 2013

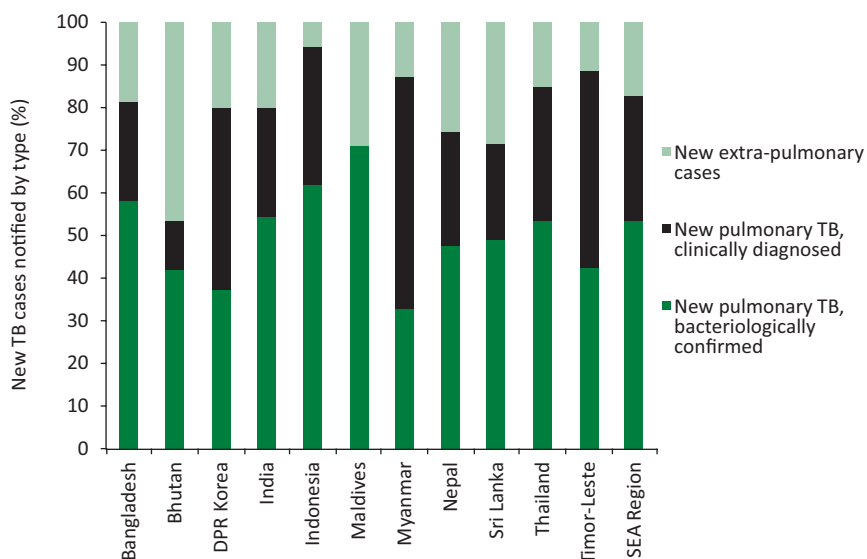
Country	Estimated incidence (All forms)	TB cases notified					
		New pulmonary TB, bacteriologically confirmed	New pulmonary TB, clinically diagnosed	New extra-pulmonary cases	Relapse*	Previously treated cases	Total notifications
Bangladesh	350 (310–400)	105 539	42 394	33 704	2 869	6 385	190 891
Bhutan	1.3 (1.2–1.4)	425	120	471	64	35	1 115
Democratic People's Republic of Korea **	110 (100–110)	33 595	38 838	18 158	7 074	7 247	104 912
India	2100 (2000–2300)	621 762	292 926	226 557	102 660	171 712	1 415 617
Indonesia	460 (410–520)	196 310	103 888	17 420	7 964	1 521	327 103
Maldives	0.14 (0.12–0.15)	80	0	33	1	0	114
Myanmar	200 (180–220)	42 595	70 519	16 887	4 854	7 307	142 162
Nepal	43 (39–49)	15 099	8 367	8 140	2 228	1 604	35 438
Sri Lanka	14 (13–16)	4 459	2 040	2 587	243	167	9 496
Thailand	80 (71–90)	32 887	19 559	9 293	1 802	2 874	66 415
Timor-Leste	5.6 (4.6–6.7)	1 565	1 723	414	55	11	3 768
SEA Region	3400 (3200–3600)	1 054 316	580 374	333 664	129 814	198 863	2 297 033
SEA Region (2012)	3450 (3200–3700)	1 065 852	594 720	338 303	131 245	201 335	2 331 455
Percentage change 2013 vs. 2012		-1.1%	-2.5%	-1.4%	-1.1%	-1.2%	-1.5%

*According to the new R&R framework, relapse cases should be reported as bacteriologically-confirmed or clinically diagnosed; all SEAR countries reported only bacteriologically-confirmed relapses, except Indonesia that reported 6406 bacteriologically-confirmed relapses and 1558 clinically-diagnosed relapses.

**** Democratic People's Republic of Korea

Source: *Global Tuberculosis Control*: WHO report 2014, World Health Organization, Geneva 2014. WHO/HTM/TB/2014.08; and Annual Reports, National TB programmes, SEAR Member states, 2014

Figure 9: Proportion of bacteriologically confirmed pulmonary TB (PTB), clinically diagnosed PTB and extra-pulmonary TB cases out of all new notified cases, Member States, SEA Region, 2013

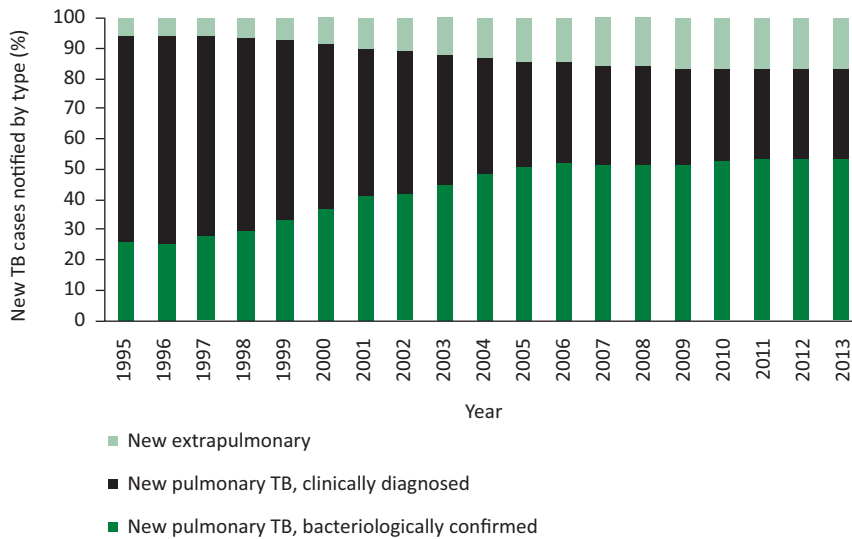


Sources: Annual Reports, National TB programmes, SEAR Member States, 2014.

* Democratic People's Republic of Korea

Consistent with development in TB diagnostic capacity and laboratory network in SEAR, the distribution of new cases by type has changed considerably since 1995, with an increase in the proportion of bacteriologically confirmed PTB cases (basically corresponding to smear-positive cases) and extra-pulmonary cases, and a decrease in clinically diagnosed pulmonary TB cases (Figure 10). The described trend was very marked until 2006, but continued at a lower pace until 2013.

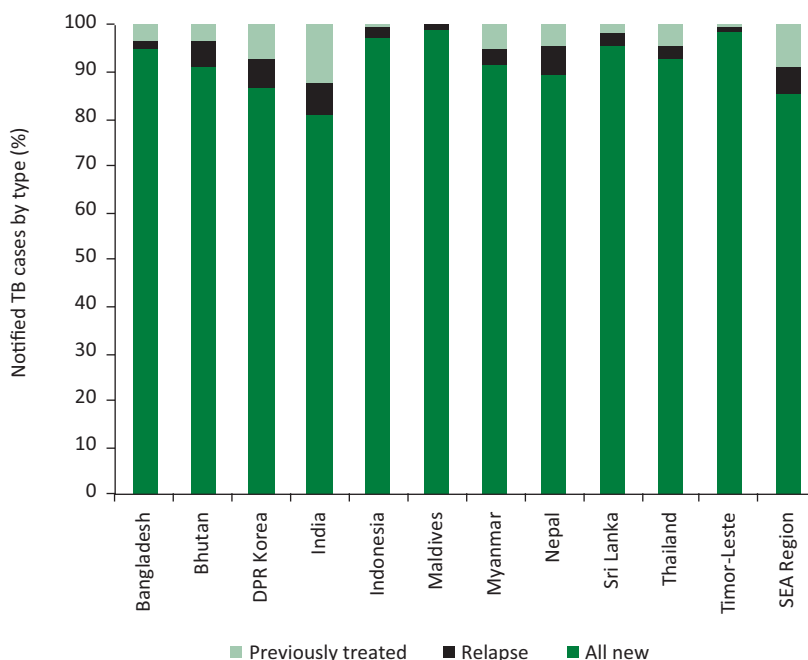
Figure 10: Distribution of annually notified new TB cases by type, SEA Region, 1995–2013



Sources: Annual Reports, National TB programmes, SEAR Member States, 2014.

In 2013, the proportion of previously treated cases (excluding relapse) out of all notified cases was 9% in the whole Region, ranging between 0% (in Maldives) and 12% (in India) (Figure 11). Low proportions of retreatment smear-positive cases were also reported by Timor-Leste (0.3%), Indonesia (0.5%) and Sri Lanka (2%). At the regional level, the proportion of previously treated cases was stable in the last decade; a stable trend is observed in most of the countries except Democratic People's Republic of Korea, where the proportion of retreatment cases has been decreasing since 2009 (from 15% to 7%) and Myanmar, where a slight decrease is observed over the last decade (from around 3% to around 5%).

Figure 11: Proportions of different types of TB according to previous treatment history among all cases reported, Member States of SEA Region, 2013



* Democratic People's Republic of Korea

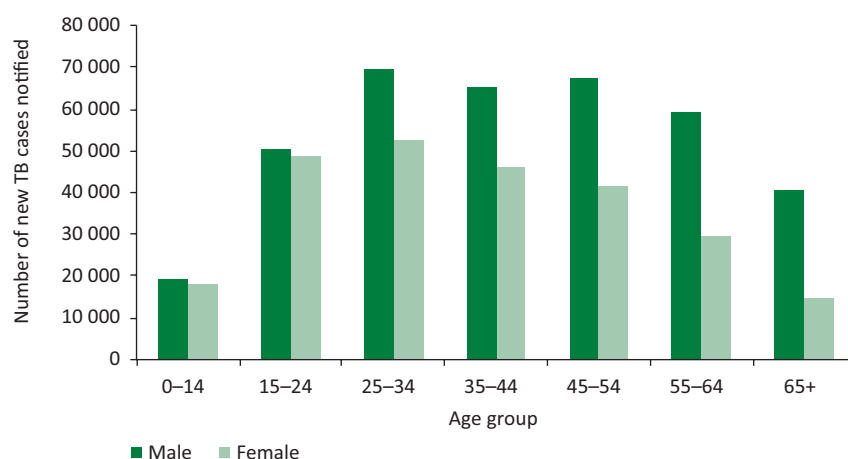
Sources: Annual Reports, National TB programmes, SEAR Member States, 2014

The proportion of relapse cases out of all newly notified (new and relapse) cases was ranging between 1% in Maldives and 8% in Democratic People's Republic of Korea and with a regional average of 6%. This proportion was rather stable during the last decade for most of the countries in the Region. An increasing trend in the proportion of relapse cases was observed in the Democratic People's Republic of Korea (from 1% in 2000 to 7% in 2013) and India (from 3% in the early 2000s to around 8% in the last five years); Myanmar showed a consistent decrease in the proportion of relapses since 1995, although since 2007, the proportion has stabilized at around 3.5%.

Age and sex distribution for all types of new cases notified is available for seven of the 11 countries in the Region: Bangladesh, Bhutan, Democratic People's Republic of Korea, Indonesia, Maldives, Nepal and Sri Lanka; relapse

cases are included in the age and sex distribution for Bhutan, Indonesia, Maldives and Sri Lanka only. India and Timor-Leste reported breakdown only by two age groups (0–14 and 15 and above years); additionally, Timor-Leste disaggregated by sex. Figures 12a and 12b show the distribution of all new cases by age and sex in 2013, in the Region as a whole (using data available only); 53% of the cases belonged to the most productive age groups between 15–44 years; 50% among males and 59% among females. In terms of rate, the most affected age group is 45 years and above, with the highest rate among men aged 55–64 years (376 per 100 000 population) and more than 65 years (338 per 100 000 population). This progressive increase of notification rates from younger to older age groups and the shift of disease burden to older age groups suggests that in the South-East Asia Region, the transmission of TB may be declining and levels of infection in younger age groups may be falling; however, this pattern is less visible among women and variability among countries is still high.

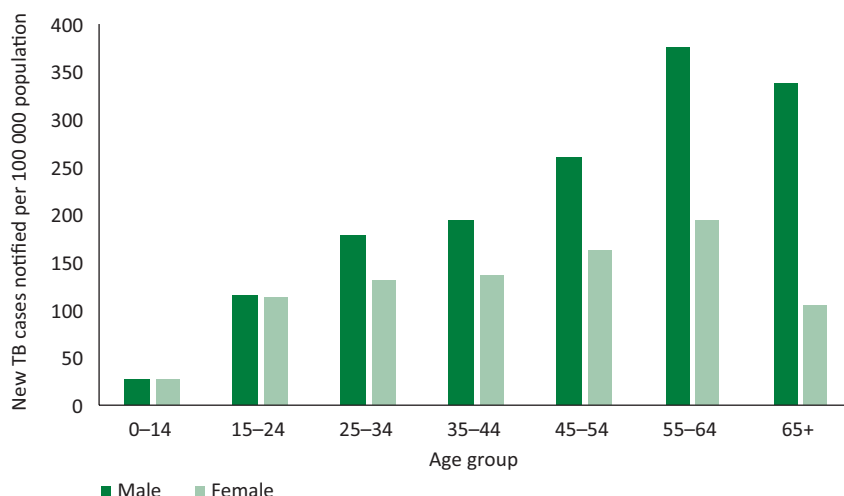
Figure 12a: Age and sex distribution of all notified new TB cases in SEA Region* (in numbers), 2013



* Includes only data from Bangladesh, Bhutan, Democratic People's Republic of Korea, Indonesia, Maldives, Nepal and Sri Lanka

Sources: Annual Reports, National TB programmes, SEAR Member states, 2014

Figure 12b: Age and sex distribution of all notified new TB cases in SEA Region* (rate per 100 000), 2013



* Includes only data from Bangladesh, Bhutan, Democratic People's Republic of Korea, Indonesia, Maldives, Nepal and Sri Lanka

Sources: Annual Reports, National TB programmes, SEAR Member states, 2014

In 2013, among all new TB cases, the percentage of paediatric cases was 5.5 for the whole Region (including data from all countries except Myanmar and Thailand) with almost no difference among males and females. There is variability among countries, with Nepal and Bangladesh reporting the lowest proportion of paediatric cases among all new TB cases (2.7% and 2.8% respectively) and Maldives, India and Indonesia reporting the highest (9% Maldives and 8% India and Indonesia). In 2013, breakdown by 0–4 and 5–14 years was reported by Bangladesh, Bhutan, Democratic People's Republic of Korea, Indonesia, Maldives, Nepal and Sri Lanka: globally in these countries the proportion of new TB cases aged 0–4 years was 36% among all paediatric cases and 2% among all cases; Indonesia had the highest proportion of 0–4 year old patients being 45% among all paediatric cases and 3.6% among all cases.

The male to female ratio of all new notified TB cases in 2013 varied from 1.0 in Bhutan and Timor-Leste to 2.0 in Nepal and Sri Lanka, and was 2.0 for the Region as a whole (excluding India, Myanmar and Thailand that did not report disaggregated data by sex). The male to female ratio in the Region progressively

increased from 1.0 to 2.7 in the age groups from 0–14 years to 65+ years; in cases younger than 24 years, there is no difference between males and females. The same pattern in sex distribution is observed when data are expressed in numbers or rates (Figure 12). Several studies showed that this finding could be explained by higher susceptibility to TB in males after adolescence due to biological factors, as well as by socioeconomic determinants that create higher exposure to risk factors (such as smoking and alcohol) in men and under notification in women due to gender-based unequal access to care and greater stigma.

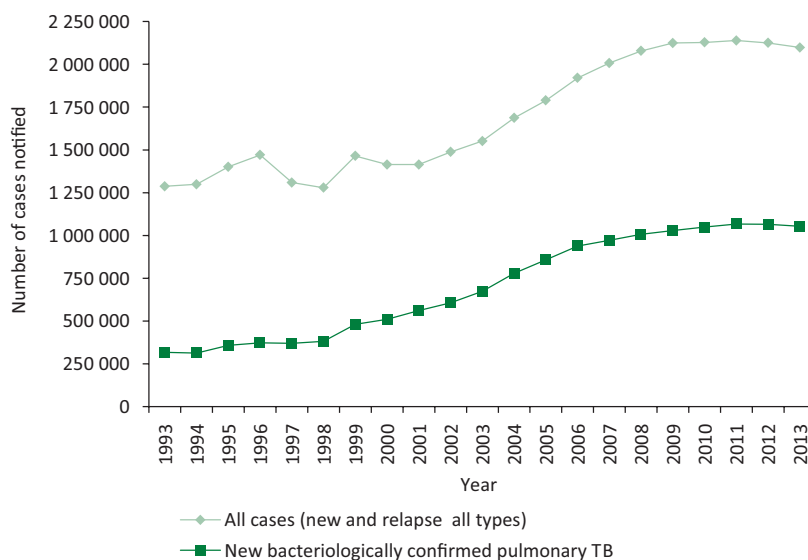
2.3.2 Trends in case notification (1995–2013)

Figure 13 shows the trends in the numbers of cases notified in the Region since 1993, for all forms of TB (including all new cases and relapses) and new bacteriologically confirmed cases (mainly corresponding to smear-positive cases, since R&R systems at country level were not capturing them; yet cases were confirmed through Xpert MTB/RIF or other tests). Notifications continued to increase over the last decade, reflecting case-finding efforts in Member States over time, with a sharper increase in notifications of all forms of TB, especially from 2000 to 2009, possibly due to increasing registration of smear-negative and extra-pulmonary cases following the involvement of the private sector and medical teaching institutions. From 2009, the number of annually notified cases was stagnating and in the last three years, it was slightly decreasing, despite ongoing efforts to strengthen TB control in most countries. This is likely the result of decreasing incidence and prevalence of TB in some countries in the Region, particularly India. Some countries (i.e. Myanmar, Nepal, etc.) reported that the introduction of Xpert MTB/RIF contributed to reduce the overdiagnosis of clinically confirmed TB cases, thus partially explaining reduction of all TB cases in recent years.

The trends in notification rates of all TB cases (all new and relapses) for the five high-burden countries and other (intermediate and low-burden) countries in the Region are presented in Figures 14a and 14b respectively.

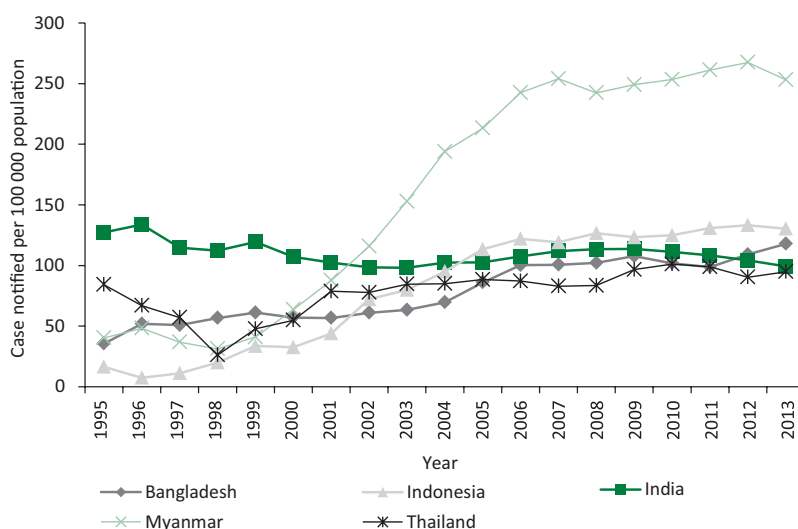
In Bangladesh, an increasing trend was observed until 2006 following which notification rates have remained fairly stable, although a further overall increase occurred until 2013 despite annual oscillations. In India, notification rates decreased from 1995 to the early 2000s and begun to slightly increase until 2009; in recent years the trend has consistently reverted. The decreasing trend until 2002 is mainly driven by clinically diagnosed PTB and extra-pulmonary cases;

Figure 13: Trends in TB cases notified by type of case, SEA Region, 1993–2013



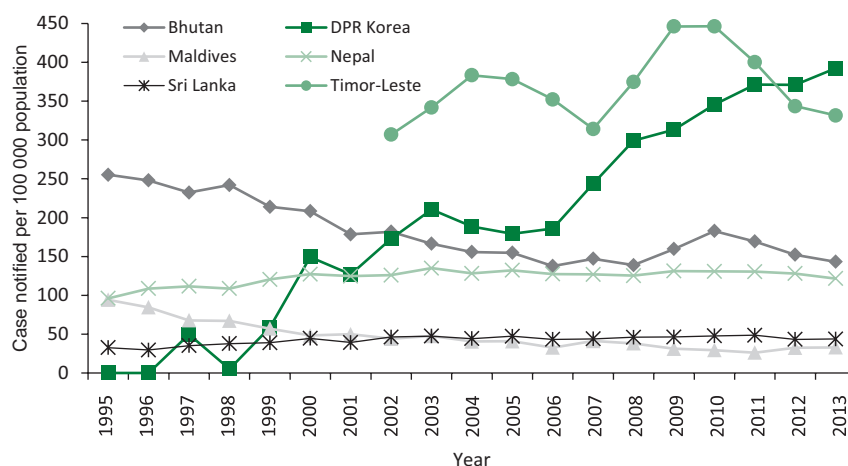
Sources: Tuberculosis control in the South-East Asia Region, Annual Reports 1996–2014, WHO/SEARO; Annual Reports, National TB programmes, SEAR Member states, 2014

Figure 14a: Trends in annual TB case-notification rates (all forms) for high-burden countries in the SEA Region, 1995–2013



Sources: Tuberculosis control in the South-East Asia Region, Annual Reports 1996–2014, WHO/SEARO; Annual Reports, National TB programmes, SEAR Member States, 2014

Figure 14b: Trends in annual TB case-notification rates (all forms) for intermediate and low-burden countries in the SEA Region, 1995–2013



Sources: Tuberculosis control in the South-East Asia Region, Annual Reports 1996–2014, WHO/SEARO; Annual Reports, National TB programmes, SEAR Member States, 2014

in fact, smear-positive cases followed a steadily increasing trend that flattened only in 2008. The increasing trend registered over the last decade is primarily due to increase in case-finding efforts and involvement of private and non-NTP public health-care providers. Concerted efforts to strengthen TB control activities are ongoing and the reverting trend in recent years suggests a decrease in TB burden in the country instead of lower performance with regard to TB control. In Indonesia, after a period of steady increase, there was a drop due mainly to bacteriologically confirmed TB notification rates in 2007, attributed to the temporary cessation of GF support for a period of nine months; later notification rates started to slightly increase again. In Myanmar, a high-burden country in the Region with the highest notification rate, a steady increase in notification rates has been observed from 2000 to 2007. The drop in 2008 may be related to funding problems. From 2009 onward, the trend continued to increase at a slower pace, and it is mainly due to clinically diagnosed pulmonary TB and extrapulmonary cases. In 2013, there was a considerable decrease in reported clinically diagnosed pulmonary cases that seems related to the reduction of overdiagnosis among adults as well as children also thanks to availability of Xpert MTB/RIF. In Thailand, from 2001 to 2008, there was a rather flat trend, followed

by an overall increase in the following years, particularly in 2009–2011 that reflect efforts in case detection and public–private collaborative activities; however, some fluctuations in notification rate are linked to problems with completeness of R&R, especially in large urban areas and due to extensive network of private providers.

In the Democratic People’s Republic of Korea, a sharp increase in the notification rates has been observed since 2006, primarily due to introduction of active case-finding that was adopted as a supplementary strategy, since a big gap was observed between case-notification rates and the revised estimates of the incidence of TB in the country, following a national tuberculin survey in 2007, which revealed a high ARTI. In Sri Lanka, that together with Maldives is the country with the lowest notification rates in the Region, a small increase in notifications was recorded until 2000, followed by a fairly stable trend until 2013. In Nepal, some increase in the notification rate was observed in the 1990s but the trend flattened without significant deviations until 2012, despite case-finding efforts and increased coverage of TB services. In 2013, there was a considerable decrease in reported clinically diagnosed pulmonary TB cases, mainly explained by reduction of misdiagnosed cases also due to introduction of Xpert MTB/RIF as initial diagnostic test among sputum smear-negative patients. In Bhutan, after a declining slope until 2008, strengthening of TB diagnostic capacity and overall TB management as well as potential overdiagnosis of extrapulmonary TB (over 40% of all annually notified cases) led to an increase in the notification rate until 2010, followed by a decreasing trend that is likely to reflect the real reduction of TB burden in the country. A consistently declining trend has been observed in Maldives in the last 15 years. The trends in Timor-Leste reflect periods of civil strife when services were seriously disrupted for considerable periods of time; a fluctuating trend reflects on one hand the efforts towards case detection and, on the other, improvement of TB diagnosis with reduction of misdiagnosis of cases.

2.3.3 Treatment outcomes

The treatment success rate among new and relapse TB cases enrolled for treatment during 2012 was 88% in the Region as a whole (Myanmar, Sri Lanka and Timor-Leste did not include relapse with new cases in the outcomes assessment). Nine of the 11 Member countries reached the 85% treatment success rate target and the newly set target of 90% success rate by 2015 was reached or surpassed by four of the 11 Member States in the Region (Table 4).

The overall case-fatality rate (CFR), default and failure rates were 4%, 5% and 1% respectively among new and relapse TB cases registered for treatment in 2012.

In Maldives, the treatment success among new and relapse cases was lower than the target. A relatively high proportion of “not evaluated” is the main reason for not achieving the target. This finding was common also in previous years when assessing treatment outcomes among new smear-positive cases only. Small numbers in Maldives create high annual fluctuation of figures for other unsuccessful treatment outcomes.

Also, Thailand did not reach the treatment success rate target due to relatively high CFR (7%) and non-evaluated cases (6%), the latter probably due to recording and reporting issues that affect overall TB control activities. Case-fatality rate may be partially explained by high case fatality among HIV-positive TB cases (16%) and partially by a high proportion of cases in old age groups that are more prone to die of any cause.

After Thailand, the second highest CFR were registered in Sri Lanka (5.5%). In the Region, the highest “lost to follow-up” rates among new and relapse cases were observed in India and Indonesia (6% and 5% respectively); Indonesia also has a high proportion of non-evaluated cases.

As expected, the success rate among previously treated cases (excluding relapse) is lower than in new cases, being 75% for the whole Region and ranging from 63% to 90% within the countries (it is 100% in Maldives, but the cohort has only one case). Similarly, CFR rate and failure rate among previously treated cases are higher, being 7% and 3% respectively for the whole Region; case fatality is ranging between 5% in Indonesia and 12% in Myanmar, while failure rate ranges between 0% in Timor-Leste and 18% in Bhutan. The rate of “lost to follow-up” among previously treated cases is high in the Region (12%), and it is particularly high in Sri Lanka (23%), Indonesia (15%) and India (13%). Although historical data available for all retreatment cases (including relapse) until 2011 cohort indicate that the defaulting rate in all countries was slightly decreasing, these high default rates among re-treatment cases are a cause of concern. In fact, high “lost to follow-up” rate as well as high failure rate is an alert because these cases could be expected to have multi-drug resistance.

Table 4: Treatment outcomes expressed as percentage among cases notified in 2012 by type of cases in Member States of the SEA Region

Countries	New and relapse cases*						Previously treated cases*					
	Cases registered	Cured or treatment completed	Failure rate	Case fatality rate	Lost to follow up rate	Not evaluated/transfer out	Cases registered	Cured or treatment completed	Failure rate	Case fatality rate	Lost to follow up rate	Not evaluated/transfer out
Bangladesh	164 587	92.0	0.6	4.1	1.6	1.8	4 899	82.1	0.9	6.4	3.6	7.0
Bhutan	1 141	91.6	2.7	3.4	0.5	1.8	17	70.6	17.6	5.9	0.0	5.9
Democratic People's Republic of Korea	91 885	91.7	2.6	2.5	2.2	1.0	7 514	83.9	5.6	6.4	2.4	1.6
India	1 288 141	87.7	1.3	3.9	5.8	1.2	177 695	74.4	2.7	6.6	12.8	3.6
Indonesia	328 824	85.5	0.5	2.3	5.4	6.4	2 600	70.5	3.3	5.2	14.8	6.2
Maldives	109	78.9	0.9	6.4	0.0	13.8	1	100.0	0.0	0.0	0.0	0.0
Myanmar	136 905	88.5	1.3	3.9	4.8	1.4	11 537	69.9	6.6	11.5	8.0	4.0
Nepal	34 350	90.8	1.5	3.0	2.0	2.6	445	77.3	5.8	5.6	7.6	3.6
Sri Lanka	8 752	86.1	0.8	5.5	4.2	3.4	188	67.0	1.0	11.0	14.0	7.0
Thailand	58 185	81.4	1.2	7.4	4.5	5.6	1 439	63.0	4.3	10.1	11.7	10.8
Timor-Leste	1 445	89.4	1.0	3.7	4.4	1.5	39	89.7	0.0	10.3	0.0	0.0
SEAR	2 114 324	87.8	1.2	3.7	5.1	2.2	206 374	74.6	3.0	6.8	11.9	3.7

*Myanmar, Sri Lanka and Timor-Leste included the relapse cases in the previously treated cases and not in the new cases

Source: Annual Reports, National TB programmes, SEAR Member states, 2014;

N.B. Sum of treatment outcomes may be >100% due to rounding of decimals. For some countries there are discrepancies between cases notified in 2012, published in previous reports and cases notified reported as denominator in this table. Figures may change due to delayed reporting of some units, data quality checks during the past year, revision of completeness of surveillance data, etc.

2.4 Community-based surveys to estimate prevalence of pulmonary tuberculosis, annual risk of tuberculosis infection (ARTI) and mortality due to TB

A number of community-based surveys have been carried out in the Region at different times to estimate the prevalence of PTB. Most of the surveys conducted were at sub-national level and the screening methodology varies across the surveys, reducing the comparability of outcomes. The currently recommended methodology (symptom screening and chest X-ray) was applied during nationwide surveys only in Myanmar (2006 and 2010), Thailand (2012) and Indonesia (2013). Screening based on symptoms and X-ray was used also in some subnational surveys in India (the repeated surveys in Thiruvallur district of Tamil Nadu, Bangalore, Wardha and most recently Gujarat). However, miniature mass radiographs were used which produce a low quality image with less sensitivity than chest radiography with auto-processor or digital technology.

Results of surveys undertaken between 1990 and 2010, already published in the “TB control in South-East Asia, 2013” annual report show large in-country and between-country variability. For surveys conducted between 2011 and 2014, final results are not yet available and cannot be reported.

Information from prevalence surveys have been largely used in the Region to revise burden estimates as well as trends over time when data from repeated surveys were available.

In India, results from the four rounds of prevalence surveys in Thiruvallur district in Tamil Nadu, between 1999 and 2006, and those conducted in pre-DOTS period (between 1968 and 1986) in the same area were used to estimate an overall decline in the prevalence of smear-positive as well as culture-positive PTB, compared with no decline in the pre-DOTS era. Point estimates from the most recent six district/sub-district level surveys show a variable level of TB prevalence in different geographical areas and provide important information for the revision of national burden estimates. A state-level prevalence survey in Gujarat was completed in 2012, and preliminary results indicate prevalence levels of TB within the range, although towards the upper limit, of prevalence rates measured during surveys conducted between 2007 and 2009; however, final results are not yet available.

In Indonesia, the national-level prevalence survey conducted during 2004 supported the estimation of declining trend because it demonstrated a three-fold decline in prevalence rates when compared to results of district-level surveys carried out during the 1980s. Results of 2013 surveys are not yet available, but preliminary data suggest that the prevalence level should be significantly revised upward, although a declining trend seems confirmed.

In Bangladesh, the comparability of results from sub-national prevalence surveys carried out in the early 2000s and the nationwide survey conducted in 2009 was limited by the different methodologies adopted. Information on point estimates and possibly on trend over time will be provided by the prevalence survey planned for 2015.

In Myanmar, prevalence estimates were significantly revised upward based on the results of the TB prevalence survey in Yangon district in 2006 and the nationwide survey in 2010. Direct measurement of trend will be provided by a repeated survey planned for 2017.

In Thailand, preliminary results from the 2012–2013 prevalence survey are available only for non-Bangkok clusters. Comparison between the 2012–2013 survey and 1991 survey indicates that prevalence of smear-positive PTB almost halved and bacteriologically positive PTB also declined, although more slowly. Current estimates are likely to be slightly revised only. However, final results should account for Bangkok clusters that seem to have considerably higher prevalence than the rest of the country.

Tuberculin surveys to estimate ARTI among children carried out in the Member States of the Region from 1990 onwards were reported in “Tuberculosis control in South-East Asia, 2013” annual report and no newer information is available for this report. It is currently recommended not to use ARTI estimates to estimate disease incidence and derive prevalence, since the assumptions needed to link ARTI and incidence were shown to be not valid anymore. Results from repeated ARTI surveys were mainly used to estimate trends over time and in SEAR. They have been used for estimation in Bhutan, Democratic People’s Republic of Korea and India⁵.

5 Refer to “Tuberculosis control in South-East Asia, 2013 Report” for additional information

A limited number of TB mortality studies based on vital registration and verification of the cause of death (COD) through verbal autopsies, have been carried out in the Region. In India, in 2003–2008, a series of large community-based mortality sub-national surveys were conducted using verbal autopsy and methodology endorsed by the Registrar General in Andhra Pradesh, Orissa, Thiruvallur, Tamil Nadu in one Kolkata slum and in rural Andhra Pradesh. These surveys showed an average TB mortality rate of 36 per 100 000 population (range 28–76). Additional information has emerged from the 2002–2007 AIIMS Ballabgarh community-based prospective mortality survey, which reported TB mortality of 40 per 100 000 person/years. The nationally-representative One Million Deaths study, accounting for deaths from 2001–2003, has informally reported TB deaths of 77 and 40 per 100 000 person years for men and women respectively; the One Million Death study is still ongoing to collect information about avoidable deaths between 1998 and 2014.

In Indonesia, verbal autopsy-based mortality studies carried out at seven sites at sub-national level, during 2006–2008, revealed that TB was ranked first to third among the leading cod in the different provinces. Myanmar is planning to conduct a nationwide TB mortality survey in 2015.

3.1 Burden of DR-TB

Well-functioning national TB control programmes in the Region achieving high treatment success rates have resulted in maintaining the slow but steady decline in TB incidence rates during the past decade. This has also led to low levels (2.2, range: 1.6–2.8%) of MDR among newly-detected cases; the South-East Asia Region and the Americas have the lowest proportion of MDR-TB among new cases. Among previously treated cases in the Region, MDR-TB rate is estimated to be higher, around 16% (range: 11–21%) and the Region has the second lowest proportion of MDR-TB among retreatment TB patients. However, given the large number of TB cases in the SEA Region, this translates to a total of 89 000 (range: 75 000–100 000) estimated MDR-TB cases among notified PTB cases, accounting for 30% of the world's MDR-TB cases in 2013. Four of the 27 high MDR-TB-burden countries are in the SEA Region: Bangladesh, India, Indonesia and Myanmar.

The country-wise estimated burden of MDR-TB is based on nationwide drug resistance survey (DRS) or models based on sub-national DRS or generic model applied to the whole Region; estimates and sources of estimate are presented in Table 5.

To improve estimates of DR-TB, RNTCP India with support from WHO has launched the National Anti-tuberculosis Drug Resistance Survey 2014–2015 in a representative sample of both newly diagnosed and previously treated TB cases. Indonesia is planning to conduct a national DRS using a new algorithm that includes Xpert MTB/RIF to screen specimens for rifampicin resistance and identifying those requesting further testing. Indonesia is also gradually implementing drug resistance sentinel surveillance (covering six provinces in 2013) to provide data geographically representative of the whole country. Among the countries in the Region, Sri Lanka reached almost full coverage of DST testing among retreatment cases, allowing direct measurement of MDR-TB prevalence among this sub-group of TB cases.

Table 5: Estimated MDR-TB cases and rates in Member States of SEA Region, 2013

Country	Source of estimates	% MDR among new TB cases (95% CI)	% MDR among previously treated TB cases (95% CI)	Estimated number of MDR-TB among all pulmonary TB cases notified in 2013 (95% CI)
Bangladesh	DRS, 2012	1.4 (0.7–2.5)	29 (24–34)	4 700 (3 200–6 900)
Bhutan	Model, DRS, 2013 ^a	2.2 (1.8–2.7)	35 (21–52)	47 (30–66)
DPR Korea*	model	2.2 (1.8–2.7)	16 (12–20)	3 900 (3 100–4 900)
India	model ^b	2.2 (1.9–2.6)	15 (11–19)	61 000 (47 000–76 000)
Indonesia	model ^c	1.9 (1.4–2.5)	12 (8.1–17)	6 800 (4 970–9 100)
Maldives	model	2.2 (1.8–2.7)	16 (12–20)	2 (1–2)
Myanmar	DRS, 2012–2013	5.0 (3.1–6.8)	27 (15–39)	9 000 (5 300–12 500)
Nepal	DRS, 2011	2.2 (1.3–3.8)	15 (10–23)	1 110 (700–1 760)
Sri Lanka	DRS, 2006 DRS, 2013 ^d	0.18 (0–0.99)	0.58 (0.07–2.1)	15 (0–74)
Thailand	DRS, 2012	2.0 (1.4–2.8)	19 (14–25)	1 880 (1 370–2 700)
Timor-Leste	model	2.2 (1.8–2.7)	16 (12–20)	83 (67–102)
SEAR	model	2.2 (1.8–2.7)	16 (12–20)	89 000 (70 000–110 000)

^a Estimates for previously treated TB patients are based on DRS results; sample size for new TB cases was too small to estimate MDR-TB prevalence in this subgroup and estimates are based on regional model

^b Estimates based on sub-national DRS conducted in three states between 2006 and 2009

^c Model based on three sub-national surveys: DRS in Mimika District in 2004, Central Java province in 2006 and East Java province in 2010

^d Estimates for previously treated TB patients are based on results from DRS that had 99% coverage among retreatment cases in 2013; estimate for MDR-TB prevalence among new cases is based on results from previous DRS conducted in 2006

*Democratic People's Republic of Korea

DRS = drug resistance surveillance or survey data; CI = confidence interval; MDR-TB = multidrug-resistant TB

Sources: Annual Reports, National TB programmes, SEAR Member states, 2014;

3.2 Response to DR-TB in the Region

In 2011, the WHO Regional office for South-East Asia published the “South-East-Asia Regional Response Plan for Drug-resistant TB Care and Control” in collaboration with WHO Country Offices. In 2012, the Regional Green Light Committee (rGLC) was established in the WHO Regional Office for South-East Asia. A Regional Advisory Committee on MDR-TB was established to provide clear guidance on new policies and strategies for PMDT in countries of the Region. During recent years, steady progress has been made in the Region in detecting MDR-TB cases and initiating them on treatment. The r-GLC had approved the case management of patients with MDR-TB under national programmes in 10 Member States and almost all countries moved to PMDT and are in the process of expanding case finding capacity and treatment and care services.

Bangladesh, Democratic People’s Republic of Korea, India, Indonesia, Myanmar, Nepal, and Thailand developed clear PMDT expansion plans and other countries included PMDT as a component of the overall national strategic plans for TB control. In India, since September 2012, all 35 states have been providing MDR-TB diagnostic and treatment services and by March 2013, all districts were covered by PMDT services. In 2012 Bangladesh initiated Community-based Programmatic Management of MDR-TB (CPMDT) and in 2014, 316 outpatient DR-TB teams were formed and 2524 health-care workers were trained to continue MDR-TB care after initiation of the treatment (4–8 weeks) in the five chest disease hospitals (CDH) and one NGO (Damien Foundation) providing MDR-TB care. In Indonesia, by the end of 2014, there were a total of 28 PMDT referral centres, 10 sub-referral centres and 777 treatment centres across the country, almost double of the coverage in 2013; M/XDR TB interventions include further expansion of PMDT sites, policy for ambulatory treatment, “Borderless Approach” and integration of PMDT services into the national health insurance system. In Myanmar, according to the scale-up plan developed for 2011–2015, by the end of 2014, 14 Regions/States and 68 townships had diagnostic capacity through Xpert MTB/RIF and MDR-TB treatment centres: there are plans to expand MDR-TB diagnosis, treatment and care to all Regions/States by 2016. Nepal has already established ambulatory case management services for MDR-TB throughout the country; currently, there are 13 treatment and 73 sub-treatment centres offering MDR-TB treatment services through primary health care (PHC) services and health facilities managed by other sectors; in 2011, hostels for DR-TB cases have been established.

Maldives continues to treat the few cases detected through the National Tuberculosis Institute, Bangalore (India) on a case-by-case basis (no case was detected in 2013). Bhutan started enrolling cases in 2010 and provides treatment through three referral hospitals. Since 2011, Sri Lanka is enrolling patients that are treated initially at the National Hospital of Respiratory Diseases and then referred for continuation of treatment at the chest clinics in their respective districts. In Timor-Leste, there is a GLC project in place since 2011: the treatment is initiated by one NGO inpatient MDR-TB ward in the district of Liquiça and six NGO facilities are providing ambulatory care after the intensive phase. There are five NGOs which support the NTP in identifying TB suspects and referring them to DOTS facilities for diagnosis and treatment. In the Democratic People's Republic of Korea, the growing number of MDR-TB cases notified and initiated on treatment is showing a rapid increase of MDR-TB diagnostic and management capacity. In Thailand, most patients with DR-TB are diagnosed and managed by university, regional/provincial and some private hospitals (about 100 treatment units throughout the country), which procure second-line anti-TB drugs (SLD) using local resources such as the Government Pharmaceutical Organization.

In 2013, according to country reports, about 280 000 TB patients in the Region were tested for susceptibility to rifampicin using phenotypic DST or WHO-recommended rapid molecular diagnostics; 26 000 laboratory confirmed MDR-TB or rifampicin-resistant cases who are not laboratory-confirmed MDR cases (RR/MDR-TB) were notified, being 30% of estimated MDR-TB cases among all notified TB cases. Almost 24 000 patients had been registered for MDR-TB treatment in the Region, corresponding to 91% of notified RR/MDR-TB cases, and being over 30% of the reported MDR-TB cases put on treatment compared to the previous year (Table 6). Data available from the first two or three quarters of 2014 (from the four MDR-TB high-burden countries in the Region) confirm the increasing uptake of PMDT activities, since more than 22 000 MDR-TB cases were reported and 92% of them were reported on treatment.

However, the numbers reported are often incomplete (i.e. Thailand estimates 75% underreporting of MDR-TB cases detected and on treatment), inconsistent with the expansion of PMDT and not fully responding to drug-resistance reporting requirements. Some countries could not report RR/MDR-TB cases correctly because the information on further confirmation of RR-TB as MDR-TB cases is missing, causing either underreporting (if RR-TB cases were omitted) or over-reporting (if some RR-TB cases are counted twice as RR-TB and MDR-TB).

Disaggregation by laboratory confirmed and non-laboratory confirmed patients initiated on MDR-TB treatment is often lacking, limiting the assessment of the gap between diagnosis and enrolment on treatment.

There is also often inconsistency between data from DRS and number of RR/MDR-TB cases reported and poor disaggregated by history of treatment (new or previously treated cases). According to data reported, only 1% and 6% of new and retreatment cases respectively were tested for resistance to rifampicin. However, for India, data on DST testing are reported as cumulative of all cases, limiting the assessment of the South-East Asia Region in terms of achievement of targets set for testing among new and previously treated patients. Considering the overall reported number of patients tested for DST, 12% of all reported patients were tested.

R&R system for DR-TB has been revised in all countries of the Region to be consistent with the international recommendations and to capture data about detection and enrolment on treatment. However, in several countries, there is need to strengthen the system and quality of data.

Treatment success rates for MDR-TB patients enrolled on SLD in 2011 were available for all countries except Thailand that implemented the R&R system for DR-TB in 2012 and Democratic People's Republic of Korea and Timor-Leste that started enrolment of patients in 2012. Average regional treatment success rate was 54% for 2011 cohort, higher than for 2010 cohort; at country level, treatment success rates ranged between 25% in Maldives and 50% in India to 85% in Bhutan and 83% in Sri Lanka. Among unfavourable treatment outcomes, death rate was 21%, the highest among all WHO Regions.

Extensively drug resistant TB (XDR-TB) has also been reported from six countries (Bangladesh, India, Indonesia, Myanmar, Nepal and Thailand) in the Region. In total, 979 XDR-TB cases were reported in 2013 and 43% of them were started on XDR-TB treatment.

In December 2011, Mumbai, India, also reported cases of so called "totally DR-TB" that pose an extremely difficult challenge to clinicians and public health authorities. As a result, besides strengthening PMDT activities, the national regulations governing private sales of anti-TB medication were reinforced and in May 2012, India made TB a notifiable disease.

Table 6: Number of RR/MDR-TB cases notified and started on treatment in Member States of SEA Region, 2013

Country	Estimated number of MDR-TB among all pulmonary TB cases notified (Best estimate)	Number of RR/MDR-TB cases notified	Proportion of estimated MDR-TB cases that were notified (%)	Proportion of RR/MDR-TB cases notified started on treatment (%)*
Bangladesh	4 700	544**	12	126
Bhutan	47	47	100	104
DPR Korea****	3 900	187	5	91
India	61 000	23 157	38	91
Indonesia	6 800	848	12	95
Maldives	2	0	–	–
Myanmar	9 000	968	11	69
Nepal	1 110	477	43	81
Sri Lanka	15	4	27	100
Thailand	1 880	230***	12	100
Timor-Leste	83	2	2	100
SEAR	88 537	26 464	30	91

Source: Annual Reports, National TB programmes, SEAR Member states, 2014

*Some countries reported overall number of patients on MDR-TB treatment, without clear disaggregation between laboratory and non-laboratory confirmed

**In Bangladesh 679 RR-TB have been detected. However, they cannot be considered additional drug-resistant cases to confirmed MDR-TB as it was not possible to report how many of them were lately diagnosed to be MDR-TB

***Thailand was not able to report RR-TB cases; only confirmed MDR-TB were reported

**** Democratic People's Republic of Korea

Although the proportion of RR/MDR-TB cases diagnosed is still low, below the target of 50%, considerable efforts have been made in the Region to expand capacity for quality assured drug susceptibility testing (DST) and there was a remarkable increase in RR/MDR-TB cases notified, with a very high proportion of patients started on treatment in most countries in the Region as a whole with high treatment success rates in some of the countries. Further efforts are needed to reach the targets set for MDR-TB case-detection rate, DST testing and treatment outcomes, including enhancement of R&R systems to base the South-East Asia Region assessment on more complete and accurate data.

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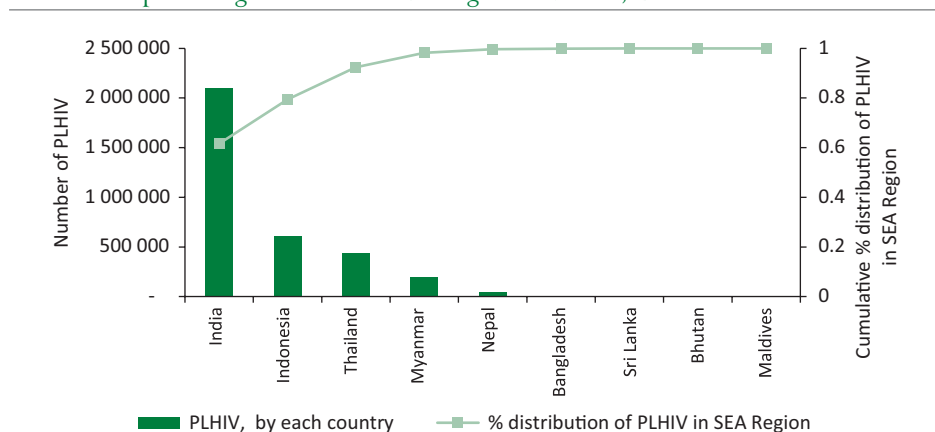
Addressing the co-epidemics of TB and HIV

4.1 Impact of HIV on TB in the Region

In 2013, 3.4 (2.9–4.0) million persons were estimated to be living with HIV/AIDS (PLHIV) in SEAR, constituting nearly 10% of PLHIV globally. There were an estimated 230 000 new HIV infections in the Region and 190 000 AIDS-related deaths in 2013; new infections declined by over 34% from 2001 to 2013. Women (15 years and above) account for nearly 37% of the total number of PLHIV in the SEA Region.

Magnitude of the infection varies and five countries namely, India, Indonesia, Myanmar, Nepal and Thailand together account for almost 99% of the HIV burden in the Region (Figure 15).

Figure 15 Number of people living with HIV (PLHIV) by country and cumulative percentage of cases in SEA Region countries, 2013



Source: UNAIDS AIDS report 2013

The overall HIV prevalence among the adult population was low (0.3%) in the Region in 2013. Thailand was the only country with a prevalence of over 1%. The estimated number of annual new infections is showing a downward trend in India, Myanmar, Nepal and Thailand compared to 2001. Nepal has reduced new infections by more than 80%, while Thailand and Myanmar have reduced incidence by about 70%, and India by 50%. In Indonesia, however, the HIV epidemic is still on the rise; it has registered an almost three-fold increase since 2001. (Table 7).

Table 7: Estimated HIV prevalence among adult populations and the number of people living with HIV infection in Member States of the SEA Region, 2013

Country	Estimated number of people newly infected with HIV	Estimated adult (15-49 years) HIV prevalence (%)	Estimated number of people living with HIV
Bangladesh	1 300	<0.1	9 500
Bhutan	<200	0.1	<1 000
DPR Korea*	No reported HIV positive individual till date		
India	130 000	0.3	2 100 000
Indonesia	80 000	0.5	640 000
Maldives	N/A	<0.1	<100
Myanmar	6 700	0.6	190 000
Nepal	1 300	0.2	39 000
Sri Lanka	<500	<0.1	2 900
Thailand	8 200	1.1	440 000
Timor-Leste	N/A	N/A	N/A
Total	230 000	0.3	3.4 million

Source: Health sector response to HIV in the South-East Asia Region, 2013

*Democratic People's Republic of Korea

The Region is distinguished by a complex, heterogeneous HIV epidemic at different stages across different countries and geographical areas within individual countries. Myanmar and Thailand have more homogenous HIV prevalence

among populations living in different geographical areas. In India, the epidemic is more concentrated in some states and districts: approximately two-thirds of the estimated HIV burden in India is concentrated in six states in the South and North-East, which make up only a third of the country's population. In Nepal, increasing HIV prevalence among high-risk groups such as intravenous drug users (IDU), has raised concerns about the potential risk of a generalized HIV epidemic. Bangladesh has a significant rising epidemic compared to previous years, although the epidemic is mainly concentrated in high-risk groups, for example, a recent survey revealed an HIV prevalence of 7% among IDU. In Indonesia, where the overall prevalence of HIV is low, <1%, three provinces have reported much higher rates of HIV: the Papua Region has a low level generalized epidemic with adult HIV prevalence of over 2%. HIV prevalence is estimated to be low in Bhutan, Maldives, Sri Lanka and Timor-Leste. HIV has till date not been reported from the Democratic People's Republic of Korea.

A significant proportion of PLHIV are also infected with tubercle bacilli and are thus at a high risk of developing TB. However, most of the incident TB cases in the Region are among HIV-negative people. In 2013, SEAR accounted for about 15% of the global burden of new HIV-positive TB cases. Four countries in the Region are among the 41 global high HIV-burden countries (India, Indonesia, Myanmar and Thailand). The estimated incidence of HIV-positive TB cases in 2013 is 170 000 corresponding to 9 per 100 000 population in the whole Region and 5% of all estimated TB incident cases, but rates vary widely among countries (Table 8). The number of deaths for HIV disease resulting in TB (as per International Classification of Diseases (ICD-10) definition) is estimated to be 48 000 in 2013, corresponding to a rate of 2.6 per 100 000 population; deaths due to HIV resulting in TB are to be considered additional to deaths due to TB among HIV-negative patients. Considering all TB deaths, associated or not with HIV, the death toll in the Region in 2013 increased to almost 500 000.

In SEAR, direct measurement of the prevalence of HIV among incident cases of TB was done in Myanmar, Nepal, Sri Lanka and Timor-Leste through HIV sentinel surveillance; India, Myanmar, Sri Lanka and Thailand also conducted national surveys; results from provider-initiated testing and counselling with at least 50% coverage of testing are available only for Bhutan, India and Thailand. All other countries rely on indirect estimates.

Table 8: HIV/TB burden in Member States of the SEA Region, best estimates and uncertainly bounds, 2013

Country	Incidence of HIV-positive TB cases		Mortality among HIV-positive TB cases	
	Number	Rate per 100 000 population	Number	Rate per 100 000 population
Bangladesh	410 (180–460)	0.26 (0.1–0.3)	160 (10–240)	0.1 (0.07–0.15)
Bhutan	<10 (<10–<10)	0.15 (0.14–0.17)	0	0
DPR Korea*	120 (56–130)	0.5 (0.2–0.5)	18 (10–30)	0.07 (0.04–0.12)
India	120 000 (100 000–140 000)	9.7 (8–11)	38 000 (31 000–44 000)	3 (2.5–3.5)
Indonesia	15 000 (8 700–20 000)	5.8 (3.5–7.8)	3 900 (2 200–6 200)	1.6 (0.9–2.5)
Maldives	<10 (<10–<10)	0.07 (0.03–0.08)	0	0
Myanmar	17 000 (16 000–18 000)	33 (30–34)	4 300 (3 300–5 300)	8 (6.3–9.9)
Nepal	1 600 (660–1 800)	5.6 (2.4–6.4)	320 (170–510)	1.2 (0.6–1.8)
Sri Lanka	25 (10–47)	0.12 (0.04–0.22)	<10 (<10–10)	0.03 (0.01–0.05)
Thailand	12 000 (10 000–13 000)	17 (15–19)	1 900 (1 300–2 400)	2.8 (2–3.6)
Timor-Leste	NA	NA	0	0
Total	170 000 (150 000–190 000)	9 (8.1–10)	48 000 (42 000–55 000)	2.6 (2.2–3)

Source: Global Tuberculosis Control: WHO report 2014, World Health Organization, Geneva 2014. WHO/HTM/TB/2014.08

Note: Figures are rounded off. NA=not available

*Democratic People's Republic of Korea

4.2 TB/HIV control activities in the Region

The need to address TB-HIV is well understood in the Region. A Regional Response Plan for TB/HIV collaboration, 2012–2015 has been developed, adapting global strategies and guidelines to the unique needs of the Region.

National TB/HIV policies and guidelines, and a comprehensive package of interventions (i.e. joint advocacy and coordination between TB and HIV national programmes, training of staff, integrated service delivery, referral of patients, R&R for TB/HIV collaborative activities, etc.) are being implemented in all countries except the Democratic People's Republic of Korea where HIV testing

in select TB cases with history of travel is being undertaken; however, the pace of implementation and outcomes differ across countries. TB/HIV activities are extensive in Thailand where high and continuously increasing coverage of HIV testing in TB cases, TB screening among HIV-positive patients, CPT and ART coverage among TB/HIV co-infected patients are reported. In Thailand, care and treatment for HIV-infected persons is free of charge and is covered by all three insurance agencies and widely available through the National Health Security Office. Services are being further expanded in India (full coverage of all 35 States reached in 2012), in Myanmar (28 sites are providing TB/HIV collaborative activities) and in Indonesia (all 33 provinces and 200 ART facilities are currently covered by TB/HIV activities).

Intensified case-finding is steadily increasing at integrated/HIV counselling, testing and care centres, and cross-referrals between the TB and HIV programmes have been strengthened; integrated management is becoming more widely available as HIV services expand. Particularly in India, the nationwide scale-up of intensified TB/HIV package including intensified TB case-finding at all HIV testing centres (integrated counselling and testing centres - ICTC) and ART centres led to identification of about 90 000 TB patients, contributing to 5% of the overall number of TB cases notified in 2013; additionally, it led to an over 30% increase of HIV testing and initiation on ART among HIV-positive TB patients in just two years, which positively impacts overall regional indicators.

In 2013, a total of 43% of TB patients in the Region knew their HIV status, and 88% and 81% of TB/HIV co-infected patients were put on CPT and ART respectively (Table 9). Although more progress is needed, the Region is rapidly achieving increasingly higher targets in the TB/HIV collaborative activities particularly with regard to ART coverage (it was 61% in 2012).

Infection control measures have been included in national plans in Bangladesh, Bhutan, Democratic People's Republic of Korea, India, Indonesia, Myanmar, Nepal, Sri Lanka, Thailand and Timor-Leste.

The TB recording and reporting systems in countries have been revised to include information on TB/HIV co-infection. However, the availability of data on HIV among TB cases remains suboptimal in some countries, including high HIV-burden countries such as Indonesia, and there is an urgent need to scale up and report on the screening of TB cases for HIV infection, and vice-versa.

Table 9: Achievements in TB/HIV collaborative activities in Member States of the SEA Region, 2013

Country	Incidence of HIV-positive TB cases (number - best estimate)	TB patients with known HIV status (%)	Number of HIV positive TB patients identified	HIV positive TB patients on ART (%)	HIV positive TB patients on CPT (%)
Bangladesh	410	1	68	90	100
Bhutan	<10	100	1	100	0
DPR Korea*	120	0	0	-	-
India	120 000	63	44 027	88	95
Indonesia	15 000	2	1 599	21	30
Maldives	<10	9	0	-	-
Myanmar	17 000	12	5 413	74	89
Nepal	1 600	11	65	100	-
Sri Lanka	25	49	37	100	100
Thailand	12 000	83	8 245	59	63
Timor-Leste	NA	41	7	100	100
Total	170 000	43	59 462	81	88

Source: Global Tuberculosis Control: WHO report 2014, World Health Organization, Geneva 2014. WHO/HTM/TB/2014.08; and Annual Reports, National TB programmes, SEAR Member states, 2014

*Democratic People's Republic of Korea

Isoniazid preventive treatment (IPT) for PLHIV proved to be difficult to implement for several reasons and it is not national policy in most countries. However, Myanmar conducted a pilot project on IPT in nine townships and 3134 PLHIV were reportedly provided with IPT between 2009 and 2012; from 2013 IPT is being mainstreamed but the uptake remains low (468 PLHIV were reported to be receiving IPT in 2013). Thailand was implementing IPT pilot projects, but no consensus has been reached yet on adoption of IPT as national policy. India has conducted operational research on IPT, adopted the policy of IPT in HIV-infected cases and the programme is planning to roll-out IPT in 2015. Bhutan has included IPT in national guidelines. In Indonesia, an IPT pilot was successfully completed in four hospitals where 73% of PLHIV received IPT and 81% of the patients completed 6/12 months regimen. In 2014, NTP scaled up implementation to 33 hospitals in eight provinces and by late September 2014, 58% of 649 eligible PLHIV were initiated on IPT. In Nepal, IPT started to be offered in 2014 in only five ART sites where 32% of new HIV patients enrolled on treatment received IPT; scale-up to 90% of ART sites is planned during 2015.

5.1 Strengthening national laboratory networks

Considerable efforts are being made to strengthen the national laboratory networks, both in terms of geographical expansion and introduction of newer technologies.

Quality-assured smear microscopy services are available through increasingly larger laboratory networks in all the 11 Member States. In 2013, nine of the 11 Member States reached or surpassed the target of one microscopy laboratory per 100 000 population.

National Reference Laboratories (NRL) in all Member countries (with the exception of Maldives and Timor-Leste) have capacity for mycobacterial culture and DST; however, only two reached the target of one culture and DST facility per 5 million population. Although culture and DST capacity is limited in some countries, efforts have been made in all countries to strengthen laboratory capacity according to national plans and with the support of supranational reference laboratories (SNRL).

For most countries that have at least one NRL accredited for quality assurance for culture and DST, expansion of culture and DST capacities is ongoing, both in terms of implementation of newer technologies and establishment of new laboratories. In Bangladesh, two additional laboratories were accredited in 2012 and one additional regional reference laboratory was established in 2014. In Bhutan, the Public Health Laboratory has been accredited for culture and DST on solid media; liquid culture and LPA have been recently introduced. In

Indonesia, there are currently 46 culture facilities, among which the number of quality assured laboratories increased from five in 2012 to 18 in 2013: external quality assessment (EQA) for DST was carried out with acceptable performance for FLD in 10 of them; two laboratories have been recently equipped with LPA. In Myanmar, the two NRL have been equipped with liquid culture, FL-DST susceptibility testing, rapid immunoassay for species identification and line probe assay for rapid diagnosis of MDR-TB; a newly established third laboratory is performing solid cultures only and in 2015, additional culture laboratories will be established in two more sites. By the end of 2014, India was relying on a network of 62 accredited laboratories (from the NTP, medical colleges, private sector and operated by NGOs) to undertake quality assured culture and DST for the programme; of these, 50 are also implementing rapid tests through LPA for diagnosis of MDR-TB cases and 11 perform second-line DST. In Nepal, upgrading of one regional laboratory for culture and DST is planned for 2015, in addition to the existing two quality assured national reference laboratories. Sri Lanka is planning to establish two new culture laboratories. In Thailand, culture capacity was expanded up to 65 culture facilities, 18 of which are performing FL-DST, also through rapid DST (specifically HAIN Genotype MTBDRplustest); in 2013, all laboratories were quality assured.

All 11 Member countries have formally established linkages with SNRL, within and outside the Region. The National Institute of Research in Tuberculosis (NIRT) formerly Tuberculosis Research Centre, Chennai, India, and the Bureau of TB at Bangkok, Thailand, are the two designated SNRL in this Region. These two laboratories are part of a global network of 32 SNRL. In 2014, the National Institute of TB and Respiratory Diseases in New Delhi, India became an SRL-National Centre of Excellence (SRL-CE); the SRL-CE are part of the NRL network and have similar terms of reference to that of an SRL, but with an in-country focus for its laboratory strengthening and capacity-building activities. NRL in some countries are linked to SRL outside the Region: Bangladesh to the SRL in Antwerp, Belgium; Democratic People's Republic of Korea to the SRL in Hong Kong; Indonesia to the laboratory at Adelaide, Australia, and Nepal to the Gauting laboratory in Germany.

India, Indonesia, Nepal and Thailand have in-country capacity to undertake DST for SLD to determine the extent of XDR-TB. Reference laboratories in Bangladesh, Indonesia, Myanmar and Nepal are engaged in rapid surveys for XDR-TB among mycobacterial isolates from patients who have failed re-

treatment regimens, through in-country facilities or linking with the SNRL in the global network. Bangladesh has been included in a new project to assess levels of resistance to fluoroquinolones and pyrazinamide among TB patients using both phenotypic and genotypic testing methods to assess the feasibility of the introduction of new drugs and shorter regimens for TB treatment.

Introduction of newer molecular and liquid culture technology for the management of MDR-TB in high-burden countries in the Region is ongoing with assistance through the EXPAND TB project, the Global Laboratory Initiative (GLI), FIND and SEARO. In 2013, the multinational project TBXpert also was launched, aiming to enable further roll-out and scale-up of Xpert MTB/RIF in targeted low- and middle-income countries. Following WHO endorsement of Xpert MTB/RIF as a rapid test for diagnosis of TB and resistance to rifampicin, and the issuance of guidelines, all Member States in the Region, excluding Maldives, are adopting, testing or scaling up Xpert MTB/RIF. In eight countries, the Xpert MTB/RIF have been included in algorithms as an initial test for the diagnosis of DR-TB among persons at risk and in six countries for diagnosis of TB in persons at risk of HIV-associated TB. Five are target countries for the TBXpert project (Bangladesh, India, Indonesia, Myanmar and Nepal). By the end of 2014, Bangladesh scaled up Xpert to a total of 39 sites; seven Xpert MTB/RIF machines provided by the TBXpert initiative are being used to target the urban areas of Dhaka. Bhutan, with support of GF NFM, is planning to install Xpert machines in four district hospitals to improve the diagnosis of MDR-TB. The Democratic People's Republic of Korea installed one machine in the NRL and conducted a small-scale TB DR study; expansion at regional level is planned. India conducted a feasibility study of introducing Xpert MTB/RIF in RNTCP under programmatic conditions in 12 states, and following its results, is planning to expand Xpert to 300 sites to be used for diagnosis of DR-TB and TB/HIV. In 2014, Xpert was installed in 89 sites and is used under the programme policy document. In Indonesia, Xpert is implemented in 41 sites including 25 Xpert instruments to address DR-TB in urban area of Jakarta; an additional 43 Xpert MTB/RIF machine are under procurement to support PMDT expansion and national DRS. In 2014, Xpert machines were installed in Myanmar in 24 sites and it is planned to provide all States and Regions with diagnostic capacity through Xpert MTB/RIF and MDR-TB treatment centres. In 2014, Nepal had 22 Xpert machines in place, including some installed in mobile units to conduct intensified case detection among vulnerable and hard-to-reach groups. In Sri Lanka and Thailand that deployed one and 14 Xpert machines respectively, in 2012–2013, there was no further scale-up. In Timor-Leste, three Xpert MTB/

RIF machines are available for diagnosis of MDR suspects, TB/HIV and smear-negatives in places where there is no access to X-rays.

5.2 Paediatric TB

Since 2006, WHO is putting emphasis on childhood TB, by issuing guidance on management and treatment of tuberculosis in children. In the second edition of “Guidance for NTP on management of paediatric TB” issued in 2014, Xpert MTB/RIF is recommended as an initial test in children who are suspected to have TB, including extra-pulmonary TB, and MDR-TB or HIV-associated TB. The second edition includes revised dosages for children and the STEP-TB project was launched to support development of child-friendly formulations. In 2014, WHO also published the “Childhood TB: training toolkit”. GF is providing an opportunity to include childhood TB as a programmatic area to be funded.

The first edition of guidelines for diagnosis and treatment of paediatric TB have been widely disseminated in the Region, although efforts towards control of childhood TB are uneven among countries.

Indonesia has the highest proportion of paediatric TB cases in the Region. The country revised the diagnostic algorithms for childhood TB to include Xpert MTB/RIF and is planning to establish community-based contact investigation and provision of IPT for exposed children <5 years of age, integrated TB screening in MCH, nutrition, and HIV programmes and provide training on childhood TB. In India, guidelines have been disseminated and patient-wise drug boxes for children are available under the programme. In Bangladesh, the NTP has involved the Bangladesh Paediatric Association in the TB control programme to train the doctors and health-care workers (HCWs) on child TB diagnosis and management: the project started with development of two training modules followed by the development of facilitators’ guide and training of district and sub-district level doctors including HCW. IPT is provided to eligible children living in the families of active TB patients as part of NTP policy (in 2013 about 2996 children were evaluated and 321 were registered for IPT). National guidelines for the management of childhood TB have been finalized in Myanmar that included paediatricians in the expert committee on DR-TB; Myanmar reported a decrease in over-diagnosis among children. In Democratic People’s Republic of Korea, training materials on paediatric TB treatment were developed and training conducted in children-related facilities at the central and provincial levels. In Nepal, a Childhood TB Management section was introduced in the NTP General Manual.

Most countries in the Region transitioned from Global Drug Facility (GDF) to direct procurement of paediatric formulations of anti-TB drugs. In 2014, Bangladesh, the Democratic People's Republic of Korea, and Myanmar received grants for anti-TB paediatric formulations through GDF.

Despite the achievements mentioned above, paediatric TB remains a neglected area, as shown by the very low notification rate in the age group below 15 years. National guidelines, updated according to new international guidelines, should be widely disseminated and staff trained on paediatric TB management in all Member States in order to increase TB case detection in the paediatric population.

In 2013, notification data with breakdown by paediatric age groups were available for seven of the 11 Member States.

5.3 Public and private partnerships

A major strategy towards increasing case detection and treatment success rates has been the inclusion of public health-care providers operating outside the Ministry of Health, such as the railways, military, the corporate sector and prison health services, as well as private providers in TB management. Particularly in some countries, the percentage of patients seeking services through the private health sector is very high. Currently, all Member countries have clear policies and strategies to involve other sectors. As a regional average, the contribution of notification of new TB cases from these sectors was about 19% in 2013; however, this proportion is underestimated, because in some countries, the R&R system does not allow proper breakdown by source of reporting. The contribution to TB control of non-NTP public and private providers is also underestimated because TB cases detected are often not reported to NTP.

In India, from 2012 onwards, the reporting from the private and non-NTP public sector is expected to increase due to the introduction of TB in the list of notifiable diseases. Indonesia is exploring new PPM approaches, matching with country needs, including mandatory notification and social business models; following the results of the TB prevalence survey that showed a high level of underreporting from private providers, PPM strategies are likely to be better tailored and PPM activities strengthened.

In several countries, universities and medical schools are contributing to evidence-based policies and strategies through technical advisory groups at national level.

The International Standards of TB Care have been endorsed by professional bodies and medical associations in Bangladesh, Democratic People's Republic of Korea, India, Indonesia, Maldives, Myanmar, Nepal, Sri Lanka and Thailand. Intersectoral collaboration and public–private partnerships for delivery of services have been further scaled up in eight Member countries (Bangladesh, India, Indonesia, Myanmar, Nepal, Sri Lanka, Thailand and Timor-Leste). More than 1500 medical colleges, 90 000 private practitioners, 2000 large public and private hospitals, 250 corporate institutions, 2500 nongovernmental organizations, nearly 100 faith-based organizations and over 900 prisons are now working with national TB control programmes. The number of private practitioners involved in PPM activities is increasing sharply, particularly in India, thanks to the successful partnership with the Indian Medical Association (IMA).

Other recent initiatives have been the formal inclusion of the principles and practices of TB control in pre-service training and establishment of referral mechanisms through providing lists of DOTS centres to teaching institutes. Indonesia has also introduced coordination meetings between community health facilities and hospitals to improve transfer mechanisms between lung clinics and puskesmas. In Myanmar, where PPM strategies were revised and prioritized based on 2009 TB prevalence survey results, services have been resumed and scaled up throughout the network of Sun Quality Clinics and the Myanmar Medical Association.

More than 1000 private laboratories are now included in national diagnostic networks and undergo quality assurance mechanisms. Indonesia has intensified training of staff of private and public hospitals and laboratories. India launched the Initiative for Promoting Affordable, Quality TB Tests (IPAQT), an innovative approach aiming to increase access to rapid, accurate and affordable diagnostics for patients treated in the private sector: the initiative involves a consortium of 50 private laboratories (approximately 3000 franchisee laboratories and over 10 000 specimen collection centres) supported by not-for-profit stakeholders, aiming to allow concessional prices for Xpert MTB/RIF, LPA and liquid culture in the private sector through agreements with producer companies.

Partnership with international and national NGOs enable TB service delivery in remote areas and among marginalized populations in several countries of the Region. The work of Bangladesh Rural Advancement Committee (BRAC) and Damien Foundation through MoU with the Government in Bangladesh is an outstanding example of large-scale service delivery by NGOs that is contributing to achieving national targets for TB control.

More than several thousand community-based initiatives are also being incorporated into routine service delivery by national programmes.

Business alliances in the Region such as the Thai Business Coalition and the Business Alliance in India are emerging as players from the non-health private sector introducing TB services into their workplaces. In Bangladesh, collaboration with the garment manufacturing sector, which accounts for three million employees and is one of the largest industrial sectors, was formalized and plans developed for providing TB services in this sector.

Examples of successful approaches are multiplying in the Region and should be systematically documented in order to replicate winning models in similar settings in the countries of Region.

5.4 Resources for TB control

Domestic funding for TB control is increasing in the Region and accounted for 54% of the estimated budget for national TB control programmes in 2014; international funds account for the remaining 45% and a large proportion of these funds is provided by the Global Fund to fight AIDS, TB and Malaria (GF). In 2014, the one fifth of the estimated budget was unfunded. Ten Member countries currently benefit from funds mobilized through the GF to over the previous rounds of GF grants and through the Single Streaming Funding, Transitional Funding Mechanism and New Funding Model. Eight countries submitted a concept note or application for the NFM in 2014. Nepal is successfully implementing the national strategy application (NSA) grant. Myanmar was one of the early applicants under the New Funding Model, covering the period 2013–2016.

In addition, nine Member countries benefit from funds from other development partners and donor governments with the exception of Bhutan and Maldives, where the only external funds are provided through WHO country budgets.

Considering the threshold of 2.3 key health personnel per 1000 population, five of the 11 Member States have sufficient human resources for health. Staff turnover, adequate training and management of human resources is a common challenge for most countries in the Region. Human resource development (HRD) plans are available for six countries in the Region.

All 11 Member countries continue to access quality-assured and affordable anti-TB drugs on a regular basis through grants or direct procurement services of GDF. All countries in the Region successfully transitioned from grants to direct procurement services using domestic sources, GF, World Bank, or other sources of bilateral funding for adult anti-TB drugs. An exceptional extended GDF grant of drugs was secured for the Democratic People's Republic of Korea (covering adult formulation only for one province).

Second-line anti-TB drugs are secured through different funding sources in countries through the GDF procurement system. In Bangladesh, it is mainly the GF and partly from USAID; Bhutan from GF; Democratic People's Republic of Korea from GF; India partly by GF and the rest from domestic resources; Indonesia by GF; Myanmar by GF, 3MDG funds, and domestic resources; Nepal from the GF; Sri Lanka from Global Fund; Thailand mainly from domestic resources and partly from GF and Timor-Leste from GF.

5.5 Operational research

National TB programmes and partners are engaged in carrying forward several operational research projects. Several other research projects are supported by WHO country offices through funds available at the country level from the Global Fund. Examples are KAP studies in Timor-Leste; public-private mix (PPM) models in Bangladesh, India, and Myanmar; hospital DOTS in Indonesia; seasonality in TB notifications; use of IPT in India, Indonesia and Myanmar, and outcomes from cross-border TB control in Thailand; feasibility study on use of Xpert MTB/RIF under programmatic conditions in India; mortality studies in India, Indonesia and Myanmar; cross-sectional community-based survey to identify where TB patients access treatment in India; studies on approaches to community-based TB care and strategies to serve hard-to-reach groups or high-risk groups (i.e. patients with diabetes) in several countries.

Table 10: Status of NSP development for the post-2015 period in Member States of the South-East Asia Region

Member States	Period of current NSP	Status of updates for post-2015 period
Bangladesh	2102–2016	National Strategic Plan for TB Control has been revised for 2015–2020, incorporating Post-2015 Global TB strategy with technical support of WHO
Bhutan	2012–2016	The country is planning a mid-term review of NSP and it will be revised accordingly based on the review findings
DPR Korea	2015–2018	NSP was recently updated
India	2012–2017	NSP period is in line with the nation's five-year plan. However with the new strategies being developed by the programme, there would be substantial revisions in 2015
Indonesia	2010–2014	NSP for the 2015–2019 period was developed and incorporates post-2015 Global TB Strategy and revised disease burden estimates
Maldives	2014–2019	Mid-term review to be undertaken in 2016
Myanmar	<ul style="list-style-type: none"> – 2011–2015 – 2012–2015 supplement – Has been extended till 2016 to incorporate NFM 	Next NSP will cover 2016–2020 and development will start and should be completed during 2015
Nepal	Jul 2010–Jul 2015	Draft NSP Jul 2015–Jul 2020 produced by NTP with support from WHO consultant. NSP to be finalized shortly by NTP and WCO
Sri Lanka	2015–2020	The previous NSP for the period 2012–2016 was updated and costed
Thailand	2011–2016	Draft NSP 2015–2019 was finalized in October 2014 and final changes need to be made by BTB and it has to be endorsed by MoPH
Timor-Leste	2012–2015	NSP for 2015–2020 was developed based on the Joint Monitoring Mission 2013 report and recommendations

Source: TB unit, CDS, SEARO/WHO

National workshops on operations research priority-setting and dissemination are held regularly in India. In collaboration with Union and other stakeholders, India is conducting operational research in several areas.

Bangladesh, India, Indonesia, Myanmar, Nepal, Sri Lanka and Thailand have benefited by several TBREACH-approved projects.

5.6 National Strategic Plans

National strategic plans (NSP) for TB control are available in the 11 Member States and addressing all programmatic areas under the current Stop TB strategy and the End TB Strategy (post-2015 Global TB Strategy). Countries with NSP covering the period until 2014 have developed new NSP to cover the five-year period 2015–2020 and include post-2015 global TB strategy and recommendations. Also, most countries with NSP covering a period beyond 2014 have revised and updated their plans (Table 10).

Some NSP address the needs of populations at higher risk and living in cross-border areas according to each country's specificity, pursuing higher and earlier case detection and quality case management.

6.1 Technical assistance in implementation of STOP TB Strategy

All 11 Member States in the Region continue to receive technical assistance through the WHO Regional Office for South-East Asia and country offices, in coordination and collaboration with international technical partners, namely, the Centers for Disease Control and Prevention (CDC), USA, the Royal Foundation for Tuberculosis in the Netherlands (KNCV), U.S. Agency for International Development (USAID), USAID-supported TBCARE I and II, Foundation for Innovative New Diagnostics (FIND), PATH, the Institute of Tropical Medicine in Antwerp, Belgium, and the UNION. The three WHO Collaborating Centres, namely, the National TB Institute (NTI), Bangalore, India, the National Institute of Research in Tuberculosis (NIRT), Chennai, India, and the SAARC TB and HIV/AIDS Centre in Kathmandu, Nepal, and technical partners based in countries in the Region also actively provided technical assistance to national TB programmes during 2014. The National Institute of TB and Respiratory Diseases (NITRD), New Delhi, and the All India Institute of Medical Sciences (AIIMS), New Delhi were recently designated as WHO Collaborating Centres.

To provide overall guidance to countries, the Regional Office updated and disseminated the Regional Strategic Plan 2012–2015 for TB control in the Region. In January 2015, the process to update the Regional Strategic Plan for TB control beyond 2015 started and the updated plan is expected to be finalized by November 2015. The updated plan will adopt key principles and strategies, pillars and components (integrated, patient centered care and prevention, bold policies

and supportive systems, intensified research and innovation) of the global “End of TB Strategy: 2016–2035” and the Stop TB Partnership’s “Global Plan to Stop TB 2016–2020”. The updated Regional Strategic Plan aims to support Member countries in reducing TB mortality and incidence in line with the global targets as set in resolution WHA67.1, to guide the countries in addressing the persisting and emerging epidemiological and demographic challenges and to advance universal health coverage and robust health systems. The updating process will include consultation with the SEA Regional Technical Working Group on Tuberculosis as well as Member States.

The WHO Regional Office and country offices are providing support to countries to develop or revise NSP covering the post-2015 period. WHO support for NSP was particularly important in Indonesia, Maldives, Nepal and Sri Lanka. Maldives also received support to develop the overall National Health Plan.

Technical missions were undertaken to all 11 Member countries during 2014 to provide support to national programmes in various areas: laboratory assessments and laboratory capacity-building, strengthening laboratory quality control and assurance, culture and DST, introduction of rapid molecular tests, development and implementation of guidelines and/or national strategies for TB, human resource development for TB control, MDR-TB, TB-HIV, childhood TB, infection control, PPM, improvement of drug procurement and supply management, data management and use, and impact assessments. The Regional Office laid particular focus on implementation of DR-TB control and provided support on the scale-up of PMDT.

Technical support was provided to Bangladesh, the Democratic People’s Republic of Korea, India, Indonesia, Maldives, Myanmar, Nepal, Sri Lanka, Thailand and Timor-Leste to either revise national plans or to develop MDR-TB control expansion plans.

Technical assistance is ongoing to India and Indonesia to scale up implementation of the PPM approach. A national workshop on PPM was supported in Nepal.

The TB Technical Assistance Mechanism (TBTEAM) has been utilized to provide technical assistance to countries. The SEAR TBTEAM focal point identified national TBTEAM focal point(s) in collaboration with all national and external partners involved in respective countries. SEAR TBTEAM regularly monitors the

functioning of the national TBTEAM to ensure that information is up to date and that they are performing the tasks in the standard terms of reference for a national TBTEAM focal point. The regional roster of experts was further expanded and all proposed technical assistance missions to countries mapped, with the aim of deploying suitable consultants to meet the technical assistance requirements of countries. This is also serving to facilitate seeking additional funding from GF, USAID, TBREACH, UNITAID and other partners to support the necessary technical assistance to countries.

6.2 Regional Green Light Committee (rGLC)

To provide more coordinated and quality support to the implementation and expansion of PMDT, rGLC was established in 2012. The rGLC acts as a Secretariat to the MDR-TB Advisory Group to support Member States in meeting the challenges of DR-TB. The rGLC Secretariat has a memorandum of understanding with WHO and GF and its objective is to provide clear guidance on new policies and strategies for PMDT interventions in countries of the Region. The rGLC “package of services” was defined and the *modus operandi* was endorsed. rGLC is supporting the implementation of the Regional Response Plan for MDR-TB, ensuring that country PMDT plans reflect programmatic recommendations on the response to DR-TB, including recording and reporting of the standard indicators selected for the Region, and that the reports of monitoring mission are reviewed and structured according to the standard template. rGLC is also supporting coordination of needed high quality technical assistance and resource mobilization for countries that have PMDT expansion plans.

Some of the programmatic recommendations of rGLC include the need to prioritize risk groups and develop algorithms for use of WHO-approved rapid diagnostics in order to improve case-finding and diagnosis; move toward self-sufficient in-country diagnostic capacity, and create linkages with SRL for technical support; move forward ambulatory case management; strengthen infection control; monitor community mobilization efforts at country level; encourage research on WRD’s and DRS surveys.

Some of the strategies to ensure effective support to countries are: to explore identification of centre of excellence in MDR-TB clinical management at the regional level; establishment of regional PMDT training centre to enhance managerial and technical capacities for the management of DR-TB within the

Region; possibility of a regional proposal to address cross-border issues and the treatment of migrants.

The third and fourth meetings of the MDR-TB Advisory Committee were held in April and November 2013 respectively. The fifth was held in May 2014 and the sixth in February 2015.

In 2014, monitoring missions for PMDT were conducted in Bangladesh, Bhutan, Democratic People's Republic of Korea, India, Indonesia, Myanmar and Nepal.

6.3 Strengthening national laboratory networks

Technical assistance, coordinated through WHO, is being provided through the SNRL based at the Institute of Medical and Veterinary Science (Australia); Institute of Tropical Medicine (Belgium); Central Reference Laboratory; Gauting (Germany); the National Institute of Research in Tuberculosis (India) and the National Tuberculosis Institute (India), the Bureau of TB at Bangkok (Thailand), and the Department of Health, SAR (Hong Kong), to help establish culture and DST facilities in countries in a phased manner, in line with national plans. All 11 countries have formally established linkages with SNRL. Additionally, India receives support from the newly established SRL-National Centre of Excellence (SRL-CE) at the NITRD, that belongs to the NRL network and has similar terms of reference to that of an SRL but has an in-country focus.

Continuous support to strengthen capacity for quality assurance, culture and DST, was provided to Bangladesh, Bhutan, Democratic People's Republic of Korea, India, Indonesia, Myanmar, Nepal and Thailand. As a result, all 11 Member States have quality assured smear microscopy, culture and first-line DST is available in all countries (through in-country facilities or through linkage with SNRL) and four countries developed capacity for quality assured second-line DST.

In 2014, missions by EXPAND TB (Expanding Access to New Diagnostics for TB) project were conducted in Bangladesh, India, Indonesia and Myanmar. EXPAND TB is a collaborative effort between WHO, GLI, FIND and GDF, to ensure access to quality-assured new diagnostic technologies, endorsed by WHO, including liquid culture, rapid speciation, rapid DST and molecular line probe assay; diagnostic technologies are properly integrated into TB control programmes and implemented in appropriate laboratories in countries and local know-how and

sustainability are promoted through technology transfer efforts. As per 2014 information, newer diagnostics were available in all Member States of the Region except Maldives.

6.4 Capacity-building, information exchange

Training, exchange of information at global and regional level, and in-country capacity-building have been the key areas of work for the WHO Regional Office and country office staff during the past years.

In 2014, the Regional Office and country offices have also supported facilitation of several national-level training and workshops in all countries and capacity was built in various technical areas.

In 2014, all Member States participated in various meetings organized by the SEA Regional Office and WHO HQ. These included:

- Training of Trainers (ToT) workshop for PMDT, 19–27 March 2014, SEARO, New Delhi
- Meeting of the SEA Regional Technical Working Group on TB, 28–29 April 2014, SEARO, New Delhi
- Fifth Regional Advisory Committee Meeting on MDR--TB, 29–31 May 2014, Mumbai, India
- Joint WHO/Global Fund Workshop on Scaling up Public–Private Mix for TB Care and Control in High Impact Asia Countries, 25–27 June 2014, SEARO, New Delhi
- Global Consultation on Childhood TB for High Burden Countries in the Eastern Mediterranean, South-East Asia and Western Pacific regions, Jakarta, Indonesia, 29 September–1 October 2014
- SEA Regional Meeting of National Tuberculosis Control Programme Managers and Partners, 10–14 November 2014, New Delhi, India

WHO staff participated in the workshop on development of national strategic planning for tuberculosis control, Divonne, France; Expert consultation on PPM for management of DR-TB, Geneva, Switzerland; Annual meeting of the Childhood TB subgroup and 45th Union World Conference on Lung Health and TB Symposium on Post-2015 Global TB Strategy, Barcelona, Spain.

The SEAR TB Technical Working Group is functional and meets bi-annually. It effectively guided the regional TB control programme, particularly in relation to the implementation of the DOTS and STOP TB strategy in general.

6.5 Resource mobilization

Several Member States were assisted in mobilizing resources from development partners and donor governments during the year.

Bangladesh, Bhutan, Democratic People's Republic of Korea, Nepal, Sri Lanka and Timor-Leste were supported by WHO to develop a concept note (CN) for the New Funding Model of the Global Fund. Thailand was supported in the development of a joint TB/HV CN for the New Funding Model of the GF.

All countries (except Maldives) receive support for management of GF grants and funding. USAID reports were elaborated and are available for Bangladesh, India, Indonesia, Myanmar and Regional Office.

The activities undertaken and coordinated by the TB unit at the Regional Office were supported almost entirely through USAID regional funding. Some funding was also received through the Global TB Programme at WHO/HQ, for organizing regional workshops.

6.6 Ensuring regular supplies of drugs and improving procurement and supply management

WHO has coordinated and facilitated technical support to the countries through GDF missions in anti-tuberculosis drug procurement, storage, and management.

Eight countries were supported in capacity-building for drug management: Bangladesh, the Democratic People's Republic of Korea, Indonesia, Maldives, Myanmar, Nepal, Sri Lanka, and Timor-Leste. Assistance continued to be provided for timely procurement of anti-TB drugs mainly through direct procurement mechanisms. In fact, access to anti-tuberculosis medicines has improved as most Member States have successfully transitioned from grants to direct procurement for FLD, predominantly funded by the GF. All 11 countries embarked on the use of GDF services and products and accessed the low-cost and quality assured fixed-dosage combination drugs. No stock-outs were reported from any country at the point of treatment delivery.

An exceptional extended GDF grant was secured for Democratic People's Republic of Korea (100% of paediatric formulation and adult formulation only for one province). GDF grants for paediatric formulations were also made to Bangladesh and Myanmar. SLD were procured through GDF and funded by GF in all countries except Maldives where the Ministry of Health is procuring second-line drugs on a case-by-case basis; in Thailand, FLD are procured using domestic funding and local resources such as the Government Pharmaceutical Organization, but SLD are procured from GDF using GF funding.

6.7 Operational research

Bangladesh, India, Indonesia and Myanmar were supported in the elaboration of operational research protocols in order to address country needs and innovative approaches.

India, Myanmar and Thailand were assisted in developing protocols for initiating INH preventive therapy at selected sites and India and Myanmar used evidence collected to mainstream it as national policy.

6.8 Coordination, collaboration and partnerships

To mobilize greater commitment for TB control in the Region, WHO at country, regional and headquarters levels continued to interact with several donor and development partners.

Staff from the country offices participated and contributed to workshops and meetings held by WHO/headquarters and partner agencies, namely: STAG meeting, Regional Advisers' meeting, TBTEAM meeting, Union Conference, Global Laboratory and Drug-resistant Initiatives.

6.9 Monitoring and evaluation, and TB burden estimates

Over the past few years, interventions to support impact assessments were made in several Member States in the form of prevalence or annual risk of infection surveys, mortality surveys, in-depth analysis of several years' programme data to determine trends and revision of burden estimates.

In 2014, support for prevalence surveys at different stages was provided to four countries. Thailand was supported in the finalization of analysis of data;

Indonesia was supported in finalization of field operations implementation and analysis of data and the report; and Bangladesh received support in preparation for the TB prevalence survey initiated in 2015 (development of survey protocol, procurement plan, standard operation procedures and implementation plan).

Assistance to India and Indonesia was provided in preparation for the national DRS to be conducted in 2015, including development of DRS protocol.

Joint external monitoring missions (JEMM) on TB control were completed in Bangladesh, Bhutan, the Democratic People's Republic of Korea, Myanmar and Sri Lanka.

Bangladesh, Bhutan, the Democratic People's Republic of Korea and Nepal were supported by WHO to conduct an epidemiological analysis that was instrumental in preparing concept notes for the GF, as well as useful for monitoring and evaluation of TB control activities and revision of country strategies.

Sri Lanka received support to finalize the report of the in-depth epidemiological analysis of historical data to better assess TB burden that was conducted in 2013.

In 2014, Indonesia and Thailand participated in a workshop organized by WHO to develop protocols for inventory studies, based on WHO guidelines, to improve their burden estimate by measuring the entity of under-notification and evaluate where efforts to collaborate with public and private sector providers are needed.

WHO also provided technical support to several countries for strengthening routine surveillance systems. Efforts are being made to strengthen national TB surveillance systems, focusing on quality of data, with the main emphasis on completeness of case reporting, accurate compilation and reporting of data, and implementation of the new reporting framework.

Country profiles

Bangladesh

With a population of about 157 million, Bangladesh is among countries with the highest burden of TB. The estimated prevalence and incidence rates of all forms of tuberculosis were 402 and 224 respectively per 100 000 population in 2013. Estimates have been revised slightly downward following a TB epidemiological and impact analysis conducted in March 2014. However, the burden estimates have not been officially approved by NTP and it plans to reassess them jointly with WHO, following the completion of the prevalence survey in 2016. The protocol for the TB Prevalence Survey has been finalized and approved by Ministry of Health and Family Welfare. Major equipment (X-ray machine, Xpert machines) and vehicles have been received and procurement of small items and reagents is under process. Standard Operating Procedures (SOP) have been developed through stakeholders' workshops and being finalized by the Institute of Epidemiology, Disease Control and Research (IEDCR). Forms and cards have been developed by IEDCR in consultation with NTP. Recruitment and training of staff and field testing has been completed and piloting and actual field implementation will be held in 2015. The draft report will be available in 2016.

In 2013, the notification rate of all forms of TB and new bacteriologically confirmed cases was 119 and 68 respectively, showing an increase of 18% and 3% respectively compared to 2011. Treatment success rate among new and relapse cases (all types) is above 90% since 2007, and it was 92% in 2012 cohort. In 2012, cohort treatment success rates among re-treatment cases was 82%; among a cohort of 63 HIV-positive TB cases, treatment success was 81%.

The number of peripheral laboratories performing smear microscopy has increased steadily over recent years, from 1072 in 2012 to 1089 in 2013, corresponding to 0.7 per 100 000 population, to provide greater access to TB diagnostic services. In 2013, as in the previous year, EQA was carried out for all microscopy laboratories, 94% of them showing acceptable performance. Following the WHO recommendation, NTP plans to gradually replace the light microscopes with LED to improve the capacity and quality of sputum microscopy. To support this national initiative, TB CARE II procured and distributed 200 LED microscopes

in the country. To use the new microscopes, over 300 staff were trained on LED microscopy. The focus of the training is to update laboratory technicians' skills in sample collection, smearing and staining, microscopic examination by LED, smear evaluation, recording and reporting, supply management, quality assurance, preparation of reagents, preservation of microscopes, and troubleshooting.

In 2013, there were three accredited laboratories performing culture and DST for FLD; for two of them, EQA was carried out showing acceptable performance. One laboratory provides line probe assays (LPA) testing. Despite the number of culture and DST, capacity was tripled, compared to 2011. National coverage of culture and DST is still low, considering the size of the population (0.1 laboratory per 5 million population). Besides the existing laboratories, one regional TB reference laboratory (RTRL) was established in Khulna in 2014 and will become functional in March 2015 after completion of standardization of culture. Another RTRL in Sylhet division is being established and will be completed in 2015. DST for second-line drugs is available in NTRL that is linked to the Supranational Reference Laboratory in Antwerp, Belgium, since 2007. Bangladesh is participating in the EXPAND project and achievements in 2014 include increased MDR-TB case detection and reduced turnaround time to 23 days for liquid culture and three days for LPA; increased biosafety at the NTRL and capacity development of laboratory staff.

Xpert MTB/RIF was first introduced in Bangladesh in March 2012 with the support of the TB CARE II project. Till December 2014, a total of 39 Xpert MTB/RIF machines were functioning at different settings in the country, including six machines in Dhaka city. Initially, only DR-TB suspects were tested by Xpert MTB/RIF and in 2013, a total of 5747 DR-TB suspects were tested. Bangladesh was included in the UNITAID TB Xpert project with support from the Stop TB Partnership and TBREACH initiative. Through this project, seven Xpert MTB/RIF instruments have been implemented in order to provide access to free diagnosis to high-risk patients in Dhaka through innovative social business models including private screening centres and other partnering locations. Xpert MTB/RIF assay was included in an algorithm as the initial diagnostic test for TB in persons at risk of HIV-associated TB, for diagnosis of smear-negative TB cases and for the diagnosis of drug-resistant TB among persons at risk.

Due to the size of the population and reported TB cases, Bangladesh is among the 27 MDR-TB high burden countries, despite data from previous DRS indicating

low levels of MDR-TB. The results of the first national DRS completed in 2012 confirmed a low proportion of new TB cases that have MDR-TB (1.4%, confidence intervals 0.7–2.5), but the proportion among retreated cases was revised upwards (28.5%, confidence intervals 24–34). The total number of estimated MDR-TB cases among notified cases in 2013 was 4700. Coverage of routine surveillance of drug resistance is still low, being 0.1% and 50% among new and re-treatment TB cases respectively; however, it shows a remarkable increase compared to 2012 levels (testing among retreatment cases was 7% only).

MDR-TB care is provided by the National Institute and Hospital of Diseases of Chest in Dhaka, the chest disease hospital (CDH) in Chittagong, Khulna, Sylhet, and Pabna as well as the Damien Foundation (NGO partner of NTP). The latter is providing MDR-TB services as an operational research project in designated geographical areas following a nine-month regimen; the Damien Foundation has its own reference laboratory capable of performing culture and DST for FLD. As per WHO recommendation, NTP Bangladesh has initiated CPMDT in 2012 with technical assistance from WHO and TB CARE II project. SOP for CPMDT and training modules were developed (2011–2012); 316 outpatient DR-TB teams were formed and 2524 HCW were trained on CPMDT in 2014. DR-TB treatment initiation was also decentralized through minor renovation of existing CDH and training of doctors and health workers of CDH. A total of 278 hospital beds are now available under NTP for initiation of DR-TB treatment. Within 4–8 weeks when two consecutive sputum (weekly interval) samples become negative, the patients are handed over to outpatient DR-TB teams to continue the treatment under CPMDT. Thus, national capacity for inpatient management of MDR-TB cases has increased.

In 2013, a total of 544 MDR-TB cases were confirmed and notified; 679 RR-TB were detected. However, they cannot be considered additional DR-TB cases as it was not possible to report how many of the RR-TB cases were diagnosed to be MDR-TB. In total, 684 RR/MDR-TB patients were started on second-line treatment, of which 28% were started on nine-month regimen by Damien Foundation under an operational research project. Data from the first semester of 2014 show considerable increase of capacity for MDR-TB diagnosis and treatment: in this period, 520 MDR-TB cases were reported and 369 RR/MRD-TB cases were started on treatment. In 2013, three of the five XDR-TB patients diagnosed were started on treatment. Two patients treated in the private sector had bedaquiline added to the treatment regimen under compassionate use. Bangladesh is one of the five

countries selected for a project to assess levels of resistance to fluoroquinolones and pyrazinamide in order to provide guidance to development of algorithms and introduction of new treatment regimens. For the cohort of MDR-TB patients enrolled for treatment in 2011, the success rate was 68%. The rate increased to 72% according to the report of cases registered during the first three quarters of 2012.

Bangladesh introduced mHealth information system in 2013 and is in the process of updating the mHealth applications, expanding it to all the CPMDT districts, and using it as a tool for routine monitoring of DOTS for patients, administration of drugs, and treatment adherence by patients. Updated mHealth system will enable to analyse and generate reports and graphs on patient data by geographic units, treatment status, gender. Currently, mHealth system is operational in 33 districts and is being scaled up to cover the remaining CPMDT districts.

HIV prevalence in the adult general population is low (less than 1%) in Bangladesh except for IDU, among whom a recent survey revealed an HIV prevalence of 7%. National TB/HIV operational guidelines were developed in 2009 and there is a national TB/HIV committee, although effective collaboration between the national AIDS, STI and TB programmes needs to be strengthened. A limited number of NGOs provide HIV counselling, prevention and care for TB-HIV co-infected individuals. The number of TB patients tested in 2013 for HIV was 2067, corresponding to 1% of all TB patients notified in the same year; HIV-positive TB cases detected were 68 (3% of all tested) and all of them started ART and 90% started CPT. TB screening was reported for 607 HIV-positive patients.

Child TB (CTB) activities are progressing steadily in Bangladesh. National guidelines on CTB management have been published in 2012. With the support of TB CARE II project, NTP has involved the Bangladesh Paediatric Association in the TB Control Programme to train the doctors and HCW on CTB diagnosis and management in order to increase the case-detection rate of CTB in Bangladesh. The project started with development of two training modules followed by the facilitators' guide and training of district and sub-district level doctors including HCW. In 2013, TB cases among children of 0–14 years old represented 2.8% of all new TB cases detected, of which 13% were in the age group 0–4 years. Providing IPT to eligible children living in the families of active TB patients is part of NTP

policy. About 2996 children were evaluated and 321 children registered for IPT; among the registered children, 78 completed the full course of prophylaxis in 2014.

The number of people with diabetes is rising rapidly. The growing prevalence of diabetes poses a challenge for TB control, as uncontrolled diabetes leads to a greater risk of developing TB. In this context, NTP with the support of TB CARE II has initiated a project with the Bangladesh Diabetic Shomity with the ultimate goal of addressing the vulnerability of the diabetic patients to acquire TB disease. In 2014, a total 457 health professionals were oriented and 179 physicians participated in a three-day training on management of TB and diabetes. A total of 4848 diabetics with symptoms of TB have been referred by the health professionals for sputum microscopy; among them 500 smear-positive and 265 smear-negative patients were detected.

The TB Infection Control Operational Guidelines were published in 2011 and translated into the local language (Bangla) in 2014. The practical approach to lung health (PAL) guidelines have been published and three batches of TOT have been completed. After the TOT, 99 medical doctors have been trained on PAL.

TB services are part of an essential services package under the Health, Population and Nutrition Sector Development Programme (HPNSDP) which is implemented through the PHC system of the country. Bangladesh is an outstanding example of implementing TB control in partnership with NGOs. Community-based DOTS through village doctors and the network of *shasthya shebikas* (female community health volunteers) is the most common mechanism for supervising drug intake. In 2013, data about community-based activities were available for 55% of all basic management units (BMU): in these BMU, 71 784 TB cases were referred by community health workers and/or community volunteers, being 44% of all TB cases notified. Collaboration with garment manufacturers, which accounts for three million employees and is one of the largest industrial sectors, was formalized and plans developed for providing TB services in these companies. Several stakeholders in the private and corporate sectors are involved in TB control and in rendering services in line with international standards for TB care. Totally, 110 non-NTP public providers (including public, medical college and military hospitals, and the prison system) and 85 private providers have been involved so far, contributing to about 23 146 cases notified in 2013 (90% from private providers and 10% from non-NTP public providers).

WHO piloted electronic registration of TB data using e-TB manager software in six sites in 2010 and now NTP with the support of WHO and Management Sciences for Health (MSH), it has been expanded to 210 sites. WHO is also supporting the organization of 15-day basic computer training for field-level government and NGO staff. Following this basic computer training, MSH Bangladesh organizes the training on e-TB manager software. At present, data are being collected from the field both in hard and soft copies and this will be continued until the e-TB manager is fully operational throughout the country.

A human resources development (HRD) plan has been developed and a focal point for HR designated at the central level. NTP guidelines have been included in the curricula for basic training of different categories of health staff. A “Handbook on Tuberculosis for MBBS students” based on NTP Guidelines was published in 2013 in collaboration with the Centre for Medical Education and TB CARE II. The international standard of TB care (ISTC) has been formally endorsed by professional associations.

A joint monitoring mission was successfully conducted in April 2014 and following its recommendations, the National Strategic Plan for 2015–2020 was updated. A concept note for the application to the New Funding Mechanism of Global Fund was submitted in June 2014 and approved by the Global Fund for the period of June 2015 to December 2017. Currently the TB programme is also getting support from the Global Fund through Rounds 3, 5, 8 and 10. This support is channelled through two principal recipients: the External Resource Division of the Ministry of Finance for NTP (Government) and BRAC for NGO consortium. In addition, USAID provides financial assistance to the NTP through TB CAREII, MSH and WHO, while several other donors are funding TB activities through NGOs. Some support for TB control is also made available through HPNSDP. However, domestic funding is very limited, representing 5% of the budget for 2014. More than 60% of the budget estimated for TB control activities in 2014 was unfunded. WHO provides strong technical and operational support to the programme.

Major achievements

The Major achievements of NTP in Bangladesh are as follows:

- The sixth joint monitoring mission conducted during 30 March–10 April 2014 and report published;
- EPI data analysis completed;

- Revised Strategic Plan for National Tuberculosis Control Programme (2015–2020) finalized;
- a CN for the application to the NFM of the GF submitted in June 2014 and approved by GF for the period June 2015–December 2017;
- fifth edition of national guidelines and operational manual for tuberculosis control and second edition of national guidelines and operational manual for PMDT published;
- MDR-TB management scaled up in Pabna, Khulna and Sylhet;
- cPMDT started in 2012 and gradually expanded to the whole country;
- two training modules on CTB developed, followed by facilitators' guide and training of district and sub-district level doctors including HCW;
- first edition of national guidelines and operational manual on PAL at PHC level and participants' module on PAL, Bangladesh and guidelines on PAL for nurse/HA/FWA/paramedics in Bangla published.
- national monitoring and evaluation plan for tuberculosis control (2011–2015) and MDR-TB expansion plan (2012–2017) published;
- number of microscopy laboratories were increased from 1072 to 1089;
- number of centres with Xpert MTB/RIF machines increased from 12 to 27;
- electronic registration of TB data using e-TB Manager software is running in 210 sites;
- observed World TB Day 2014 and published fact sheet on tuberculosis (in Bangla);
- further expansion of public–private mix for TB control with involvement of Bangladesh knitwear manufacturers and exporters association to provide TB control services programme in knitting industries; and
- handbook on tuberculosis for MBBS students published.

Major challenges

The major challenges faced by NTP are as follows:

- ensuring uninterrupted supply of drug and logistics;
- establishing system for assessing quality of anti-TB drugs;

- strengthening procurement, supply and management system;
- ensuring sustainability of skilled and trained staff at different levels.;
- strengthening laboratory services including expansion of culture and DST;
- scaling-up the management of DR-TB and community PMDT;
- further scaling up and strengthening private–public collaborative interventions;
- strengthening linkages with the national AIDS and STI programmes for TB/HIV;
- sustaining and controlling the quality of DOTS;
- further improving case-notification of smear-negative, extra-pulmonary TB cases;
- improving capacity for diagnosis and management of child TB cases and TB with co-morbidity;
- sustaining partnerships with NGOs, the private sector, academic institutes and in workplaces in TB control;
- reaching the hard-to-reach population in islands and marshy lands; and
- financial sustainability;

Activities planned for 2015

The following activities are planned for 2015:

- TB prevalence survey in 2015–2016.
- The Global Fund using NFM Grant signing.
- piloting shorter regimen for MDR-TB management as operational research;
- establishing of RTRL at Sylhet for culture and DST in a phased manner;
- scaling up PAL activity;
- expanding TB/HIV collaborative activities in a phased manner;
- developing capacity for wider implementation of TB/HIV, MDR-TB and PPM DOTS interventions;
- expanding private–public collaborative activities further;

- strengthening the procurement and supply management system;
- strengthening supervision and monitoring;
- scaling-up of e-TB Manager;
- implementation of TB infection control;
- Capacity-building for diagnosis and management of smear-negative, extra-pulmonary and childhood TB;
- Establishing a pharmacovigilance system and conducting drug quality assessment;
- Conducting operational research on validation of data, TB–diabetes relationship and TB lymphadenitis;
- establishing of electronic LMIS; and
- scaling-up Xpert MTB/RIF sites.

Figure 16: Case-notifications by type of patients, 2013

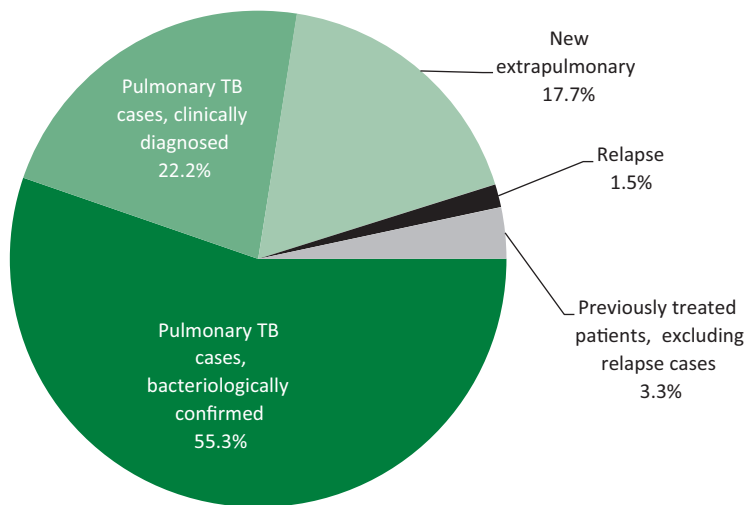


Figure 17: Trends in TB case-notifications, 1995–2013

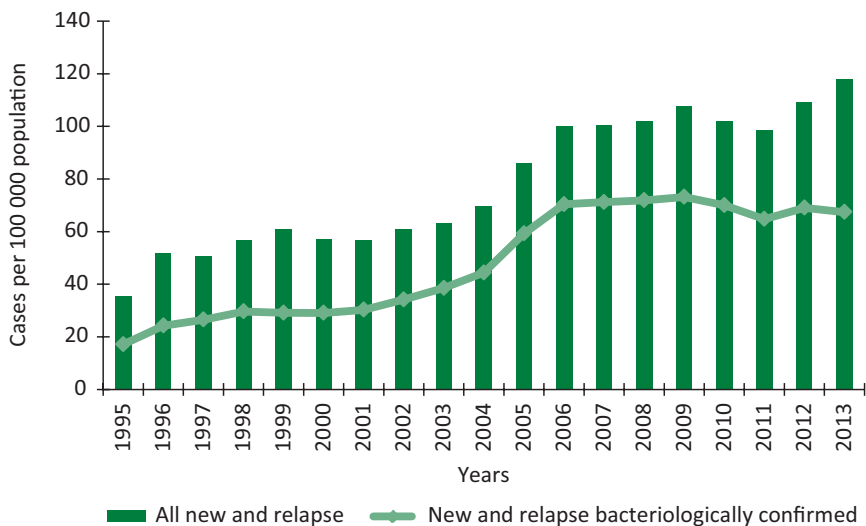


Figure 18: New TB cases (all types) by sex and age groups per 100 000 population, 2013

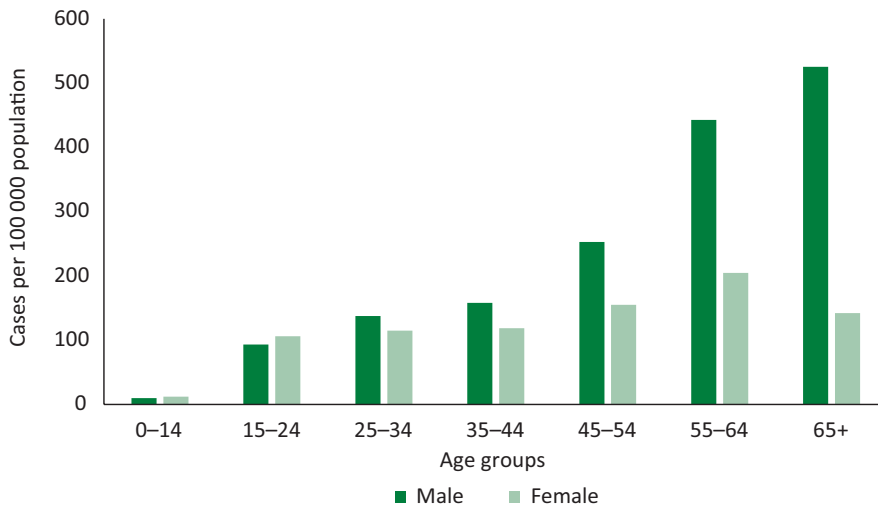


Figure 19: Treatment outcomes by type of cases, 2012 cohort (2011 cohort for RR/MDR-TB cases)

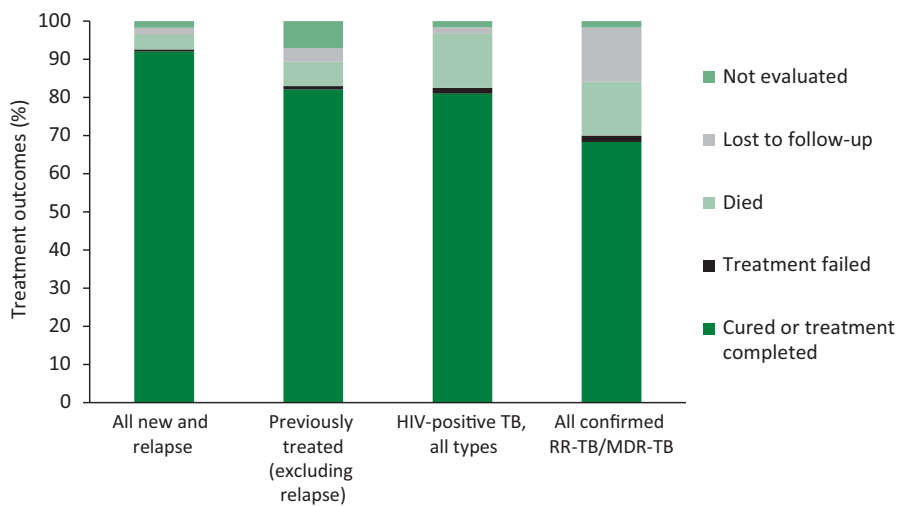


Figure 20: Trends in treatment success rate by type of cases, 1995–2012

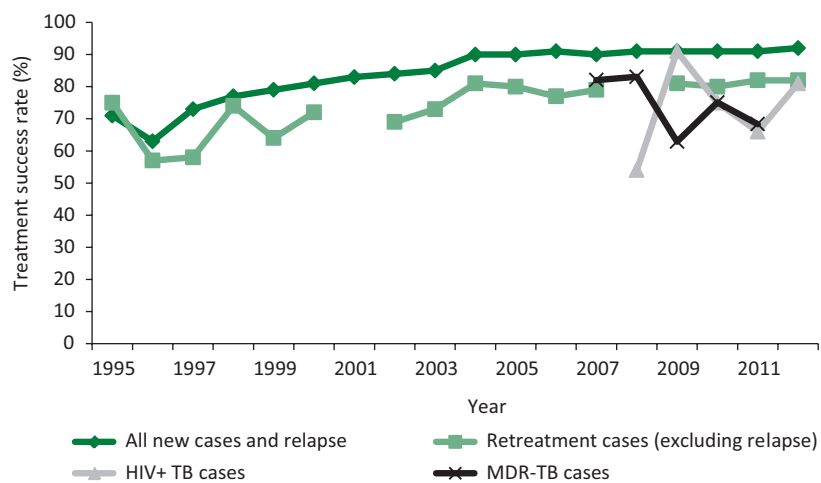


Table 11: Estimates and notification rates for 2013, Bangladesh*

Population**	156 594 962
Incidence of all forms of TB	350 000 (310 000–400 000)
Incidence rate of all forms of TB (per 100 000 population per year)	224 (199–253)
Prevalence of all forms of TB	630 000 (330 000–1 000 000)
Prevalence rate of all forms of TB (per 100 000 population)	402 (210–656)
TB death rate (of all forms of TB, excluding HIV per 100 000 population per year)	51 (33–69)
Number of new (all forms) and relapse TB cases notified	184 506
Notification rate of new and relapse TB cases (per 100 000 population for the year 2013)	119
Notification rate of new bacteriologically confirmed cases (per 100 000 population for the year 2013)	68
Case-detection rate (all forms of TB)	53 (47–59)
Treatment success rate (%) of all new and relapse TB cases for 2012 cohort	92

*Estimated incidence, prevalence and mortality rates and numbers have not been officially approved by the National TB Programme and should be considered provisional; reassessment should be done following the prevalence survey planned in 2015

**Source: United Nations, Department of Economic and Social Affairs, Population Division (2013). World Population Prospects: The 2012 Revision, DVD Edition.

Bhutan

With a population of approximately 750 000, Bhutan had an estimated TB prevalence and incidence rate (of all forms of TB) 196 and 169 respectively per 100 000 population in 2013. All TB burden indicators are estimated to be decreasing over time. The notification rate of all forms of TB (new cases and relapses) and new bacteriologically confirmed cases were 143 and 56 respectively, showing a steady decrease since 2010, particularly for all TB cases. The treatment success for the cohort of all new and relapse cases registered during 2012 was 92%; success rate is steadily equal to or above 90% since 2007. Since 2003, the treatment success rate for retreatment cases was 75% or above; however, in the 2012 cohort, the treatment success rate was slightly lower (72%), with a treatment failure rate of 19%. The TB control programme is fully integrated into the general health services with the majority of activities decentralized to the districts.

Efforts to improve access to TB services for vulnerable populations were made according to the work-plan of the Global Fund Transitional Funding Mechanism (GF TFM) grant. Screening of migrant workers was conducted in eight districts where major projects and construction activities are being undertaken to improve case-finding among the vulnerable populations. About 64 people were found to be TB symptomatic, of which one had smear-positive TB. Symptomatic screening and educational programmes on TB are being carried out in all the districts covering monastic institutions. In 2014, training of indigenous physicians was conducted to establish partnership with the indigenous unit for referral of presumptive TB cases along with inclusion of referral information in the TB treatment card. As the report has not been received, it is presumed that none of the indigenous units have identified TB suspects and referred them.

The DRS was completed in 2013 to better assess drug resistance levels in the country; the results of this survey suggests a higher drug resistance rate than previous WHO estimates, with around 5% prevalence of MDR-TB among new cases and 35% among previously treated cases.

In 2013, coverage of DRS as well as MDR-TB case detection increased remarkably: 34% of all new cases notified and 57% of retreatment cases were tested for drug resistance; 39 MDR-TB cases were diagnosed among new cases tested for DST (proportion of 21%), nine among re-treatment cases (proportion of 45%), and 15 among cases with history unknown. A total of 49 MDR-TB cases were diagnosed in 2013: of these, 47 had been laboratory confirmed and two were clinically diagnosed. All 49 MDR-TB cases diagnosed had been enrolled on treatment; of them 12 cases reported through clinical judgement were enrolled on treatment and were later confirmed through laboratory tests. GLC approval for the management of MDR-TB cases has been obtained in 2009, guidelines for MDR-TB management have been finalized, medical doctors trained on MDR-TB management and SLD being procured through GDF/GLC. For the MDR-TB cohort of 2011, the treatment success rate was 85%.

The Public Health Laboratory (PHL) has been linked to the regional SNRL in Bangkok, Thailand, and accredited for culture and first-line DST; EQA showed acceptable performance in 2013. DST for SLD is not available in the country and the samples are being shipped to NSRL in Bangkok for testing. Additional laboratory technicians were trained for undertaking quality-assured culture and DST. DST is currently indicated for all re-treatment cases and all smear-positive cases initiated on treatment: all backlog samples had been tested for culture and DST and the delay in providing the result has been reduced. Liquid culture facility has been recently introduced at PHL and the process of validating liquid DST result is ongoing. In 2014, the LPA was established through GF support to speed up the diagnosis of MDR-TB. PHL has improved in providing results to the districts after the introduction of LPA. Through the support of the NFM grant, there is a plan to introduce Expert MTB/RIF machines in four district hospitals to improve the diagnosis of MDR-TB among various categories of patients.

The prevalence of HIV infection in the general population is low, being 0.02%. HIV sentinel surveillance carried out in previous years has also revealed a low level of HIV infection among TB patients. Policies for referral of TB patients to HIV counselling and testing, CPT and ART are being implemented, and policies for IPT, and TB-HIV collaborative activities are included in the NSP for TB Control 2012–2016. A national body responsible for coordinating TB-HIV activities has been formed. Development of new TB/HIV guidelines, including a recording and reporting system to capture implementation of collaborative activities was

completed and training of all relevant HCW was conducted. In 2013, all notified TB cases were tested for HIV; one HIV-positive TB case was detected and started on ART but not CPT.

NTP has introduced fixed-dose combination (FDC) drugs, replacing single-drug formulations for first-line treatment for both adult and paediatric cases. The adult and paediatric FDC of anti-TB drugs are procured through the GDF through the Royal Government of Bhutan funding. Guidelines on management of TB have been revised and trainings conducted for medical doctors involved in TB control activities. A comprehensive HRD master plan is in place in the HR Division of the Ministry of Health. The programme coordinates with the Human Resource Division at the central level on HR management issues.

There is strong collaboration between NTP and partners, including the military hospitals. All military hospitals are involved in delivering TB services. The NTP is financially supported by the government and GF (Round 6 and TFM grant). NTP has submitted the TB NFM CN application to GF and it is expected that for the next three years, it will be supported through this grant.

Major achievements

The following are the major activities that were successfully conducted in 2013 and 2014:

- treatment success rate of new smear-positive cases maintained at > 90%;
- GF NFM CN submitted for five key modules;
- training of medical officers and health workers conducted on national TB-HIV guidelines;
- conducted GLC and GDF Mission through WHO support;
- conducted laboratory assessment visit by SNRL;
- laboratory capacity strengthened with the introduction of liquid culture and DST plus LPA;
- strengthened patient follow-up using mobile technology;
- observed World TB Day in all 20 districts;
- procured FLD and SLD through GDF/GLC;

- strengthened monitoring and supervision visits to the reporting centres;
- completed DRS;
- training of new laboratory technicians on sputum microscopy undertaken;
- completed MDR-TB study on factors associated with development of MDR-TB in TB patients; and
- conducted annual TB review meeting.

Major challenges

The major challenges faced in Bhutan are as follows:

- DOT implementation throughout the course of treatment;
- emergence and gradual rise of MDR-TB;
- human resources especially in terms of technical capacity;
- ensuring adequate funding for TB control;
- delay in sample shipment from districts to the PHL; and
- inadequate community participation.

Activities planned for 2015

The following activities are planned for 2015:

- conducting refresher training for laboratory technicians who are found poor on proficiency;
- procuring FLD and SLD through GDF/GLC;
- establishing Xpert MTB/RIF machines for rapid diagnosis of MDR-TB;
- strengthening monitoring and supervision;
- strengthening the partnership with the indigenous unit for referral of presumptive TB cases;
- strengthening the follow-up of cases using communication technology;
- engaging multisectoral task force for advocacy, communication and social mobilization;
- strengthening TB/HIV collaboration;

- strengthen laboratory and clinical capacity for diagnosis of TB and MDR-TB;
- improve access to TB services for vulnerable populations such as migrant workers and monastic institutions;
- commemoration of World TB Day;
- hold annual TB laboratory and TB review meetings;
- quality assessment visit to the PHL by the SNRL; and
- conduct annual GDF/GLC mission.

Figure 21: Case-notifications by type of patients, 2013

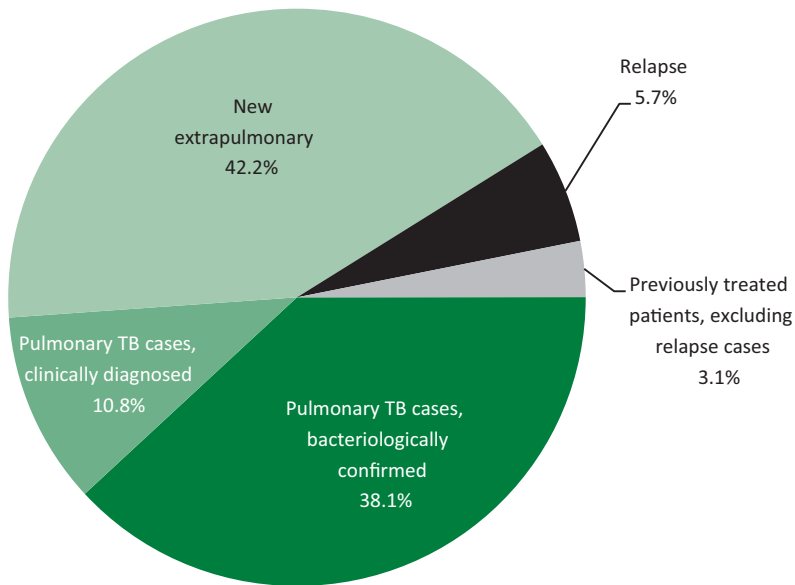


Figure 22: Trends in TB case-notifications, 1995–2013

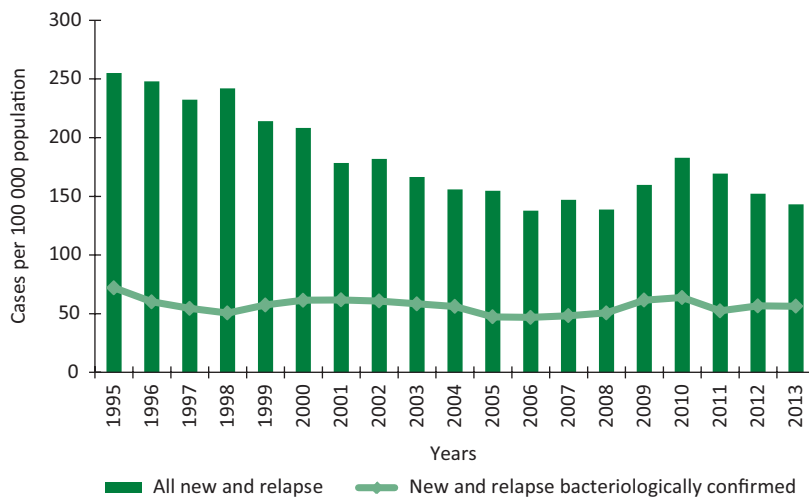


Figure 23: New (all types) and relapse TB cases by sex and age groups per 100 000 population, 2013

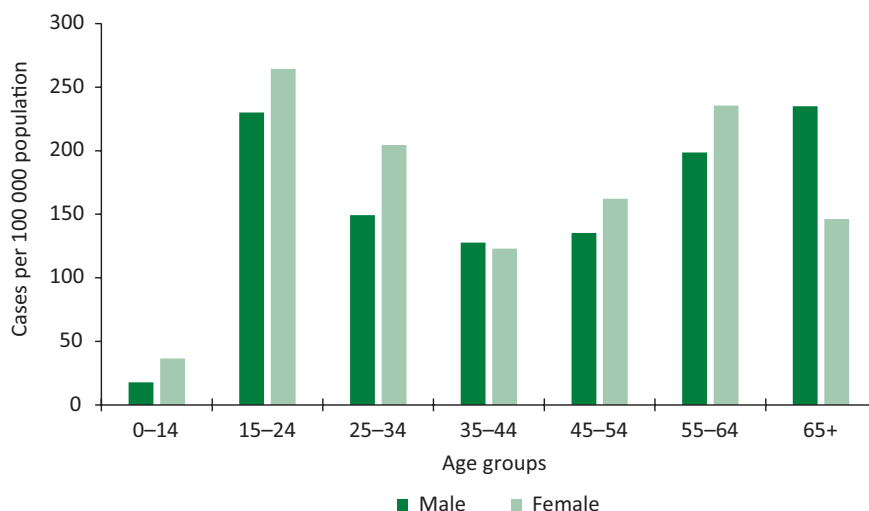


Figure 24: Treatment outcomes by type of cases, 2012 cohort (2011 cohort for RR/MDR-TB cases)

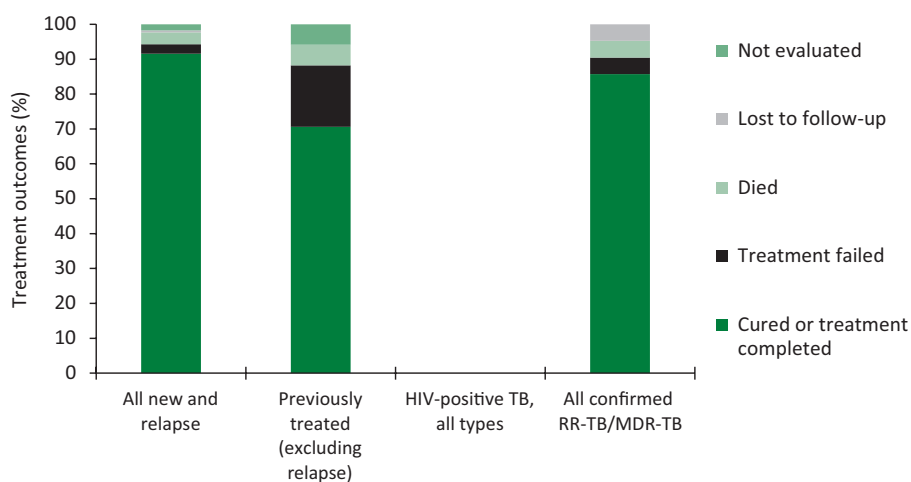


Figure 25: Trends in treatment success rate by type of cases, 1995–2012

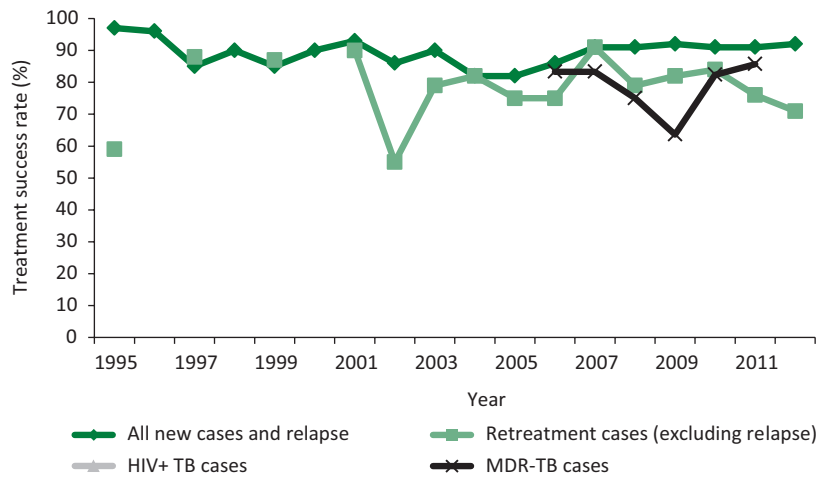


Table 12: Estimates and notification rates for 2013, Bhutan

Population*	753 947
Incidence of all forms of TB	1300 (1200–1400)
Incidence rate of all forms of TB (per 100 000 population per year)	169 (156–190)
Prevalence of all forms of TB	1500 (500–3000)
Prevalence rate of all forms of TB (per 100 000 population per year)	196 (67–393)
TB death rate (of all forms of TB, excluding HIV per 100 000 population per year)	12 (6.9–23)
Number of new (all forms) and relapse TB cases notified	1 080
Notification rate of new and relapse TB cases (per 100 000 population for the year 2013)	143
Notification rate of new bacteriologically confirmed cases (per 100 000 population for the year 2013)	56
Case-detection rate (all forms of TB)	85 (76–92)
Treatment success rate (%) of all new and relapse TB cases for 2012 cohort	92

*Source: United Nations, Department of Economic and Social Affairs, Population Division (2013). World Population Prospects: The 2012 Revision, DVD Edition.

Democratic People's Republic of Korea

With a population of about 25 million, the Democratic People's Republic of Korea has an annual incidence and prevalence of TB (all forms) of 429 and 536 respectively per 100 000 population. In 2013, the notification rate of all forms of TB and new bacteriologically confirmed cases were 392 and 135 respectively, showing a continuation of the increasing trend registered since 2006, particularly for all type of cases. In fact, to close the detection gap shown by the revision upwards of incidence estimates based on a national ARTI survey in 2007, intensified active case-finding in the community was adopted as a supplementary method for case-finding. Additionally, integration of previously non-DOTS sectors has led to an increase in case-notifications. The burden estimates were further revised upwards in 2012, because the case-detection rate exceeded 100%: for 2013, the case-detection rate for all forms of TB is estimated to be 91%. The treatment success rate of all types of new TB cases has been above 85% since 2001, sustained 90% or above since 2008 cohort (it was 92% in 2012 cohort). High treatment success rate was also reported for retreatment TB cases; being over 80% since 2008 (it was 84% in 2012 cohort).

Democratic People's Republic of Korea is planning to implement a TB prevalence survey in 2015 to better assess the real burden of TB in the country. Since 2013, the NTP and relevant international organizations including UNICEF and WHO have started working to develop the protocol for the prevalence survey. To support this endeavour, the WHO country office coordinated the international review of the country's national TB prevalence survey protocol. Based on the study protocol, NTP developed the implementation plan. Procurement of survey equipment is being processed and once it is delivered, the prevalence survey will be initiated.

Laboratory capacity has been strengthened in the country as a priority. The National Reference Laboratory at the Central TB Institute in Pyongyang regularly undertakes culture and DST for FLD. NRL is currently supported by the

nongovernmental organization, Christian Friends of Korea, Stanford University, WHO, GF and UNICEF. In 2014, EQA was carried out in NRL using 30 panels provided by Hong Kong SNRL and the results will be available in March 2015. The number of smear microscopy laboratories has been expanding in the last three years, from 320 in 2012 to 336 in 2013, at 1.3 smear laboratory per 100 000 population. EQA is regularly carried out in all smear microscopy laboratories and 91% showed acceptable results. An Xpert MTB/RIF system was established in the NRL in 2013 and 552 cartridges were used during the year. In the beginning of 2014, NTP organized a small-scale rifampicin resistance survey in one selected province to evaluate the drug resistance situation in the country.

Currently, MDR-TB is estimated to be 2.2% among new cases and 16.7% among retreatment cases based on WHO modelling. The result of a small-scale TB drug-resistance study with Xpert MTB/RIF was in conformity with the estimation: the study showed 2.2% and 16.3% RR-TB prevalence amongst new and retreatment cases respectively. Guidelines for MDR-TB management were developed in October 2011 and it was revised based on experience from PMDT extension in the country during 2014. NTP adopted the standard regimen recommended by WHO. SLD are being procured through GDF with GF support. DRS is done amongst retreatment cases only and in 2013 the coverage of DST was 1.5% in this group. In 2013, 187 RR/MDR-TB cases were notified, showing a rapid increase of MDR-TB diagnostic capacity. In 2013, a total of 170 MDR-TB cases, of which 103 were laboratory confirmed, were enrolled on second-line treatment under programmatic conditions. Treatment outcomes for MDR-TB patients are not yet available because enrolment on second-line treatment started in 2012.

No HIV infection has been reported in the country till date. However, surveillance is being maintained and HIV testing in select TB cases with history of travel is being undertaken.

Civil society organizations such as the Youth League, Trade Union, Women's Association and Unions of Agricultural Working People are collaborating with NTP to increase awareness of TB, support suspect referral and treatment adherence.

Training materials on paediatric TB treatment have been developed and training conducted and orientation meetings on childhood TB with children-related facilities at central and provincial levels have been held since 2012. In 2013, 6% of new cases reported (all types) were among 0–14 year old children, of which 14% were in the age group of 0–4 years.

A multi-year strategic plan for 2008–2015 was developed in line with the global plan to stop TB and the regional plan for TB control. In August 2014 the plan was updated for the period 2015–2018. The government allocation supports about one third of the programmes' funding requirements in 2014 in terms of staffing, infrastructure, drugs and surveillance. WHO continues to provide support to the national programme in terms of technical assistance, implementation of the GF Grant, training health staff, strengthening TB diagnostic services, upgrading infrastructure, and monitoring and evaluation.

In May 2014, the first Joint Monitoring Mission of the NTP was held. The recommendations of JMM provided valuable inputs to update the national TB strategic plan and develop the application for the GF NFM grant support for the TB grant. On October 2014, Democratic People's Republic of Korea applied for the NFM of GF for an allocation of US\$ 28.6 million for a three year period.

Currently, anti-TB drugs are being procured through the GF Round 8 TB grant for which UNICEF, Democratic People's Republic of Korea is the Principal Recipient. GDF provides paediatric anti-TB drugs for the whole country and adult drugs for one province not covered by the GF grant. Support for SLD is also received through the GF and the Eugene Bell Foundation in selected sanatoria.

Major achievements

The major achievements of NTP in the country are:

- Xpert MTB/RIF machine installed in NRL and is fully operational;
- high case-detection and treatment success rates sustained;
- M&E and supervision of DOTS implementation strengthened;
- health facilities in other sectors actively involved in TB control activity;
- GF supported project is being implemented satisfactorily;
- regular supplies of anti-TB drugs ensured through GF and GDF;
- logistic management system for drug supply and management strengthened;
- national TB Strategy updated in line with JMM recommendations;
- PMDT is being rolled out in a phased manner;

- initiated establishment of a RTRL; and
- human resource capacity strengthened through regular training (programme management, laboratory work and EQA, ACSM, supply management, data management).

Major challenges

The main challenges faced are:

- inadequate resources and capacity for expanding PMDT for the benefit of all MDR-TB patients;
- suboptimal capacity for diagnosis of childhood TB and procurement of quality assured paediatric anti-TB drugs;
- resource mobilization for establishing RTRL;
- strengthening EQA in line with international recommendations; and
- long lead time required for the procurement of key commodities.

Activities planned for 2015

The following activities are planned for 2015:

- preparing for and starting TB prevalence survey in 2015;
- strengthening of coordination with other sectors, particularly the mining industry;
- undertaking systematic supportive supervision at all levels;
- establishing more Xpert MTB/RIF systems at regional level;
- expanding programmatic management of DR-TB for better geographical coverage;
- refurbishing of key MDR-TB wards at provincial level;
- harmonizing the MDR-TB treatment regimen with NTP and other donors;
- providing technical support to NTRL to accelerate the accreditation process;
- initiating operation of Hamhung RTRL; and
- mobilizing additional resources through the GF-NFM.

Figure 26: Case-notifications by type of patients, 2013

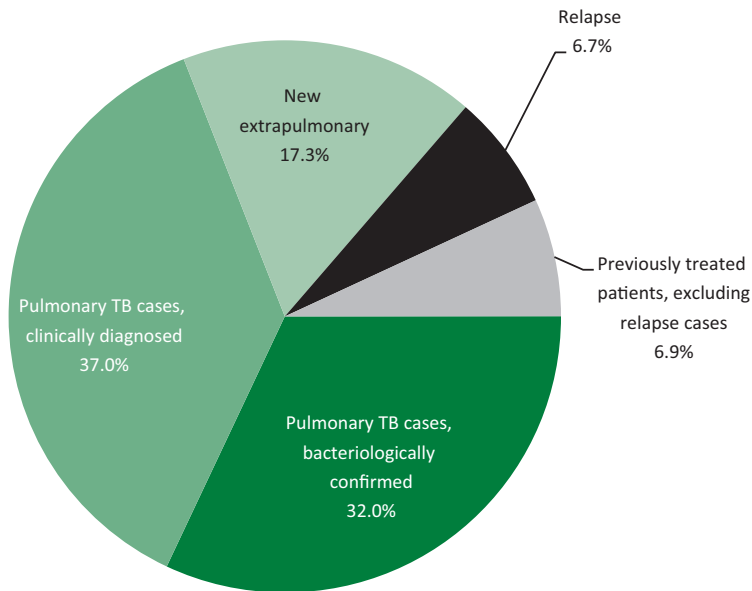


Figure 27: Trends in TB case-notifications, 1995–2013

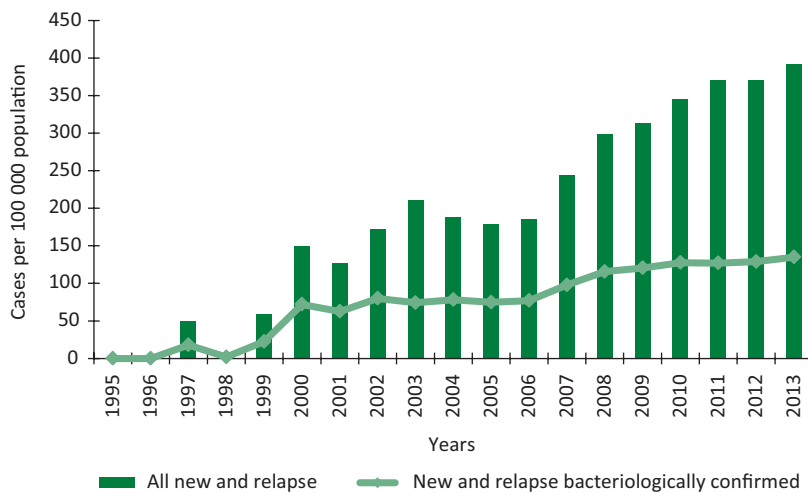


Figure 28: New (all types) TB cases by sex and age groups per 100 000 population, 2013

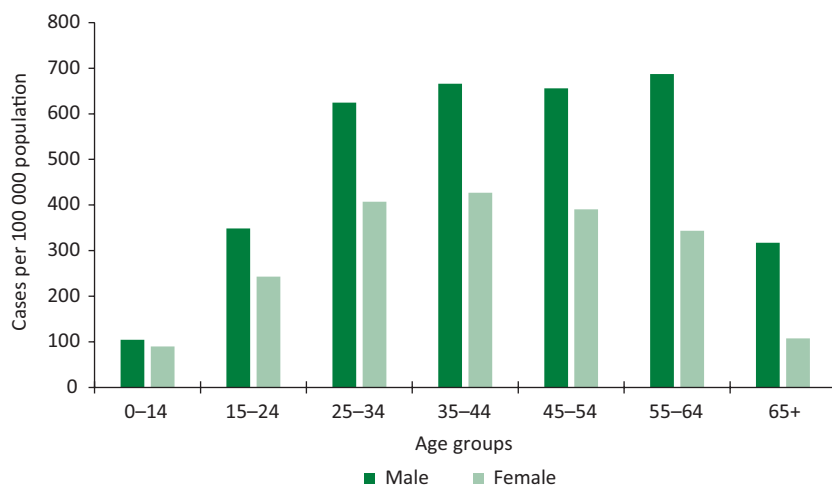


Figure 29: Treatment outcomes by type of cases, 2012

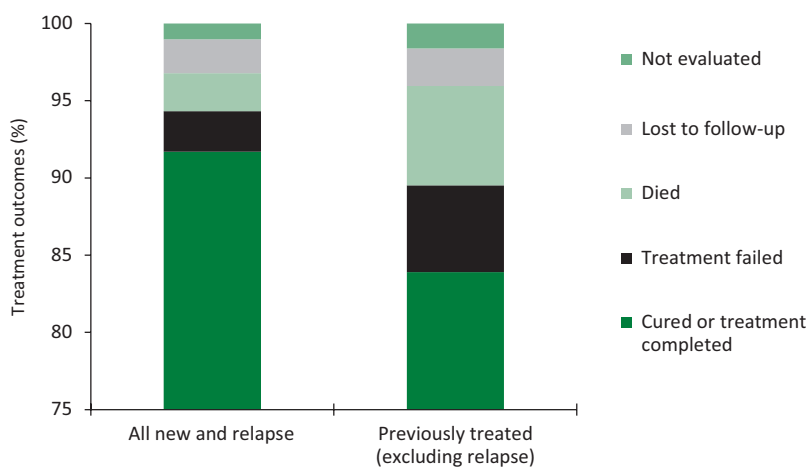


Figure 30: Trends in treatment success rate by type of cases, 1995–2012

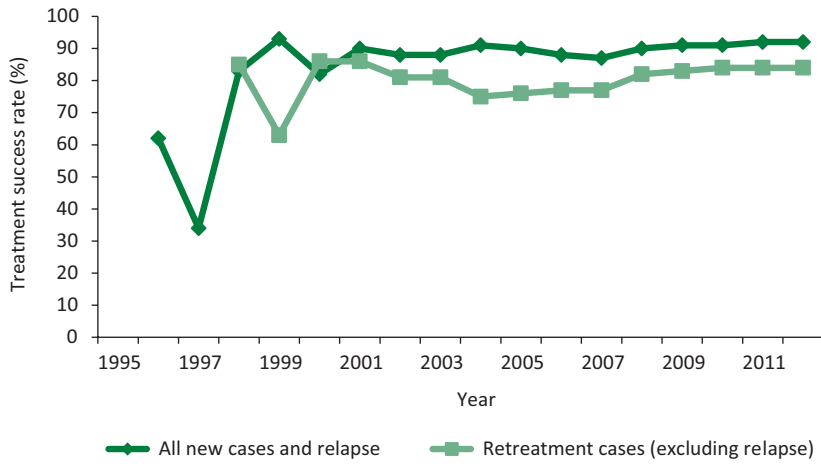


Table 12: Estimates and notification rates for 2013, Democratic People's Republic of Korea

Population*	24 895 480
Incidence of all forms of TB	110 000 (100 000–110 000)
Incidence rate of all forms of TB (per 100 000 population per year)	429 (401–456)
Prevalence of all forms of TB	130 000 (36 000–290 000)
Prevalence rate of all forms of TB (per 100 000 population per year)	536 (146–1 175)
TB death rate (of all forms of TB, excluding HIV per 100 000 population per year)	27 (12–46)
Number of new (all forms) and relapse TB cases notified	97 665
Notification rate of new and relapse TB cases (per 100 000 population for the year 2013)	392
Notification rate of new bacteriologically confirmed cases (per 100 000 population for the year 2013)	135
Case-detection rate (all forms of TB)	91 (86–98)
Treatment success rate (%) of all new and relapse TB cases for 2012 cohort	92

*Source: United Nations, Department of Economic and Social Affairs, Population Division (2013). World Population Prospects: The 2012 Revision, DVD Edition.

India

With a population of about 1252 million, India is the largest country in the Region. It is ranked first among the high-burden countries and contributed 24% of the estimated global incident TB cases and about 20% of global TB-related deaths in 2013.

The country initiated the process to have its own national estimates for disease burden and two rounds of consultations were held with national and international experts in 2011 and 2012. WHO estimates were revised based on results of these consultations. Prevalence and incidence rates of all forms of tuberculosis were 211 and 171 respectively per 100 000 population in 2013, showing a steady decline compared to previous years. The notification rate of all forms of TB (new and relapse) and bacteriologically confirmed cases were 99 and 50 respectively per 100 000 population in 2013; the notification rate of all TB cases was 113. Despite efforts to increase detection of TB cases and achievements in terms of incidence and prevalence reduction, the case-detection rate of all forms of TB was estimated to be 58% in 2013. Low case-detection rate is likely to be affected by under-notification from the private sector. A cross-sectional community-based survey of 30 districts suggests that about 50% of detected cases are not reported to the NTP, a finding confirmed in a recent prevalence survey in Gujarat state. Preliminary results of the Gujarat survey that included 87 530 people (participation rate 90%) show a crude prevalence rate of all laboratory confirmed pulmonary TB cases of 383 (341–424) per 100 000 population.

Since its inception in 1997, the RNTCP has initiated almost 20 million patients on treatment. Since 2005, the programme has consistently achieved and exceeded the global target of 85% treatment success rate among new smear-positive cases, as well as among all new and relapse TB cases, with 88% for the cohort of patients registered in 2012, slightly below the newly set target of 90% success rate. In the 2012 cohort, the treatment success rate for retreatment cases (excluding relapse) and HIV-positive TB cases (all forms) was 74% and 77% respectively ; among retreatment cases the higher proportion of unsuccessful treatment was related to “lost to follow-up” (13%), and among HIV-positive cases to deaths (13%).

By the end of 2014, a total of 62 laboratories from the public sector (NTP and medical colleges), the private sector and operated by NGOs, were accredited by the RNTCP to undertake quality assured culture and drug sensitivity testing including 11 laboratories, doing second-line DST; they all demonstrated acceptable performance during EQA. Twenty-one laboratories use liquid culture technology. In addition, 50 laboratories including four from the private sector implemented LPA for diagnosis of MDR-TB cases. By 2014, rapid DST through Xpert MTB/RIF was implemented in 89 sites, representing a significant scale-up compared to 54 sites in 2013.

EQA was carried out in all of the 13 048 smear microscopy laboratories in the country. However, results were not available at the national level. The target of at least one smear microscopy laboratory per 100 000 population has been reached (in 2013 the figure was 1.04/100 000 pop.); with the rapid increase in the number of accredited culture and DST laboratories, the target of one laboratory per 5 million population has not been reached yet (in 2014, the figure was 0.5 culture and DST facility per 5 million pop.). However, considering any access to drug resistance testing, including Xpert MTB/RIF, India achieved a coverage of 0.8 per 5 million population in 2014. In 2013, in addition to the existing SNRL in Chennai, the NITR in New Delhi, India became an SRL-National Centre of Excellence (SRL-CE). The SRL-CE has similar terms of reference to that of an SNRL, but with an in-country focus for its laboratory strengthening and capacity building activities.

Following the banning of commercial serology for TB diagnosis in 2012, the Initiative for Promoting Affordable, Quality TB Tests (IPAQT) was launched in March 2013: it is a consortium of 75 private laboratories (approximately 3000 franchisee laboratories and over 10 000 specimen collection centres) supported by not-for-profit stakeholders, aiming to allow concessional prices for Xpert MTB/RIF, first-LPA and liquid culture in the private sector through agreements with producer companies. Participating laboratories must be quality assured, notify TB cases to RNTCP, adhere to a ceiling price when charging patients and cannot use any tests that are not recommended by WHO and RNTCP. IPAQT is an innovative approach to increase access to rapid, accurate and affordable diagnostics for patients treated in the private sector.

SOP for second-line DST, guidelines for certification of laboratories for second-line DST and a guidance document on policy to use Xpert MTB/RIF under programme were developed in 2013. Following the interim results of feasibility

study of introducing Xpert MTB/RIF in RNTCP under programmatic conditions (RNTCP-FIND-WHO CBNAAT Project), conducted across 18 tuberculosis units (TUs) in 12 states, Xpert MTB/RIF assay was included into an algorithm as the initial diagnostic test for TB in persons at risk of HIV-associated TB and for the diagnosis of DR-TB among persons at risk.

MDR-TB prevalence is estimated to be low (2.2% among new cases and 15% among retreatment cases) based on sub-national DRS conducted in three states between 2006 and 2009. In order to have more representative estimates, RNTCP with support from WHO has launched the National Antituberculosis Drug Resistance Survey 2014–2015 in a representative sample of both newly diagnosed sputum smear-positive PTB cases and previously treated sputum smear-positive PTB cases. Despite the low MDR-TB prevalence, due to the size of the population and number of TB cases reported annually, India ranks first among the 27 MDR-TB high-burden countries worldwide, contributing to 21% of all MDR-TB cases estimated among notified cases. RNTCP has developed a plan to considerably scale up MDR-TB services in order to treat at least 40 000 MDR-TB patients in the country per annum by 2017, supported by GF, UNITAID and domestic funds to enable a rapid expansion of MDR-TB services in the next few years. India is also a target country for the EXPAND-TB and TBXpert global projects aiming to strengthen diagnostic capacity. Since September 2013, all 35 states across 704 districts covering the entire population (100%) of the country are providing MDR-TB diagnostic and treatment services. In 2013, India detected 23 157 MDR-TB cases including rifampicin-resistant cases (RR-TB) detected using Xpert MTB/RIF, being 37% of the estimated number among notified PTB cases; this represents a remarkable increase in MDR-TB notification, 33% increase compared to 2012 and a four-fold increase compared to 2011. From January to September 2014, 19 297 MDR-TB including RR-TB cases were detected, confirming rapid scale-up of MDR-TB diagnosis capacity. From January to September 2014, SLD resistance was tested in 2184 MDR-TB cases and 939 XDR-TB cases including ofloxacin-resistant cases were detected. Also, enrolment on treatment is showing a significant increase and despite the increasing detection of cases, the proportion of patients started on treatment is stable. In 2013, 21 092 laboratory confirmed MDR-TB and 392 XDR-TB cases were started on second-line standard treatment, being 91% and 70% respectively of cases diagnosed. From January to September 2014, 18 276 laboratory confirmed MDR-TB and 879 XDR-TB cases were started on second-line standard treatment, being 95% and 94% respectively of cases diagnosed. Treatment outcomes of 2011 cohort showed a 50% success rate, higher than

the 2010 cohort, and 23% of the death rate. RNTCP is developing guidelines and regulation of newer anti-TB drugs in India. To look into the possibility of introduction of bedaquiline in India, a protocol for a multicentric study is being finalized.

It is estimated that around 2.4 million Indians are currently living with HIV. According to country-level data HIV prevalence among incident TB patients is estimated to be 5.95% (95% CI: 5.93%–5.97%). The incident HIV-positive TB cases in 2013 were estimated to be 120 000 and India is among the 41 TB/HIV high-burden countries. Since 2008, the revised “National framework of joint TB/HIV collaborative activities” has been implemented and an “intensified TB/HIV package” has been rolled out and expanded to all 35 states of India. Intensified TB case-finding has been implemented nationwide at all HIV testing centres (known as integrated counselling and testing centres, ICTC) and ART centres. In 2013, 786 922 TB suspects were referred from ICTC and ART centres to RNTCP and of them 89 420 were diagnosed as having TB, contributing to 5% of the overall number of TB cases notified. In 2013, 887 903 TB patients (63% of total TB patients registered) were tested for HIV; 44 027 (5% of those tested) were diagnosed as HIV-positive and were offered access to HIV care. The percentage of TB patients tested for HIV is increasing significantly (it was 45% in 2011 and 56% in 2012) as well as the access to ART that increased from 59% in 2012 to 88% in 2013. Ninety-five percent of diagnosed HIV-positive TB cases were offered access to CPT.

In 2013, the Government of India adopted the policy of IPT in HIV-infected cases and the programme is planning to roll out IPT in 2015.

RNTCP piloted the guidelines for airborne infection control in health-care facilities (provisional version) in three states in 35 health-care facilities ranging from high-end tertiary care facilities to primary health centres; the guidelines have been finalized after the pilot conclusion. In 2013, 110 DR TB wards were established with airborne infection control measures.

RNTCP is progressively involving an ever greater number of care providers. RNTCP revised and operationalized guidelines and schemes for collaborative PPM TB activities with NGOs and the private sector, and updated training material specifically designed for private practitioners. Utilizing support received under the Global Fund’s Single Stream Funding, RNTCP has further expanded its PPM TB activities. The programme has forged a successful partnership with IMA, the

Catholic Bishops' Conference of India (CBCI), PATH, The Union and World Vision India. The PPM project with IMA has been expanded to 16, and that with CBCI to 19 states across the country. As a result of the collaboration with IMA, 86 626 private medical practitioners have been sensitized on RNTCP, 14 982 private doctors in 15 states have been trained, 4134 DOTS centres and 95 DMCs are functional under this project. Efforts towards systematic and comprehensive engagement of pharmacists and chemists to provide training and possibly accreditation is also ongoing and an MoU has been signed between the Central TB Division and key sector associations (IPA, AIOCD, PCI, SEARPharm, FIP): in 2014, training of trainers (ToT) and state-level training were conducted, and 1031 community pharmacists have undergone modular training, 350 pharmacists are referring suspects to RNTCP and 23 are working as DOTS providers.

By 2014, RNTCP had involved 2569 NGOs and 13 150 private practitioners; 150 corporate hospitals and 330 medical colleges are implementing RNTCP.

In 2013, the overall number of TB patients notified by non-NTP public providers was 199 564, (of which 87% were from medical colleges) and 85 439 by private, corporate and voluntary providers (of which 50% were from medical colleges and 46% from private health facilities). Totally, PPM contributed 23% of the reported cases in 2013 (increasing its proportion of 16% in 2012).

Health services are administered in a decentralized manner at the level of the states and union territories through diverse public and private sector facilities. Policies for TB control activities are formulated at the central level in consultation with other stakeholders, with the Central TB Division in the Ministry of Health and Family Welfare having overall responsibility for RNTCP. RNTCP has a strategic plan in place for 2012–2017; plan and budgets are aligned with the national health plan. The National Rural Health Mission provides an opportunity for strengthening TB service delivery at the grass-roots level. A focal point for HRD has been designated at the central level. The EPI centre software has been successfully transitioned to a Windows-based system. RNTCP has developed a case- based, web-based patient tracking and real time programme data management system for all forms of TB (Nikshay); a mobile application was developed for private providers. The recording and reporting system is aligned with WHO "Definitions and reporting framework – 2013 revision". By end-2014, 82 309 private health facilities were registered for TB notification in Nikshay and cumulatively 1 643 521 TB patients were notified from the private sector through this tool.

India is successfully implementing urban TB control models. An example is the 'Mumbai Mission for TB Control', released in March 2013 that formulated a blue print to ensure universal access to TB care. This has a comprehensive programme for reaching the last TB patient in vulnerable areas especially the slums of Mumbai; it details further scaling up of diagnostic and treatment facilities in Mumbai, ensuring sensitization of every first point health-care contact with RNTCP protocols. Mumbai also launched a massive awareness campaign—"Mumbai Mission for TB Control Awareness campaign" with famous film star Mr Amitabh Bachchan as campaign ambassador.

Important infrastructure development in terms of decentralized management units were created in Chennai and Kolkata. Urban TB projects are planned in another 30 cities, starting in 2015.

Encouraging results have been achieved in three pilot projects in which free anti-TB drugs for all TB patients including the private sector are provided to achieve universal access following "Standards for TB Care in India". Once a qualified practitioner diagnoses and decides to treat a TB patient outside the scope of RNTCP, s/he will notify the case using ICT-enabled mechanisms and prescription details relevant to anti-TB drugs are shared with the contact centre. Based on it, a unique voucher number is generated and shared with practitioner and patient. The voucher number written on the prescription is carried by the patient to the chemist. The voucher is validated by the chemist with help of the contact centre and free anti-TB drugs are given to patients. The patient is contacted telephonically for confirmation of receipt of free medicine and later at home, for extending public health services like contact screening, adherence and infection control counselling, HIV testing and DST services etc.

RNTCP was supported by the World Bank, United Kingdom Department for International Development (DFID), GF, USAID, UNITAID and other partners during the period 2007–2013 and has since transitioned to an increased budgetary support from domestic resources: domestic resources contributed to 66% of the overall budget in 2013; no budget gap was identified for 2014. In August 2014 India applied for the GF grant under NFM. GF, UNITAID, WHO, USAID and other partners continue to provide technical support to the programme.

Major achievements

The major achievements of RNCTP are as follows:

- Since its inception, the programme has initiated more than 19 million patients on treatment, thus saving more than 3.1 million additional lives.
- Since 2007, RNTCP has also achieved the new smear-positive case-detection rate of more than 70% in line with the global targets for TB control while maintaining the treatment success rate of >85%.
- Decentralized diagnosis through a network of more than 13 000 quality-assured sputum microscopy laboratories; to ensure quality of sputum microscopy, EQA is being routinely conducted throughout the country as per a standardized protocol based on international guidelines (on site evaluation, panel testing and blinded crosschecking).
- Treatment services were decentralized through a network of more than 640 000 DOT centres/providers using patient-wise boxes both for adults and paediatric patients.
- Engagement of the new cadre of community-based accredited social and health activists (ASHA) was increasing.
- Successful involvement of 330 medical colleges, 2569 NGOs, 13 150 private practitioners and over 150 corporate sector health units was achieved.
- Revised RNTCP guidelines and schemes for involvement of NGOs and private providers in RNTCP activities was implemented.
- A national framework for TB-HIV collaborative activities was implemented nation-wide, with “intensified TB/HIV package” implemented in all 35 states.
- Sixty two laboratories were accredited for TB culture and DST.
- By March 2013, all districts in the country were covered by PMDT services. As on September 2013, a cumulative total of 276 149 suspects were being tested for MDR-TB and 36725 MDR-TB patients and 351 XDR-TB patients initiated on treatment.
- The programme has developed a case-based, web-based notification system (Nikshay).
- The programme has developed “Standards of TB Care in India” which has triggered important advancement in early case-detection and effective treatment for all TB patients.

- The Programme has developed protocol for diagnosis and treatment of non-MDR drug resistant TB in 2014 and will be implementing DST-guided treatment for such patients in 2015.
- A NACO-RNTCP-WHO collaborative project for intensified TB case-detection among PLHIV attending antiretroviral treatment (ART) centres was launched in 2014 with completion of training of trainers. Implementation in 30 ART centres in five southern states will start in early 2015. This project will use Xpert MTB/RIF for early TB diagnosis with necessary changes in diagnostic algorithm, use daily FDC anti-TB drugs, pilot isoniazid prophylaxis, implement AIDS information centres in ART centres and institute pharmaco-vigilance in these sites.
- In a workshop “TB-India Vision 2020”, RNTCP has developed strategies for intensified TB control activities for achieving 2020 TB targets.
- Mumbai launched a massive awareness campaign: “Mumbai Mission for TB Control Awareness campaign” with famous film star Mr Amitabh Bachchan as campaign ambassador.
- Universal access to free anti-TB drugs pilot projects launched in three sites, Patna in Bihar, Mehsana in Gujarat and Mumbai in Maharashtra.
- Under the GF Round 9 project, civil society organizations are undertaking activities in 374 districts across 23 states to enhance the visibility and reach of the programme and engage with communities and community-based care providers to improve TB care and control.
- During 2014, central internal evaluation of the programme performance and implementation status of RNTCP was conducted every month in two districts in a state on a one-to-one basis along with review of their activity plans to improve programme performance.

Major challenges

The major challenges faced by RNTCP are as follows:

- ineffective and delayed diagnosis of TB in both the private and public sector;
- patients accessing private providers not linked or engaged with RNTCP;
- large-scale expansion of patient notification from the private sector;

- Inadequate staffing at all levels, to be addressed through improved HRD, to reduce reliance on a limited pool of TB-dedicated staff;
- alleviating weaknesses in supervision capacity and quality, as well as in planning, monitoring and evaluation;
- enforcement of regulations for prescribing and sale of anti-TB drugs; promoting rational use of first- and second-line anti-TB drugs outside the programme to prevent MDR and XDR TB; and
- developing and implementing airborne infection control measures in health facilities.

Activities planned for 2015

The following activities have been planned in 2015:

- maintaining and further improving both the quality and reach of services to move towards achieving universal access;
- planning a joint monitoring mission in April 2015 to review the progress made for universal access and recommend changes required for moving towards implementation of End TB strategy;
- implementing revised diagnostic algorithm for early detection of TB cases and treatment protocols including DST-guided treatment for drug resistant cases;
- taking major initiatives for urban TB control models, in 30 cities;
- taking innovative private sector engagement initiatives including social franchising.;
- planning laboratory scale-up to further expand the network of quality assured laboratories;
- deploying 300 additional XpertMTB/RIF machines to address laboratory capacity deficits in hard-to-reach areas for decentralized DST;
- piloting intensified TB case-finding in ART centres and piloting IPT;
- disseminating the “Standards for TB Care in India”;
- deploying revised schemes for involvement of NGOs and private practitioners across the country;

- finalizing revised technical and operational guidelines for early case-detection including revision of diagnostic algorithm, contact tracing, active case-finding etc;
- evaluating the effect of the revised diagnostic algorithm, suspect and case definitions on case notifications;
- developing and testing ICT for notification and drug management;
- scaling up of Nikshay, the case-based, web-based patient tracking and data management system for all forms of TB including use of mobile apps, call centre notification systems; and
- scaling up of strategies for universal access to free treatment for all TB patients diagnosed and managed in the public and private sectors across the country using private provider interface agencies.

Figure 31: Case-notifications by type of patients, 2013

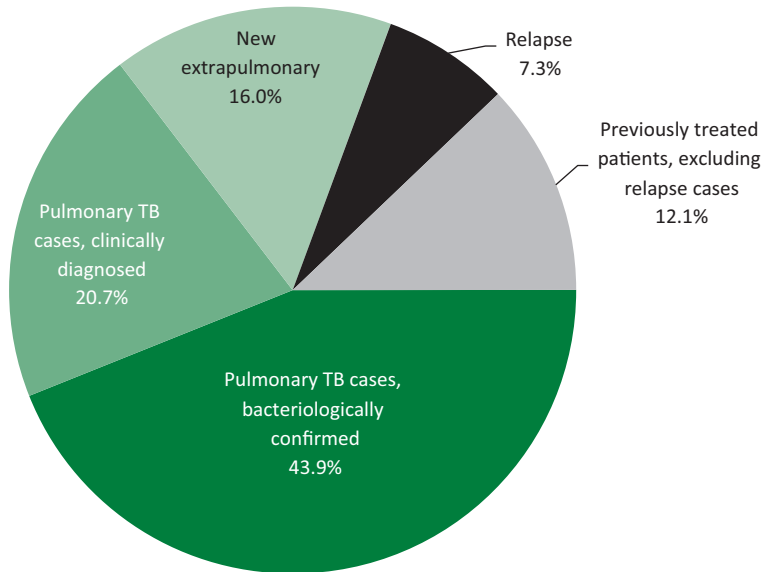


Figure 32: Trends in TB case-notifications, 1995–2013

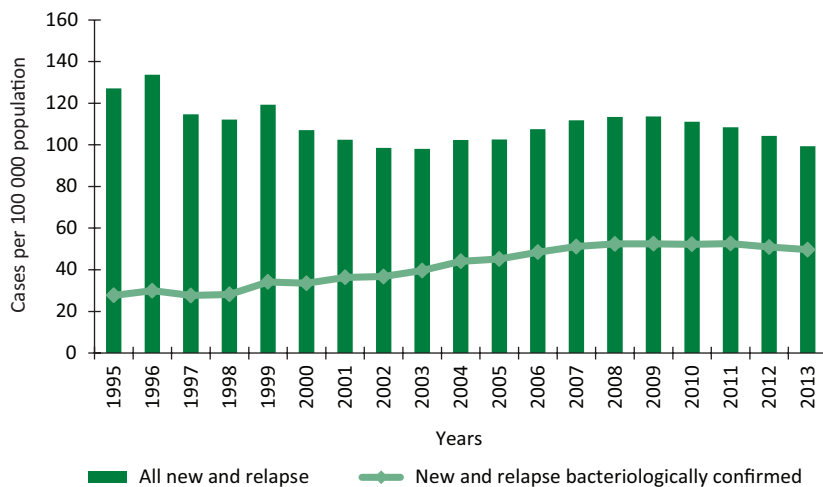


Figure 33: Treatment outcomes by type of cases, 2012 cohort
(2011 cohort for RR/MDR-TB cases)

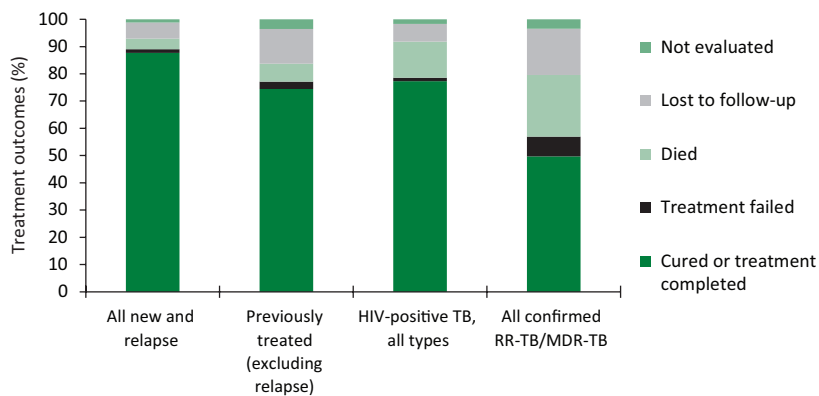


Figure 34: Trends in treatment success rate by type of cases, 1995–2012

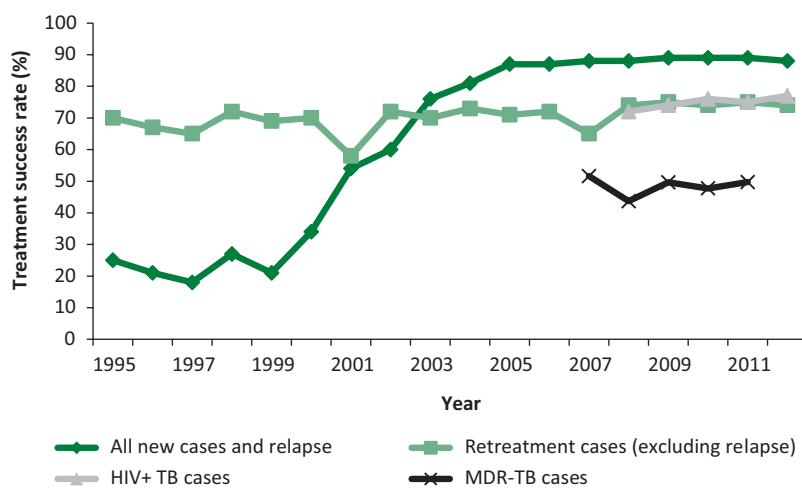


Table 13: Estimates and notification rates for 2013, India

Population*	1252139596
Incidence of all forms of TB	2 100 000 (2 000 000–2 300 000)
Incidence rate of all forms of TB (per 100 000 population per year)	171 (162–184)
Prevalence of all forms of TB	2 600 000 (1 800 000–3 700 000)
Prevalence rate of all forms of TB (per 100 000 population per year)	211 (143–294)
TB death rate (of all forms of TB, excluding HIV per 100 000 population per year)	19 (12–28)
Number of new (all forms) and relapse TB cases notified	1243 905
Notification rate of new and relapse TB cases (per 100 000 population for the year 2013)	99
Notification rate of new bacteriologically confirmed cases (per 100 000 population for the year 2012)	51
Case-detection rate (all forms of TB)	58 (54–61)
Treatment success rate (%) of all new and relapse TB cases for 2012 cohort	88

*Source: United Nations, Department of Economic and Social Affairs, Population Division (2013). World Population Prospects: The 2012 Revision, DVD Edition.

Indonesia

With a population of about 250 million, Indonesia is among countries with the highest TB burden globally. To better assess TB burden estimates and trends in the country, Indonesia started a nationwide TB prevalence survey in April 2013: 67 946 persons from 156 clusters participated in the survey, which targeted only clusters' residents aged over 15 years. Based on the survey results, burden estimates have been revised upward. However, survey results have not been endorsed by the Ministry of Health of Indonesia. At the time of writing this report, estimates still in use show prevalence and incidence rates of all forms of tuberculosis at 272 and 183 respectively per 100 000 population in 2013. The notification rate of all forms of TB and new bacteriologically confirmed cases were 130 and 79 respectively per 100 000 population, showing a fairly stable trend in recent years, following a steep increase in the early 2000s. The case-detection rate for all forms of TB is estimated to be 81% in 2013, although it is expected to decrease according to new estimates. The National Basic Health Survey 2013 revealed only 44% of diagnosed and treated TB cases being notified by NTP. Consistently, the prevalence survey reported that almost 50% of the survey participants who were under TB treatment at the time of the interview took the treatment in the private sector.

Treatment success rate among new and relapse TB cases (all types) was consistently above the target of 85% in the last decade. For the cohort of patients registered in 2012, the success rate was 86% with a relatively high rate of "lost to follow-up" and "not evaluated" (5% and 6% respectively); for the same cohort, success rate among retreatment cases was 71%, with 15% of "lost to follow-up". For the 2012 cohort, for the first time, Indonesia reported treatment outcomes of HIV-positive TB cases (size of the cohort was 1353 patients): success rate was 49%, death rate was 24% and "lost to follow-up" 17%.

The national TB control programme collaborated with all stakeholders, including other units of the MoH, other ministries, technical partners, health providers, community representatives and civil society organizations, to develop a new NSP 2015–2019. The newly developed strategic plan incorporates all 2013

JEMM recommendations, new Global “END TB” strategy targets, the new national development plan and the new national health agenda, including universal health coverage. The NSP aims a more ambitious target for the next five years, which includes a 15% reduction of TB incidence and 35% reduction of TB mortality by 2019.

The TB programme is scaling up public–public and public–private partnerships, resulting in increased notification by hospitals and clinics being linked to the national TB programme. In 2013, 9044 NTP providers, 946 non-NTP public providers and 912 private providers were engaged in the programme and actively collaborated with NTP. The non-NTP public providers include 168 prisons and 180 military/police hospitals. Totally, an additional 283 non-NTP providers were engaged in 2014, compared to 2013. In 2013, the total contribution from non-NTP providers to case notification was 29% (93 513 cases); 72% of this came from non-NTP public providers. The number of cases contributed by non-NTP private, corporate and voluntary providers increased six-fold from 2012 to 2013, totalling 26 345 cases notified to NTP.

The support of quality DOTS expansion in public and private hospitals, and private practitioners relied on standarization and accreditation system. Collaborating with the Ministry of Education, teaching of principles and practices of DOTS has been integrated into the national medical school curriculum and implemented at all 74 schools of medicines in Indonesia. New PPM approaches, matching with country needs, are being considered, including mandatory notification and social business models. Indonesia is implementing the UNITAID TBXpert project: with support from the Stop TB Partnership and TBREACH initiative 25 Xpert MTB/RIF instruments were implemented to provide wider access to diagnosis to high-risk patients in Jakarta through innovative social business models including private screening centres and other partnering locations. From November 2013–August 2014, more than 10 769 patients were tested with these machines in several sites in Jakarta, resulting in 1969 confirmed TB patients and 170 RR-TB.

ISTC has been endorsed by the professional associations and further adapted by MoH into a formal document, known as PNPK TB or National Medical Practice Guideline. ISTC now has a legal frame with legal obligation. Following PNPK/ISTC standards is now mandatory among clinicians in Indonesia.

Advocacy, communication and social mobilization (ACSM) activities are being scaled up in different provinces. National Stop TB Partnerships Forum Indonesia was established on 30 May 2013, aiming to accelerate social and political action to stop the spread of TB in Indonesia. The members of the Forum Indonesia include 65 organizations/institutions, which can be grouped into eight categories: government, community-based organizations, academia, professional associations, the private sector, health-care institutions, international partners and individuals. Active community engagement is an important component of TB control activities: in 2013, data about community involvement were reported by 9% of BMU, showing that 42% of TB cases notified by these BMUs were cases referred by community health workers /community volunteers. Community health workers / volunteers also provided treatment adherence support to patients who have high potential to default; among patients that received this support the treatment success rate was 54% that can be considered the risk reduction of “lost to follow-up”. Indonesia is implementing a recording and reporting system to better capture the contribution of community involvement to TB notification and treatment outcomes, and in 2013, was among the few countries able to report some data.

Indonesia relies on a network of 5566 smear microscopy laboratories, corresponding to 2.2 laboratories per 100 000 population; in 2013, EQA was conducted in 47% of smear microscopy laboratories and 75% showed acceptable performance. Efforts to expand and strengthen the national laboratory network are ongoing, with assistance from the SNRL in Adelaide, Australia. In 2014, there were 46 laboratories capable of constructing for culture test of which 18 are quality-assured for culture and 10 have been certified for DST. DST for SLD is available in the country and LPA is in use in two laboratories. In 2014, Xpert MTB/RIF roll-out expanded to 41 sites, from 23 in 2013, and 9305 cartridges were used. Xpert MTB/RIF was included into an algorithm as the initial diagnostic test for the diagnosis of DR-TB among persons at risk, for TB in persons at risk of HIV-associated TB and CTB.

The number of retreatment cases is steadily below 3%, and reported failure to first-line treatment is low (steadily around 0.5%). However, these data are mainly from DOTS centres; data from the private sector and non-NTP public sector are not yet extensively captured by the NTP. There are no nationwide representative data on prevalence of MDR-TB. Sub-national DRS have been conducted in Mimika District (2004), showing 2% MDR-TB cases among newly diagnosed TB cases,

and in Central Java province (2006) showing MDR rate of 1.8% among the new cases and 17% among re-treatment cases. Another DRS conducted in 2010 in East Java province revealed MDR prevalence of 2% and 9.7% among new and retreatment cases respectively. Indonesia is planning to conduct a national DRS using a new algorithm that includes Xpert MTB/RIF to screen specimens for rifampicin resistance and identifying those requesting further testing. By 2013, Drug Resistance Sentinel Surveillance was implemented in six provinces and will be expanded gradually, following the country PMDT expansion. The sentinel DRS is aiming to provide data geographically representative of the whole country. In 2013, 39% of retreatment cases notified was tested for DST, representing a significant increase from 10% in 2012. Among cases (all types) tested in 2013, 20% were confirmed RR/MDR-TB cases. Taking into account the lessons learnt from DR TB sentinel surveillance 2012–2013 and the National TB Prevalence Survey 2013, NTP had decide to conduct a national DR-TB survey in 2015 as a first step to regular DR-TB surveillance.

Even if MDR-TB prevalence is considered to be low, due to the large size of population and the number of TB cases reported annually, Indonesia is one of the 27 MDR-TB high- burden countries worldwide. In 2009, national PMDT was started, treatment guidelines developed and MDR-TB diagnostic and treatment services commenced at two urban sites. By Q4 of 2014, there were a total of 28 PMDT referral centres, 10 sub-referral centres and 777 treatment centres across the country. M/XDR TB specific strategies and interventions include further expansion of PMDT sites, policy for ambulatory treatment, “borderless approach” and integration of PMDT services into the National Health Insurance system (New ICD-10 coding for DR-TB presumptive and confirmed cases). In 2013, 502 MDR-TB and 346 RR-TB cases were detected and by December 2014, 1685 RR/MDR-TB cases were detected, showing a steadily increasing diagnostic capacity compared to previous years. In 2013, 587 confirmed MDR-TB cases and 222 RR-TB patients were initiated on second-line standard treatment; an additional 1248 MDR-TB cases (confirmed or unconfirmed) were started on treatment by December 2014. Among the 2011 cohort of MDR-TB patients enrolled for treatment, the success rate was 60%, the death rate was 15% and “lost to follow-up” 24%. In 2013, 441 MRD-TB cases were tested for resistance to SLD; 14 XDR-TB cases were diagnosed and 10 started XDR-TB treatment. Of the six XDR-TB cases started on treatment in 2011, three were cured or completed treatment and three were “lost to follow-up”.

It is estimated that the prevalence of HIV among the adult population is 0.4% nationally, and there are an estimated 591 000 PLHIV in the country. While HIV is characterized as a concentrated epidemic in Indonesia, it is at the stage of a generalized epidemic in Papua province, with an HIV prevalence of 2.4% in the general population. The estimated number of people co-infected with TB/HIV is 15 000 (ranging between 8700 and 20 000) and Indonesia is listed among the 41 TB/HIV high-burden countries. The estimated prevalence of HIV among incident TB cases is 3% nationally. In some provinces, the reported TB/HIV co-infection rate is reported to be much higher, e.g. in Papua (14%) and Bali (3.9%). The national policy for TB-HIV collaboration activities is in place and guidelines and training materials have been developed. The NTP has revised the recording and reporting system, to include the information on TB-HIV. By the end of 2014, there were a total of 1391 health facilities provided with voluntary confidential counselling and testing (VCCT) and provider-initiated HIV testing and counselling (PITC), and 448 health facilities provided care, support and treatment, including 328 ARV hospitals and 120 satellites. The top priority of NTP is to provide quality DOTS services at all ART facilities. Currently, 200 CST facilities are implementing DOTS. Facilities for CD4 counts are available in 181 health facilities across the country. In 2014, 2% of TB cases were reported being tested for HIV. However, this low proportion was mainly due to delay in completeness of reporting due to the transition to web-based system for reporting and difficulty related to the different format of TB register previously in use. Of the TB patients tested, 33% were HIV-positive; 7621 TB patients tested for HIV, of which 1599 (21%) were HIV positive, and 477 (30%) were on CPT and 332 (21%) on ARV respectively. However, the indicators for TB/HIV activities are better when considering reports from TB/HIV sites: in 2013 in 63 TB/HIV sites, among 12 904 TB patients 2074 were tested for HIV (16%): 856 (41%) were HIV-positive, 410 (48%) started/continued on ARV and 720 (84%) are put on CPT. IPT pilot was successfully completed in four hospitals: 205 out of 281 (73%) PLHIV received IPT and 167 (81%) of the patients completed 6/12 months regimen. In 2014, NTP scaled up implementation of IPT to 33 hospitals in eight provinces, so that by late September 2014, 5805 PLHIV were screened for TB, 649 were eligible for IPT and 375 (58%) were initiated on IPT.

A comprehensive HRD plan is in place and a focal point for HR has been designated at the central and provincial levels. Drug management is showing good improvement; there is generally a good supply of FLD and SLD at all levels. All PMDT sites were trained in management of SLD to ensure availability of stocks. Since 2010, all FLD were procured using Government of Indonesia budget. In the last three years, no drug stock-outs have been reported.

Indonesia is transitioning to a full national web- and case-based electronic recording and reporting system; by the end of 2014, more than 87% of districts level reported through SITT (Integrated TB Information System). The next phase of SITT where health facilities are able to upload their data directly into the web is under progress. However, several challenges such as lack of human resource capacity and internet infrastructure in many parts of the country are hampering the process. In 2013, a national assessment of the TB surveillance system was undertaken using the newly developed WHO “Checklist of standards and benchmarks for TB surveillance and vital registration systems”; results showed that 97% of all districts reported data, but since TB reporting is not a legal requirement, not all TB cases were reported to NTP. On the basis of identified gaps, a list of costed priority activities was outlined: among others, the implementation of mandatory notification policy, scaling up the sample vital registration system, implementation of DRS or DR sentinel surveillance, implementation of nationally representative survey of HIV prevalence among TB patients, and inventory study to assess level of underreporting. An investment plan was developed and financing was secured for implementation in collaboration with NPT, WHO and GF. As per recommendations, DR sentinel surveillance is being expanded, DRS is being planned, and on September 2014 a protocol for an inventory study was developed during a workshop held in Indonesia and also targeting other four high-burden countries.

NTP’s plan and budget are aligned with the national health sector development plan. However, in the past, there were challenges due to the decentralization of health services down to district level. In 2011, NTP formulated a policy known as “exit strategy”, anticipating less reliance on external funding and by mobilizing funds at the sub-national level for programme operational costs and funds from universal health coverage insurance scheme for patients costs. In 2014, domestic funds contributed to 13% of the overall budget and the funding gap was 57% of the estimated budget needs for that year.

The Indonesian programme has received support from several sources including the GF (round 8, 10 and SSF) and USAID through TB CARE I. A joint TB/ HIV CN for the NFM of the GF was submitted and under development and budget allocated for TB NFM is around US\$ 30 million. Indonesia is a recipient under the EXPAND-TB project aimed at strengthening laboratory capacity and uptake of newer tools. Technical assistance is being provided by WHO, KNCV, MSH, Family Health International 360 (FHI360), Japan Anti-TB Association (JATA), ATS, Union and IVMS.

Major achievements

PMDT:

- (1) Long-term PMDT plans (2015–2019) finalized in thirty-three provinces (out of 34 provinces in the country) aiming to achieve universal access of DR-TB patients by 2018;
- (2) increased RR/MDR TB diagnosis and treatment capacity;
- (3) PMDT services provided in 28 provinces;
- (4) further decentralization of PMDT services: 64% of MDR-TB patients continuing treatment at satellite health centre (452/708 MDR TB patients as per September 2013);
- (5) financial support for PMDT expansion plan and implementation, including training, renovation, networking, treatment and patient support continued by GF. HR strengthening supported by GF by hiring 17 provincial PMDT technical officers and five similar positions at the national level.

Laboratory:

- (1) ten laboratories certified for FLD DST and quality assured by SRL IMVS Adelaide, including five also for SLD DST; eight other laboratories in the pipeline for certification; and
- (2) additional 43 Xpert MTB/RIF machines under procurement to support PMDT expansion.

TB/HIV:

- (1) thirteen highest HIV-burden districts implementing the test and treat policy resulting in an increased number of testing of TB and HIV patients; further scale-up planned for more districts;
- (2) coverage of CPT and ARV increasing among HIV-positive TB patients and IPT implementation being expanded, following the successfully completed pilot;
- (3) All 33 provinces initiated their TB-HIV plans; and
- (4) Xpert MTB/RIF used for diagnosis of TB in HIV patients in 38 ART hospitals.

PPM:

- (1) hospital accreditation for TB services implemented; 26 hospitals accredited so far;
- (2) ninety-seven pulmonologists engaged by NTP through Indonesian pulmonologist associations in Jakarta and Banten provinces; further scale-up to six other provinces is underway; and
- (3) of 382 prisons and detention centres, 221 implemented DOTS (58%), 181 (47%) conducted entry screening, and 35 (9%) conducted mass screening annually; twenty-six large prisons have TB/HIV services; success referral rate was 79%, the treatment success rate for new cases 80% and for retreatment cases 50%; as many as 31 MDR-TB patients in the prison system have been identified and put on treatment.

Others:

- (1) national prevalence survey completed;
- (2) National TB Control Strategic plan for 2016–2019 was finalized in December 2014;
- (3) National medical guideline for TB (PNPK) was finalized and disseminated; official launch of this document occurred during 2014 World TB day commemoration;
- (4) E-TB Manager is being implemented in almost all PMDT sites (100% referral centres and 80% sub-referral centres);
- (5) electronic web-based TB information system phase 1 implemented in all 33 provinces to strengthen the national TB surveillance system; SITT phase 2 is under training and dissemination process;
- (6) further development to synchronize TB data with the health information system underway; first links developed for ETB Manager and SITT.

Major challenges

PMDT:

The following are the main challenges faced by the NTP.

- (1) While TB control is largely funded through the NTP, it is critical that the provinces/districts fund certain components of PMDT through their budgets. Provincial/district commitment for PMDT varies, depending on the perceived priority for TB and MDR-TB.

- (2) When staffing at the provincial health office is inadequate, it may result in disconnection between the clinical (at hospital level) and programmatic services.
- (3) Despite availability of free diagnostic and treatment services to MDR-TB patients, there are several direct and indirect costs borne by the patients (i.e. cost of travel, time required adhering to clinic-based DOT, loss of employment). These constraints have an impact on treatment adherence and outcomes. While the scope of insurance coverage is expanding in Indonesia, it still does not sufficiently cover all costs; many of the costs are on reimbursable basis which means that the patient will have to spend first, and reimbursement often implies excessive bureaucracy and paper work.
- (4) As the programme shifts to electronic recording and reporting (R&R), some initial difficulties have been observed in logistics management if the data entry is not complete or timely.
- (5) A very low proportion of retreatment cases are being notified (main reason appears to be misclassification of retreatment cases as new cases due to inadequate history taking) and this reduces the chance of early screening for drug resistance.
- (6) Although there has been significant reduction in treatment delay for MDR-TB cases, delays up to six months were observed; a significant proportion of diagnosed MDR-TB cases (as high as 20–30% in certain large hospitals) is not placed on treatment.
- (7) While the treatment success rates were good for the 2009 and 2010 cohorts, high levels of “lost to follow-up” and death amongst the enrolled MDR-TB patients (15% and 24% respectively) for the 2011 cohort were observed.
- (8) NTP and clinicians face problems on availability of additional SLD. There are also very limited options for constituting a regimen for pre-XDR and XDR.
- (9) Many of the satellite centres are not fully aware about the management of adverse events for mild side effects and unnecessarily refer them to the referral hospitals; this practice often leads to delays and improper management.

Laboratories:

- (1) The roles and responsibilities of the laboratory regulatory body under MoH (BPPM/ BUK) are not well executed and NTP still engaged into laboratory strengthening issues;
- (2) EQA for smear microscopy is weak;
- (3) NRL lack capacity to undertake their roles more effectively;
- (4) There is a huge gap regarding existing laboratory infrastructure, equipment, HR to meet needs for C/DST laboratory expansion and support Xpert MTB/RIF training and supervision;
- (5) There is under-utilization of Xpert MTB/RIF, due to weak patient referral and/or the absence of a rapid and reliable system for movement of specimens/isolates across the network.

TB/HIV:

- (1) There is no official structure for TB and HIV/AIDS programme coordination at national level with sufficient staffing to monitor TB/HIV collaboration activities; some provinces/districts/health facilities do not have TB/HIV forum/ working group. Joint planning and M&E also not regularly done.
- (2) There is no systematic national surveillance among TB patients.
- (3) Coverage of HIV testing among TB patients and number of TB HIV patients with ARV is still low. Scale up of IPT is limited.
- (4) There is limited access to Xpert MTB/ RIF and the number of health facilities with Xpert MTB/RIF to diagnose TB in HIV patients is still low.
- (5) There is intermittent dosage at the continuation phase.

PPM:

- (1) Cure rates of patients treated in hospitals are low (only 50% in private hospitals and 66% in public hospitals) due to high loss to follow-up rates (around 15%).
- (2) Large majority of private providers are not yet engaged and not implementing national TB standards and guidelines; limited number of private providers engaged in PMDT.
- (3) Limited resources are available for prisons to implement TB including MDR and TB/HIV activities.

- (4) Diagnosis of TB in children is still low. Tuberculin tests are not available in all health facilities and many paediatricians do not follow the diagnostic algorithm.
- (5) The volume of TB drugs circulating in the private sector is larger than in NTP and irrational drugs use is widespread.
- (6) Reaching the unreached and underserved population (poorest, remote, borders, islands and migrants areas) is a challenge.
- (7) There is low notification of TB cases from all health providers. A significant proportion of TB patients seek care in health facilities which do not notify the cases to TB programme.
- (8) Mortality estimation is difficult, because no systematic cause of death recording is in place in the districts and provinces.

Activities planned for 2015

Following activities are planned for 2015:

Intensified case-finding:

- generating demand for services by increasing public knowledge of TB symptoms and how to access services;
- conducting active case-finding among vulnerable populations and in geographic areas of high burden;
- systematically tracing and evaluating household contacts of PTB cases;
- establishing and implementing mandatory case-notification for all providers;
- maintaining and improving the quality of basic TB services at all levels;
- expanding the availability of diagnostics to detect smear-negative, extra-pulmonary, and DR-TB in adults and children;
- conducting an inventory study to measure the magnitude of TB under-notification.

PPM:

- expanding hospital engagement with a focus on proper referral, reducing in default rate, and linking all general hospitals with the DOTS and PMDT network;

- expanding private provider engagement by implementing the certification scheme being developed by the Indonesian Medical Association, and scaling up successful pilots of the Indonesian Pulmonologist Association/Indonesian Medical Association;
- engaging provincial and district branches of professional organizations, in particular the Indonesian Medical Association (IDI), Indonesian Nurses Association (PPNI), and the Indonesian Pharmacist Association (IAI) to promote rational drug use, adoption of standardized TB treatment regimens, and patient adherence support; and
- expanding treatment services to keep up with the increased demand, including quality-assured drug supplies, trained HR, and patient-centered support for treatment.

Childhood TB (CTB):

- establishing community-based contact investigation and provision of IPT for exposed children < 5 years of age;
- establishing integrated TB screening in MCH, nutrition, and HIV programmes and providing community outreach and education about childhood TB;
- expanding and strengthening health provider engagement in providing paediatric TB services; and
- improving access to and ensuring the quality of CTB diagnostic and treatment services.

TB/HIV:

- developing and/or strengthening mechanisms for TB and HIV programme collaboration at national, provincial and district levels, with first priority to areas of high burden;
- intensifying TB case-finding among PLHIV and those at risk for HIV;
- offering HIV counselling, testing, and prevention to all TB patients, with implementation of opt-out testing in high-HIV burden areas;
- providing integrated high-quality treatment for TB/HIV patients (one-stop service);

- scaling up IPT in all ART referral hospitals, primary health centres, prisons, and military settings; and
- implementing infection control measures (the TemPO strategy) in health facilities treating TB, MDR-TB, and HIV patients and providing national guidelines on facility design that promote good airborne infection control.

PMDT:

- preventing the spread of drug-resistant forms of TB through universal access to high-quality services for DR-TB and infection control in health facilities and the community;
- providing patient-centred care for all MDR-TB patients including adherence support;
- strengthening political commitment to PMDT at all levels and mobilize resources through partnership with stakeholders and community-based organizations;
- improving management and ownership of PMDT services at the sub-national level; and
- conducting a national DRS to support an assessment of burden and plan for PMDT scale-up.

Others:

- advocating to increase commitment and contribution from local governments to support TB control through civil society involvement;
- engaging National Health Protection System (SJKN) to cover TB service expenditure;
- supporting initiation of TB and diabetes collaborative activities;
- supporting capacity strengthening of TB staff on DOTS, PMDT, TB/HIV and other key areas; and
- collaborating with all partners to prevent problem of drug and commodity stock-out.

Figure 35: Case-notifications by type of patients, 2013

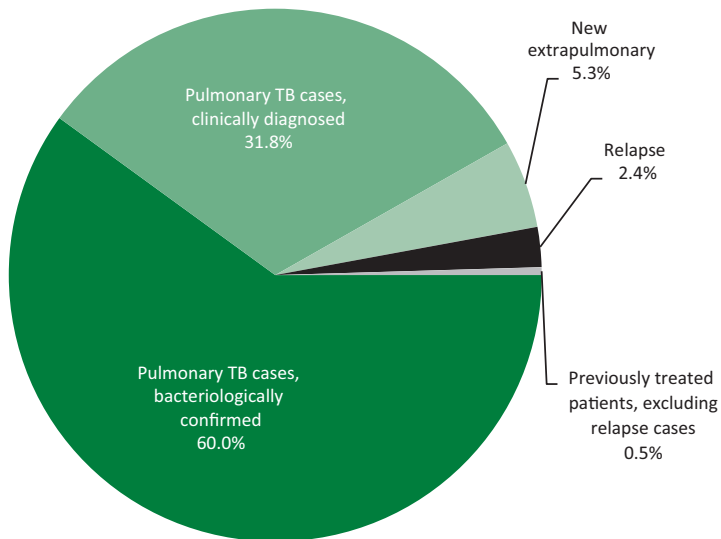


Figure 36: Trends in TB case-notifications, 1995–2013

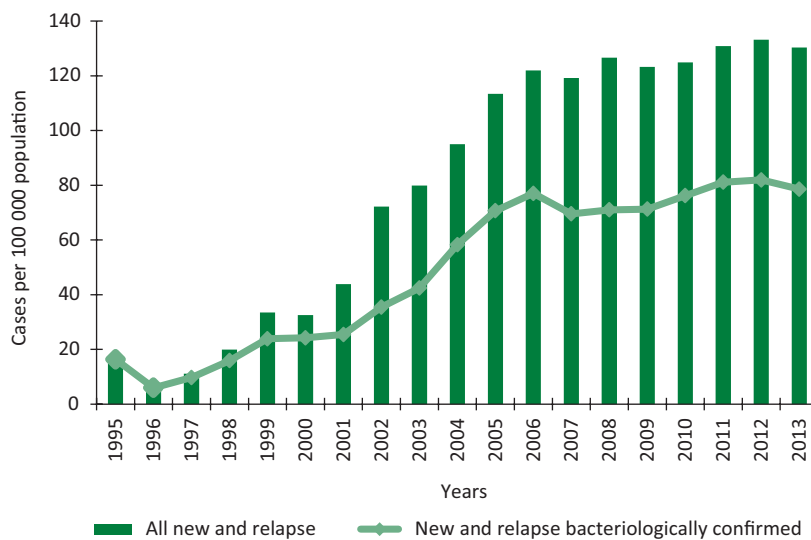


Figure 37: New (all types) and relapse TB cases by sex and age groups per 100 000 population, 2013

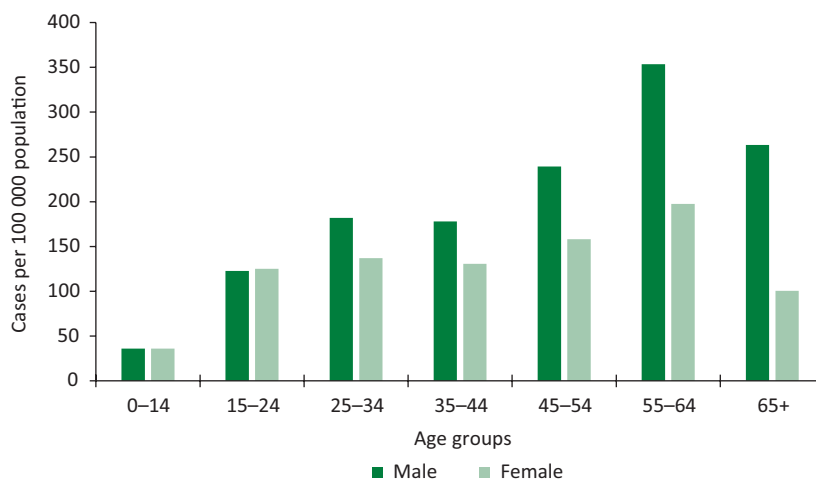


Figure 38: Treatment outcomes by type of cases, 2012 cohort (2011 cohort for RR/MDR-TB cases)

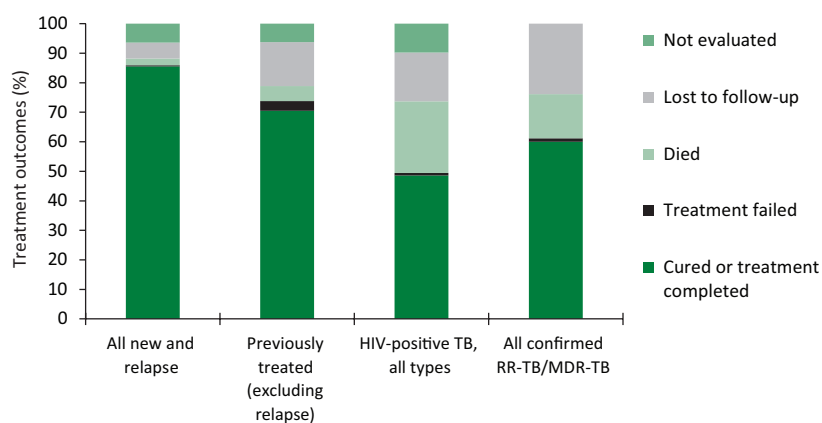


Figure 39: Trends in treatment success rate by type of cases, 1995–2012

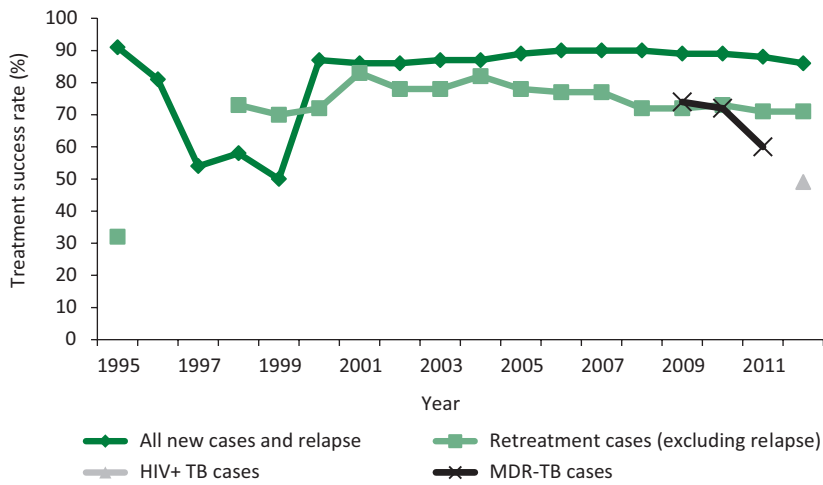


Table 14: Estimates* and notification rates for 2013, Indonesia

Population**	249 865 631
Incidence of all forms of TB	460 000 (410 000–520 000)
Incidence rate of all forms of TB (per 100 000 population per year)	183 (164–207)
Prevalence of all forms of TB	680 000 (340 000–1 100 000)
Prevalence rate of all forms of TB (per 100 000 population per year)	272 (138–450)
TB death rate (of all forms of TB, excluding HIV per 100 000 population per year)	25 (14–37)
Number of new (all forms) and relapse TB cases notified	325 582
Notification rate of new and relapse TB cases (per 100 000 population for the year 2013)	130
Notification rate of new bacteriologically confirmed cases (per 100 000 population for the year 2013)	79
Case-detection rate (all forms of TB)	81 (59–118)
Treatment success rate (%) of all new and relapse TB cases for 2012 cohort	86

**Source: United Nations, Department of Economic and Social Affairs, Population Division (2013). World Population Prospects: The 2012 Revision, DVD Edition.

Maldives

With a population of about 345 000, Maldives has an estimated prevalence and incidence rate of all forms of TB at 57 and 40 respectively per 100 000 population. The notification rate of all forms of TB and new smear-positive cases was 33 and 23 respectively, showing no change compared to 2012, but a relative increase of bacteriologically confirmed cases; in the last two years, the notification rate was higher compared to a steady decrease in the previous five years. Nine percent of TB cases were diagnosed among migrant workers. Treatment success rate among new and relapse cases (all types) was 79% for the cohort of patients registered in 2012. Treatment success rate is below the 85% target since 2007, with the exception of 2011 cohort, mainly because of defaulters and non-evaluated cases (the latter are 14% in 2012 cohort).

The NTP of the Health Protection Agency (HPA) continues to act as a central body for registration, planning, monitoring and evaluation of the TB control activities since its establishment in 1976. In 2013, the NSP for TB control 2014–2018 was developed. Continuous support has been received from WHO and from curative services both in the public and private sectors in the country, in TB case finding, treatment, record keeping, follow-up of TB patients and contact-tracing activities. In 2013, only two cases were reported by non-NTP public providers. All anti-TB drugs are available only through the government-run national TB control programme.

The main objectives of NTP are to effectively improve and strengthen TB preventive activities, in addition to diagnosis and treatment of TB cases. In this regard, establishment of critical infrastructure and HRD for intensified case-finding, early case detection and strengthening the microscopy network are critical. In 2013, there were 70 smear microscopy laboratories; EQA was not conducted for any laboratory. There is one culture facility in the country. DST, if deemed clinically necessary, is undertaken by shipment of samples to NTI, Bangalore, India, which is the designated SNRL for the country. MDR-TB patients are managed clinically at the Indira Gandhi Memorial Hospital in Malé, and treatment is based on individualized regimens. SLD for the management of these

cases are procured by the Ministry of Health on a case-by-case basis through GDF. In 2013, six patients were tested for drug resistance but no RR/MDR-TB case was detected. Of the four MDR-TB cases enrolled on treatment in 2011, one completed the treatment, one was “lost to follow-up” and two died.

At present, priority has been given to improve and strengthen the TB preventive activities, raise awareness, and to cure as many patients as possible and to provide better services to the community. In this regard efforts have been made to improve the quality of services in terms of case-holding and case management. Work has been initiated to establish diagnostic facilities at regional and atoll levels. Regular mass screening for high-risk populations, such as prison inmates and drug users is done. As a result of the intensified activities, the programme has maintained the same trend of TB prevalence for the past few years. Also, the programme has made efforts to develop close coordination and collaboration with other health establishments, especially private health care institutions, in identifying and accurately reporting identified cases. Social mobilization for increased community involvement, collaboration with civil society organizations (such as Journey and Society for Health Education), and utilization of available services and strengthening NTP management have been identified as key areas.

Available data suggest that TB is relatively uncommon in Maldives; HIV prevalence is estimated to be less than 0.01% in the adult population and TB/HIV is not a major problem yet. HIV testing for all TB patients who are above 15 years was initiated in December 2011. In 2013, 10 TB patients were tested for HIV and none resulted positive.

Funding for TB control activities is domestic, and in 2014, the estimated funding gap was 18%. NTP is technically supported by WHO and benefits from an on-going grant from GDF for FLD.

Major achievements

NTP has achieved the following.

- NTP continues to show excellent case detection and treatment success rates and in the overall quality of DOTS services.
- Diagnosis and treatment policies are in accordance with WHO guidelines.

- Quality assured, WHO-recommended FLD and SLD are purchased from GDF through ministry of health funds and provided free of charge to patients.
- Direct observation of the treatment for full course of treatment is in place due to the well-functioning DOT centres at all health facilities.
- Screening of all HIV-positive cases for active TB is in place in collaboration with the HIV programme since 2003 and all TB-positive cases for HIV began treatment from 1 December 2011 onwards.
- All the contacts of sputum-positive TB patients are identified and screened.

Major challenges

The main challenges faced are:

- There is shortage of human and financial capacity to implement, fully control and coordinate all TB-related activities in the country.
- No quality control has been carried out for smear microscopy.
- No capacity is available in the country for DST: no adequate system of sputum transport has been established with external TB laboratory for DST for diagnoses as well as for follow-up for X/MDR TB patients.
- Levels of collaboration between all care-providers and the NTP are inadequate.
- Ensuring adequate supervision and monitoring of DOTS centres in the regions and atolls is a challenge.
- A strong stigma is associated with TB which may prevent diagnosis or lead to primary default after diagnosis.
- Patients frequently seek medical care from other countries, which do not follow any set policy with regard to anti-TB drugs; this has led to the emergence of drug resistance in the Region.
- The social stigma attached to the disease lingers as a residue in people's minds as an incurable/fatal condition. Changing this takes time.

Activities planned for 2015

The following activities are planned for 2015:

- finalization and endorsement of the NSP for TB control in Maldives 2015–2019;
- review and revision of the national guideline for PMDT and the national guideline for TB control;
- development of treatment guidelines, SOP and protocols for TB screening in special institutions;
- strengthening tuberculosis surveillance and monitoring;
- promotional activities to mark the World TB Day – 2015; and
- conducting DOTS administration training for health-care providers.

Figure 40: Case-notifications by type of patients, 2013

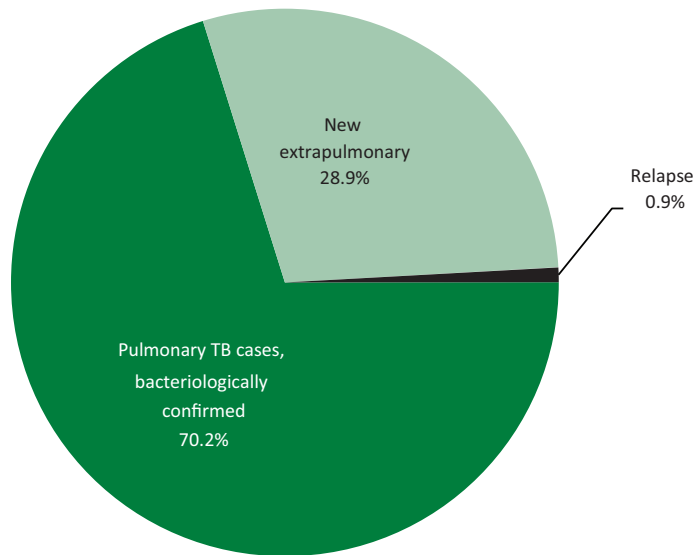


Figure 41: Trends in TB case-notifications, 1995–2013

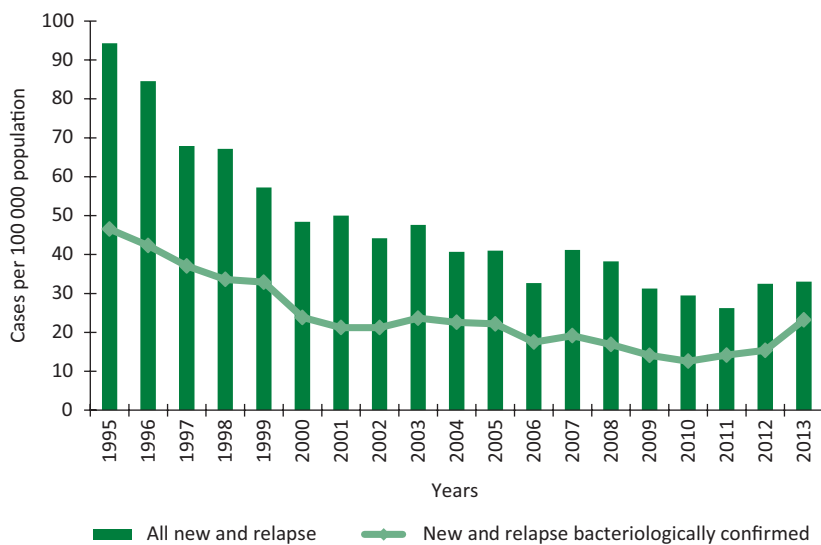


Figure 42: New (all types) and relapse TB cases by sex and age groups per 100 000 population, 2013

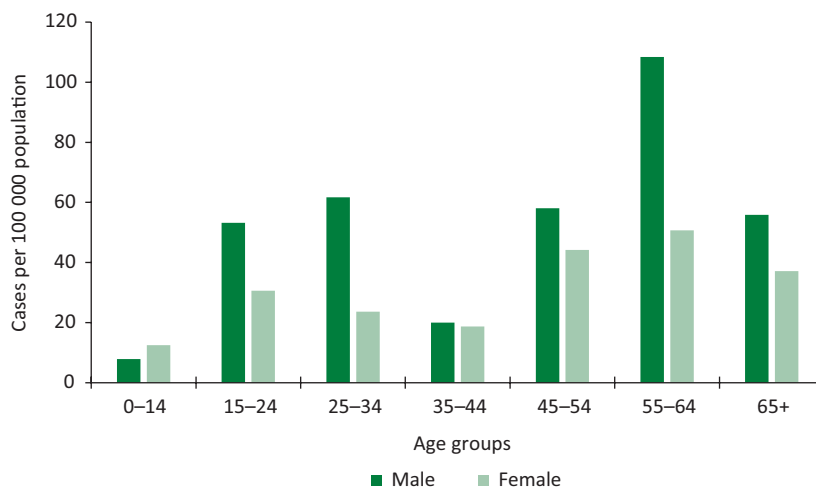


Figure 43: Treatment outcomes by type of cases, 2012 cohort (2011 cohort for RR/MDR-TB cases)

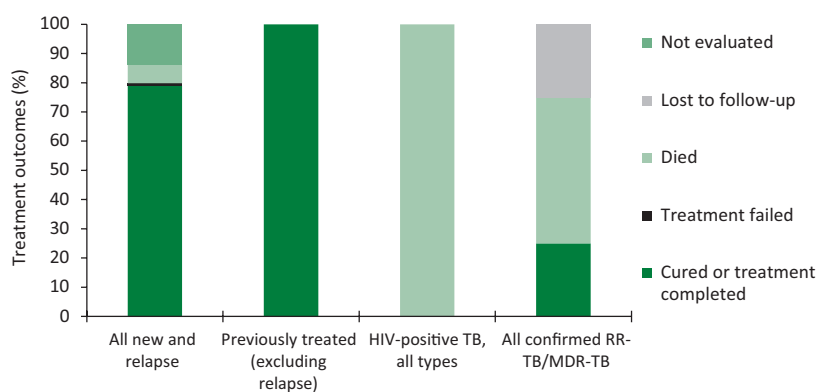


Figure 44: Trends in treatment success rate by type of cases, 1995–2012

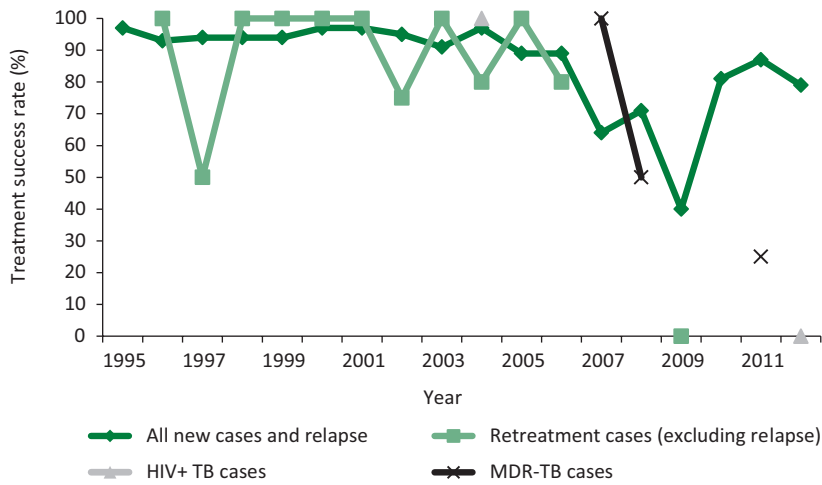


Table 15: Estimates and notification rates for 2013, Maldives

Population*	345 023
Incidence of all forms of TB	140 (120–150)
Incidence rate of all forms of TB (per 100 000 population per year)	40 (34–44)
Prevalence of all forms of TB	200 (94–340)
Prevalence rate of all forms of TB (per 100 000 population per year)	57 (27–97)
TB death rate (of all forms of TB, excluding HIV per 100 000 population per year)	2.2 (1.8–2.6)
Number of new (all forms) and relapse TB cases notified	114
Notification rate of new and relapse TB cases (per 100 000 population for the year 2013)	33
Notification rate of new bacteriologically confirmed cases (per 100 000 population for the year 2013)	23
Case-detection rate (all forms of TB)	83 (75–97)
Treatment success rate (%) of all new and relapse TB cases for 2012 cohort	79

*Source: United Nations, Department of Economic and Social Affairs, Population Division (2013). World Population Prospects: The 2012 Revision, DVD Edition.

Myanmar

Myanmar is among the 22 countries with the highest burden of TB worldwide and TB control is a priority in the country's National Health Plan. The country endorsed the Stop TB Strategy 2007 and started implementation of the broad spectrum of TB control activities in the entire country.

Based on the results of the prevalence survey conducted in 2009–2010, WHO revised the estimated prevalence and incidence rates of all forms of tuberculosis upward. For 2013, these rates were estimated to be 473 and 373 respectively per 100 000 population. Data from the prevalence survey were suggestive of significant ongoing transmission; however, a downward trend of smear-positive symptomatic TB was also shown. To better assess trends in TB burden, Myanmar is planning to repeat the prevalence survey in 2017. The 2010 survey provided important information about reasons for missing cases that is being used to improve case-finding strategies.

In 2013, the notification rates of all forms of TB (including all new cases and relapse) was 253 per 100 000, reverting the slightly increasing trend for all TB cases observed since 2008; given that since 2008, the notification rate of new bacteriologically confirmed cases is fairly stable around 80 per 100 000 population, annual variation is related to new extra-pulmonary cases, whose proportion among new cases is consistently decreasing, and clinically diagnosed PTB cases. The decrease in clinically diagnosed TB cases is partially due to improved management of CTB to address over-diagnosis. Treatment success rate among all new cases was 89% for the cohort of patients registered in 2012; among retreatment cases (including relapses) registered in 2012 the success rate was 70.8% and the death rate was 11.6%.

The reference laboratories in Yangon and Mandalay perform cultures and first-line DST (both conventional method and rapid test); a third laboratory (in Taunggyi) is performing solid cultures only. Second-line DST is being undertaken at the SNRL in Bangkok. With support from EXPAND-TB (Expanding Access to New Diagnostics for TB) the two national reference laboratories have been equipped with liquid culture, FLDST, and rapid immunoassay for species identification and

LPA for rapid diagnosis of MDR-TB. With the upgraded laboratory capacity, MDR-TB can be detected within three to seven days. Myanmar is one of the countries participating in UNITAID's TB Xpert project, aiming to expand the availability and use of Xpert MTB/RIF: by the end of 2013, Xpert MTB/RIF was implemented in 24 sites and 14 246 tests were performed. Xpert MTB/RIF assay was included in an algorithm as the initial diagnostic test for TB in persons at risk of HIV-associated TB and for the diagnosis of drug-resistant TB among persons at risk. The number of smear microscopy laboratories is being constantly expanded and increased from 464 in 2012 to 486 in 2013, almost reaching the target of one laboratory per 100 000 (this indicator was 0.94 in 2013); according to EQA carried out in 97% of the laboratories, 98.6% reported slide concordance rate.

Myanmar is on the list of the 27 MDR-TB high-burden countries worldwide. The third nationwide DRS, carried out in 2012–2013, had shown an MDR-TB prevalence of 5% (95% confidence interval (C.I.): 3.1%–6.8%) among new and 27% (95% C.I.: 15.0%–39.2%) among previously treated cases. The latter result is significantly higher than the 2008 DRS survey. The Ministry of Health has established an expert committee on drug-resistant TB including chest physicians, general physicians, ART physicians, paediatrician, microbiologists and other staff from NTP, WHO and NGOs, to oversee the national response. After the conclusion of a GLC-approved pilot project for treatment of MDR-TB (301 patients enrolled among category II failures, with a cure rate of 71%), the NTP is mainstreaming MDR-TB management as a routine programme component. A MDR-TB scale-up plan was developed to build capacity for diagnosis, treatment and care for 10 000 MDR-TB patients over five years; in April 2011, r-GLC GF the expansion of MDR-TB management with financial support of the GF and Three Diseases Fund. In 2013, new MDR-TB guidelines were launched. In 2014, 14 regions/states and 68 townships had diagnostic capacity through Xpert MTB/RIF and MDR-TB treatment centres: there are plans to expand MDR-TB diagnosis, treatment and care to all regions/states by 2016. Information on testing for drug resistance (through any of the WHO approved tests) in 2013 is provided by selected sites and townships and, although these indicate a high percentage of testing among new and retreatment cases, data could not be considered representative of the entire country. In 2013, 881 MDR-TB cases were diagnosed, being around 10% more than cases detected in 2012; additionally 87 RR-TB were diagnosed. Although the diagnostic capacity increased remarkably, the gap between cases detected and started on treatment was important, as 667 patients were started on second-line treatment in 2013.

However, the gap between diagnosed and treated cases seems to be reducing: in fact, between January and June 2014, 587 of the 738 MDR-TB cases detected were started on treatment. In 2013, among the 71 MDR-TB cases tested for SLD resistance, only one XDR-TB case was detected. Treatment success rate for all MDR-TB cases enrolled on treatment in 2011 was 71%; 11% were “lost to follow-up” and 17% died; considering exclusively the PMDT cohort (from Yangon and Mandalay of 50 patients) the success rate was 80%.

While the national prevalence of HIV infection is estimated at 0.47% of the adult population in 2013, the prevalence of HIV among TB patients was reported to be 9.2% (confidence intervals: 8.2%–10.2%), based on data from the 2013 HIV sentinel survey. At the end of 2013, TB/HIV collaborative activities are being implemented jointly by NTP and the National AIDS Programme in 28 sites. HIV screening for TB patients is presently available through 28 VCCT sites. CPT was included in national guidelines. Data for TB/HIV collaborative activities conducted in 2013 in these 28 sites were reported by the Union, MSF-Holland, MSF-Switzerland and MDM: 12% of all TB patients were tested for HIV and 32% of them were found positive; 89% of TB/HIV co-infected patients were receiving CPT and 74% of them were receiving ART (slightly lower proportion than in 2012). Of 8463 known HIV-positive patients belonging to the 2012 cohort, the treatment success rate was 69.6%.

A pilot project to provide IPT to PLHIV was conducted in nine townships and 3134 PLHIV were reported being provided with IPT between August 2009 and June 2012. From 2013 the IPT is being mainstreamed but the uptake remains low.

An update of the five-year Strategic Plan 2011–2015 was released in 2012. It was developed in light of the prevalence survey results and the recommendations of the joint monitoring mission conducted in November 2011. This plan and its budget are aligned with the national health sector development plan. A TB Diagnosis Plan was developed covering the period 2014–2018. It outlines the NTP’s goals of increasing access to quality-assured AFB microscopy, quality X-ray exam and reading, and rapid laboratory diagnosis in order to diagnose TB among AFB-negative patients, especially PLHIV and MDR-TB among people at risk for M/XDR-TB.

To address the component of increasing case-finding, NTP has engaged private providers through partnerships with the Myanmar Medical Association and the Sun Quality Health network of PSI, which together accounted for 21% of

TB notifications (all forms) in 2013 nationally. Other national and international NGOs have developed community programmes aimed at identifying and referring presumed TB cases. The collaboration with non-NTP public providers, such as public hospitals and prisons, was contributing 3% of TB notifications. With support of The Union and Population Services International (PSI), two projects on innovative approaches to increase case-finding and early detection (TBREACH initiative) were implemented in 2012. The Union as well as PSI adopted an active approach at the community level, with PSI also engaging private pharmacies and drug sellers. Guidelines on community involvement in TB prevention, care and control were developed with national and international partner organizations. Myanmar was among the few countries able to report data on community referral from all BMU: the number of cases referred by community health workers and/or community volunteers was 1% of all TB cases notified in 2013 nationwide (the contribution was much higher within the communities where these activities were implemented); among TB patients receiving treatment adherence support (data reported by 45% of BMU) treatment success rate was 85%.

NTP is being supported by increased funding from the government (15% of the 2014 estimated budget was from domestic sources), supplemented significantly by funding from external sources such as GDF GF, Japan International Cooperation Agency (JICA), USAID, UNITAID, WHO, TBREACH, and the Three Millennium Development Goals (3 MDG) Fund. However, in 2014, there was a funding gap of 35% of the estimated budget for TB control activities.

Myanmar was one of the early applicants under the NFM, covering the period 2013–2016. Grant agreements have been signed with two principal recipients for a combined amount of up to US\$ 90.8 million for the four-year period.

Major achievements

The achievements of NTP are as follows.

- Major expansion of MDR-TB has taken place with a significant reduction in the number of patients on the waiting list for treatment and good programme outcomes have been maintained.
- NTP was successful in securing additional funding from GF (US\$ 18.6 million on top of what was committed through NFM), 3MDG Fund (US\$ 38 million) and USAID, resulting in a much reduced funding gap for the coming three years.

- A DRS was successfully completed. Results have been used to steer the programme (e.g. fast-tracked coverage for MDR-TB for Yangon Region).
- Guidelines were developed for active case-finding in various settings. Dedicated action control teams were constituted, composed of NTP and NGO staff.
- Engagement of private general practitioners and public hospitals has been scaled up and is being consolidated.

Major challenges

NTP faces the following challenges.

- The gap between estimated TB and MDR-TB burden and notified cases remains significant and will require expansion of innovative strategies.
- Though much reduced, the funding gap is still significant and efforts will be needed to reduce this gap as well as secure funds for TB care and prevention beyond 2016.
- Further expansion of MDR-TB services will depend on different actors working in a coordinated fashion, including devolving services down to the community level. Innovative mechanisms will need to be evaluated.
- Further expansion of TB/HIV collaborative activities is a challenge.

Activities planned for 2015

The following activities are planned for 2015.

- Implementation of active case-finding will be scaled up through the deployment of dedicated teams in hard-to-reach, remote areas, border areas, urban slums; as well as through identifying presumed TB cases among people attending health services (pregnant women, elderly, diabetes, etc.).
- expansion of PMDT project will be accelerated in 25 new townships and TB/HIV collaborative activities in 108 new townships by the end of 2018.
- Under the GF's NFM grant for TB, NTP will progressively expand TB/HIV collaboration to cover 330 townships by 2016. Scale-up of MDR-TB is also planned up to 108 townships.
- Culture laboratories will be established in two more sites (Mawlamyaing and Naypyidaw).

Figure 45: Case-notifications by type of patients, 2013

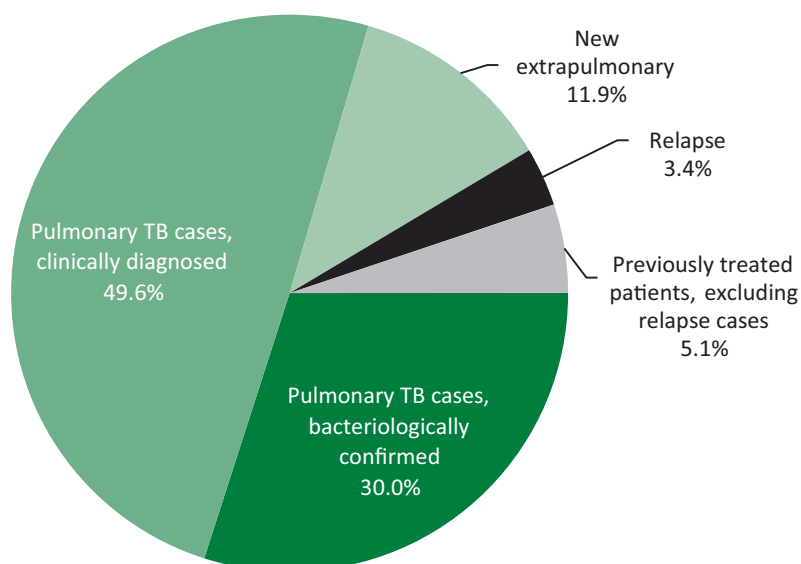


Figure 46: Trends in TB case-notifications, 1995–2013

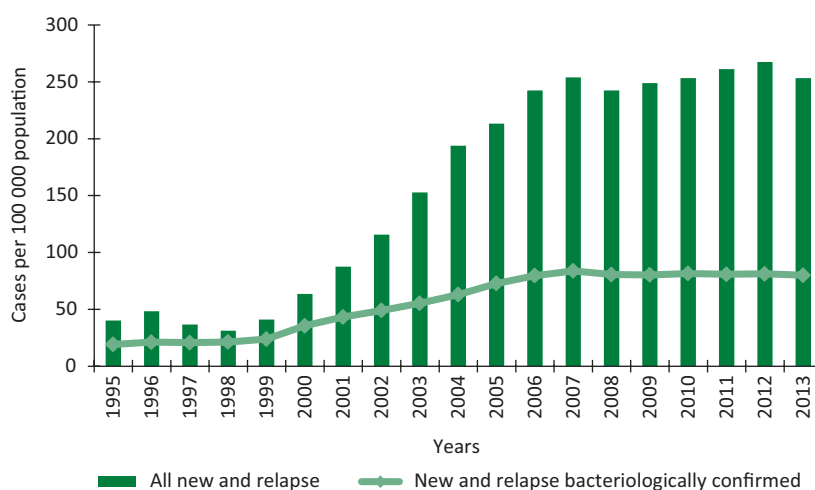
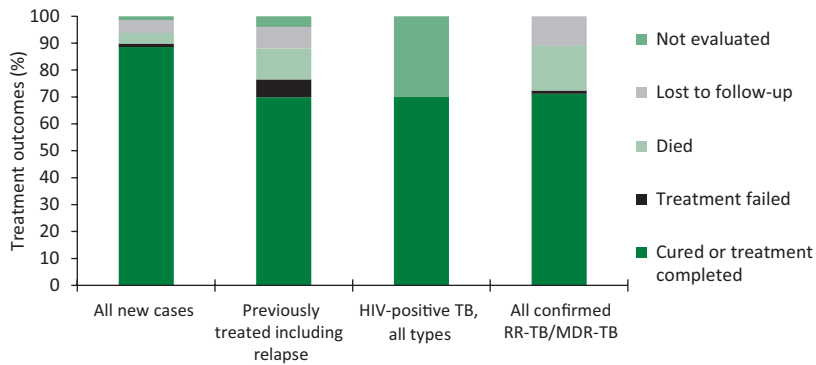


Figure 47: Treatment outcomes by type of cases, 2012 cohort
(2011 cohort for RR/MDR-TB cases)*



*For HIV positive TB cohort the results were reported only in terms of cured or treatment completed and unsuccessful outcomes (including treatment failed, died, lost to follow up and not evaluated)

Figure 48: Trends in treatment success rate by type of cases, 1995–2012

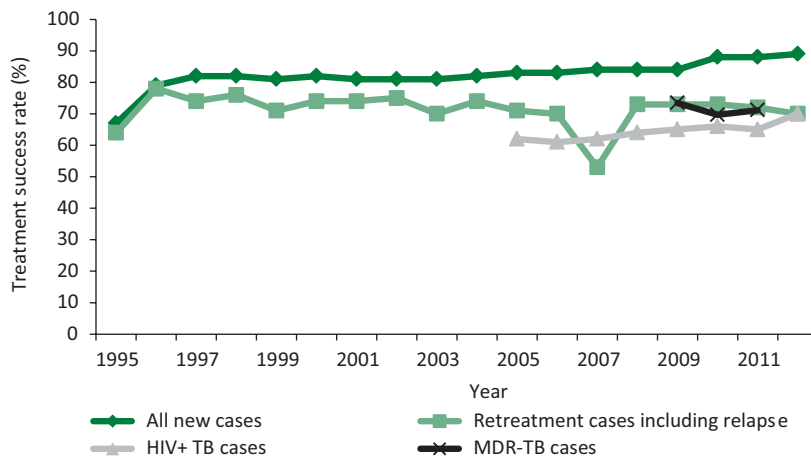


Table 16: Estimates and notification rates for 2013, Myanmar

Population*	53 259 018
Incidence of all forms of TB	200 000 (180 000–220 000)
Incidence rate of all forms of TB (per 100 000 population per year)	373 (340–413)
Prevalence of all forms of TB	250 000 (190 000–320 000)
Prevalence rate of all forms of TB (per 100 000 population per year)	473 (364–595)
TB death rate (of all forms of TB, excluding HIV per 100 000 population per year)	49 (29–71)
Number of new (all forms) and relapse TB cases notified	134 855
Notification rate of new and relapse TB cases (per 100 000 population for the year 2013)	253**
Notification rate of new bacteriologically confirmed cases (per 100 000 population for the year 2013)	80**
Case-detection rate (all forms of TB)	68 (61–74)
Treatment success rate (%) of all new and relapse TB cases for 2012 cohort	89

*Source: United Nations, Department of Economic and Social Affairs, Population Division (2013). World Population Prospects: The 2012 Revision, DVD Edition.

**In country the population figure used, provided by the MoH is 47 796 627, therefore notification rates are 282 and 89 per 100 000 population for all TB cases and bacteriologically confirmed respectively

Nepal

With a population of about 28 million, Nepal has an estimated incidence and prevalence of all forms of TB at 156 and 211 respectively per 100 000 population (in 2013). The notification rate of all forms of TB and new bacteriologically confirmed cases was 122 and 54 respectively, showing a decreased rate for all forms of TB compared to previous years. This mainly related to decreased notification of clinically diagnosed PTB cases; this decrease is known to be greatly related to reduction of misdiagnosis due to introduction of Xpert MTB/RIF as an initial confirmation test for TB. Sustained high case-detection and a slight shift to the older age groups during the last five years suggest a recent decline in TB burden in Nepal. An epidemiological appraisal took place in November 2014; however, to better understand the real burden of disease, age distribution and possible reasons for missing out TB cases, Nepal is planning to conduct a prevalence survey in 2015. The protocol and implementation plan were prepared in collaboration with RIT-Japan and national staff underwent WHO training in Indonesia. A NTP survey coordinator has been appointed and field operations should start in 2015 for an expected duration of 18 months.

Treatment success rate among new and relapse cases (all types) was 90% for the cohort of patients registered in 2012, and is consistently above the target of 85% since 2001. In the last decade also the success rate among retreatment cases has been high, ranging 80–85%.

Tuberculosis control is identified as a top priority programme within the Ministry of Health and Population. NTP's plan and budget are aligned with the national health sector development plan and the NSP for 2015–2020 is being developed, incorporating recommendations of the programme review done in 2013. NTP has several fully dedicated staff at central, regional and district levels. In addition, a programme management unit was set up in 2009 at NTC to help with planning, implementation and monitoring of activities supported by GF. Full DOTS institutional coverage was reached in the primary health system, including 100% coverage in PHC centres, health posts, and sub-health posts in the country. Decentralization of services, outreach projects and strong community involvement

are contributing significantly to increase case-detection and access to TB diagnosis and treatment. To better assess impact of community engagement the current R&R system of NTP is being amended in order to capture the contribution of the community; information will be available in the 2015 annual report.

Intensified case-finding strategies are also being initiated through the TBREACH project: in 2012, nine Xpert MTB/RIF machines granted by the STOP TB Partnership have been deployed to increase case-detection of sputum smear negative, HIV-infected and MDR-TB cases. In 2013 and 2014, NTP procured with GF funds and received from WHO, TBXpert and additional Xpert MTB/RIF machines and cartridges. A national NGO (HERD), using Xpert machines received through the TBREACH project, started conducting intensified case detection among vulnerable groups (slum dwellers, migrants, prisoners, Buddhist monks in monasteries, carpet weavers, contacts of SS+ cases, etc.) by deploying mobile units (vans carrying Xpert machines) to hard-to-reach and underserved locations. In 2013, a total of 22 Xpert MTB/RIF sites were available and 10 256 cartridges were used. Xpert MTB/RIF assay was included in an algorithm as the initial diagnostic test for TB in persons at risk of DR-TB and HIV-associated TB and for sputum smear-negative cases with suggestive signs of TB on chest radiology.

The number of smear microscopy laboratories increased to 553 in 2013, reaching 2.0 smear microscopy laboratory per 100 000 population. QA activities are regularly carried out in all regions: in 2013, results were available for a higher proportion of laboratories (83% compared to 61% in the previous year), the percentage of laboratories showing no major error remained high as in the previous year (98%).

In 2011, the German-Nepal Tuberculosis Project (GENETUP) lab (NGO-run laboratory in public–private partnership with NTP) conducted nationwide DRS on a sample of 806 patients (664 new cases and 142 previously treated cases). Compared to 2007, nationwide DRS, results showed a very slight decline of MDR-TB prevalence among new cases (2.2%, CI: 1.3%–3.8%) but a rather sharp increase (15.4%, CI: 10.1%–22.7%) among re-treatment cases. Overall, MDR-TB prevalence among TB cases in Nepal is 4.7% (CI: 3.3%–6.5%); estimated MDR-TB cases among notified PTB cases in 2013 were, therefore, 2110. Culture and DST (for first and second-line drugs) facilities are provided by two quality assured laboratories: the NRL at NTC and the GENETUP laboratory, both located in Kathmandu and supervised by the SNRL at Gauting, Germany. In 2013, 13% of new cases and 25%

of retreatment cases were tested for drug resistance. Since testing new cases for DR-TB is not in the national policy, the proportion of new cases tested is mainly the result of smear-negative patients tested with Xpert MTB/RIF to confirm TB. A total of 327 MDR-TB and 150 RR/TB cases were detected in 2013 and 388 of them were started on second-line standard treatment. In 2013 also, 15 XDR-TB cases were diagnosed and 11 were started on XDR-TB treatment.

Nepal was one of the first countries globally to introduce ambulatory MDR-TB case management in 2005 diagnosing and treating Category II failures and other laboratory-confirmed MDR-TB cases under a GLC approved project. The management of MDR-TB on an ambulatory basis has been expanded to all five regions in the country. Currently, there are 13 treatment and 73 sub-treatment centres offering MDR-TB treatment services through PHC services and health facilities managed by other sectors. Further improvement of MDR-TB management has been achieved since 2011 through establishment of hostels for DR-TB cases, introduction of a 20-month treatment regimen for MDR-TB patients, revision of the National Drug Resistant Tuberculosis Management Manual and the 2013–2016 PMDT Expansion Plan. An electronic database for MDR-TB cases on treatment based on OpenMRS is expected to be introduced in 2015. Treatment success rates for RR/MDR-TB and XDR-TB patients enrolled on treatment in 2011 were 72% and 31% respectively; CFR was 6% among RR/MDR-TB cases and 56% among XDR-TB cases.

Estimated HIV prevalence among the adult population in Nepal is 0.23%. Sentinel surveys of HIV among TB patients conducted in 2011–2012 showed HIV prevalence of 2.4% among TB patients. Another sentinel survey was in operation during 2014. The country has established a national working group on TB/HIV and a national TB/HIV coordination committee. The national strategy for TB/HIV has been officially endorsed by the Ministry of Health and Population. Joint planning, evaluation and logistics management, information-sharing, advocacy and operational research have been planned by the two programmes. In 2013, 3773 TB patients were tested (11% of notified cases) and 65 were found HIV-positive (1.7%); all TB/HIV cases detected were enrolled on ART and CPT was offered to patients with CD4 count of less than 350 cells/ml. In 2014, IPT began to be offered and only five ART sites were providing IPT to 32% of adults and children newly enrolled in HIV care during the year; scale-up to 90% of ART sites is planned during 2015.

Guidance on infection control has been incorporated in DR-TB guidelines.

The programme, working in close collaboration with national and international implementing partners, has successfully involved private practitioners in major cities. The expansion of PPM has led to the engagement of several NGOs, public hospitals, all 20 medical college hospitals, both in the public and private sectors and two major prisons in the country. The military hospital is also collaborating with NTP in providing TB services. In 2013, 6% of all notified cases were reported by non-NTP public providers and 8% by private providers and NGOs, contributing to overall 14% of all annual cases notified.

Data management is presently paper-based; the revised WHO framework was introduced in July 2014 and relevant updated forms have been used by reporting units starting from November 2014. The programme is also using an Excel-based system, but it is planning to upgrade the OpenMRS platform for DR-TB to include also susceptible TB. The PAL was introduced in 2007 and expanded to cover 19 districts in 2013; and within these 19 districts expansion to the health post level will be carried out.

NTP is heavily dependent on donor funding: only 19% of the estimated budget for TB control activities in 2014 was from domestic funding. The programme also received support through the GF rounds 4 and 7 and successfully applied for NSA grant. The current agreement of NSA phase 2 will end in mid-2015 and carry over funds would flow through the NFM until 2017. For the national prevalence survey, funding is being received from GF, Norwegian Lung Association and the Government of Nepal.

Major achievements

The following are the main achievements of NTP:

- successful implementation and nationwide coverage of MDR/XDR-TB management programme, with 41 of the 75 districts covered by DR-TB centres and sub-centres;
- full DOTS health institutional coverage in the primary health system including PHC centres, health posts and sub-health posts in the country;
- revision of national DR-TB management manual;

- revision of NTP general manual (with introduction of CTB management section);
- development of infection control policy and strategy;
- uninterrupted supply of first and second-line and paediatric QA TB medicines through GDF;
- revision of PMDT expansion plan;
- expansion of Xpert technology in several districts and development of national algorithms for their use;
- collaboration with the National Centre for AIDS & STD Control to implement IPT in five ART clinics and conducting evaluation;
- kick-started intensified case-finding addressed to various marginalized and vulnerable groups (contacts, HIV-infected, slum dwellers, migrants, prisoners, residents of mountainous districts, etc.);
- introduction of community DOTS in 11 districts;
- establishment of DR-home with enhanced services – DOTS, availability of in-house 24/7 medical services;
- enhancing active case detection by door-to-door mobilization of mothers' groups; and
- conducted microscopic camps in all the districts.

Major challenges

The major challenges facing NTP are:

- increasing trend in DR and XDR cases;
- addressing stagnant case-notification in some districts;
- implementing of proper and effective TB/HIV collaborative activities, including PITC and Three Is;
- harnessing the potential offered by a rampant yet poorly regulated private health sector through the adoption and expansion of most suitable PPM model(s); and
- financing NTP by moving away from the heavy dependence on external funding and specifically on one major donor (GF).

Activities planned for 2015

The following activities are planned for 2015:

- initiation of prevalence survey;
- study on TB among diabetic patients and vice-versa;
- meaningful involvement of private practitioners in DOTS and re-structuring DOTS services to make them more user-friendly;
- scaling up various other forms of intensified case-finding;
- introduction of infection control in TB programme settings;
- increasing case-detection of MDR, TB/HIV and SS cases by strategically deploying the Xpert MTB/RIF machines;
- expansion of PAL initiative to all health facilities in the 19 districts;
- expansion and consolidation of TB/HIV collaborative activities;
- finalization of NSP July 2015–19 July 2020;
- diversification of resource mobilization initiatives;
- countrywide consolidation of newly adopted revised R&R formats;
- establishment of five additional DR-TB hostels inside governmental health institutions;
- upgrading of three regional laboratories (two for sputum culture, one for culture and DST); and
- remodelling PPM activities.

Figure 49: Case-notifications by type of patients, 2013

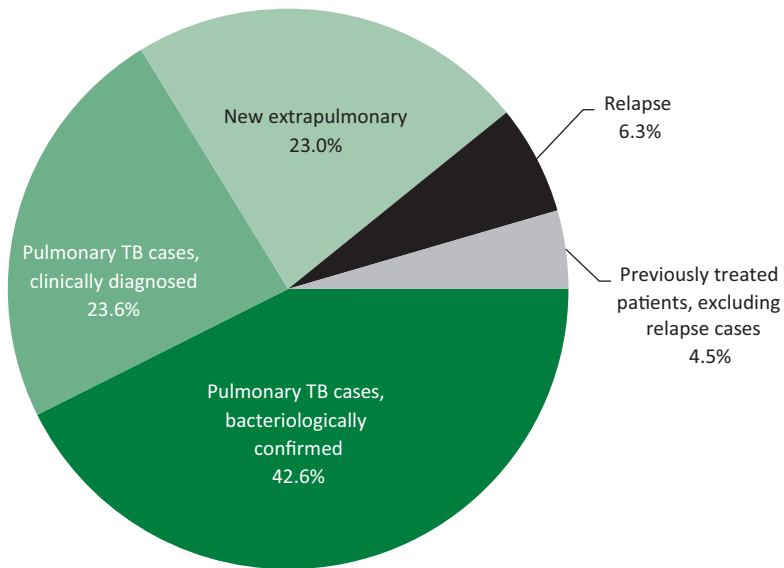


Figure 50: Trends in TB case-notifications, 1995–2013

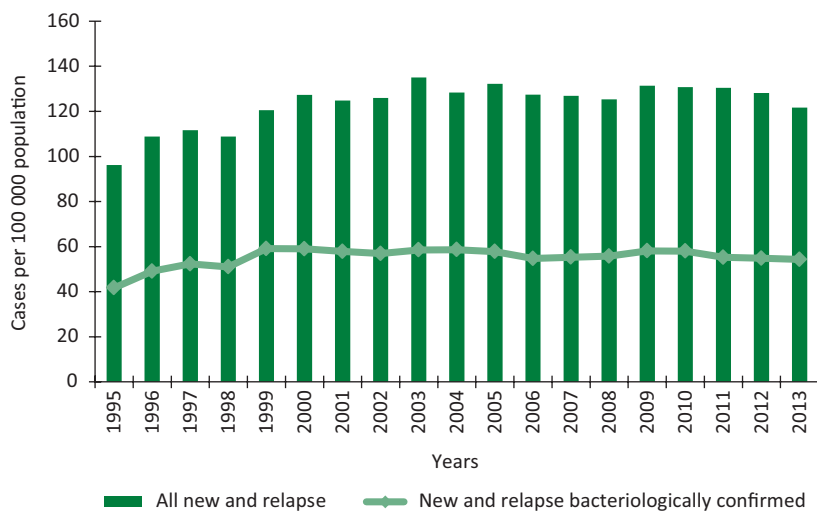


Figure 51: New (all types) TB cases by sex and age groups per 100 000 population, 2013

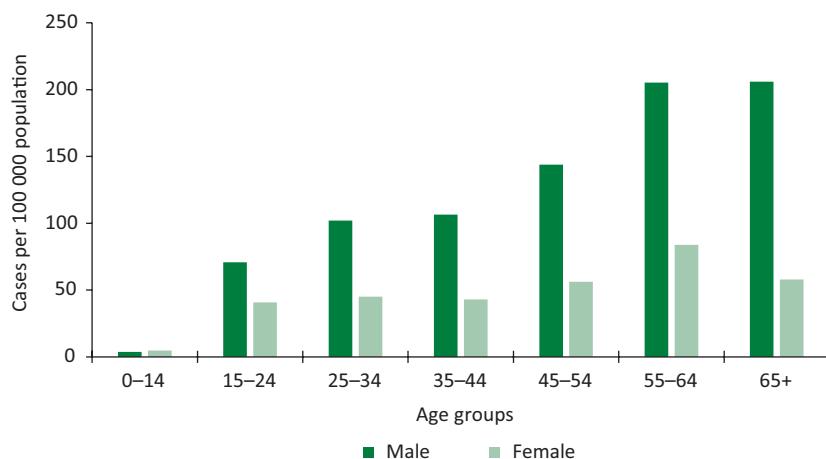


Figure 52: Treatment outcomes by type of cases, 2012 cohort (2011 cohort for RR/MDR-TB cases)

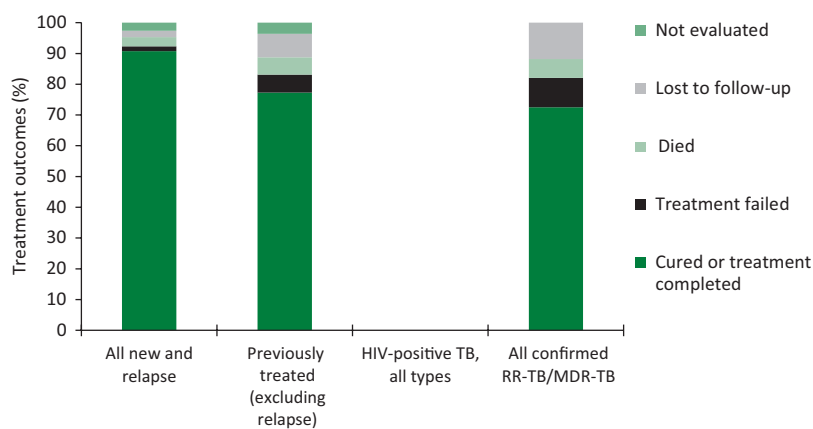


Figure 53: Trends in treatment success rate by type of cases, 1995–2012

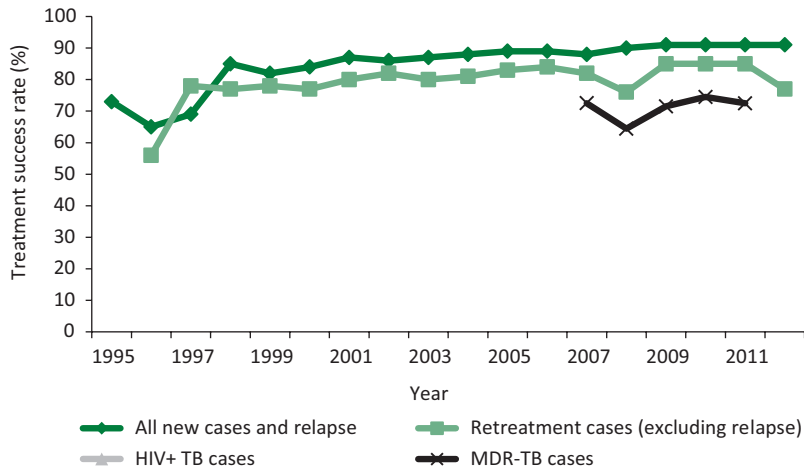


Table 17: Estimates and notification rates for 2013, Nepal

Population*	27 797 457
Incidence of all forms of TB	43 000 (39 000–49 000)
Incidence rate of all forms of TB (per 100 000 population per year)	156 (139–178)
Prevalence of all forms of TB	59 000 (27 000–100 000)
Prevalence rate of all forms of TB (per 100 000 population per year)	211 (99–365)
TB death rate (of all forms of TB, excluding HIV per 100 000 population per year)	17 (7.4–27)
Number of new (all forms) and relapse TB cases notified	33 834
Notification rate of new and relapse TB cases (per 100 000 population for the year 2013)	122
Notification rate of new bacteriologically confirmed cases (per 100 000 population for the year 2013)	54
Case-detection rate (all forms of TB)	78 (68–87)
Treatment success rate (%) of all new and relapse TB cases for 2012 cohort	9

*Source: *United Nations, Department of Economic and Social Affairs, Population Division (2013). World Population Prospects: The 2012 Revision, DVD Edition.

Sri Lanka

The country has an estimated population of 21 million and is among the low TB prevalence countries in the Region. The estimated prevalence and incidence rates of all forms of tuberculosis were 103 and 66 respectively per 100 000 population, in 2013. The notification rate of all new and relapse TB cases (all types) and new bacteriologically confirmed cases were 44 and 21 respectively per 100 000 population; while the notification of laboratory confirmed cases is fairly stable over time, the notification of clinically diagnosed cases in 2012–2013 was lower than in the period 2006–2011, despite there being no downscaling of NTP activities. An innovative case-finding strategy is being implemented through TB/diabetes collaborative activities; the pilot phase has been completed, but data are yet to be analysed. It is planned to conduct sensitization programmes for health staff working in diabetes clinics throughout the country. Mass screening in prisons, including the largest prison in Colombo district, has been conducted.

Sri Lanka reached and has sustained the target of 85% treatment success rate among all new TB cases since 2004; the success rate was 86.5% for the cohort of patients registered in 2012. In the same cohort, the success rate was 67% for retreatment TB cases. Treatment success rate in retreatment cases dropped in 2012 cohort as it was above 70% since 2005; this is mainly due to a large proportion of “lost to follow-up” (14%). Among new cases, the overall default rate has dropped from 15% to 4% in the last decade, due to intensified defaulter tracing efforts involving the district and field public health Inspectors and other categories of health staff.

Laboratory network strengthening is ongoing. In 2013, the number of smear microscopy laboratories increased to 214 (being 1.0 laboratory per 100 000 population); for 89% of them, EQA was carried out and for 95% the results showed acceptable performance. Currently, there are three quality assured culture facilities. DST for FLD is performed in one laboratory through conventional methods and LPA. One Xpert MTB/RIF was deployed in the country in 2012 and it is mainly used for detection of MDR-TB among MDR-TB suspects (it was included

as an initial test for this purpose in diagnostic algorithm); in 2013, 150 cartridges were used.

A national DRS was completed in 2006, and this confirmed the very low levels of drug resistance: resistance to any drug was 1.4% among new patients and 8.8% among previously treated cases in the country; the prevalence of MDR-TB was 0.17% (1 out of 595 isolates). The protocol for a repeated DRS has been developed with the technical assistance of WHO. The planned DRS to be conducted, funded through GF NFM interim funding. Culture and DST is to be performed for all patients who fail initial anti-TB treatment regimens, at the time of initiation of treatment for all sputum smear-negative TB patients, patients commencing re-treatment regimens, contacts of MDR-TB cases, health-care workers, HIV-infected TB cases, migrants, drug addicts and prisoners. In 2013, testing for drug resistance was very high among retreatment cases (99%) and increased to 21% among new cases. Only three MDR-TB cases and one RR-TB case were detected in 2013; all of them were started on treatment. The programme initiated MDR-TB case management under r-GLC approval with support through GF in 2010. MDR-TB is diagnosed at the NRL which is supported by the SNRL at NIRT, Chennai, India. Patients are treated initially at the National Hospital of Respiratory Diseases; afterwards they are referred for continuation of treatment at the chest clinics in their respective districts. National guidelines for the management of MDR-TB have been developed. The cohort of MDR-TB patients started on treatment in 2011 includes only six patients: five were cured or completed treatment and one died.

HIV co-infection rate among TB patients was estimated at 0.07% in 2011. Since 1993, TB patients have been included under the HIV sentinel sero-surveillance survey and the data show consistently low TB/HIV co-infection rate. In 2013, 49% of notified TB cases were tested for HIV, compared to 36% of cases tested in 2012 as a result of expansion of HIV screening done in all district chest clinics and improved reporting; 37 TB patients of all tested were found to be HIV-positive (0.8%) and they are all on CTP and ART, showing very significant improvement of TB/HIV care compared to the previous year. In 2013, screening for TB was done and recorded for 97% of HIV-positive patients enrolled in HIV care and 5% of HIV patients newly enrolled on treatment received IPT.

Public-private collaborative projects have been initiated on a limited scale. Non-NTP public providers including government hospitals (38 public hospitals

including teaching hospitals and five military hospitals), public medical colleges, prisons, armed forces and police contributed 756 TB patients to case notification in 2013, being 8% of the total. The private sector contributed 406 TB patients (4% of the total).

ISTC will be used as a tool for establishing effective TB services within other sectors. There is a plan for initiation of PAL and piloting was initiated in five districts; however, outcomes of the pilot indicate poor sustainability due to turnover of staff and insufficient motivation. TB infection control activities in chest clinics were implemented, infection control committees established and staff trained; it was reported that 0.5 per 1000 health workers had TB in 2013.

NTP's plan and budget are aligned with the national health sector development plan. The NSP for 2015–2020 was updated, taking into consideration the recommendations of the Joint Monitoring Mission in 2014 and the findings of epidemiological analysis, as well as dialogue between multiple stakeholders in the country. The government provides the major part of funding for the TB programme (49% of estimated budget for 2014 TB control activities was domestically funded), with additional resources from GF Round 6 (ending in 2014), and WHO. New grant application for allocation of US\$9 million was submitted to GF.

Major achievements

The main achievements of NTP are as follows:

- reaching and sustaining the global targets:
 - strengthening active case detection among high-risk categories such as prisoners, drug addicts;
 - strengthening collaboration between non-NTP care providers; and
 - expansion of diagnostic facilities through establishing new culture laboratories at Galle and Jaffna.
- integration of TB surveillance and control activities into the primary health care settings;
- improvement of the quality of DOTS provision;

- strengthening of TB control activities in the northern province by infrastructure development and human resource mobilization;
- further expanding the service coverage by consultant respiratory physicians;
- implementing TB infection control activities in chest clinics;
- sustaining the control of MDR-TB and TB/HIV co-infection; and
- undertaking operational research on TB-related deaths.

Major challenges

The major challenges faced by NTP are as follows:

- maintaining adequate number of human resources in the face of high turnover of trained staff;
- reaching the unreached population groups (e.g. population groups with limited access to services, urban slums, prison population, and population in tea and rubber estates);
- addressing TB control among migratory working population from high-burden countries;
- expansion of diagnostic services with WHO-recommended new rapid diagnostics;
- involvement of all care providers in TB control (health and non-health);
- improved focus on paediatric TB;
- overcoming TB-related stigma; and
- financial sustainability.

Activities planned for 2015

The following activities are planned for 2015:

- expansion of the use of new technology in laboratory diagnostics of TB and MDR-TB;
- establishment of two regional TB culture laboratories (Galle and Jaffna);
- capacity-building of central and district staff by training on procurement and supply management, MDR-TB, TB/HIV co-infection, IT literacy, data management, operational research and productivity;

- completion of infrastructure development at National Reference Laboratory, upgrading to BSL-3 level;
- further expansion of community DOTS provision;
- decentralization of TB control activities in Colombo district;
- integration of TB case detection and management with selected general health institutions on a pilot basis;
- estimation of burden of TB in the country using indirect methods of assessment;
- updating national manual in accordance with the recommendations made by the Joint Monitoring Mission;
- updating training modules;
- strengthening public–private mix in TB control by establishing DOT centres in private hospitals, linking private institutions to the programme data management system and improving proficiency of private laboratories;
- further integrating TB control with existing PHC network including improved defaulter tracing and contact screening through field public health inspectors;
- printing and distribution of manuals and guidelines;
- conducting DRS, and pharmacovigilance survey on TB;
- carrying out comprehensive island-wide KAP survey;
- development of a comprehensive ACSM plan based on the results of a KAP survey and implementation;
- strengthening active screening among high-risk categories such as prisoners, migrants, drug addicts, urban slum dwellers, estate population health care workers, etc;
- expansion of screening facilities for TB among diabetics, chronic kidney disease patients; and
- strengthening central and peripheral-level monitoring mechanisms.

Figure 54: Case-notifications by type of patients, 2013

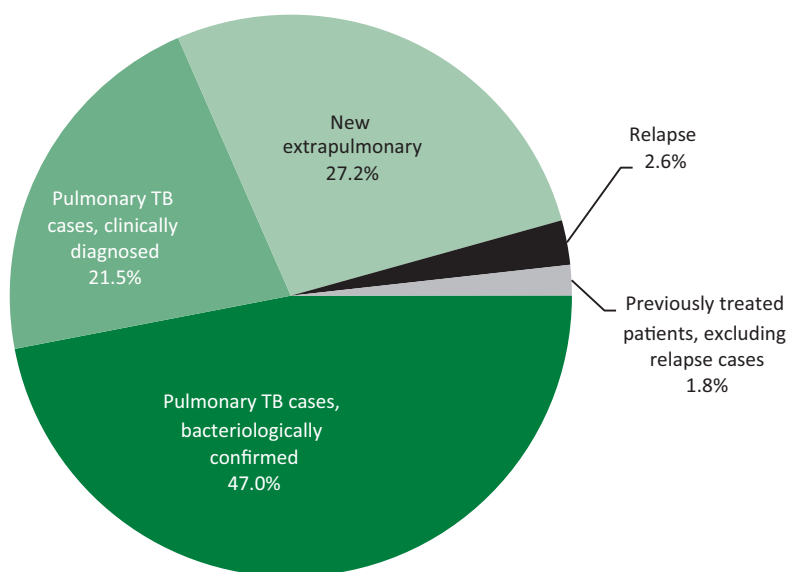


Figure 55: Trends in TB case-notifications, 1995–2013

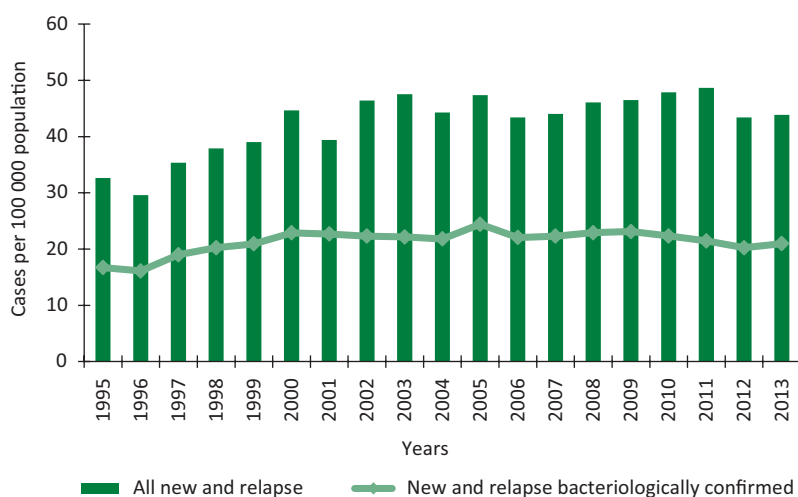


Figure 56: New (all types) and relapse TB cases by sex and age groups per 100 000 population, 2013

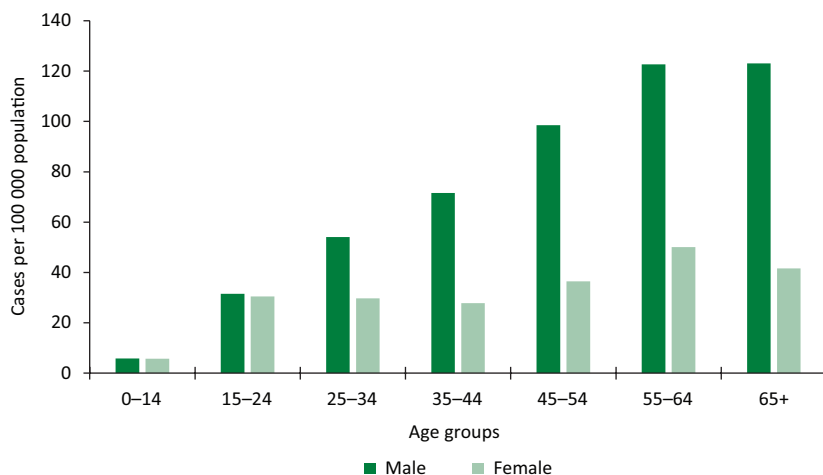


Figure 57: Treatment outcomes by type of cases, 2012 cohort (2011 cohort for RR/MDR-TB cases)

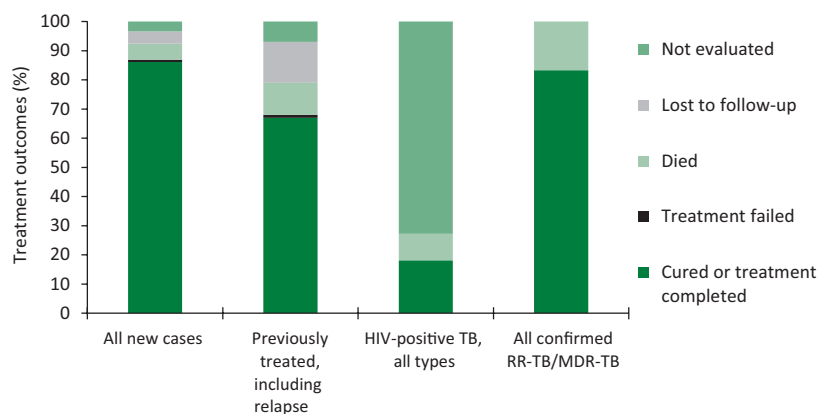


Figure 58: Trends in treatment success rate by type of cases, 1995–2012

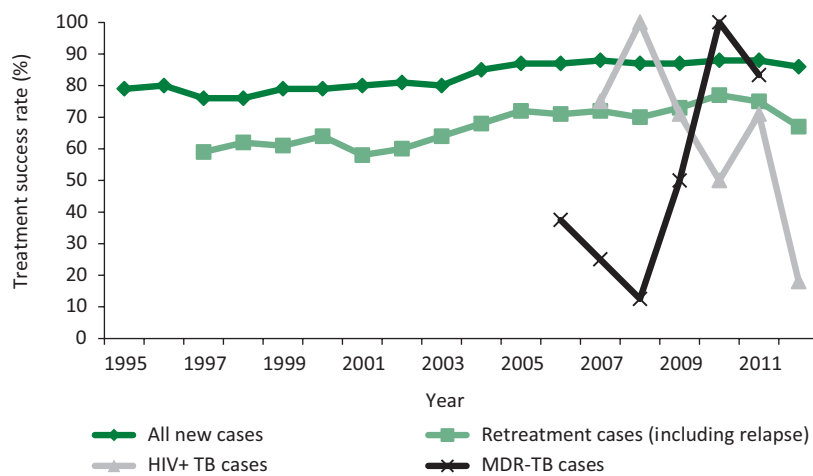


Table 17: Estimates and notification rates for 2013, Sri Lanka

Population*	21 273 228
Incidence of all forms of TB	14 000 (13 000–16 000)
Incidence rate of all forms of TB (per 100 000 population per year)	66 (59–75)
Prevalence of all forms of TB	22 000 (11 000–36 000)
Prevalence rate of all forms of TB (per 100 000 population per year)	103 (53–170)
TB death rate (of all forms of TB, excluding HIV per 100 000 population per year)	1.3 (1.0–1.6)
Number of new (all forms) and relapse TB cases notified	9 329
Notification rate of new and relapse TB cases (per 100 000 population for the year 2013)	44
Notification rate of new bacteriologically confirmed cases (per 100 000 population for the year 2013)	21
Case-detection rate (all forms of TB)	66 (59–74)
Treatment success rate (%) of all new and relapse TB cases for 2012 cohort	86

*Source: United Nations, Department of Economic and Social Affairs, Population Division (2013). World Population Prospects: The 2012 Revision, DVD Edition.

Thailand

With a population of approximately 67 million Thailand is among the 22 high TB burden countries. In 2013, the estimated prevalence and incidence rates of all forms of TB were 149 and 119 respectively per 100 000 population. In 2013 Thailand concluded field operations of its fourth national TB prevalence survey (the previous one was conducted in 2006). The survey was conducted in two phases, firstly in non-Bangkok clusters with a participation rate of 79%, and secondly in Bangkok clusters with a participation rate of 26%: a total of 76 331 people aged 15 years or more participated in the survey. The screening methodology included symptoms suggestive of TB and chest X-ray; laboratory confirmation of two sputum samples (spot and morning) was done through smear microscopy and solid culture. Based on non-Bangkok clusters the preliminary results show a prevalence of smear-positive cases and bacteriologically-positive cases of 110 (95%CI: 54–224) and 253 (95% CI: 187–342) respectively per 100 000 population, among adult population (15 years and above). Data are currently being analysed and adjusted: final results will allow improvement of current burden estimates, as well as better definition of trends, and guide future TB programming.

TB services are available in any hospital in Thailand. Widespread effective coverage of health insurance enables affected persons to afford the cost of diagnosis, treatment and much of the care for all forms of TB. It is estimated that since 2000, almost 600 000 patients have been diagnosed and treated and 220 000 lives saved (compared to no treatment). However, access to TB services is to some extent limited for uninsured patients and efforts towards universal coverage of services are needed. Despite this limitation, Thailand has made considerable progress in expanding and enhancing TB diagnosis and care, particularly among vulnerable populations, such as migrants (4% of cases notified in 2013 were foreign born), PLHIV, and populations in closed settings. A new policy of making health insurance packages available to all categories of migrants has been announced by the Ministry of Public Health in November 2013 and implementation has commenced although there are several

challenges to be addressed to achieve full universal access, especially in some settings. The notification rate of new and relapse TB cases (all forms) and new bacteriologically confirmed cases were 95 and 49 respectively, in 2013, showing an increase towards the levels observed from 2009 to 2011, following a drop in 2012. Considering that mandatory notification for TB is not enforced and that the surveillance system is under-performing (as showed by assessment of the TB surveillance system using the WHO “Checklist of standards and benchmarks for TB surveillance and vital registration systems”), the notification rate is likely to be affected by under-reporting to NTP more than by under-diagnosis.

The treatment success rate among new and relapse TB cases (all types) was 81% for the cohort of patients registered in 2012, falling below the target of 85% treatment success rate; among the unfavourable outcomes were “case-fatality rate” (7%) and “not evaluated” (6%). Further efforts to increase completeness of reporting could impact positively on overall treatment outcomes; in fact, by targeting large urban settings such as Bangkok, “not evaluated” cases decreased by 70% in the last five years. Treatment success rate is higher among bacteriologically-confirmed cases (in past years 85% target of cured/treatment completed rate was reached among smear-positive cases) than among pulmonary clinically diagnosed and extra-pulmonary TB cases. Among other factors, increase in success rate is challenged by a high notification rate in those over 64 years (highest age-specific rate among both female and male – age-disaggregated data are available for smear-positive cases only), where patients are prone to die for any cause. Another challenge to improve the treatment success rate is represented by low treatment success rate and high case-fatality among HIV-positive TB cases (70% and 16% respectively in 2012 cohort). Treatment success rate among retreatment cases (excluding relapse) was still rather low, being 63% in 2012 cohort, and the proportion of “lost to follow-up” and “not evaluated” was 11% and 12% respectively.

In SEAR, Thailand has the highest HIV burden with 459 688 people living with HIV in 2013, including 193 965 women and 8830 children, corresponding to an estimated 1.1% of the adult population being infected with HIV (Asian Epidemic Model, 2013 estimation). Since the peak was reached in 2000 (26%), the estimated HIV prevalence among incident TB cases has declined yearly, reaching 15% in 2013, when 12 000 HIV-positive incident TB cases were estimated corresponding to a rate of 17 per 100 000 population. Substantial progress has been made in implementing TB/HIV collaborative activities throughout the

country. PITC of TB patients has been integrated into national guidelines and are implemented throughout the country. Routine HIV screening is recommended nationally for all registered TB patients; in 2013, the HIV counselling and testing rate among TB patients was 83% (increased from 72% in the previous year), and 15% among all those tested were found to be HIV-positive, corresponding to 8245 patients. Care and treatment for HIV-infected persons is free of charge and it is covered by all three insurance agencies and widely available through the National Health Security Office (NHSO) and the GF supported programmes. CPT and ART was provided to, 63% and 59% respectively of HIV-positive TB patients. ART coverage needs further expansion although progress is being made: in 2013, a total of 4890 TB/HIV patients were started on ART, compared to 4538 in 2012. In 2013, according to reported data, 41% of all estimated HIV-positive incident TB cases received treatment for both TB and HIV. Early initiation on ART could be enhanced by increasing awareness of doctors on management of TB/HIV patients, reducing holding-back factors such as the concern about immune reconstruction inflammatory syndrome. Improved identification of HIV-infected TB patients, together with effective linkages to care and treatment will be required to significantly reduce TB mortality rates that in 2013 were estimated to be 12 and 2.8 per 100 000 population for all TB and TB/HIV co-infection respectively. Intensified case-finding among newly detected HIV-positive patients has been initiated. Routine and periodic symptomatic screening for TB among HIV-infected patients is undertaken in all hospitals under the MoPH and some hospitals in the private and non-MoPH public sector during the initial diagnosis, on follow-up visits and when the decision to initiate ART is made. In clinical practice all HIV patients are screened for TB routinely, although this information is not formally reported by the private sector.

The fourth national DRS was completed in 2012, and results shown that there has been no significant increase of MDR-TB prevalence among new cases (2.03%) and a considerable decrease of MDR-TB prevalence among previously treated cases (18.88%) since the 2006 survey. Thailand has an extensive laboratory network for culture and drug resistance testing. The 65 culture laboratories represent 4.8 laboratories per 5 million population, above the global target for culture availability and DST is available in 18 sites at selected regional laboratories, representing 1.3 DST facility per 5 million population; all DST laboratories demonstrated acceptable performance at EQA in 2013. Rapid DST, specifically HAIN Genotype MTBDRplustest and Xpert MTB/RIF

(implemented in 14 sites), have been introduced; Xpert MTB/RIF was introduced as an initial test in diagnostic algorithms for patients at risk of DR-TB. However, due to decentralization of laboratory services and the number of private sector laboratories also undertaking TB diagnosis, maintaining QA is one of the key challenges faced by the NTP. For smear microscopy laboratories (1081 in 2013) the external quality control reached 90% of facilities and 90% of them showed acceptable performance. Laboratory strengthening is being supported through domestic funding, additional funding from GF and Thailand Ministry of Public Health and US/CDC collaboration. The NRL has capacity for second-line DST, and has been formally designated as the second SNRL in SEAR. Culture, DST (including with rapid tests) and SLD for eligible patients (failure of any treatment regimen, contacts of MDR-TB cases, patient commencing re-treatment regimen) are available free of cost for Thai citizens through NHSO. For prisoners and HIV-positive with presumed TB NHSO covers cost for conventional culture. However, the new GF proposal would extend the availability of free rapid tests for these categories too. In 2013, 10% of notified new TB cases and 12% of retreatment cases were tested for drug resistance. NTP reported 230 MDR-TB cases detected in 2013 and all have been started on treatment, showing that access to treatment improved remarkably. However, the reporting of MDR-TB cases is incomplete and not timely and the number of notified patients does not reflect the real diagnostic and case-finding capacity; NHSO indicates that more than 1000 MDR-TB patients (based on bacteriological or clinical criteria) were started on second-line treatment in 2013. Data on RR-TB cases detected are currently not available. However, all RR-TB cases are expected to be further tested with standard methods and be reported as MDR-TB cases if applicable. In 2013, five XDR-TB cases were diagnosed and started on treatment. Since the revised R&R system was implemented in 2012, treatment outcomes for 2011 cohort are not available.

At present, most patients with DR-TB are diagnosed and managed by university, regional/provincial and some private hospitals, which procure SLD using local resources such as the Government Pharmaceutical Organization. GF was providing support to approximately one fourth of the MDR-TB management sites. However, the Thai government is transitioning out of GF funding to achieve full domestic funding in 2017. In the new GF CN, only funding for SLD for less than 100 patients was included.

The national electronic database (TB Clinical Management - TBCM), developed to improve real-time reporting and case management, currently covers the whole country, although effective coverage of the system is about 60%. Current guidance and recommendation of Thai MoPH is to integrate as much as possible disease-specific databases with the national HMIS system. Therefore, at the moment, there is rethinking on ongoing investment and expansion of the TBCM. In 2013 Thailand conducted a national assessment of the TB surveillance system using the WHO “Checklist of standards and benchmarks for TB surveillance” that identified problems such as reports missing from a large proportion of teaching hospitals and private providers, several platforms in use for reporting; on the basis of identified gaps, a list of costed priority activities was outlined and an investment plan was developed.

TB services are fully integrated within PHC. Thailand has made remarkable progress in involving NGOs and the private sector in TB control activities. Private hospital associations and NGOs (World Vision International, American Refugee Committee, the Raks Thai Foundation and International Committee of the Red Cross (ICRC), FHI 360) provide TB care according to International Standards for TB care. In 2014, the public providers reporting to NTP were only prisons: 1402 cases were reported contributing to around 2% of the total of cases notified. Under-notification is known to be important in the urban areas of Bangkok where only 21 of the 97 hospitals notify TB cases to the NTP. Of the nearly 397 private hospitals, only 30 reported TB cases to the NTP in 2014 (1907 cases contributing to around 2–3% of all cases).

The NSP for TB care and prevention was updated for 2015–2020, based on recommendations of the Fifth Joint International Monitoring Mission and Review of the NTP conducted in 2013 and multiple stakeholders’ meetings. The country’s TB programme is supported mainly by the government budget through the NHSO; about 70% of the estimated budget for 2014 was covered by domestic funds (accounting only for NHSO, not considering other sources such as other insurance agencies). NTP and NHSO have ensured an uninterrupted supply of anti-TB drugs at all levels, and the delivery of services throughout the country. Additional support has been provided by GF Single Stream Funding (2012–2014) and NFM (2015–2016), and Thai–US CDC Collaboration, ICRC and WHO.

Major achievements

The major achievements of NTP in Thailand are as follows:

- sustained collaboration and evidence-based programme financing achieved through ongoing dialogue and planning using a regular platform for communication between the Bureau of TB, NHSO, academics, BMA and other partners;
- sustained high utilization rate for TB/HIV patients (83% of TB patients counselled and tested for HIV in 2013);
- progress towards sustained TB services among marginalized populations such as migrants and cross-border populations through domestic government funding sustained;
- specific focus on TB control achieved by negotiating dedicated funds for TB screening and control in 143 prisons from the GF and the NHSO;
- single CN for TB-HIV in order to support better integration and collaboration approved and a grant of over US\$ 40 million secured for 2015–2016;
- introduction and progressive scale-up of molecular diagnostics, including domestic funding from NHSO to reimburse their cost;
- updated TB Guidelines finalized;
- accreditation system for quality TB care according to international standards implemented across the country;
- prevalence survey and DRS completed;
- PMDT reporting and recording system established;
- epidemiological assessment and review completed;
- revision of NSP for the period of 2015–2019 completed;
- significant improvements in case-notification achieved;

Major challenges

The major challenges faced are as follows:

- improving quality of DOTS under the decentralized health system and in large urban centres (i.e. Bangkok or capital districts of each province);
- improving case-notifications further;

- harmonizing monitoring and reporting systems;
- national level roll-out of molecular diagnostic tools for intensified case finding and reduction of diagnosis time;
- rolling-out new treatment guidelines, particularly for DR-TB.
- further strengthening of TB/HIV integrated activities, particularly revitalization of the TB/HIV committee, intensified case-finding among known HIV-positive people and generation of consensus on IPT;
- revising records and reports of drug-sensitive TB to monitor all indicators of detection, enrolment, interim results and final outcomes in line with new 2013 WHO revised definitions;
- strengthening referral system between MDR-TB hospitals in the capital districts and community hospitals where MDR/XDR-TB patients live;
- better systematic management and regular supervision of programme activities in the context of decentralization;
- effectively involving private hospitals in TB control;
- sustaining gains in implementing TB control activities in the Bangkok metropolitan area;
- addressing human resource management constraints at the central and regional levels; and
- setting up effective cross-border data sharing and referral networks for TB control in preparation for the ASEAN Community 2015, when the Mekong Region will see free movement of people and goods in the region;

Activities planned for 2015

The following activities are planned for 2015:

- capacity-building of health staff at primary care units whose location is closer to patients' home in decentralized settings and in large urban centres (i.e. Bangkok) to enhance treatment adherence;
- ongoing decentralization of laboratory services to support early case-finding being implemented, so that all regional laboratories are able to provide quality assured DST and molecular diagnostics by end-2015 and meet quality assurance requirements;

- strengthening of regular supervision, monitoring and evaluation of the programme;
- supporting integration of electronic and web-based reporting and recording system with national HMIS systems;
- revising the R&R system of M/XDR-TB to be consistent with the international recommendations;
- increasing the involvement of private hospitals and ensuring that practices are in line with the national and international guidelines; and
- supporting key stakeholders in the government and private sector for greater commitment to address fragmented service delivery, and improving regulation of the private sector.

Figure 59: Case-notifications by type of patients, 2013

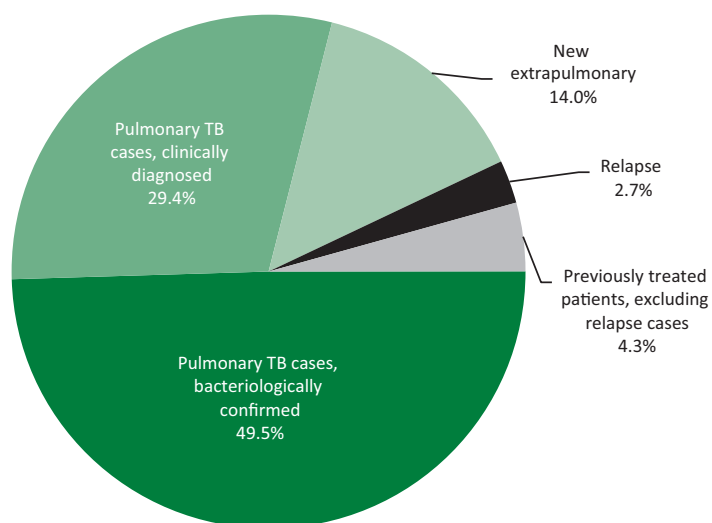


Figure 60: Trends in TB case-notifications, 1995–2013

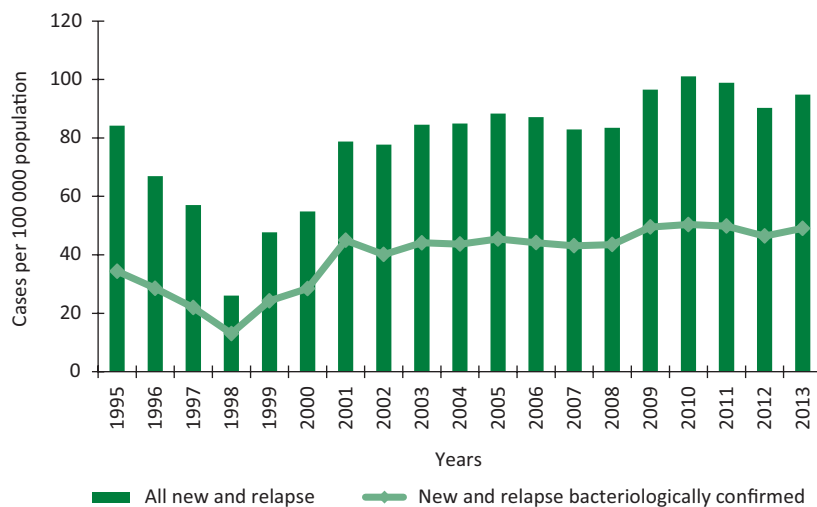


Figure 61: Treatment outcomes by type of cases, 2012 cohort
(2011 cohort for RR/MDR-TB cases)

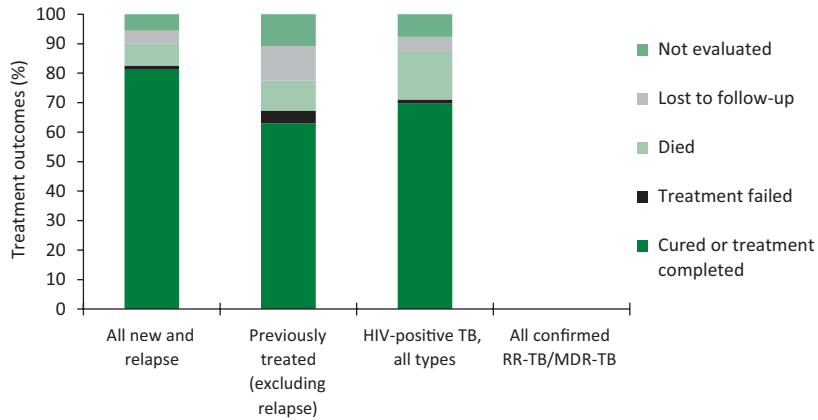


Figure 62: Trends in treatment success rate by type of cases, 1995–2012

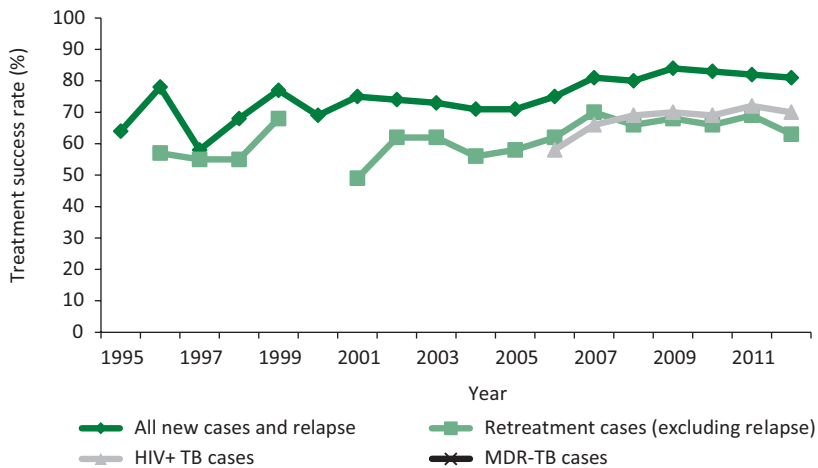


Table 18: Estimates and notification rates for 2013, Thailand

Population*	67 010 502
Incidence of all forms of TB	80 000 (71 000–90 000)
Incidence rate of all forms of TB (per 100 000 population per year)	119 (106–134)
Prevalence of all forms of TB	100 000 (48 000–170 000)
Prevalence rate of all forms of TB (per 100 000 population per year)	149 (72–252)
TB death rate (of all forms of TB, excluding HIV per 100 000 population per year)	12 (7–18)
Number of new (all forms) and relapse TB cases notified	63 541
Notification rate of new and relapse TB cases (per 100 000 population for the year 2013)	95
Notification rate of new bacteriologically confirmed cases (per 100 000 population for the year 2013)	49
Case-detection rate (all forms of TB)	80 (71–89)
Treatment success rate (%) of all new and relapse TB cases for 2012 cohort	81

*Source: United Nations, Department of Economic and Social Affairs, Population Division (2013). World Population Prospects: The 2012 Revision, DVD Edition.

Timor-Leste

With a population of about 1.1 million, Timor-Leste is a low TB burden country. However, incidence and prevalence rates of all TB cases are estimated to be high, being 498 and 802 respectively per 100 000 population in 2013 (source: Global TB report 2014). These estimates were calculated during an in-country workshop and are based on results of a comprehensive TB epidemiological assessment conducted in 2013 that covered level of under-diagnosis/under-reporting as well as degree of over-diagnosis/over-reporting. In 2013 the notification rate was 332 and 138 per 100 000 population for new and relapse TB cases (all forms) and bacteriologically-confirmed cases respectively (rates used in-country are slightly lower because they are calculated using projections of census data). While notification of bacteriologically-confirmed cases is stable since 2010, the notification of PTB cases, clinically diagnosed is consistently decreasing. Considering ongoing efforts to control TB, this could be the result of reduced mis-diagnosis of TB cases without laboratory confirmation instead of decreased case detection. Treatment success rate among new TB cases (all types) was 89% for the cohort of patients registered in 2012.

NTP has established services in all 13 districts and 65 sub-districts of the country; district TB coordinators are working with the district health management teams in all districts and in the 65 community health centres at the sub-district level. Community health centres have been strengthened and better funded in order to include support for conducting outreach activities at the village level through the *servisu integradu da saúde comunitária* initiative.

Presently, 18 microscopy centres are based in public and NGO facilities (12 in the districts and six in Dili). The new LQAS system for the quality assurance system was recently developed and the nationwide EQA system will be rolled-out in 2015. All laboratory technicians are trained in the new quality assurance protocol. No conventional culture and DST facility is available in the country but linkage was established with the SNRL at the NIRT in Chennai, India in 2014. Additionally, three Xpert MTB/RIF machines are available for diagnosis of MDR suspects, TB/HIV and smear-negatives in places where there is no access to X Rays. DST facility

is being developed in the country with support of Korea International Cooperation Agency (KOICA) and the DST laboratory will be functional by end-2016.

Six NGO facilities are providing ambulatory care and one is providing in-patient MDR-TB management. There are five NGOs which support NTP in identifying TB suspects and in referring them to DOTS facilities for diagnosis and treatment. There is good collaboration between NGOs and private clinics with NTP; in 2013, 189 cases were reported by private, corporate and voluntary providers, being 5% of all notified cases.

MDR-TB rates are estimated to be low, being 2.2% among newly diagnosed and 16% among previously treated TB cases. An r-GLC-approved MDR-TB case management project is in place. In 2013 two confirmed MDR-TB cases were identified (both were initially detected by Xpert MTB/RIF and further confirmed by conventional culture and DST); both the cases were enrolled on second-line treatment. The treatment is initiated by MDR-TB clinical specialists and cases are admitted to NGO inpatient MDR-TB ward, Klibur Domin in the district of Liquiça, for the intensive phase. GDF has provided necessary SLD, with funding supported through GF.

HIV remains relatively uncommon in Timor-Leste. In 2013, data from sentinel sites for surveillance of HIV in TB patients showed 0.38% of TB/HIV co-infection rate (95% CI: 0–1.25). A TB/HIV coordinating body at the national level is being established. Initial training for staff at VCT has been completed and a formal mechanism for referral from VCT to DOTS centres has been initiated. In 2013, 41% of all TB patients were tested for HIV (more than double of those tested in 2012) and 0.5% of them were found positive; all were started on ART.

The national Stop TB strategy plan was updated for 2015–2020. Continued funding under GF was secured for TB control activities through the Transitional Funding Mechanism (2014–2015) and NFM (2016–2017). The Ministry of Health supports all staff costs, infrastructure and basic resources and contributed 23% of the estimated budget for 2014.

Major achievements

- NTP Manual revised including the most recent WHO recommendations and training for doctors and health workers is under way;
- all R&R tools are revised according to the new WHO definition and will be rolled-out in 2015;
- NSP (2015–2020) developed based on the Joint Monitoring Mission 2013 report and recommendations;
- continuing funding from the GF will be secured through NFM for 2016–2017;
- laboratory EQA protocol is being rolled-out nationwide and training of the laboratory technicians has been completed;
- TB/HIV collaboration continued to be further strengthened through joint planning at the national level and through coordination meetings at the district level;
- doctors and health workers have been trained on the new training manual for doctors and health workers;
- ensured availability of TB and MDR-TB drugs at all times in the country; and
- TB infection control guidelines used for training of health workers and doctors.

Major challenges

- improving quality of DOTS implementation specially with rifampicin in the continuation phase of the Cat I treatment;
- ensuring adequate access to TB services in many remote and hilly areas through a reliable transport system;
- promoting adherence to standard diagnostic and treatment practices by all levels of health staff;
- implementing the new EQA protocol nationwide and work on adequate number of microscopy centres in the country; and
- lack of paediatrician and expert doctor at community health centre level to diagnose TB in children and young adults.

Activities planned for 2015

- application for NFM for TB funding for 2016–2017;
- institutionalization of the QA system for TB microscopy and Xpert MTB/RIF;
- implement the revised NTP manual;
- nationwide roll-out of better regimen for TB treatment according to the new TB guideline;
- continue meetings of TB Technical Working group and PMDT committee;
- strengthen PMDT activities;
- improve involvement of community volunteers in TB suspect referral and DOT provision;
- improve routine programme data recording and reporting, and feedback to districts;
- strengthen regular supervision from national to district level and from district level to sub-district level;
- improving programme management capacity at national and district levels; and
- continue regular quarterly review meetings with staff from all levels.

Figure 63: Case-notifications by type of patients, 2013

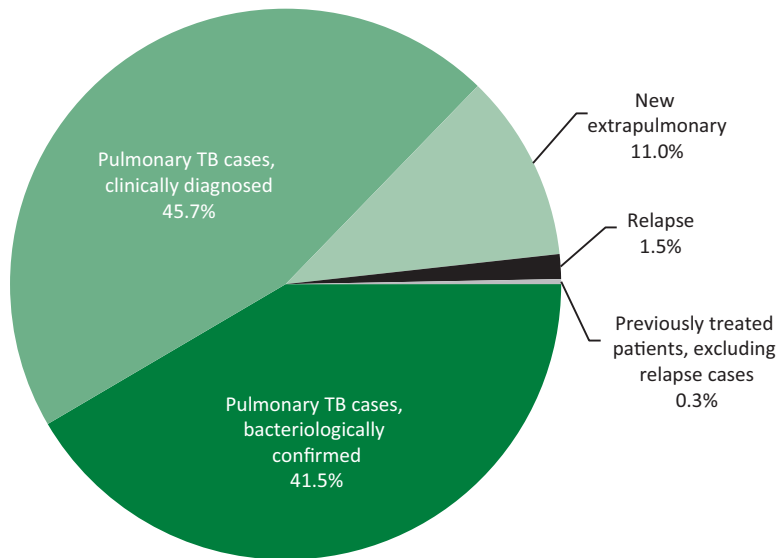


Figure 64: Trends in TB case-notifications, 1995–2013

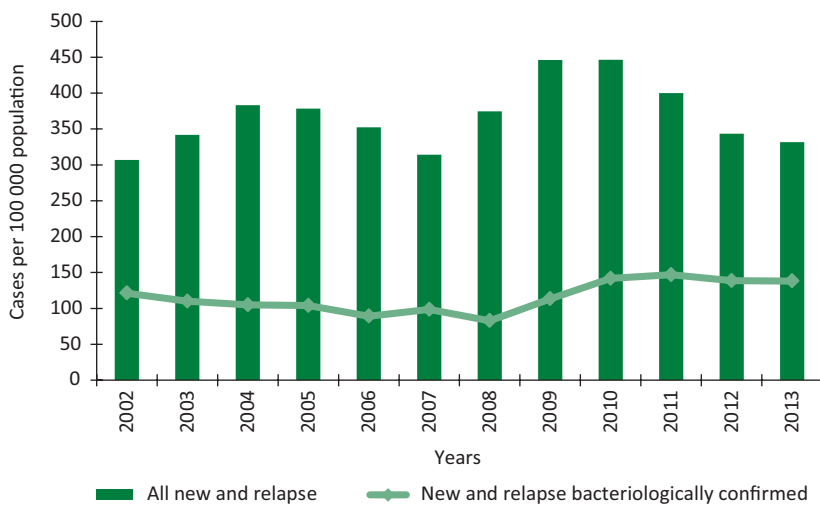


Figure 65: New TB cases (clinically diagnosed and extrapulmonary only) by sex and age groups per 100 000 population, 2013

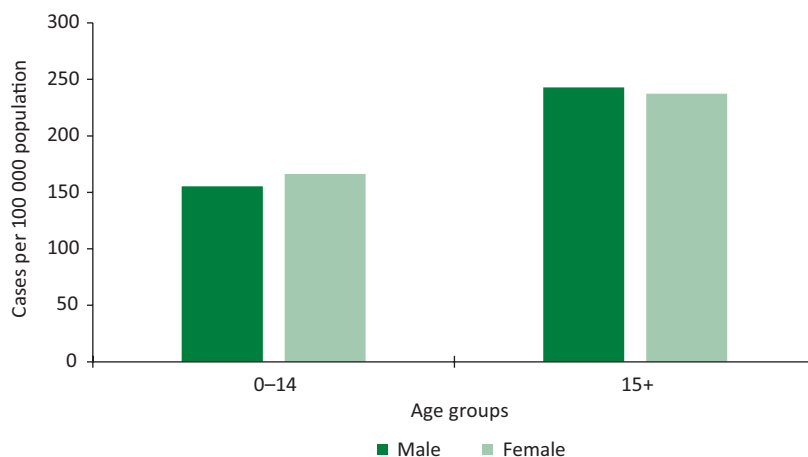


Figure 66: Treatment outcomes by type of cases, 2012 cohort (2011 cohort for RR/MDR-TB cases)

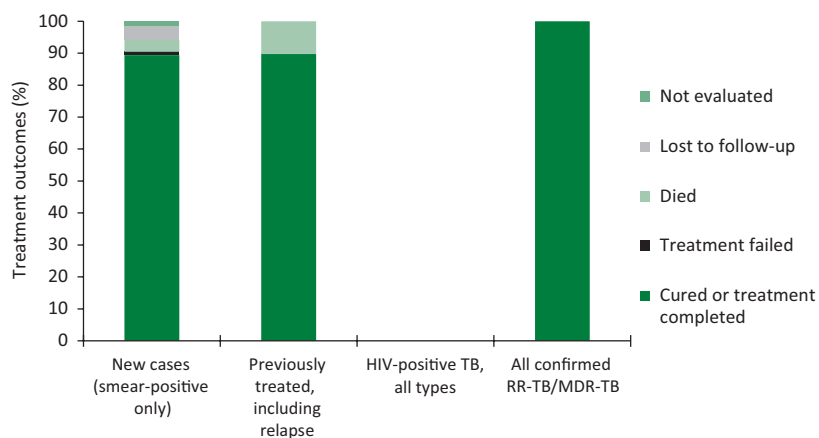


Figure 67: Trends in treatment success rate by type of cases, 1995–2012

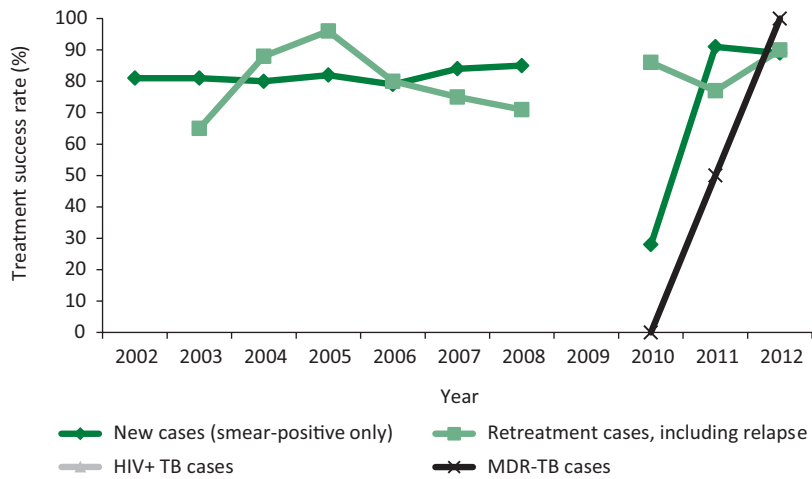


Table 19: Estimates and notification rates for 2013, Timor Leste

Population*	1 132 879
Incidence of all forms of TB	5 600 (4 600–6 700)
Incidence rate of all forms of TB (per 100 000 population per year)	498 (409–596)
Prevalence of all forms of TB	9 000 (3 800–15 000)
Prevalence rate of all forms of TB (per 100 000 population per year)	802 (394–1351)
TB death rate (of all forms of TB, excluding HIV per 100 000 population per year)	87 (33–132)
Number of new (all forms) and relapse TB cases notified	3 757
Notification rate of new and relapse TB cases (per 100 000 population for the year 2013)	332
Notification rate of new bacteriologically confirmed cases (per 100 000 population for the year 2013)	138
Case-detection rate (all forms of TB)	67 (56–81)
Treatment success rate (%) of all new TB cases for 2012 cohort	89

*Source: United Nations, Department of Economic and Social Affairs, Population Division (2013). World Population Prospects: The 2012 Revision, DVD Edition.

Millennium Development Goal Country Profiles

Situation analysis of achievement of MDG goal 6 for tuberculosis

For each country in SEAR the progress towards the achievement of Millennium Development Goal (MDG) 6, to combat HIV/AIDS, malaria and other diseases, was analysed for the extent of tuberculosis control.

The MDG target for tuberculosis control is:

- by 2015 halt and begin to reverse the incidence of tuberculosis.

Country status towards the achievement of indicators' targets linked to the MDG and endorsed by the Stop TB Partnership, was analysed:

- to halve TB prevalence rate by 2015, compared with 1990 levels; and
- to halve TB death rate by 2015, compared with 1990 levels.

Trends over time from 1990 to 2012 and projections for the years 2013–2015 were used to analyse prevalence and mortality targets¹. Trends and projections have uncertainty bands whose width reflects the quality and completeness of data on which estimates are based.

Besides MDG, the summary table below includes information regarding the status of countries in SEAR toward the achievement of additional targets of the Global Plan to STOP TB 2011–2015²; all indicators reported refer to 2013, although several countries provided figures for 2014 that indicate further progress.

¹ For details on methodology used to estimate TB burden rates and projections refer to the online Technical Appendix of "Global Tuberculosis Control: WHO report 2014". http://www.who.int/tb/publications/global_report/gtbr14_online_technical_appendix.pdf

² For details on TB control activities linked to the Global Plan indicators presented, refer to the country profiles in this report

Table 20: Summary table on situation towards achieving MDG targets and Stop TB strategy targets for all 11 Member States in the SEA Region in 2013 (N.B. for indicators that have confidence intervals, only the best estimate is shown)

Category	Indicator	Target	Bangladesh	Bhutan	DPRK*	India	Indonesia	Maldives	Myanmar	Nepal	Sri Lanka	Thailand	Timor-Leste
TB burden	Incidence rate	1990 level falling	T: <226 R: 224	T: <777 R: 169	T: <384 R: 429	T: <217 R: 171	T: <453 R: 403	T: <146 R: 40	T: <395 R: 373	T: <164 R: 156	T: <66 R: 66	T: <138 R: 119	T: < 498 R: 498
	Prevalence rate	50% of 1990 level	T: 252 R: 402	T: ≤883 R: 196	T: ≤240 R: 536	T: ≤233 R: 211	T: ≤523 R: 660	T: ≤143 R: 57	T: ≤447 R: 473	T: ≤174 R: 211	T: ≤56 R: 103	T: ≤106 R: 149	T: ≤404 R: 802
	Mortality rate	50% of 1990 level	T: ≤40 R: 51	T: ≤138 R: 12	T: ≤55 R: 27	T: ≤19 R: 19	T: ≤33 R: 42	T: ≤14 R: 2	T: ≤77 R: 49	T: ≤26 R: 17	T: ≤4 R: 6	T: ≤10 R: 12	T: ≤45 R: 87
Treatment	Treatment success rate (annual cohort)	≥85%	92%	92%	92%	88%	86%	79%	89%	91%	86%	81%	89%
TB case-detection	Number of cases notified and treated (all new and relapse)	N/A	184 506	1 080	97 665	1 243 905	325 582	114	134 855	33 834	9 329	63 541	3 757
	Case detection rate (all types)	≥70%	53%	85%	91%	58%	71%	83%	68%	78%	66%	80%	67%
TB/HIV	% of TB patients tested for HIV	100%	1%	100%	0%	63%	2%	9%	12%	11%	49%	83%	41%
	% of HIV-positive TB patients treated with ART	100%	100%	100%	0%	88%	21%	-b	74%	100%	100%	59%	100%
MDR-TB	% of estimated MDR-TB cases notified	≥50%	12%	100%	5%	37%	12%	0%	11%	43%	27%	12%	2%
	% of previously treated TB patients tested for MDR-TB	100%	50%	29%	1%	-c	39%	100%	70% ^d	25%	99%	12%	3%
	% of new TB patients tested for MDR-TB	20%	<1%	44%	0%	-c	<1%	6%	13% ^d	13%	21%	10%	0%
	Treatment success rate (annual cohort)	≥75%	68%	86%	-	50%	60%	25%	71%	72%	83%	-	100%

Category	Indicator	Target	Bangladesh	Bhutan	DPRK*	India	Indonesia	Maldives	Myanmar	Nepal	Sri Lanka	Thailand	Timor-Leste
Laboratory	Number of laboratories with sputum smear microscopy per 100 000 pop.	≥1	0.7	4.6	1.3	1.0	2.2	20.3	0.9	2.0	1.0	1.6	1.6
	Number of laboratories with culture and DST per 5 million pop.	≥1	<0.1	6.6	0.2	0.2	0.2	0	0.2	0.4	0.2	1.3	0

Note: T = Target; R = result

^a Incidence, prevalence and mortality rate estimates for Indonesia are being revised. In this table old burden estimates already published in the previous report are included.

^b No HIV-positive TB case was detected in 2013

^c India did not provide breakdown between retreatment and new cases tested for drug resistance. In total 17% of all notified TB cases were tested for drug resistance in 2013

^d Data are from selected sites/townships and testing could have been done for special reasons; therefore figures could not be considered representative of the whole country.

*Democratic People's Republic of Korea

Source: *Global Tuberculosis Control*: WHO report 2014, World Health Organization, Geneva 2014. WHO/HTM/TB/2014.08

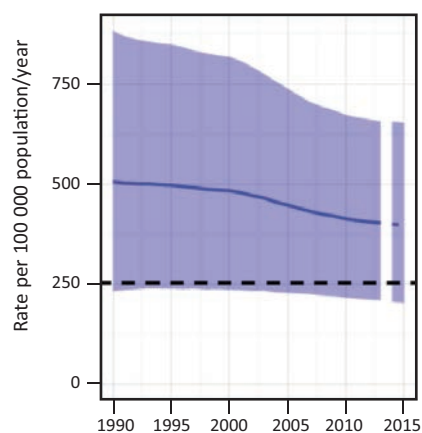
Bangladesh

In March 2014, a TB epidemiological and impact analysis was conducted, leading to downward revision of burden estimates and a slight revision of trends. However, estimates and projections still have very large uncertainty bounds underlining the need for more accurate calculations. Following the national prevalence survey planned for 2015, estimates will be revised. However, based on current figures, TB prevalence rate (best estimate) is showing a declining trend from 1990 to 2013, with acceleration in the early 2000s and at a slower pace in the last five years. According to projections till 2015, it seems unlikely that Bangladesh will reach the target of halving TB prevalence by 2015 compared to 1990 baseline (Graph 1).

The TB mortality rate is showing a declining trend from 1990 to 2013, following a similar pattern of prevalence trend. Despite progress in reducing mortality (decreased by about 36% in 2013 compared to 1990 level), according to projections, it seems unlikely that Bangladesh will reach the target of halving TB mortality by 2015 compared to 1990 baseline (Graph 2).

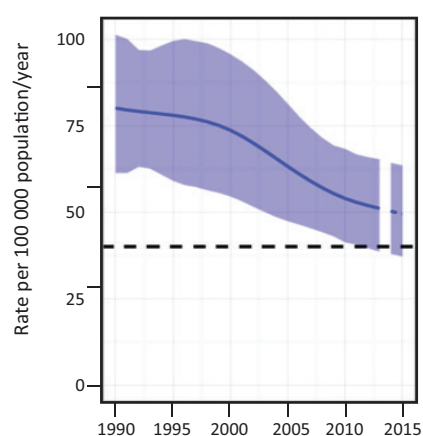
The analysis of trend in TB incidence from the notification data proves to be difficult because of the considerable change in case notification due to important case-finding efforts. Current data suggest only a minor decrease in TB incidence rate since 1990, from 225.7 to 224.2 per 100 000 population in 2013 (Graph 3). Uncertainty bounds of estimates, especially in the upper bound, are larger in most recent years reflecting the need for additional information in order to better assess whether Bangladesh is actually on track to achieve the target of reverting the TB incidence trend. In fact, despite the good performance of TB programme on treatment success rate (target of 90% was reached in 2004), estimated case detection of all forms of TB is still low (53% in 2013) suggesting that it is unlikely that Bangladesh will reach the MDG target by 2015.

Graph 1: Trend in estimated TB prevalence rates 1990–2013 and forecast TB prevalence rates 2014–2015, Bangladesh



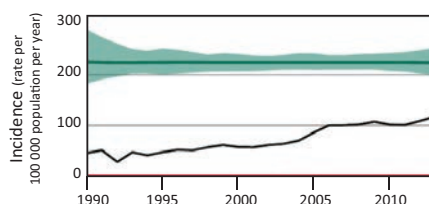
(Shaded areas represent uncertainty bands. The horizontal dashed line represents the target of a 50% reduction by 2015 compared with 1990. The other dashed line shows projections up to 2015)

Graph 2: Trend in estimated TB mortality rates 1990–2013 and forecast TB prevalence rates 2014–2015, Bangladesh



(Shaded areas represent uncertainty bands. The horizontal dashed line represents the target of a 50% reduction by 2015 compared with 1990. The other dashed line shows projections up to 2015)

Graph 3: Trend in case-notification rates (new and relapse cases, all forms) and estimated TB incidence rates, 1990–2013, Bangladesh



(Black line represents notification rate, green line represents estimated incidence, red line represents incidence of HIV-positive TB cases only, shaded areas represent uncertainty bands)

Source: *Global Tuberculosis Control: WHO report 2014*, World Health Organization, Geneva 2014. WHO/HTM/TB/2014.08

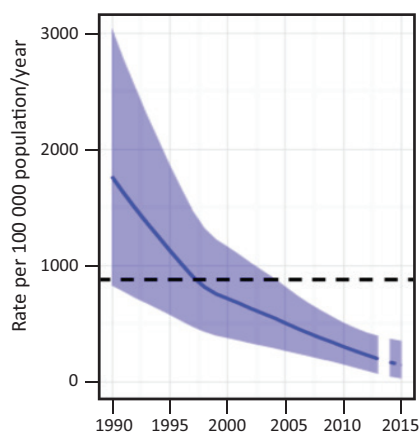
Bhutan

The TB prevalence rate has been showing a constant declining trend from 1990 to 2013, and Bhutan has already reached the target of halving TB prevalence by 2015 compared to 1990 baseline (Graph 1). Projection for 2014–2015 indicates no deviation from the current trend and even the large upper uncertainty bound falls far below the target confirming that Bhutan is achieving the target.

The TB mortality rate follows the same declining trend as prevalence, and the target of halving TB mortality by 2015 compared to 1990 baseline was reached before 2000; projections till 2015 confirm that Bhutan has reached the mortality reduction target (Graph 2).

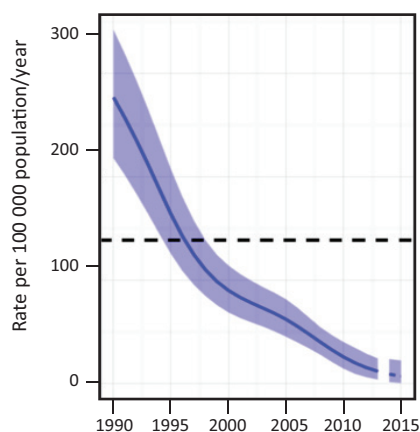
The analysis of trend in TB incidence from the notifications data shows a steady decline in the past decade. In 2008–2010, the annual notification data showed an increasing trend that was followed by a decline in the next triennium: the observed bump was most likely due to further case finding efforts (Graph 3) and estimates suggest a consistent reduction of incidence over time. Despite low HIV prevalence in the population, estimates of incidence of HIV-positive TB cases show a slightly increasing trend after 2008 (from 6 to 8 per 100 000 population) that might challenge TB control achievements in the future. Although Bhutan has already achieved the MDG target of reverting TB incidence by 2015, efforts should be made to maintain current achievements and to address emerging new challenges in TB control.

Graph 1: Trend in estimated TB prevalence rates 1990–2013 and forecast TB prevalence rates 2014–2015, Bhutan



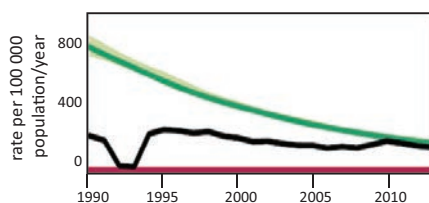
(Shaded areas represent uncertainty bands. The horizontal dashed line represents the target of a 50% reduction by 2015 compared with 1990. The other dashed line shows projections up to 2015)

Graph 2: Trend in estimated TB mortality rates 1990–2013 and forecast TB prevalence rates 2014–2015, Bhutan



(Shaded areas represent uncertainty bands. The horizontal dashed line represents the target of a 50% reduction by 2015 compared with 1990. The other dashed line shows projections up to 2015)

Graph 3: Trend in case-notification rates (new and relapse cases, all forms) and estimated TB incidence rates, 1990–2013, Bhutan



(Black line represents notification rate, green line represents estimated incidence, red line represents incidence of HIV-positive TB cases only, shaded areas represent uncertainty bands)

Source: *Global Tuberculosis Control: WHO report 2014*, World Health Organization, Geneva 2014. WHO/HTM/TB/2014.08

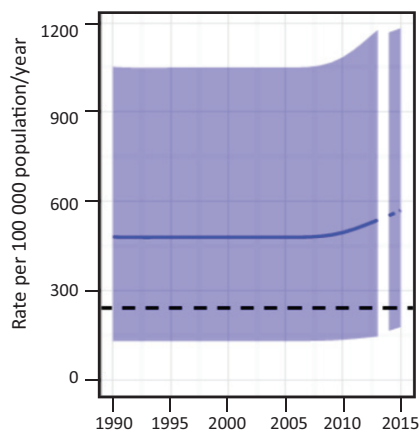
Democratic People's Republic of Korea

The TB prevalence rate was estimated to be steady from 1990 to 2007 and to increase afterwards based on trend of notification rate; between 2007 and 2013 is estimated about 10% increase (Graph 1). Projections for 2014–15 confirm this increasing prevalence trend and it seems highly unlikely that Democratic People's Republic of Korea will reach the target of 50% reduction of 1990 level. However, uncertainty bounds are very wide, particularly the upper band, and estimates and projections could not be considered reliable.

The TB mortality rate and its trend rely on better quality data, including some data from vital registration, and uncertainty bounds are rather narrow. TB mortality seems to sharply decrease starting from the early 1990s, going beyond the target of 50% reduction of 1990 level already achieved six years ago, and a couple of years later even the upper uncertainty bound was below the target (Graph 2). Projections until 2015 confirm this achievement.

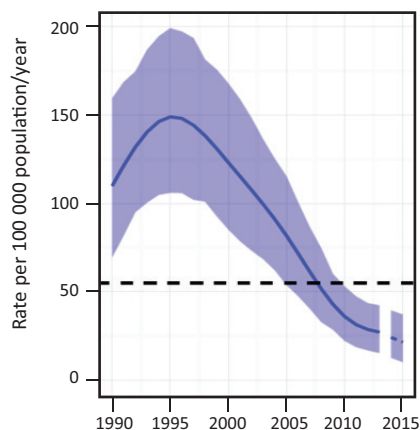
The analysis of trend in TB incidence from the notifications data proves to be difficult due to the substantial change in case-notification; increased notification rate is likely to be related to strong case-detection efforts and laboratory strengthening. However, active case-finding, enhanced reporting of cases and other efforts to address TB do not appear sufficient to justify the trend of notification rate, especially considering that the case-detection rate is estimated to be high (91% in 2013). It is, therefore, likely that TB incidence in the Democratic People's Republic of Korea is indeed increasing (Graph 3). Although it seems unlikely that the country would achieve the target of reverting the TB incidence trend by 2015, additional information would be useful in order to better assess current TB epidemiological profile.

Graph 1: Trend in estimated TB prevalence rates 1990–2013 and forecast TB prevalence rates 2014–2015, Democratic People’s Republic of Korea



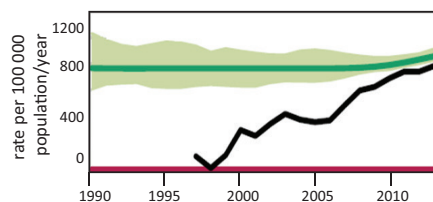
(Shaded areas represent uncertainty bands. The horizontal dashed line represents the target of a 50% reduction by 2015 compared with 1990. The other dashed line shows projections up to 2015)

Graph 2: Trend in estimated TB mortality rates 1990–2013 and forecast TB prevalence rates 2014–2015, Democratic People’s Republic of Korea



(Shaded areas represent uncertainty bands. The horizontal dashed line represents the target of a 50% reduction by 2015 compared with 1990. The other dashed line shows projections up to 2015)

Graph 3: Trend in case-notification rates (new and relapse cases, all forms) and estimated TB incidence rates, 1990–2013 Democratic People’s Republic of Korea



(Black line represents notification rate, green line represents estimated incidence, red line represents incidence of HIV-positive TB cases only, shaded areas represent uncertainty bands)

Source: *Global Tuberculosis Control: WHO report 2014*, World Health Organization, Geneva 2014. WHO/HTM/TB/2014.08

India¹

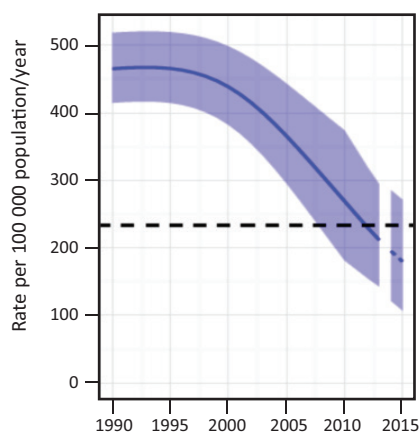
The TB prevalence rate is showing a steady and important declining trend since 2000; in 2013 the best estimate of prevalence fell under the target of 50% reduction of 1990 level by 2015 (Graph 1). Projections for 2014–2015 showing a continuation of the current trend reaching over 60% reduction of the 1990 level by 2015. Despite the large uncertainty interval (even larger for projections) with the upper bound being partially above the target, India is highly likely to reach prevalence target by 2015.

The TB mortality rate follows a flat trend from 1990 to 2003, with declining slope afterwards. In 2013 the mortality rate was just above the target and projections until 2015 suggest that India is likely to reach the target of halving 1990 mortality rate by 2015, even though projected estimates have a large upper uncertainty bound partially above the target (Graph 2).

The analysis of trend in TB incidence from the notifications data shows that incidence started to revert in mid-2000's (Graph 3). In fact, taking into consideration efforts and achievements in TB control and recent revision of TB burden estimates, the declining trend of notification rate is considered to reflect a real decrease in TB incidence. The achievement of India towards halting and reverting TB incidence by 2015 (MDG goal for TB control) positively reflects the overall situation of SEAR towards achievement of MDG goals.

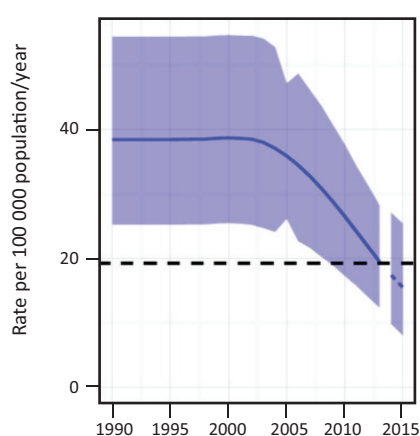
¹ All graphs are based on provisional estimates [not yet endorsed by (GoI)]

Graph 1: Trend in estimated TB prevalence rates 1990–2013 and forecast TB prevalence rates 2014–2015, India



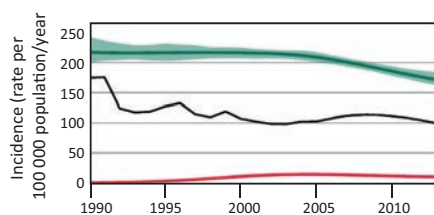
(Shaded areas represent uncertainty bands. The horizontal dashed line represents the target of a 50% reduction by 2015 compared with 1990. The other dashed line shows projections up to 2015)

Graph 2: Trend in estimated TB mortality rates 1990–2013 and forecast TB prevalence rates 2014–2015, India



(Shaded areas represent uncertainty bands. The horizontal dashed line represents the target of a 50% reduction by 2015 compared with 1990. The other dashed line shows projections up to 2015)

Graph 3: Trend in case-notification rates (new and relapse cases, all forms) and estimated TB incidence rates, 1990–2013, India



(Black line represents notification rate, green line represents estimated incidence, red line represents incidence of HIV-positive TB cases only, shaded areas represent uncertainty bands)

Source: Global Tuberculosis Control: WHO report 2014, World Health Organization, Geneva 2014. WHO/HTM/TB/2014.08

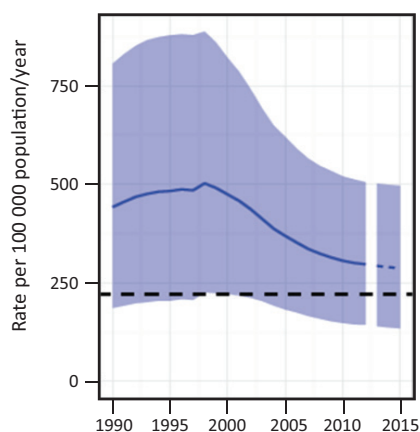
Indonesia

Burden estimates for Indonesia and their trends are being revised based on the results of the TB prevalence survey finalized in 2014. At the time of the publication of this report, new estimates were not officially approved and could not be used for assessment of country situation towards achievements of MDG goals. Therefore, Indonesia's assessment has been postponed until new and more accurate estimates are released.

However, old prevalence and mortality estimates were suggesting that Indonesia is on track for reaching the MDG targets of halving the mortality rate compared to 1990 baseline by 2015, but it is not on track for halving the prevalence rate (Graph 1 and 2). Nonetheless, it must be considered that old estimates are known to be affected by very large uncertainty bounds and projections until 2015 carry even larger uncertainty, making them unreliable to predict the likelihood of Indonesia reaching MDG targets.

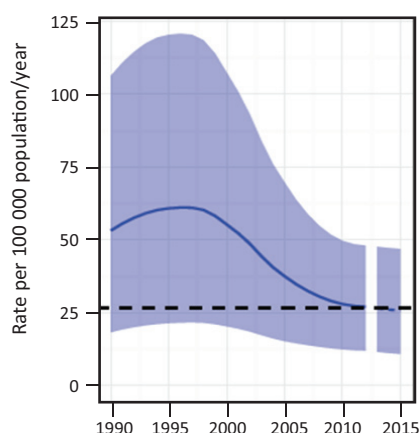
Increased notification rates over time, with a slower pace in the last five years, are likely to reflect the important case-detection efforts and should not be related to an increase in real incidence. Therefore, independently of revision of absolute value of incidence rate figures, it is estimated that incidence started to revert over the last decade (Graph 3), being well on track to achieve the MDG goal of incidence reduction by 2015.

Graph 1: Trend in estimated TB prevalence rates 1990–2012 and forecast TB prevalence rates 2013–2015, Indonesia



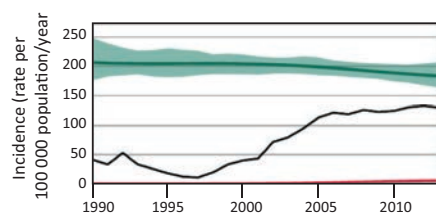
(Shaded areas represent uncertainty bands. The horizontal dashed line represents the target of a 50% reduction by 2015 compared with 1990. The other dashed line shows projections up to 2015)

Graph 2: Trend in estimated TB mortality rates 1990–2012 and forecast TB prevalence rates 2013–2015, Indonesia



(Shaded areas represent uncertainty bands. The horizontal dashed line represents the target of a 50% reduction by 2015 compared with 1990. The other dashed line shows projections up to 2015)

Graph 3: Trend in case-notification rates (new and relapse cases, all forms) and estimated TB incidence rates (old estimates, currently under revision), 1990–2013, Indonesia



(Black line represents notification rate, green line represents estimated incidence, red line represents incidence of HIV-positive TB cases only, shaded areas represent uncertainty bands)

Source: Global Tuberculosis Control: WHO report 2014, World Health Organization, Geneva 2014. WHO/HTM/TB/2014.08

Maldives

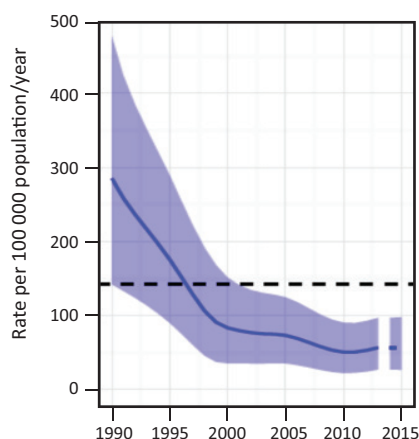
The TB prevalence rate is showing a steep decline from 1990 to 2000, with reduction of prevalence to over 70% of the 1990 level. A further decline in prevalence although not so steep, reached 57 per 100 000 population in 2013 which is the lowest in the SEA Region. Despite some fluctuations in the annual rate and relatively large confidence intervals, estimates are consistently below the target and projections for 2014–2015 confirm that Maldives is very likely to maintain a low prevalence rate (Graph 1).

The TB mortality rate follows a similar overall trend as the prevalence rate, with a sharp decline until 2004 and consistent low rates until 2013 (the spike in 2002 could be considered an outlier). Projections until 2015 show stabilization of mortality rate to very low level, around 2 per 100 000 population with narrow uncertainly bounds, far below the MDG target (Graph 2).

Also, the incidence target was achieved, with a steady and important decrease of incidence throughout the last 20 years (Graph 3). In fact, taking into consideration efforts and achievements in TB control, the declining trend of notification rate is considered to reflect a real decrease in TB incidence.

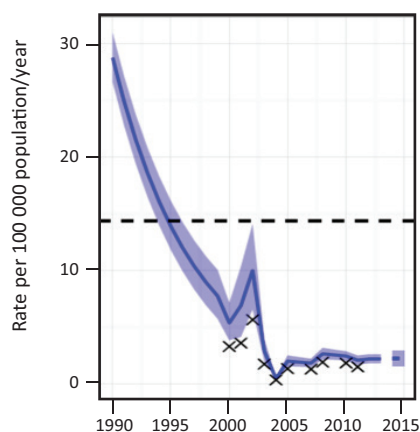
TB epidemiology in Maldives seems to be shifting from an epidemic phase to low endemic phase. However, efforts towards TB control should continue to be strengthened as estimated incidence is still 40 per 100 000 population (above 20/100 000 threshold for low incidence country) and the shift of infection to older age groups expected in a country transitioning to low endemic phase is still not clearly observed. In fact the notification rate decreased in all age groups but more sharply in the 15–34 age group. However, due to small numbers, notification rates have large annual fluctuations hampering proper interpretation. Relatively high rates in males aged 15–34 years may be also explained by TB occurring in foreign-born migrants that represent 8% of all TB cases notified.

Graph 1: Trend in estimated TB prevalence rates 1990–2013 and forecast TB prevalence rates 2014–2015, Maldives



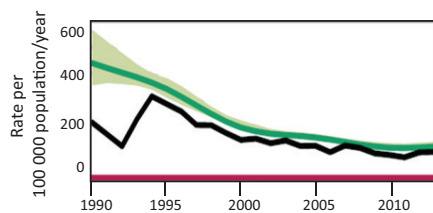
(Shaded areas represent uncertainty bands. The horizontal dashed line represents the target of a 50% reduction by 2015 compared with 1990. The other dashed line shows projections up to 2015)

Graph 2: Trend in estimated TB mortality rates 1990–2013 and forecast TB prevalence rates 2014–2015, Maldives



(Shaded areas represent uncertainty bands. The horizontal dashed line represents the target of a 50% reduction by 2015 compared with 1990. The other dashed line shows projections up to 2015. The "x" symbol represents the mortality data from vital statistics reported by Maldives that were adjusted to account for incomplete coverage - deaths with no reported cause - and ill-defined causes but not for miscoding of causes of deaths))

Graph 3: Trend in case-notification rates (new and relapse cases, all forms) and estimated TB incidence rates, 1990–2013, Maldives



(Black line represents notification rate, green line represents estimated incidence, red line represents incidence of HIV-positive TB cases only, shaded areas represent uncertainty bands)

Source: *Global Tuberculosis Control: WHO report 2014*, World Health Organization, Geneva 2014. WHO/HTM/TB/2014.08

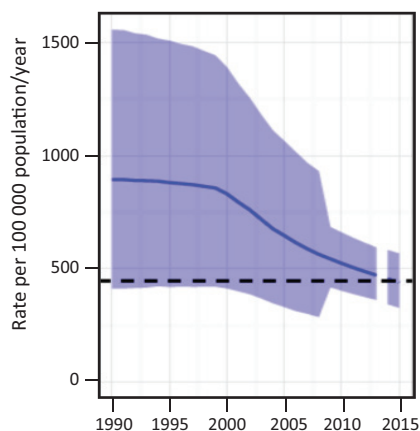
Myanmar

The TB prevalence rate was estimated to have a rather flat trend until 2000 and decreased afterwards almost reaching 50% reduction of the 1990 prevalence level in 2013. Projections for 2014-2015 suggest that if the current rate of progress continues, Myanmar could achieve 50% reduction by 2015, although the uncertainty upper bound would lie almost entirely above the target line (Graph 1). Myanmar is planning to conduct another prevalence survey in 2017 to provide direct measurement of prevalence trend.

The TB mortality rate follows a steep declining slope from 1998 until 2010, and already in 2006 the target of 50% reduction of 1990 mortality baseline was achieved. Estimates after 2006 as well as projections until 2015 indicate a continuing declining trend, with the upper uncertainty bound entirely below the target, indicating Myanmar would achieve halving the 1990 mortality rate by 2015 (Graph 2).

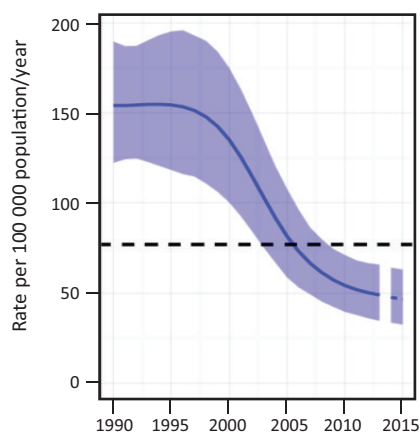
The analysis of trend in TB incidence (of all cases and HIV-positive TB cases) from the notifications data shows that incidence slightly increased from 1990 to 2002; afterwards, due to remarkable case detection efforts and strengthening of TB control activities, the trend started to revert and in 2013 incidence was lower than the 1990 level (Graph 3). Considering large overlapping of uncertainty bands around best incidence estimates, the reversion of trend is less clear. Incidence of HIV-positive TB cases is also slightly reverting suggesting that the HIV epidemic is not likely to jeopardize achievement in TB control in the near future. Overall, Myanmar seems to be on track for achieving the MDG target for incidence reduction.

Graph 1: Trend in estimated TB prevalence rates 1990–2013 and forecast TB prevalence rates 2014–2015, Myanmar



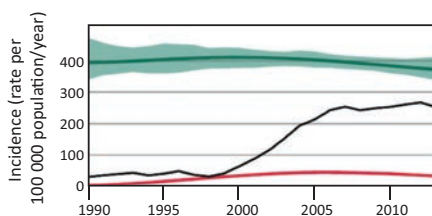
(Shaded areas represent uncertainty bands. The horizontal dashed line represents the target of a 50% reduction by 2015 compared with 1990. The other dashed line shows projections up to 2015)

Graph 2: Trend in estimated TB mortality rates 1990–2013 and forecast TB prevalence rates 2014–2015, Myanmar



(Shaded areas represent uncertainty bands. The horizontal dashed line represents the target of a 50% reduction by 2015 compared with 1990. The other dashed line shows projections up to 2015)

Graph 3: Trend in case-notification rates (new and relapse cases, all forms) and estimated TB incidence rates, 1990–2013, Myanmar



(Black line represents notification rate, green line represents estimated incidence, red line represents incidence of HIV-positive TB cases only, shaded areas represent uncertainty bands)

Source: Global Tuberculosis Control: WHO report 2014, World Health Organization, Geneva 2014. WHO/HTM/TB/2014.08

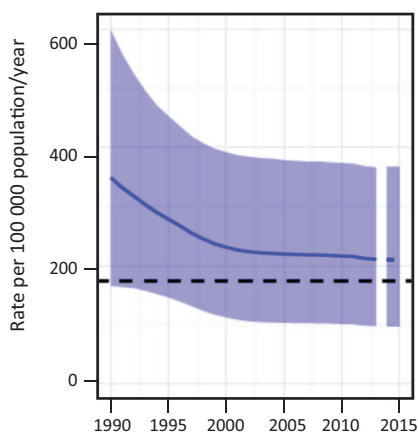
Nepal

The TB prevalence rate, after showing a declining trend from 1990 to 2000, stabilized at around 220 per 100 000 population, and in the last five years is further decreasing; projections for 2014-2015 suggest that the prevalence rate is likely to continue decreasing slightly but the progress rate seems insufficient to reach the MDG target of halving the prevalence rate compared to 1990 baseline (Graph 1). Estimates and projections are affected by wide uncertainty bounds reflecting the need for improving current estimates; Nepal is indeed planning to conduct a prevalence survey in 2015 in order to better understand the real burden in the country and the reasons for missing cases despite continuous efforts in expanding coverage of TB services and outreach activities.

As with prevalence, TB mortality rate is also showing a rather flat trend after 2002, following a sharp declining trend in the previous decade up to a more than 50% decrease from the 1990 baseline. Although projections until 2015 do not suggest any further decrease compared to the 2013 mortality rate, the MDG mortality goal is expected to be achieved as even the upper uncertainly bound is below the target (Graph 2).

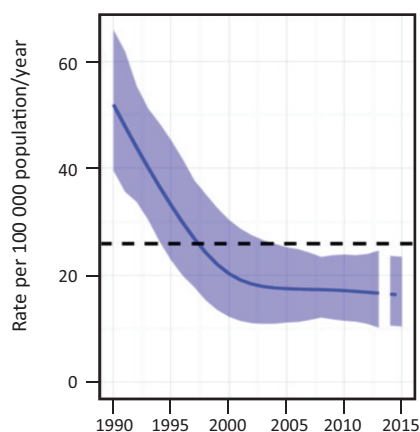
The analysis of trend in TB incidence from the notifications data shows a fairly constant trend in notifications of all TB cases as well as bacteriologically-confirmed cases in the last decade, despite significant case-finding efforts and expansion of population coverage for TB service delivery. However, in 2013 notification rates seem to confirm the slight decrease that started to occur in 2012. The flat trend of previous years was interpreted as the result of increased case detection combined with slightly decreasing incidence, and in light of 2012–2013 results the incidence is estimated to begin to revert (Graph 3). Therefore, Nepal seems on track to achieve incidence target by 2015. The incidence rate of HIV-positive TB cases is estimated to be slightly increasing and, although the rate is too small to jeopardize overall achievement in TB control, efforts should be strengthened in order to manage emerging challenges.

Graph 1: Trend in estimated TB prevalence rates 1990–2013 and forecast TB prevalence rates 2014–2015, Nepal



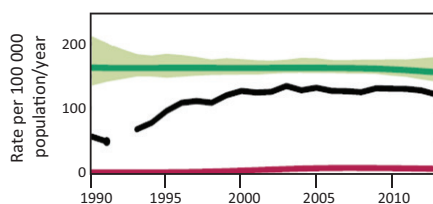
(Shaded areas represent uncertainty bands. The horizontal dashed line represents the target of a 50% reduction by 2015 compared with 1990. The other dashed line shows projections up to 2015)

Graph 2: Trend in estimated TB mortality rates 1990–2013 and forecast TB prevalence rates 2014–2015, Nepal



(Shaded areas represent uncertainty bands. The horizontal dashed line represents the target of a 50% reduction by 2015 compared with 1990. The other dashed line shows projections up to 2015)

Graph 3: Trend in case-notification rates (new and relapse cases, all forms) and estimated TB incidence rates, 1990–2013, Nepal



(Black line represents notification rate, green line represents estimated incidence, red line represents incidence of HIV-positive TB cases only, shaded areas represent uncertainty bands)

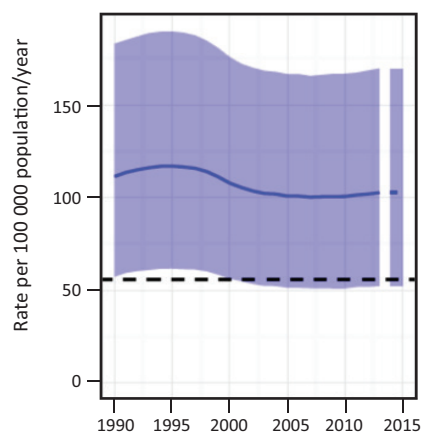
Sri Lanka

The TB prevalence rate shows an overall declining trend from the mid-1990s to 2010 reaching 100 per 100 000 population prevalence; from 2010 to 2013, the prevalence rate was increasing very slightly and projections suggest that the rate is stabilizing at 103 per 100 000 population by 2015. Although burden estimates and projections have very large uncertainty bounds and such a minor recent increase of best estimates is negligible, the currently projected trend suggests that it is very unlikely that Sri Lanka will reach the target of halving TB prevalence by 2015 compared to 1990 baseline (Graph 1).

The TB mortality rate shows an increasing trend from 1990 to 1996, followed by a decline between 1997 and 2006 and flat a trend from 2006 onwards at a low rate of 5 per 100 000 population with narrow uncertainty bands. The flat trend is mainly related to non-availability of vital statistics in recent years; most up to date and reliable vital statistics are needed to better assess achievements of Sri Lanka in mortality reduction, because current data could have underestimated the impact of TB control activities on TB mortality over the last seven years. Considering current trend estimates, despite progress in reducing mortality (decreased by more than 20% in 2013 compared to 1990 level), according to projections until 2015, it seems unlikely that Sri Lanka could reach the target of halving TB mortality compared to 1990 baseline by 2015 (Graph 2). However, considering the 2000 baseline, that represent the peak of TB mortality rate in the last two decades and the inception of TB control under DOTS conditions, Sri Lanka halved the mortality rate in 2006.

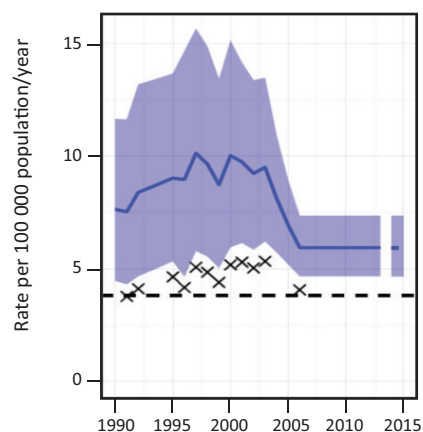
The notification rate has been increasing from 1995 to 2000 and remained fairly stable until 2013, despite minor fluctuations. Implementation of DOTS in a phased manner between 1997 and 2005 (phased expansion of microscopy laboratory network and recruitment/training of staff) might partly explain the slow pace of increase in case-notifications. There is no evidence of modification in TB determinants which could have led to a significant change in TB incidence. Current data were considered insufficient to determine reliable trend, therefore incidence was assumed to follow a horizontal trend going through the most recent estimate of incidence (Graph 3). Additional information is needed in order to better assess whether Sri Lanka would achieve the target of reverting the TB incidence trend by 2015.

Graph 1: Trend in estimated TB prevalence rates 1990–2013 and forecast TB prevalence rates 2014–2015, Sri Lanka



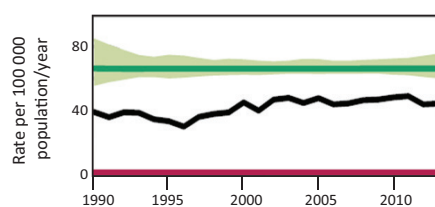
(Shaded areas represent uncertainty bands. The horizontal dashed line represents the target of a 50% reduction by 2015 compared with 1990. The other dashed line shows projections up to 2015)

Graph 2: Trend in estimated TB mortality rates 1990–2013 and forecast TB prevalence rates 2014–2015, Sri Lanka



(Shaded areas represent uncertainty bands. The horizontal dashed line represents the target of a 50% reduction by 2015 compared with 1990. The other dashed line shows projections up to 2015. The "x" symbol represents the mortality data from vital statistics reported by Sri Lanka that were adjusted to account for incomplete coverage - deaths with no reported cause - and ill-defined causes but not for miscoding of causes of deaths)

Graph 3: Trend in case-notification rates (new and relapse cases, all forms) and estimated TB incidence rates, 1990–2013, Sri Lanka



(Black line represents notification rate, green line represents estimated incidence, red line represents incidence of HIV-positive TB cases only, shaded areas represent uncertainty bands)

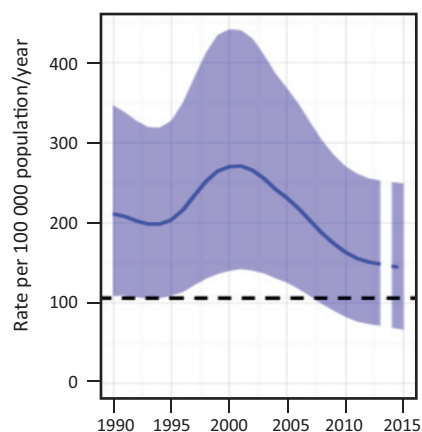
Thailand

After a minor decrease in the early 1990s, TB prevalence sharply increased and peaked in 2000; it started consistently declining afterwards, but due to this bell-shape trend, the 2013 prevalence rate was only 30% lower than the 1990 baseline, although it decreased by 46% compared to the peak in 2000. Projections for 2014–2015 indicate a further decline, but it seems unlikely at the current rate of progress that Thailand will achieve the target of halving the 1990 prevalence rate by 2015 (Graph 1). However, estimates and projections are affected by wide uncertainty bands. Estimates will be revised according to the results of the recently concluded prevalence survey.

TB mortality trend mirrors the prevalence trend, reaching a 37% reduction in 2013 compared to the 1990 baseline and 50% reduction compared to the peak in 2000. Projections for 2014–2015 show a continuation of the recent declining trend up to almost 50% of the 1990 level by 2015 (lower uncertainty bound falls below target); it seems possible that Thailand could achieve the target of mortality reduction by increasing TB mortality control efforts and accelerating the current rate of progress (Graph 2).

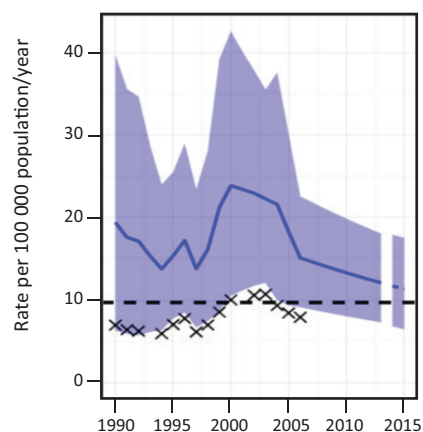
The analysis of notifications data indicates a substantial change in case notification rate over time, especially between 1995 and 2000; that is most probably due to disruption of reporting and recording system and possibly to discontinuation of services. After 2000, the notification rate shows constant slight increase, although with minor annual fluctuations. This trend is likely to be related to changes in the TB programme (i.e. case finding efforts, improvement of the quality of smear laboratories and implementation of TB/HIV and PPM activities) leading to more successful control of TB that also impacted TB epidemiology. The impact of the HIV epidemic in terms of incident HIV -positive TB cases seems to be decreasing from the early 2000s onwards, even though at a lower pace in recent years. Similarly, other factors might impact TB incidence in the rapidly changing environment in Thailand (i.e. GDP, access to care, etc.). It is, therefore, estimated that TB incidence temporarily increased in the early 2000s and started decreasing until 2013 reaching 30% reduction compared to the peak in 2002 and 14% reduction compared to 1990 (Graph 3). Hence, Thailand is achieving the target to revert TB incidence by 2015.

Graph 1: Trend in estimated TB prevalence rates 1990–2013 and forecast TB prevalence rates 2014–2015, Thailand



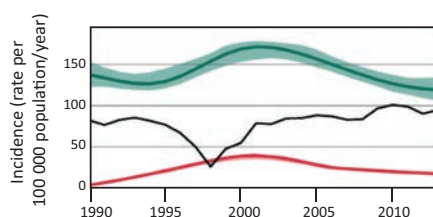
(Shaded areas represent uncertainty bands. The horizontal dashed line represents the target of a 50% reduction by 2015 compared with 1990. The other dashed line shows projections up to 2015)

Graph 2: Trend in estimated TB mortality rates 1990–2013 and forecast TB prevalence rates 2014–2015, Thailand



(Shaded areas represent uncertainty bands. The horizontal dashed line represents the target of a 50% reduction by 2015 compared with 1990. The other dashed line shows projections up to 2015. The "x" symbol represents the mortality data from vital statistics reported by Thailand that were adjusted to account for incomplete coverage - deaths with no reported cause - and ill-defined causes but not for miscoding of causes of deaths)

Graph 3: Trend in case-notification rates (new and relapse cases, all forms) and estimated TB incidence rates, 1990–2013, Thailand



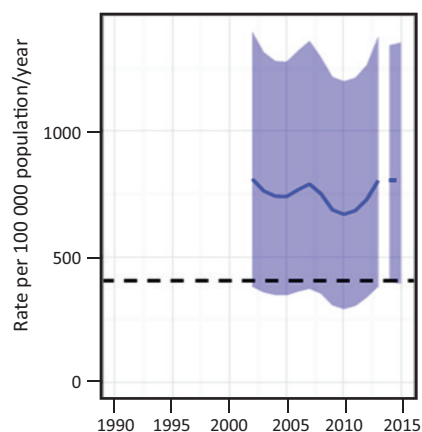
(Black line represents notification rate, green line represents estimated incidence, red line represents incidence of HIV-positive TB cases only, shaded areas represent uncertainty bands)

Timor-Leste

TB burden estimates for Timor-Leste have been recently revised by WHO based on in-depth analysis of available in-country data. According to the estimated trend Timor-Leste is unlikely to halve the 1990 level of prevalence and mortality by 2015 (Graphs 1 and 2). In fact, prevalence and mortality rates are both estimated to be increasing in the last three years following overall decreasing trend of the previous decade. However all burden estimates are still affected by very large uncertainty bands (even larger for projections) and country performance towards MDG targets is difficult to be assessed on the basis of available information.

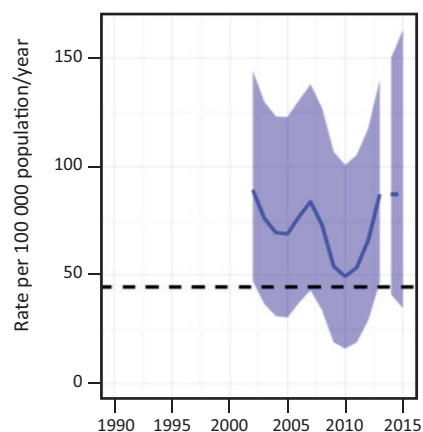
The analysis of trend in TB incidence from the notifications data proves to be difficult due to high fluctuation of notification rates and quality issues related to recording and reporting. Changes in case-notification may have been influenced by political instability leading to a flux of refugees and migration of population to the peripheral areas, although they are likely to be mainly related to case-finding efforts by the national TB programme, such as increased number of hospitals, health facilities providing TB services, microscopy centres and TB doctors and staff. Fluctuation of notification rate of TB cases concerns mainly clinically diagnosed pulmonary TB cases which are over 50% of all new and relapse cases; this finding could be related to difficulties to confirm the diagnosis and the recent decrease in notification rate may reflect reduced misdiagnosis of these cases. Notification rate of bacteriologically confirmed TB cases is more stable and follow overall increasing trend. Altogether, current data were considered insufficient to determine reliable TB incidence trend; therefore incidence was assumed to follow a horizontal trend going through the most recent estimate of incidence (Graph 3). Additional information is needed in order to better assess whether Timor-Leste would achieve the target of reverting TB incidence trend by 2015.

Graph 1: Trend in estimated TB prevalence rates 1990–2013 and forecast TB prevalence rates 2014–2015, Timor Leste



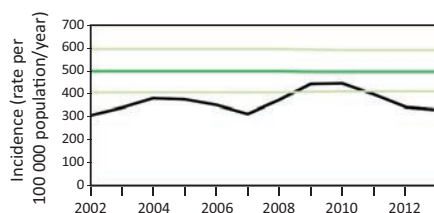
(Shaded areas represent uncertainty bands. The horizontal dashed line represents the target of a 50% reduction by 2015 compared with 1990. The other dashed line shows projections up to 2015)

Graph 2: Trend in estimated TB mortality rates 1990–2013 and forecast TB prevalence rates 2014–2015, Timor Leste



(Shaded areas represent uncertainty bands. The horizontal dashed line represents the target of a 50% reduction by 2015 compared with 1990. The other dashed line shows projections up to 2015)

Graph 3: Trend in case-notification rates (new and relapse cases, all forms) and estimated TB incidence rates, 1990–2013, Thailand



(Black line represents notification rate, green line represents estimated incidence, red line represents incidence of HIV-positive TB cases only, shaded areas represent uncertainty bands)

National TB control programmes in all 11 Member States of the South-East Asia Region have made a substantial progress in implementing the components of the Stop TB strategy. As a result of this concerted action by national TB control programmes and all partners, almost 22 million TB patients have been treated during the past 10 years. The treatment success rate among new smear-positive pulmonary TB (PTB) cases has remained above 85% since 2005, and was 88% in the 2012 cohort. The TB mortality rate has decreased by 50% since 1990 and the Region is on track to achieve the global target of a 50% reduction by 2015. The decline in the prevalence is observed in all Member States and in some it is over 50%.

While considerable progress continues to be made, national TB control programmes face a number of challenges that relate to uncertainties regarding sustainable financial and operational resources, limited technical and management capacity, etc. It is increasingly being recognized that attention needs to be paid to addressing the social, economic and behavioural determinants that impact TB, if national efforts to combat TB are to succeed in the longer term.

This annual report reviews the epidemiological and programmatic situation of the country TB programmes and progress made in the countries during 2014 and provides guidance to countries to further strengthen their efforts towards achievement of the TB elimination target as set out in the 'End TB Strategy'.



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ISBN 978 92 9022 476 1



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Acronyms

ACSM	advocacy, communication and social mobilization
AIIMS	All India Institute of Medical Sciences, New Delhi, India
ART	antiretroviral treatment
ARTI	annual risk of tuberculosis infection
ASHA	accredited social and health activist
BMU	basic management unit
BRAC	Bangladesh Rural Advancement Committee
CBCI	Catholic Bishops' Conference of India
CDC	US Centers for Disease Control and Prevention, Atlanta, United States
CFR	case-fatality rate
CDH	chest disease hospital
CN	concept note
COD	causes of death
CPMDT	community-based programmatic management of drug-resistant TB
CPT	cotrimoxazole preventive therapy
CTB	child TB
DFID	United Kingdom Department for International Development
DHS	demographic health survey
DOTS	directly observed treatment, short course
DRS	drug resistance survey/surveillance
DR-TB	drug-resistant tuberculosis
DST	drug susceptibility testing
EQA	external quality assessment/assurance
EXPAND-TB	expanding access to new diagnostics for tuberculosis
FDC	fixed-dose combination
FHI	Family Health International

FLD	first-line anti-TB drugs
FIND	Foundation for Innovative New Diagnostics
GDF	Global Drug Facility
GENETUP	German–Nepal Tuberculosis Project
GF	Global Fund to Fight AIDS, Tuberculosis and Malaria
GFC	global focus countries
GF-TFM	Global Fund Transitional Funding Mechanism
GLC	Green Light Committee
GLI	Global Laboratory Initiative
HCW	health-care worker
HNPSPD	Health, Nutrition and Population Sector Development Programme
HPA	Health Protection Agency, Malé, Maldives
HQ	headquarters
HRD	human resources development
ICRC	International Committee of Red Cross
ICTC	integrated counselling and testing centre
IDSP	integrated disease surveillance project
IDU	intravenous drug use/r(s)
IEC	information, education and communication
IEDCR	Institute of Epidemiology, Disease Control and Research, Dhaka, Bangladesh
IMA	Indian Medical Association
IPT	isoniazid preventive treatment
IPAQT	Initiative for Promoting Affordable, Quality TB Tests
ISTC	international standards for tuberculosis care
IVMS	Institute of Veterinary and Medical Sciences, Australia
JATA	Japan Anti-TB Association
JICA	Japan International Cooperation Agency
JEMM	joint external monitoring mission

KAP	knowledge, attitude and practice
KNCV	Royal Dutch Tuberculosis Association
LPA	line probe assay
MDG(s)	Millennium Development Goal(s)
MDR-TB	multidrug-resistant tuberculosis
MIFA	managing information for action
MIS	management information system
MSH	Management Sciences for Health
MoU	memorandum of understanding
NCDC	National Centre for Disease Control
NFM	New Funding Model
NGO	nongovernmental organization
NIDCH	National Institute of Disease and Chest Hospital
NHSO	National Health Security Office
NIRT	National Institute of Research for Tuberculosis, Chennai, India
NITRD	National Institute of TB and Respiratory Diseases, New Delhi, India
NRL	national reference laboratory(ies)
NSA	national strategy application
NSP	national strategic plans
NTI	National Tuberculosis Institute, Bangalore, India
NTP	national tuberculosis programme
PAL	practical approach to lung health
PHC	primary health care
PHL	Public Health Laboratory, Thimpu, Bhutan
PITC	provider-initiated HIV testing and counselling
PLHIV	people living with HIV
PMDT	programmatic management of drug-resistant tuberculosis
PPM	public–private, public–public or private–private mix
PSI	Population Services International

PTB	pulmonary TB
QA	quality assurance
r-GLC	regional green light committee on MDR-TB
RNTCP	Revised National Tuberculosis Control Programme (India)
R&R	recording and reporting
RR/MDR-TB	Rifampicin resistant/multidrug-resistant TB
RTRL	regional TB reference laboratory
SEAR	(WHO) South-East Asia Region
SITT	integrated tuberculosis information system
SLD	second-line drugs (for MDR-TB)
SNRL	supranational reference laboratory
SOP	standard operating procedures
STD	sexually transmitted disease(s)
STI	sexually transmitted infection(s)
TB	tuberculosis
TBCM	tuberculosis clinical management
TB/HIV	tuberculosis and human immunodeficiency virus
TBTEAM	TB technical assistance mechanism
TFM	transitional funding model
ToT	training of trainers
The Union	International Union Against Tuberculosis and Lung Disease
UNITAID	
USAID	United States Agency for International Development
VCCT	voluntary confidential counselling and testing
VCTC	voluntary counselling and testing centre
VR	vital registration
WHA	World Health Assembly
WHO	World Health Organization
XDR-TB	extensively drug-resistant tuberculosis

Preface



The WHO South-East Asia Region continues to bear a significant burden of tuberculosis despite making significant progress in the global efforts to eliminate TB. Although notified TB cases have been steadily increasing, a decline in the prevalence is seen in all Member States, some reporting more than 50% decline since 1990. With good implementation of DOTS by Member States, the level of “multi-drug-resistant” (MDR) TB among newly-detected cases is low. The Region has achieved the target of halving the TB mortality rate, but we cannot be complacent at this stage, as we need to accelerate our efforts

to strengthen the TB control programmes in all Member States to achieve further reduction in mortality due to TB. This report is an excellent review of the current status and future plans for the control of TB in the SEA Region.

While the advancements in tuberculosis control over the past two decades are substantial, they are far from enough to ensure progress towards elimination of TB. Challenges of inadequate coverage and weak performance of health services limit access to high-quality tuberculosis care in some of the countries. Further, many public and private health-care providers remain delinked from national tuberculosis control efforts. In addition, tuberculosis is a disease of the poor and the absence of universal health coverage aggravates the economic burden of TB on the poor. This hardship is compounded by a lack of social protection mechanisms to address associated income loss and non-medical costs. The weaknesses in health systems have limited the linkages that are required across social sectors in order to address poverty, undernutrition and the risk factors that adversely influence the health outcomes of people afflicted by tuberculosis and their vulnerability to it. Childhood TB continues to be a neglected health concern in countries due to the non-availability of an explicit diagnostic tool to detect TB among children.

The strong support from the Global Fund (GF) is an opportunity that countries should not miss. With the resources that GF is making available to countries, this is the time to not only intensify TB control programmes, but also to strengthen the health systems so that future sustainability in a resilient health system is ensured.

WHO has released its post-2015 Global TB Strategy called “End TB Strategy” through resolution WHA67.1 endorsed by the Sixty-seventh World Health Assembly in May 2014. The new strategy aims to eliminate TB by 2035. To achieve this ambitious target, countries require stronger commitment, more concerted efforts and specific strategies and support to accelerate progress in preventing disease and deaths, and expand access to needed interventions and new tools.

This annual report is a compilation of regional and country-specific achievements, challenges and plans. WHO will continue to provide technical support to catalyse and accelerate the implementation of TB care and control in Member States through a range of activities as detailed in this report. I am sure that with the commitment of ministries of health and support from all partners and stakeholders, the Region will achieve the desired targets and lead the global fight against TB.



Dr Poonam Khetrpal Singh
Regional Director

Tuberculosis remains one of the major public health concerns in the South-East Asia Region of WHO. The Region accounts for 38% of the global burden of tuberculosis (TB) in terms of incidence. It is estimated that about 3.4 million new cases of TB occur each year and about 440 000 people died of this disease in 2013, most of these in five countries, namely, Bangladesh, India, Indonesia, Myanmar and Thailand, which are among the 22 high-TB-burden countries in the world. Levels of multidrug-resistance are lower than 2.2% among new cases and 16% among retreatment cases; however, this translates into nearly 89 000 estimated multi-drug-resistant TB (MDR-TB) cases among all TB cases notified in 2013. In 2013, 43% of TB patients knew their HIV status and HIV-positive TB patients were 6.1%. While 88% of HIV-positive TB patients were on cotrimoxazole preventive therapy, 81% were on antiretroviral therapy.

In terms of progress in TB control, all 11 Member States have sustained country-wide access to directly observed treatment, short-course (DOTS). Each year, more than 2 million TB cases are being registered for treatment and the treatment success rate among new smear-positive (NSP) pulmonary TB (PTB) cases has remained above 85% since 2005, and was 88% in the 2012 cohort. The TB mortality rate has decreased more than 50% since 1990 and the Region already achieved the global target of a 50% reduction by 2015. The decline in the prevalence is observed in all Member States with some reporting as over 50% decline.

National TB control programmes have also made progress in implementing the components of the Stop TB strategy. As a result of this concerted action by national TB control programmes and all partners, almost 22 million TB patients have been treated during the past 10 years; thereby averting several thousand deaths. A growing number of MDR-TB diagnosis and treatment sites are being established in the Region, and in 2013, almost 24 000 MDR-TB patients were put on treatment. However, this represents only a fraction of the estimated 89 000

MDR-TB cases in the Region. A regional green light committee on MDR-TB (r-GLC) has been established to provide technical guidance to countries of the Region to scale up drug-resistant TB (DR-TB) care and management. The collaboration between TB and HIV control programmes is improving. Several countries in the Region such as India and Thailand have submitted a joint TB/HIV concept note to the New Funding Model of the Global Fund in 2014, and where the dual burden of TB and HIV epidemic exists, many others will join in this combined effort between two vertical programmes. Private–public collaborative activities have been further expanded in medical colleges, private and large public hospitals, corporate sectors, prisons and nongovernmental organizations. Infection control policies and plans are being pursued in 10 countries. Newer diagnostics are being deployed with assistance from partners in all high-TB-burden countries as well as in low-TB-burden countries in the Region. The TB activities also included community mobilization to promote effective communication and participation among community members to generate demand for TB prevention, diagnosis, treatment and care services. In addition, recognizing that the success of TB control depends on strong health systems, health systems strengthening components were included in the national strategic plans. The annual meeting of the national TB control programme (NTP) managers and partners held in November 2014 provided a strategic forum for exchange of information on existing and new innovative approaches being applied in countries, discussed technical issues, and followed up on actions taken on the recommendations of previous meetings. The meeting resulted in providing valuable advice for developing policies, strategies and plans for implementation of TB control interventions in Member countries. The meeting also discussed various issues extensively, including future action in the respective countries specifically for effective adaptation and implementation of the global “End TB Strategy”. The meeting made important recommendations to Member States, technical and financial partners, and civil society for future actions to ensure universal access to quality-assured diagnosis and treatment for all persons with TB, scaling up programmatic management of drug resistant tuberculosis (PMDT), strengthened surveillance and impact measurement, and enhanced resource mobilization, through close multisectoral collaboration and engagement of diverse stakeholders ranging from relevant ministries to affected communities.

In terms of resources, national governments meet 50% of the budgets available to run national TB control programmes, while the Global Fund covers more than a third of funding. Countries in the Region are submitting concept

notes to the New Funding Model of the Global Fund based on revised national strategic plans and as per the need identified through in-depth analysis of country epidemiology. Additional support is received through several bilateral agreements with donor governments and agencies including USAID TBCARE I and II in Indonesia and Bangladesh respectively, through 3 MDG and USAID funds in Myanmar and USAID in India. Other global initiatives such as (UNITAID), the Global Drug Facility, the Global Laboratory Initiative, the EXPAND TB PROJECT, TB REACH and the Stop TB partnership are helping to mobilize resources for the diagnosis and treatment of all forms of TB towards achieving universal case detection and treatment.

While considerable progress continues to be made, national TB control programmes face a number of challenges that relate to uncertainties regarding sustainable financial and operational resources, limited technical and management capacity, weak procurement and supply management mechanisms, and national laboratory networks which, in turn, are slowing the planned expansion of early and enhanced case detection and interventions for TB/HIV and DR-TB. Though collaboration with other sectors is steadily increasing, the provision of care by all health-care providers is not sufficiently linked to national programmes to make an impact at the national level. Low community awareness and utilization of services hamper the uptake of services and it is increasingly being recognized that attention needs to be paid to addressing the social, economic and behavioural determinants that impact TB, if national efforts to combat TB are to succeed in the longer term.

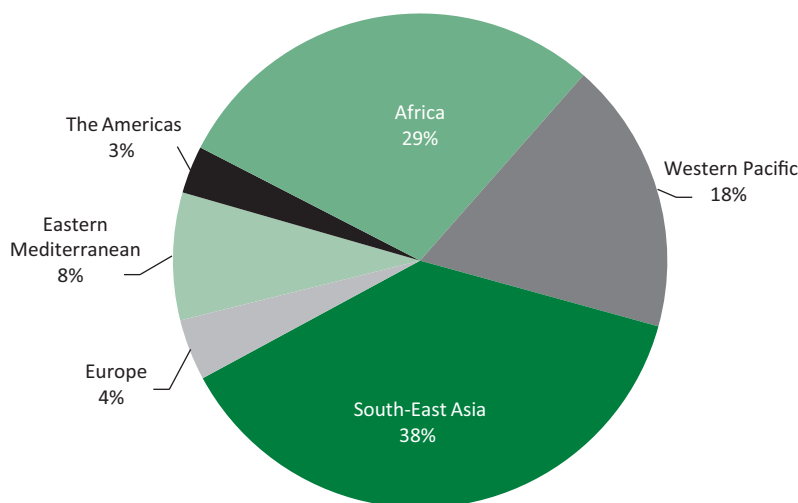
WHO has now released its post-2015 Global TB Strategy called “End TB Strategy” through resolution WHA67.1 endorsed by the Sixty-seventh World Health Assembly in May 2014. The new strategy aims to achieve elimination of TB by 2035. With this ambitious target, countries require stronger commitment, more concerted efforts and specific strategies and support to accelerate progress in preventing disease and deaths, and expand access to needed interventions and new tools.

2

The burden of disease caused by TB

The WHO South-East Asia Region (SEAR) with nearly one fourth of the world population accounts for 38% morbidity and 39% mortality of the global burden of tuberculosis, with an estimated 4.5 million prevalent and 3.4 million incident cases and 440 000 deaths in 2013 (Figures 1a and 1b). Five of the 11 Member countries in the Region are among the 22 high-burden countries, with India alone accounting for 23% of the world's incident cases and 21% of world deaths for TB. Among all new TB cases detected in 2013 in the Region, most cases occurred among young adults, particularly in the most productive age group of 25–34 years; males are more affected with a male-to-female ratio of 1:5.

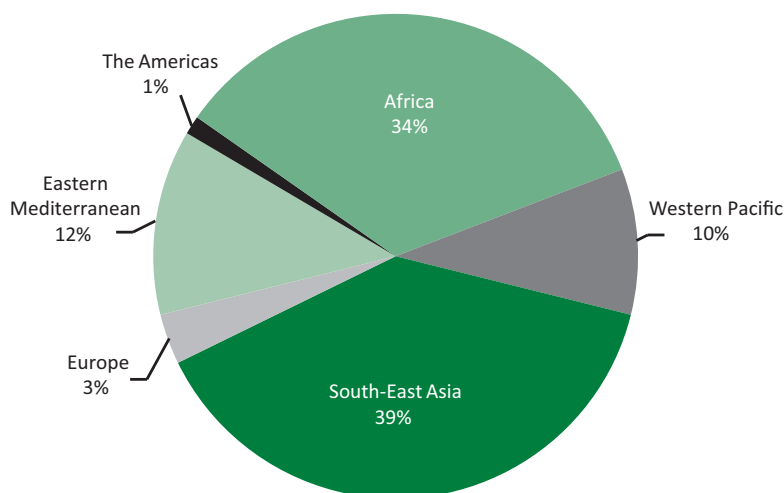
Figure 1a: Estimated incidence of all forms of TB, classified by WHO Region, 2013



Estimated global TB incidence = 9 000 000 (8 600 000 – 9 400 000) cases (all forms of TB)

Source: *Global Tuberculosis Control: WHO report 2014*, World Health Organization, Geneva 2014. WHO/HTM/TB/2014.08

Figure 1b: Estimated mortality of all forms of TB, classified by WHO Region, 2013



Estimated global TB mortality = 1 100 000 (980 000 – 1 300 000) cases (all forms of TB)

Source: *Global Tuberculosis Control: WHO report 2014*, World Health Organization, Geneva 2014. WHO/HTM/TB/2014.08

2.1 Estimated TB incidence, prevalence and mortality

2.1.1 Enhancement of TB burden estimates in South-East Asia Region (SEAR)

TB burden estimates for SEAR are calculated according to WHO methods¹ and are published as best estimates with uncertainty intervals that provide a range of plausible values. Their width is inversely proportional to the accuracy of the estimate, depending on quality and coverage of data source from countries in the Region.

Some of the country estimates are not officially endorsed by Member States, as revision of estimates is an ongoing process or estimates are considered to be based on poor assumptions. All countries are strongly encouraged to improve their TB burden estimates through available methods: in-depth analysis of available data, systematic assessment of the quality and coverage of surveillance

¹ Full details about the methods used are provided in the online Technical Appendix of “Global Tuberculosis Control: WHO report 2014”. http://www.who.int/tb/publications/global_report/gtbr14_online_technical_appendix.pdf

data, operational research, prevalence and mortality surveys. Besides short-term means to improve estimates, countries should strengthen TB surveillance and vital registration (VR) systems in order to achieve the ultimate goal of direct measurement of incidence and mortality using notification and vital registration data respectively.

Estimates of TB burden between 2009 and 2014 in all countries in the South-East Asia Region were discussed, during a regional workshop held in 2009 and additionally, during in-country workshops in some countries (in India two national consultations were organized in 2011 and 2012). These interactions were useful to collect information to estimate TB incidence through the indirect method based on estimated case-detection rate combined with notification data; this method was applied to most countries in the Region. Case-detection rate of all forms of TB was estimated through in-depth analysis of available surveillance data, of access to health and programmatic management of TB, and expert opinion on proportion of cases not detected or not captured by TB surveillance. Trends over time were calculated considering changes of case-detection rate in different years, except for Bhutan and India where results from repeat annual risk for tuberculosis infection (ARTI) surveys were used as well. For Thailand, incidence trends were estimated using mortality trends that are based on VR data; this approach was considered more accurate than derivation of trends using other parameters. For Myanmar and Thailand, models to calculate incidence based on results of prevalence survey (using estimated duration of disease) were elaborated; however, due to considerable uncertainty around estimates obtained with this method, incidence estimates rely on general method based on notification and case-detection rates. Information was inadequate for time series analysis for Bangladesh, Sri Lanka and Timor-Leste and the incidence trend was considered flat, “frozen” at the value of most recent point estimate.

India is an important focus country for better assessment of burden estimates due to its impact on regional as well as global estimates. For India, in addition to what is explained above, case-detection rate was estimated also with support of two sub-national inventory studies. However, national inventory studies are needed, in particular to better assess the number of TB cases detected in the private sector but not reported. In the analysis of trend over time, the trend was estimated to be flat between 1990 and 2001, due to absence of data and considering that Revised National Tuberculosis Control Programme (India) (RNTCP) started in 1999 only in part of the country. Between 2001 and 2013,

based on data from two national tuberculin surveys (conducted in 2000 and 2010) and annual notification data, the annual rate of decline in TB incidence was assessed to be progressively increasing from 0.5% in early 2000 to around 2.5% from 2007 onwards.

For most countries in the Region, prevalence was estimated using the indirect method, multiplying incidence by estimated duration of TB disease. This type of estimate is the most uncertain of the three TB burden indicators, because it is the product of two uncertain quantities, incidence and disease duration that cannot be measured directly, and leads to large uncertainty intervals in most of the countries. Prevalence was estimated based on results of prevalence survey (direct method) only for Myanmar and India. In Myanmar, the 2009 prevalence rate is based on the results of the prevalence survey, and estimates for 1990–2008 and 2010–2013 are based on survey-imputed data. In India, no nationwide prevalence survey was conducted, given the size of the country and logistics and cost implications; however, the India 2010 prevalence rate was calculated using results from pooled subnational surveys; similarly to Myanmar, 1990–2009 and 2011–2013 estimates are based on survey-imputed data. In the South-East Asia Region, other countries conducted prevalence surveys. Bangladesh conducted a survey in 2010, but the methodology used is not recommended by WHO and results were not considered accurate enough to directly measure prevalence rate. Thailand and Indonesia completed a prevalence survey in 2012 and 2013 respectively. However, at the time of writing this report, revised estimates based on survey results were not yet available and approved by respective governments. Estimates for Democratic People's Republic of Korea are based on data provided by the national TB programme.

TB-related mortality was estimated indirectly, multiplying incidence by estimated case fatality ratio, for seven countries in the Region because of lack of good quality VR or data from mortality surveys. VR data have been used to estimate TB related mortality for Maldives, Sri Lanka and Thailand. VR data were not available for all years and estimates based on data points available were calculated for the missing years. In Maldives, VR data were available for 2000–2011 while in Sri Lanka and Thailand, information was available from the early 1990s until 2006 and 2007 respectively, but more up-to-date data were missing. For all countries, TB mortality estimates were adjusted upwards to account for incomplete coverage of VR and ill-defined causes of death; width of uncertainty bound is, therefore, related to completeness and quality of national VR data.

For India, data from six large community-based subnational mortality surveys conducted between 2003 and 2008, using verbal autopsy and methodology endorsed by the Registrar General of India, were also used. Additional information on TB mortality has emerged from a community-based prospective mortality survey covering the period 2002–2007. All data were pooled to obtain a national estimate and to derive a complete time-series for 1990–2012 (estimates for 2013 were imputed based on this time series); current estimates are higher than previous indirect estimates. Further information will be available from a large nationally-representative community-based prospective all-causes mortality survey (the One Million Deaths study), accounting for deaths from 1998–2014, conducted by the Registrar General of India with the support of other partners.

In the Region, progress towards enhancement of burden estimates as well as strengthening TB surveillance is being made.

Nepal is planning to upgrade the OpenMRS platform used for drug-resistant cases for drug-susceptible TB in 2015. India successfully transitioned its electronic recording and reporting system (EPI Centre software) to a Windows- based platform and developed a case-based, web-based notification system (Nikshay), available also as a mobile application, that is being used widely also within the private sector; TB was made a mandatorily notifiable disease impacting completeness of TB case notification. Thailand rolled out a nationwide electronic database (TB Clinical Management - TBCM), developed to improve real time reporting and case management; the country is now focusing on its integration into the national HMIS system. Indonesia is transitioning to SITT (Integrated TB Information System), a national web- and case-based electronic recording and reporting system that was in place in 87% of districts by 2014; in the next implementation phase, health facilities are expected to upload their data directly into SITT. Indonesia is also scaling up its sample VR system. Bangladesh is replacing the paper-based information system with the eTB manager in a phased manner; the eTB manager has already been implemented in 210 districts and further expansion is ongoing.

By the end of 2014, three countries, Bangladesh, Indonesia and Thailand, successfully used the WHO “Checklist of standards and benchmarks for TB surveillance and vital registration systems” to identify gaps, corrective actions and funds needed in order to strengthen TB surveillance and VR.

In 2014, Thailand and Indonesia developed protocols for inventory studies, based on WHO guidelines², to improve their burden estimate by measuring the under-notification entity; these studies also provide valuable information about where efforts to collaborate with public and private sector providers are needed.

Sri Lanka conducted an in-depth analysis of data in 2010. In 2013, Timor-Leste conducted a comprehensive TB epidemiological assessment with the primary objective of evaluating the efficiency and reliability of case-finding under NTP and accuracy of notification data and to revise current burden estimates.

In the last few years, several countries in the Region were conducting or are planning population-based TB prevalence surveys to provide direct measurement of prevalence as well as useful information about why and to what extent people with TB are missed out. Among global focus countries (GFC), Thailand concluded field operations of its second national TB prevalence survey in 2012–2013 (the first was conducted in 2006); preliminary results from non-Bangkok clusters are available, but data are being further analysed and adjusted prior to publication of the final result. Indonesia concluded field operations in 2013 and final results are under discussion for official approval; new burden estimates are expected to have an impact on overall regional estimates as well as global estimates. Myanmar is planning to repeat the prevalence survey in 2017 (the first was conducted in 2009) to provide direct measurement of point prevalence and trend over time. Bangladesh is planning to start field implementation of the prevalence survey done according to WHO recommended methodology in 2015; study protocol, implementation plan, procurement and standard operation procedures were finalized by 2014. Among non-GFC, Nepal and Democratic People's Republic of Korea have both developed the protocol and implementation plan and field operations should start by 2015.

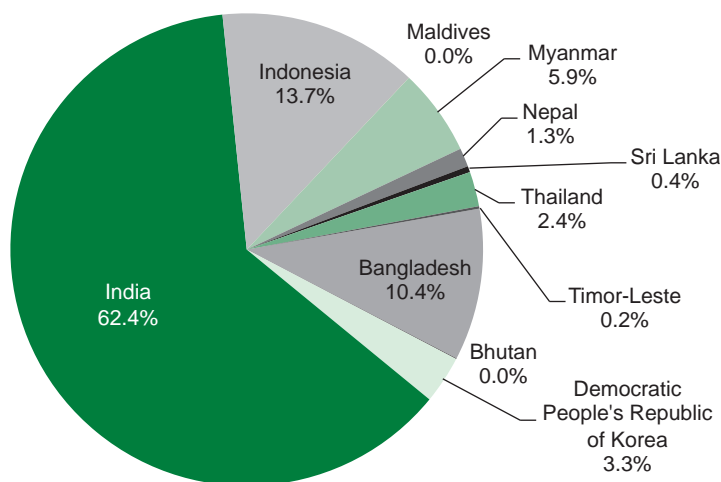
2.1.2 Estimated TB incidence, prevalence and mortality in South-East Asia Region

As indicated earlier, South-East Asia Region has a high burden of TB. Contribution of each country to the overall regional burden is uneven and India carries most of the incident and prevalent cases as well as deaths in the Region (Figures 2a, 2b and 2c)³; Bangladesh and Indonesia also contribute a high proportion of cases and the former contributes an important proportion of TB deaths.

² "Assessing tuberculosis underreporting through inventory studies". Geneva, World Health Organization, 2013 (WHO/HTM/TB/2012.12)

³ Source: Global Tuberculosis Control: WHO report 2014, World Health Organization, Geneva 2014. WHO/HTM/TB/2014.08

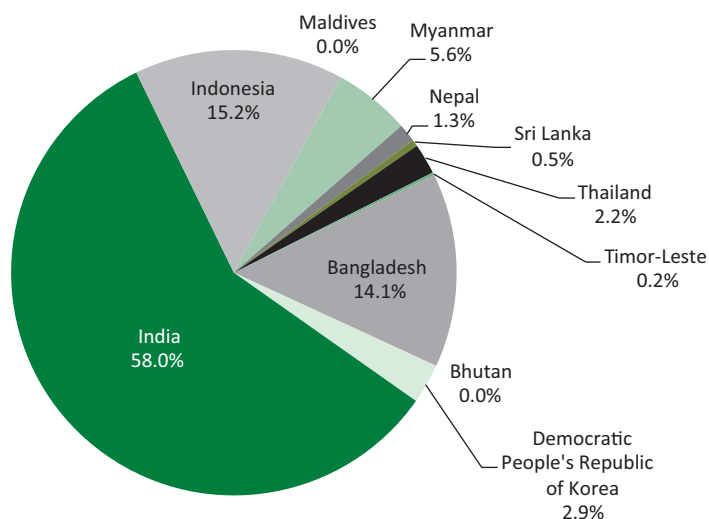
Figure 2a: Estimated incidence of all forms of TB in SEA Region, distributed by country, 2013



Estimated regional TB incidence = 3 264 000 (3 129 000 – 3 713 000) cases (all forms of TB)

Source: *Global Tuberculosis Control: WHO report 2014*, World Health Organization, Geneva 2014. WHO/HTM/TB/2014.08

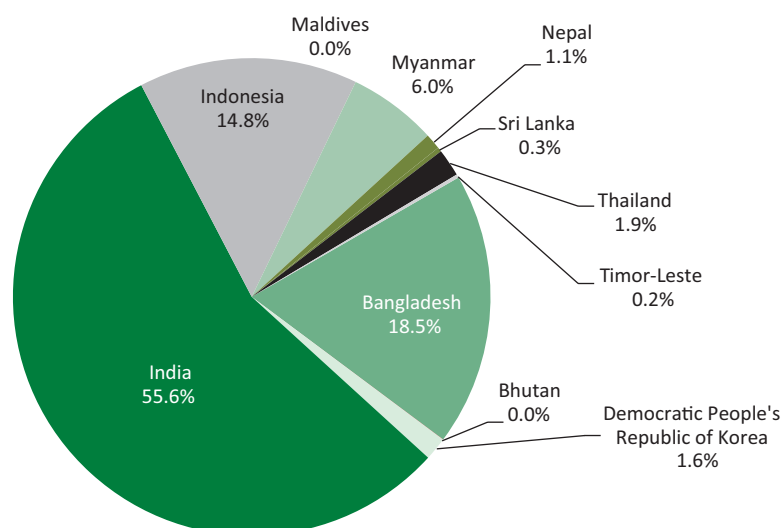
Figure 2b: Estimated prevalence of all forms of TB in SEA Region, distributed by country, 2013



Estimated regional TB prevalence = 4 480 000 (2 787 000 – 6 735 000) cases (all forms of TB)

Source: *Global Tuberculosis Control: WHO report 2014*, World Health Organization, Geneva 2014. WHO/HTM/TB/2014.08

Figure 2c: Estimated mortality for TB (excluded among HIV-positive patients) in SEA Region, distributed by country, 2013



Estimated regional TB mortality = 432 000 (265 000 – 625 000) deaths for TB excluding deaths among HIV positive patients

Source: *Global Tuberculosis Control*: WHO report 2014, World Health Organization, Geneva 2014. WHO/HTM/TB/2014.08

Although India certainly carries a high burden in terms of absolute numbers of TB cases and deaths, in terms of rates, other countries in the Region, such as Bangladesh, Democratic People's Republic of Korea, Myanmar and Timor-Leste carry a higher burden. The TB incidence, prevalence and mortality rates in Member States of the Region, estimated as discussed in paragraph 2.1.1., are presented in Table 1. New estimates for Indonesia, although not yet finalized and approved, suggest a greater burden than previously estimated, and consequently, are expected to have a significant impact on overall estimates for the Region.

For 2013, WHO provided estimates at regional level disaggregated by sex. In the SEA Region 40% of estimated TB incident cases are women (1.3 million; uncertainly interval 1.2–1.4 million) and 40% of TB deaths in HIV-negative patients occur among women (130 000 deaths; uncertainly interval 100 000–170 000); the Region accounts for 39% of all TB incident cases and TB deaths among women worldwide.

Table 1: Estimates of TB disease incidence, prevalence and mortality in Member States of the South-East Asia Region (rates per 100 000 population), 2013

Country	Population* (in thousands)	Incidence rate of all forms of TB (confidence intervals)	Prevalence rate of all forms of TB (confidence intervals)	Death rate for all forms of TB, excluding HIV (confidence intervals)
Bangladesh**	156 596	224 (199–253)	402 (210–656)	51 (33–69)
Bhutan	754	169 (156–190)	196 (67–393)	12 (6.9–23)
Democratic People's Republic of Korea ****	24 895	429 (401–456)	536 (146–1175)	27 (12–46)
India	1 252 140	171 (162–184)	211 (143–294)	19 (12–28)
Indonesia***	249 866	183 (164–207)	272 (138–450)	25 (14–37)
Maldives	345	40 (34–44)	57 (27–97)	2.2 (1.8–2.6)
Myanmar	53 259	373 (340–413)	473 (364–595)	49 (29–71)
Nepal	27 797	156 (139–178)	211 (99–365)	17 (7.4–27)
Sri Lanka	21 273	66 (59–75)	103 (53–170)	5.9 (4.7–7.3)
Thailand	67 011	119 (106–134)	149 (72–252)	12 (7.3–18)
Timor-Leste	1 133	498 (409–596)	802 (382–1375)	87 (48–141)
SEAR	1 855 068	183 (175–192)	244 (188–307)	23 (18–30)

* United Nations, Department of Economic and Social Affairs, Population Division (2013). World Population Prospects: The 2012 Revision, DVD Edition.

** The estimated incidence, prevalence and mortality rates should be considered provisional as they have not yet been officially approved by the National TB Programme of Bangladesh

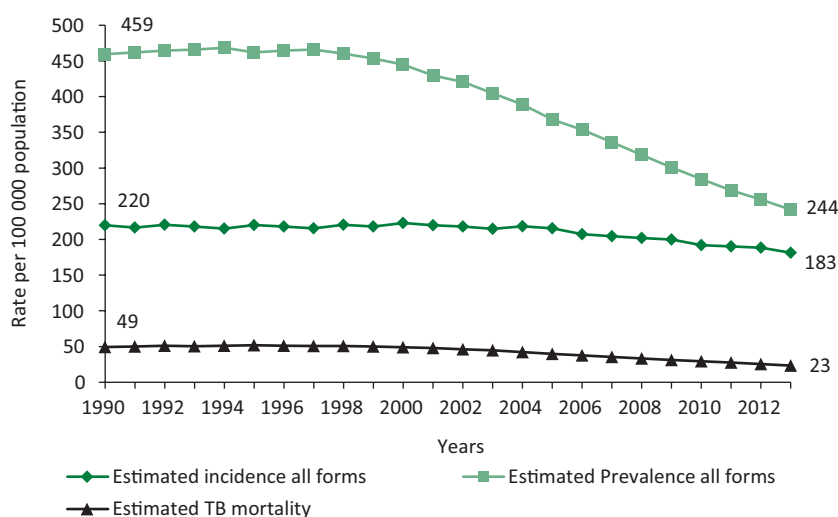
*** Burden estimates for Indonesia are being revised based on prevalence survey results; at the time of writing this report new estimates have not yet been officially released

**** Democratic People's Republic of Korea

Source: *Global tuberculosis report 2014*, World Health Organization, Geneva 2014. WHO/HTM/TB/2014.08

The trends of estimated prevalence, incidence and mortality rates in the Region as a whole are presented in Figure 3. Since 1990, the TB prevalence rate has decreased by 47% and the mortality rate by 53%. The decline in incidence is less perceptible (overall decrease by 17%), but the tendency began to revert. In the last five years, annual reduction is about 2%, 5% and 6.5% for incidence, prevalence and mortality respectively. However, the interpretation of trends should take into account the uncertainty bounds around each value (see Figures 6, 7 and 8). Uncertainty bounds are narrower around incidence (from early 2000s are around 5% deviation from best estimates, with slightly larger deviation in 2012–2013 especially for the upper bound) than prevalence and mortality (for both the deviation from best estimates is around 25%, slightly narrower after 2010).

Figure 3: Trends in estimated TB prevalence, incidence, and mortality rates from 1990 to 2013 in SEA Region

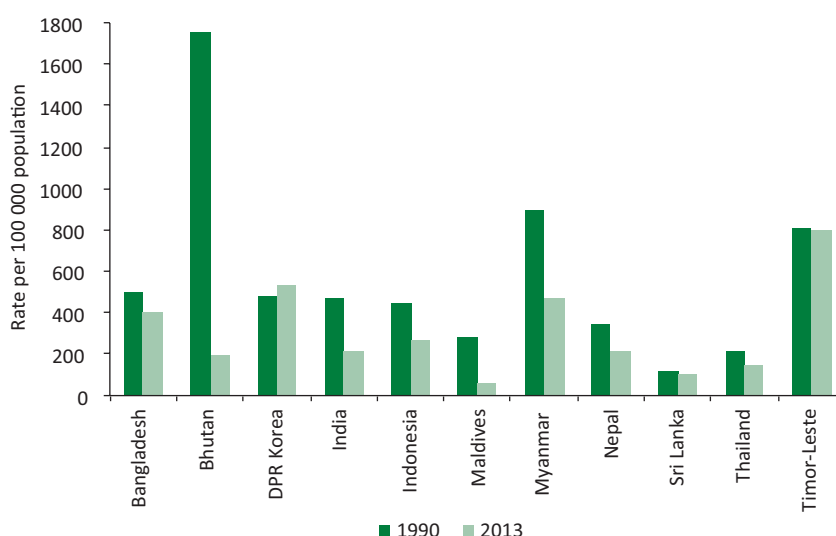


Source: Global Tuberculosis Control: WHO report 2014, World Health Organization, Geneva 2014. TB_burden_countries_2015-01-18.csv - <https://extranet.who.int/tme/generateCSV.asp?ds=estimates>

The regional profile described in Figure 3 is driven mainly by high-burden countries in the Region; however, although there is large variety in terms of rates and figures at country level, a declining trend in regional burden indicators is observed in most of the 11 Member States of the Region. Figures 4 and 5 summarize the comparison of the estimated TB prevalence and mortality rates

respectively per 100 000 population between 1990 and 2013 in each of the 11 Member States of the Region. For Timor-Leste, the baseline is set at 2002, due to non-availability of national data in 1990. As in Figure 3, this comparison takes into consideration only the best estimates of prevalence and mortality rates. Taking into account this limitation, a decline in the prevalence rates is observed in all Member States, except Democratic People's Republic of Korea, and in three countries it is very significant, beyond 50%, that is one of the Stop TB Partnership targets for 2015. A significant decline in the mortality rates is observed in all Member States and in seven countries, the decrease is already beyond 50% of the 1990 baseline. Further analysis of trend of burden estimates per country is available in the chapter "Millennium Development Goal Country Profiles".

Figure 4: Estimated prevalence rate (all forms of TB) in 1990* and 2013, by Member States of SEA Region

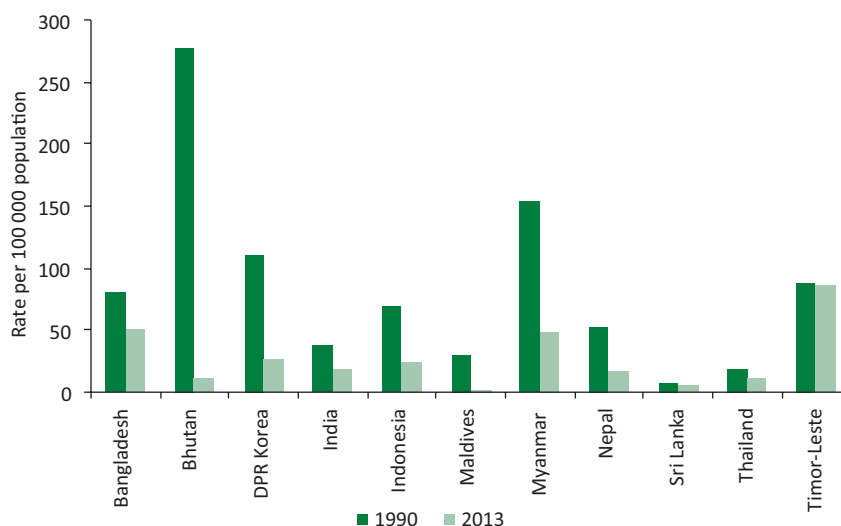


* For Timor-Leste, the baseline is 2002.

** Democratic People's Republic of Korea

Source: Global Tuberculosis Control: WHO report 2014, World Health Organization, Geneva 2014. WHO/HTM/TB/2014.08

Figure 5: Estimated mortality rate (excluding HIV) in 1990* and 2013, by Member States of SEA Region



*For Timor-Leste, the baseline is 2002.

** Democratic People's Republic of Korea

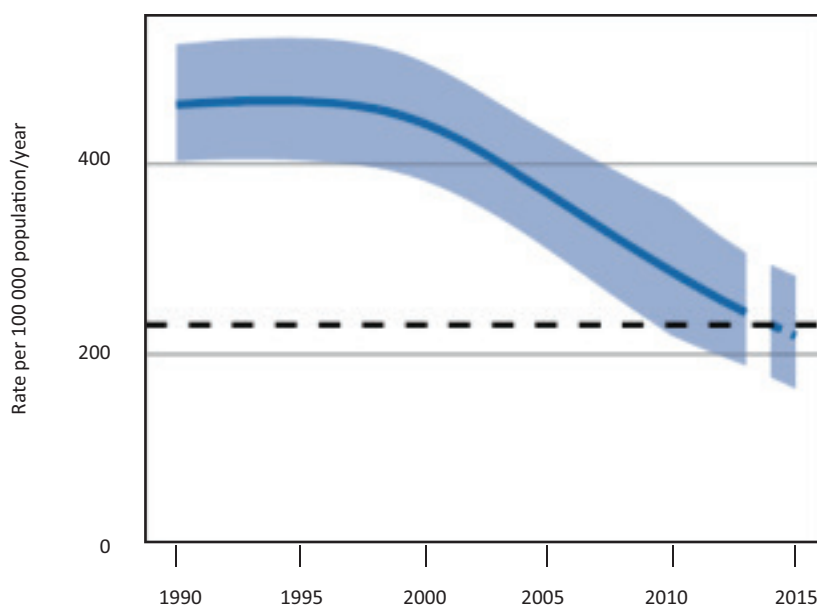
Source: Global Tuberculosis Control: WHO report 2014, World Health Organization, Geneva 2014. WHO/HTM/TB/2014.08

2.2 Reporting progress towards global targets

As showed in the previous section, SEAR is performing well in terms of reduction of TB burden. Analysis of progress towards the achievement of Millennium Development Goal (MDG) 6, to combat HIV/AIDS, malaria and other diseases, with regard to tuberculosis control, shows that the Region has achieved or is well on track to halt and begin to reverse the incidence of tuberculosis by 2015, and halve the TB death and prevalence rates by 2015, compared with 1990 levels.

Regarding the MDG targets of halving the prevalence rates compared to the 1990 baseline, the Region is on track to reach the targets. In fact, according to Figure 6, considering only the best estimate, in 2013, the prevalence rate decreased by 47%; according to the projections based on the assumption that the current trend will not change, the Region would reach 50% reduction of baseline data. However, almost the entire upper uncertainty bound would be over the target; more accurate estimates resulting from completed or planned prevalence surveys will be useful to confirm achievements in the Region beyond any doubt.

Figure 6: Trends in estimated TB prevalence rate 1990–2013 and forecast TB prevalence rate 2014–2015, SEA Region

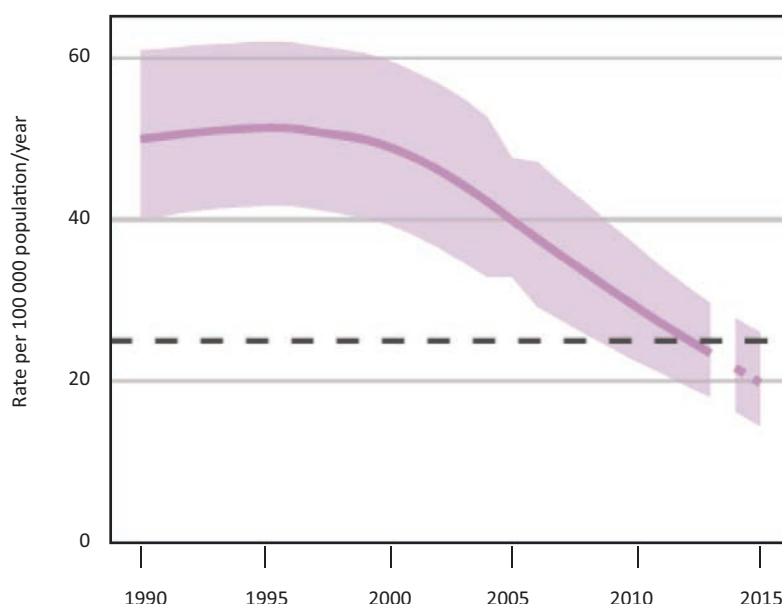


Note: shaded areas represent uncertainty bands. The horizontal dashed lines represent the Stop TB Partnership target of a 50% reduction in the prevalence rate by 2015 compared with 1990

Source: *Global Tuberculosis Control*: WHO report 2014, World Health Organization, Geneva 2014. WHO/HTM/TB/2014.08

Regarding the target of halving the mortality rate compared to the 1990 baseline, the Region had reached the target in 2013. In fact, according to Figure 7, considering only the best estimate, in 2013, the mortality rate decreased by 53%; according to the projections based on the assumption that the current trend will not change, the Region would sustain the achievement and even the upper uncertainly bound is expected to be almost entirely below the target.

Figure 7: Trends in estimated TB mortality rate 1990–2013 and forecast TB prevalence rate 2014–2015, SEA Region

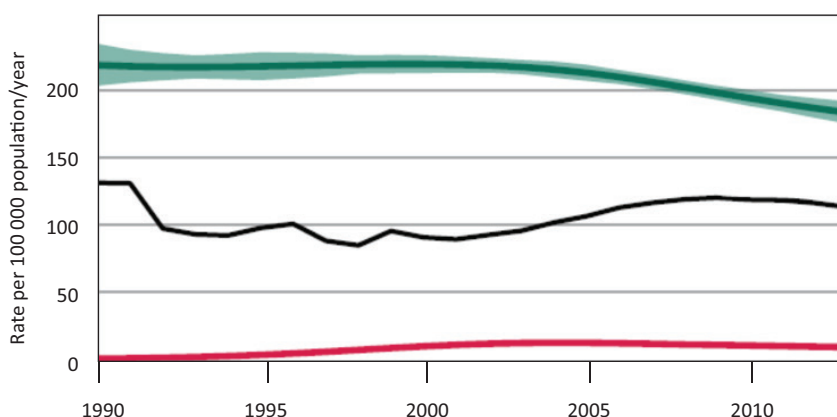


Note: shaded areas represent uncertainty bands. The horizontal dashed lines represent the Stop TB Partnership target of a 50% reduction in the prevalence rate by 2015 compared with 1990

Source: *Global Tuberculosis Control: WHO report 2014*, World Health Organization, Geneva 2014. WHO/HTM/TB/2014.08

The case-notification rate of all forms of TB has been steadily increasing since 2000, but in the last four years, minor decrease has been observed, from 119 to 113 per 100 000 population (Figure 8). Considering important case-finding efforts and strengthening of TB control activities in most countries in the Region, including India, this trend reflects a real decrease in incidence. The incidence does not follow a linear decreasing pattern. After a minor increase in the late 1990s, the decrease was observed starting from 2005. Even considering the relatively large upper uncertainty bound for incidence estimates in most recent years, there was a decline in TB incidence that, considering the best estimates, was about 17% in 2013 compared with the 1990 level. The overall notification rate in the Region is still below the target of 70% case-detection rate of estimated incident cases and even farther from the ideal goal of universal access; in 2013, the estimated case-detection rate of all TB cases was 62% (59–65%).

Figure 8: Estimated TB incidence and notification rate, SEA Region, 1990–2013



Source: *Global Tuberculosis Control: WHO report 2014*, World Health Organization, Geneva 2014. WHO/HTM/TB/2014.08

Besides the MDG goal, Table 2 includes information regarding the status of the Region toward the achievement of additional targets of the Global Plan to STOP TB 2011–2015. Further details are provided in the following sections.

2.3 TB case notification and treatment outcomes

By the end of 2007, full DOTS coverage, defined as the proportion of the population living in administrative areas with access to DOTS services, was reached in SEAR. Briefly, after 2006, all 11 Member States endorsed the Stop TB Strategy and started implementation of the broad spectrum of TB control activities. For the period 2015–2020, most Member States have already updated their national strategic plans including efforts towards universal access to TB care. Thanks to significant efforts at country level, the Region achieved good results in terms of case-finding and notification and treatment outcomes.

Table 2: Summary of situation towards MDG targets and Stop TB strategy targets for South-East Asia Region in 2013

Category	Indicator	Target	SEA Region
TB burden	Incidence rate (per 100 000 population)	1990 level falling	Target: <220 Result: 183
	Prevalence rate (per 100 000 population)	50% of 1990 level	Target: ≤230 Result: 244
	Mortality rate (per 100 000 population)	50% of 1990 level	Target: ≤25 Result: 23
Treatment	Treatment success rate (annual cohort)	≥85%	88%
Tb case detection	Number of cases notified and treated (all new and relapse)	N/A	2 098 170
	Case detection rate (all types)	≥70%	62%
TB/HIV	% of TB patients tested for HIV	100%	43%
	% of HIV-positive TB patients treated with ART	100%	81%
MDR-TB	% of estimated MDR-TB cases notified	≥50%	30%
	% of previously treated TB patients tested for MDR-TB	100%	6%
	% of new TB patients tested for MDR-TB	20%	1%
	Treatment success rate (annual cohort - 2011)	≥75%	54%
Laboratory	Number of laboratories with sputum smear microscopy per 100 000 pop.	≥1	0.8
	Number of laboratories with culture and DST per 5 million pop.	≥1	0.2

(N.B. for indicators that have confidence intervals, only the best estimate is shown)

Source: *Global Tuberculosis Control*: WHO report 2014, World Health Organization, Geneva 2014. WHO/HTM/TB/2014.08

In 2013, WHO issued an updated recording and reporting (R&R) framework⁴ including new definitions of TB cases that were necessary to improve aspects of the previous framework (i.e. more comprehensive reporting of TB cases among children) and accommodate diagnosis using Xpert MTB/RIF and other WHO-endorsed molecular tests. In this report, for the first time, data on notifications and outcomes are reported according to the new R&R framework. Most of the countries are still transitioning to the new R&R framework, but were able to report the majority of the requested information.

⁴ Definitions and reporting framework for tuberculosis – 2013 revision. Geneva, World Health Organization, 2013 (WHO/HTM/TB/2013.2)

2.3.1 Case notifications in 2013

Table 3 shows the absolute numbers of cases notified by type of TB, in each Member country for the year 2013. The 11 Member countries of SEAR altogether notified 2 297 033 cases of tuberculosis; of these 2 098 170 cases had a new episode of tuberculosis (new and relapses, all forms) which represents a case-notification rate of 113 per 100 000 population and 198 863 (9% of the total) were previously treated cases (already been diagnosed with TB but treatment was changed to a retreatment regimen). Of the new episodes of TB, 1 968 356 (94%) had TB for the first time (all new cases) and 129 814 (6%) experienced a recurrent episode of TB after being previously cured of the disease (relapse); of all new pulmonary cases and relapse, 50% were new bacteriologically confirmed PTB cases, 28% were new clinically diagnosed pulmonary TB cases and 16% were new extra-pulmonary TB cases. Five countries in the Region (Bangladesh, India, Indonesia, Myanmar and Thailand), which belong to the global list of 22 countries with the highest burden of TB (HBCs), notified a total of 2 142 188 cases, or 93% of all cases notified in the Region.

There was a decrease of 1.5% in the numbers of cases (all forms) notified in 2013 as compared to 2012 (Table 3); this small decrease is mainly driven by new pulmonary TB, clinically diagnosed.

About half of all notified new cases in the Region (54%) were new bacteriologically confirmed pulmonary TB cases (Figure 9). Bhutan (42%), Democratic People's Republic of Korea (37%), this proportion was considerably lower in Myanmar (33%); on the other hand, the proportion was substantially higher in Indonesia (62%) and Maldives (71%).

Amongst all new cases of pulmonary TB, 64% were bacteriologically confirmed in the Region as a whole, ranging from 38% in Myanmar to 78% in Bhutan.

Seventeen percent of all new cases in the Region were extra-pulmonary cases. This proportion varied largely in different countries, going from a minimum of 5% in Indonesia to a maximum of 46% in Bhutan (Figure 9).

Table 3: Estimated incidence (number in thousands) and cases notified (by type of TB patients) in Member States, SEA Region, 2013

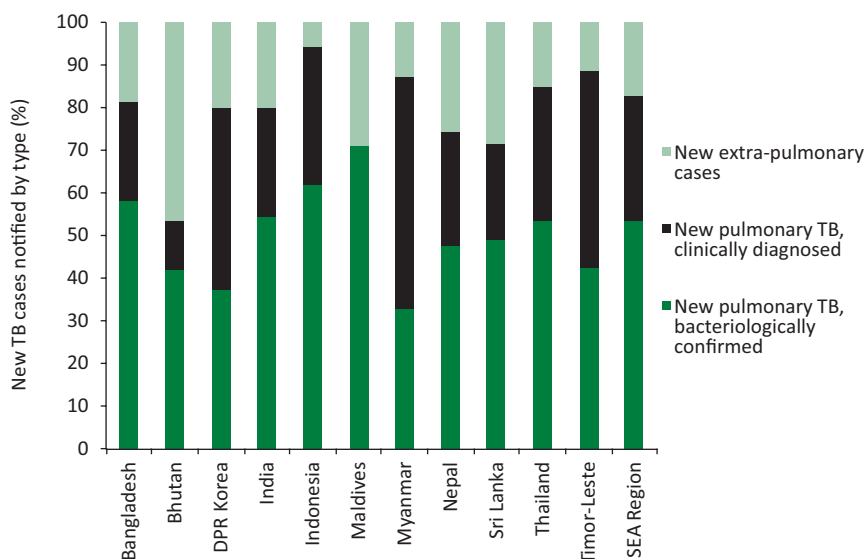
Country	Estimated incidence (All forms)	TB cases notified					
		New pulmonary TB, bacteriologically confirmed	New pulmonary TB, clinically diagnosed	New extra-pulmonary cases	Relapse*	Previously treated cases	Total notifications
Bangladesh	350 (310–400)	105 539	42 394	33 704	2 869	6 385	190 891
Bhutan	1.3 (1.2–1.4)	425	120	471	64	35	1 115
Democratic People's Republic of Korea **	110 (100–110)	33 595	38 838	18 158	7 074	7 247	104 912
India	2100 (2000–2300)	621 762	292 926	226 557	102 660	171 712	1 415 617
Indonesia	460 (410–520)	196 310	103 888	17 420	7 964	1 521	327 103
Maldives	0.14 (0.12–0.15)	80	0	33	1	0	114
Myanmar	200 (180–220)	42 595	70 519	16 887	4 854	7 307	142 162
Nepal	43 (39–49)	15 099	8 367	8 140	2 228	1 604	35 438
Sri Lanka	14 (13–16)	4 459	2 040	2 587	243	167	9 496
Thailand	80 (71–90)	32 887	19 559	9 293	1 802	2 874	66 415
Timor-Leste	5.6 (4.6–6.7)	1 565	1 723	414	55	11	3 768
SEA Region	3400 (3200–3600)	1 054 316	580 374	333 664	129 814	198 863	2 297 033
SEA Region (2012)	3450 (3200–3700)	1 065 852	594 720	338 303	131 245	201 335	2 331 455
Percentage change 2013 vs. 2012		-1.1%	-2.5%	-1.4%	-1.1%	-1.2%	-1.5%

*According to the new R&R framework, relapse cases should be reported as bacteriologically-confirmed or clinically diagnosed; all SEAR countries reported only bacteriologically-confirmed relapses, except Indonesia that reported 6406 bacteriologically-confirmed relapses and 1558 clinically-diagnosed relapses.

**** Democratic People's Republic of Korea

Source: *Global Tuberculosis Control*: WHO report 2014, World Health Organization, Geneva 2014. WHO/HTM/TB/2014.08; and Annual Reports, National TB programmes, SEAR Member states, 2014

Figure 9: Proportion of bacteriologically confirmed pulmonary TB (PTB), clinically diagnosed PTB and extra-pulmonary TB cases out of all new notified cases, Member States, SEA Region, 2013

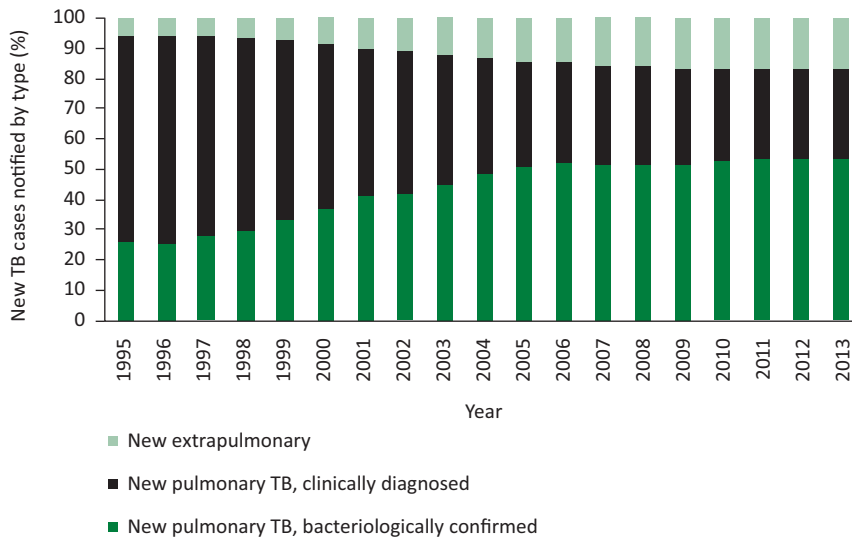


Sources: Annual Reports, National TB programmes, SEAR Member States, 2014.

* Democratic People's Republic of Korea

Consistent with development in TB diagnostic capacity and laboratory network in SEAR, the distribution of new cases by type has changed considerably since 1995, with an increase in the proportion of bacteriologically confirmed PTB cases (basically corresponding to smear-positive cases) and extra-pulmonary cases, and a decrease in clinically diagnosed pulmonary TB cases (Figure 10). The described trend was very marked until 2006, but continued at a lower pace until 2013.

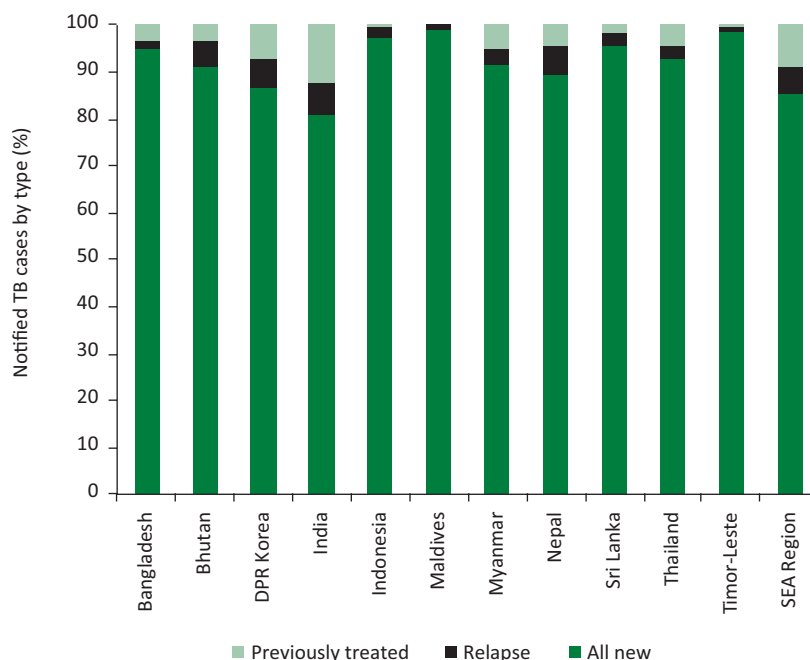
Figure 10: Distribution of annually notified new TB cases by type, SEA Region, 1995–2013



Sources: Annual Reports, National TB programmes, SEAR Member States, 2014.

In 2013, the proportion of previously treated cases (excluding relapse) out of all notified cases was 9% in the whole Region, ranging between 0% (in Maldives) and 12% (in India) (Figure 11). Low proportions of retreatment smear-positive cases were also reported by Timor-Leste (0.3%), Indonesia (0.5%) and Sri Lanka (2%). At the regional level, the proportion of previously treated cases was stable in the last decade; a stable trend is observed in most of the countries except Democratic People's Republic of Korea, where the proportion of retreatment cases has been decreasing since 2009 (from 15% to 7%) and Myanmar, where a slight decrease is observed over the last decade (from around 3% to around 5%).

Figure 11: Proportions of different types of TB according to previous treatment history among all cases reported, Member States of SEA Region, 2013



* Democratic People's Republic of Korea

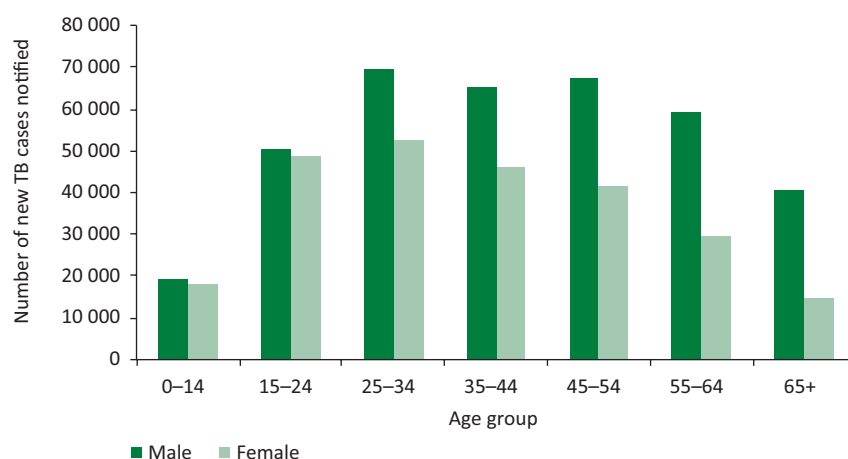
Sources: Annual Reports, National TB programmes, SEAR Member States, 2014

The proportion of relapse cases out of all newly notified (new and relapse) cases was ranging between 1% in Maldives and 8% in Democratic People's Republic of Korea and with a regional average of 6%. This proportion was rather stable during the last decade for most of the countries in the Region. An increasing trend in the proportion of relapse cases was observed in the Democratic People's Republic of Korea (from 1% in 2000 to 7% in 2013) and India (from 3% in the early 2000s to around 8% in the last five years); Myanmar showed a consistent decrease in the proportion of relapses since 1995, although since 2007, the proportion has stabilized at around 3.5%.

Age and sex distribution for all types of new cases notified is available for seven of the 11 countries in the Region: Bangladesh, Bhutan, Democratic People's Republic of Korea, Indonesia, Maldives, Nepal and Sri Lanka; relapse

cases are included in the age and sex distribution for Bhutan, Indonesia, Maldives and Sri Lanka only. India and Timor-Leste reported breakdown only by two age groups (0–14 and 15 and above years); additionally, Timor-Leste disaggregated by sex. Figures 12a and 12b show the distribution of all new cases by age and sex in 2013, in the Region as a whole (using data available only); 53% of the cases belonged to the most productive age groups between 15–44 years; 50% among males and 59% among females. In terms of rate, the most affected age group is 45 years and above, with the highest rate among men aged 55–64 years (376 per 100 000 population) and more than 65 years (338 per 100 000 population). This progressive increase of notification rates from younger to older age groups and the shift of disease burden to older age groups suggests that in the South-East Asia Region, the transmission of TB may be declining and levels of infection in younger age groups may be falling; however, this pattern is less visible among women and variability among countries is still high.

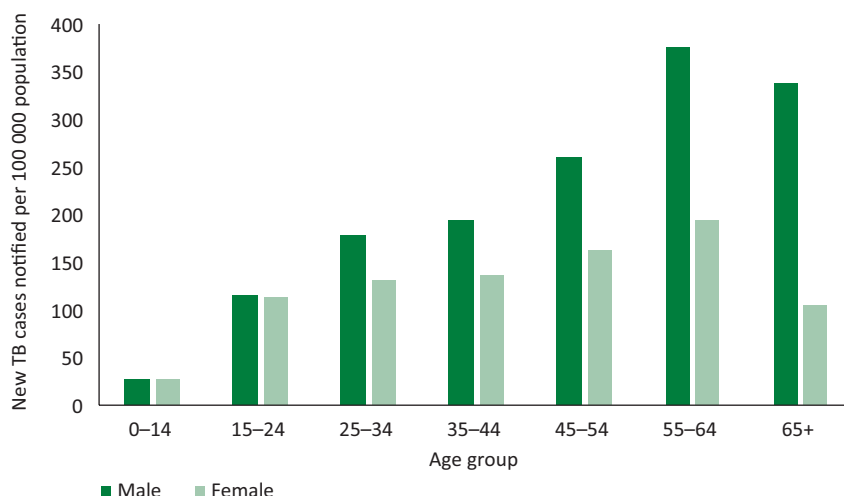
Figure 12a: Age and sex distribution of all notified new TB cases in SEA Region* (in numbers), 2013



* Includes only data from Bangladesh, Bhutan, Democratic People's Republic of Korea, Indonesia, Maldives, Nepal and Sri Lanka

Sources: Annual Reports, National TB programmes, SEAR Member states, 2014

Figure 12b: Age and sex distribution of all notified new TB cases in SEA Region* (rate per 100 000), 2013



* Includes only data from Bangladesh, Bhutan, Democratic People's Republic of Korea, Indonesia, Maldives, Nepal and Sri Lanka

Sources: Annual Reports, National TB programmes, SEAR Member states, 2014

In 2013, among all new TB cases, the percentage of paediatric cases was 5.5 for the whole Region (including data from all countries except Myanmar and Thailand) with almost no difference among males and females. There is variability among countries, with Nepal and Bangladesh reporting the lowest proportion of paediatric cases among all new TB cases (2.7% and 2.8% respectively) and Maldives, India and Indonesia reporting the highest (9% Maldives and 8% India and Indonesia). In 2013, breakdown by 0–4 and 5–14 years was reported by Bangladesh, Bhutan, Democratic People's Republic of Korea, Indonesia, Maldives, Nepal and Sri Lanka: globally in these countries the proportion of new TB cases aged 0–4 years was 36% among all paediatric cases and 2% among all cases; Indonesia had the highest proportion of 0–4 year old patients being 45% among all paediatric cases and 3.6% among all cases.

The male to female ratio of all new notified TB cases in 2013 varied from 1.0 in Bhutan and Timor-Leste to 2.0 in Nepal and Sri Lanka, and was 2.0 for the Region as a whole (excluding India, Myanmar and Thailand that did not report disaggregated data by sex). The male to female ratio in the Region progressively

increased from 1.0 to 2.7 in the age groups from 0–14 years to 65+ years; in cases younger than 24 years, there is no difference between males and females. The same pattern in sex distribution is observed when data are expressed in numbers or rates (Figure 12). Several studies showed that this finding could be explained by higher susceptibility to TB in males after adolescence due to biological factors, as well as by socioeconomic determinants that create higher exposure to risk factors (such as smoking and alcohol) in men and under notification in women due to gender-based unequal access to care and greater stigma.

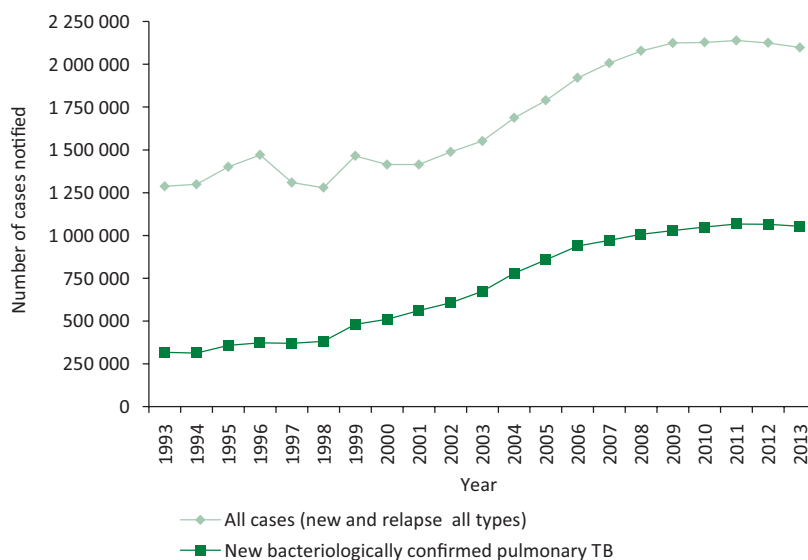
2.3.2 Trends in case notification (1995–2013)

Figure 13 shows the trends in the numbers of cases notified in the Region since 1993, for all forms of TB (including all new cases and relapses) and new bacteriologically confirmed cases (mainly corresponding to smear-positive cases, since R&R systems at country level were not capturing them; yet cases were confirmed through Xpert MTB/RIF or other tests). Notifications continued to increase over the last decade, reflecting case-finding efforts in Member States over time, with a sharper increase in notifications of all forms of TB, especially from 2000 to 2009, possibly due to increasing registration of smear-negative and extra-pulmonary cases following the involvement of the private sector and medical teaching institutions. From 2009, the number of annually notified cases was stagnating and in the last three years, it was slightly decreasing, despite ongoing efforts to strengthen TB control in most countries. This is likely the result of decreasing incidence and prevalence of TB in some countries in the Region, particularly India. Some countries (i.e. Myanmar, Nepal, etc.) reported that the introduction of Xpert MTB/RIF contributed to reduce the overdiagnosis of clinically confirmed TB cases, thus partially explaining reduction of all TB cases in recent years.

The trends in notification rates of all TB cases (all new and relapses) for the five high-burden countries and other (intermediate and low-burden) countries in the Region are presented in Figures 14a and 14b respectively.

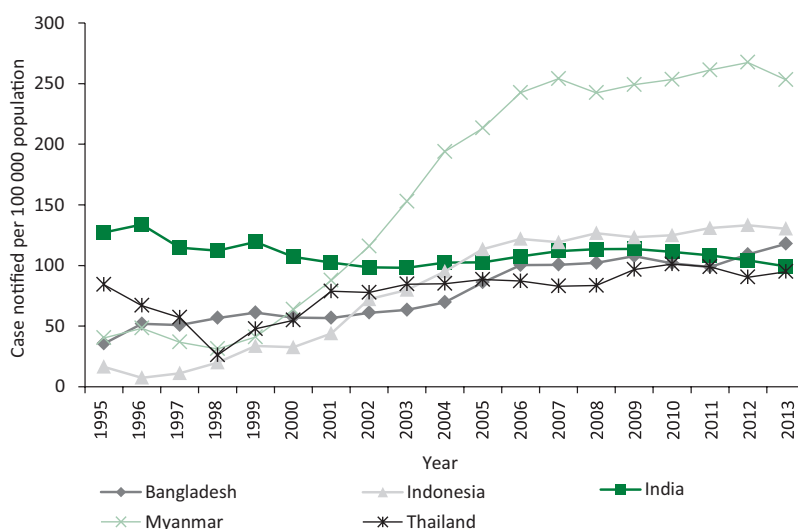
In Bangladesh, an increasing trend was observed until 2006 following which notification rates have remained fairly stable, although a further overall increase occurred until 2013 despite annual oscillations. In India, notification rates decreased from 1995 to the early 2000s and begun to slightly increase until 2009; in recent years the trend has consistently reverted. The decreasing trend until 2002 is mainly driven by clinically diagnosed PTB and extra-pulmonary cases;

Figure 13: Trends in TB cases notified by type of case, SEA Region, 1993–2013



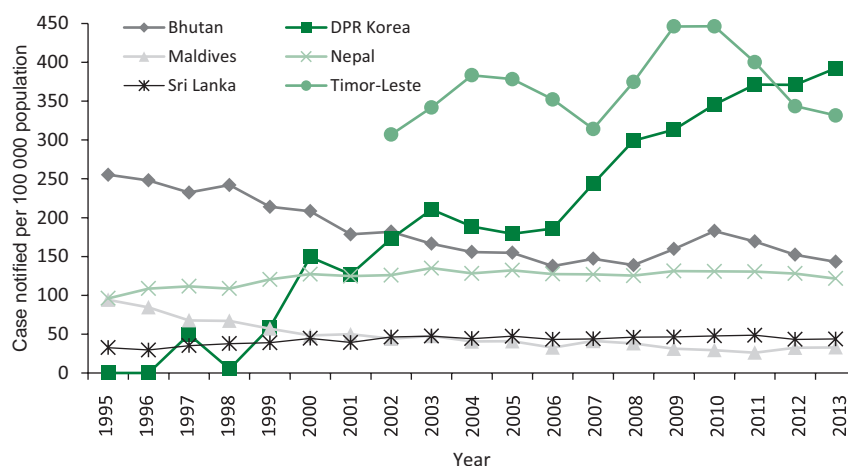
Sources: Tuberculosis control in the South-East Asia Region, Annual Reports 1996–2014, WHO/SEARO; Annual Reports, National TB programmes, SEAR Member states, 2014

Figure 14a: Trends in annual TB case-notification rates (all forms) for high-burden countries in the SEA Region, 1995–2013



Sources: Tuberculosis control in the South-East Asia Region, Annual Reports 1996–2014, WHO/SEARO; Annual Reports, National TB programmes, SEAR Member States, 2014

Figure 14b: Trends in annual TB case-notification rates (all forms) for intermediate and low-burden countries in the SEA Region, 1995–2013



Sources: Tuberculosis control in the South-East Asia Region, Annual Reports 1996–2014, WHO/SEARO; Annual Reports, National TB programmes, SEAR Member States, 2014

in fact, smear-positive cases followed a steadily increasing trend that flattened only in 2008. The increasing trend registered over the last decade is primarily due to increase in case-finding efforts and involvement of private and non-NTP public health-care providers. Concerted efforts to strengthen TB control activities are ongoing and the reverting trend in recent years suggests a decrease in TB burden in the country instead of lower performance with regard to TB control. In Indonesia, after a period of steady increase, there was a drop due mainly to bacteriologically confirmed TB notification rates in 2007, attributed to the temporary cessation of GF support for a period of nine months; later notification rates started to slightly increase again. In Myanmar, a high-burden country in the Region with the highest notification rate, a steady increase in notification rates has been observed from 2000 to 2007. The drop in 2008 may be related to funding problems. From 2009 onward, the trend continued to increase at a slower pace, and it is mainly due to clinically diagnosed pulmonary TB and extrapulmonary cases. In 2013, there was a considerable decrease in reported clinically diagnosed pulmonary cases that seems related to the reduction of overdiagnosis among adults as well as children also thanks to availability of Xpert MTB/RIF. In Thailand, from 2001 to 2008, there was a rather flat trend, followed

by an overall increase in the following years, particularly in 2009–2011 that reflect efforts in case detection and public–private collaborative activities; however, some fluctuations in notification rate are linked to problems with completeness of R&R, especially in large urban areas and due to extensive network of private providers.

In the Democratic People’s Republic of Korea, a sharp increase in the notification rates has been observed since 2006, primarily due to introduction of active case-finding that was adopted as a supplementary strategy, since a big gap was observed between case-notification rates and the revised estimates of the incidence of TB in the country, following a national tuberculin survey in 2007, which revealed a high ARTI. In Sri Lanka, that together with Maldives is the country with the lowest notification rates in the Region, a small increase in notifications was recorded until 2000, followed by a fairly stable trend until 2013. In Nepal, some increase in the notification rate was observed in the 1990s but the trend flattened without significant deviations until 2012, despite case-finding efforts and increased coverage of TB services. In 2013, there was a considerable decrease in reported clinically diagnosed pulmonary TB cases, mainly explained by reduction of misdiagnosed cases also due to introduction of Xpert MTB/RIF as initial diagnostic test among sputum smear-negative patients. In Bhutan, after a declining slope until 2008, strengthening of TB diagnostic capacity and overall TB management as well as potential overdiagnosis of extrapulmonary TB (over 40% of all annually notified cases) led to an increase in the notification rate until 2010, followed by a decreasing trend that is likely to reflect the real reduction of TB burden in the country. A consistently declining trend has been observed in Maldives in the last 15 years. The trends in Timor-Leste reflect periods of civil strife when services were seriously disrupted for considerable periods of time; a fluctuating trend reflects on one hand the efforts towards case detection and, on the other, improvement of TB diagnosis with reduction of misdiagnosis of cases.

2.3.3 Treatment outcomes

The treatment success rate among new and relapse TB cases enrolled for treatment during 2012 was 88% in the Region as a whole (Myanmar, Sri Lanka and Timor-Leste did not include relapse with new cases in the outcomes assessment). Nine of the 11 Member countries reached the 85% treatment success rate target and the newly set target of 90% success rate by 2015 was reached or surpassed by four of the 11 Member States in the Region (Table 4).

The overall case-fatality rate (CFR), default and failure rates were 4%, 5% and 1% respectively among new and relapse TB cases registered for treatment in 2012.

In Maldives, the treatment success among new and relapse cases was lower than the target. A relatively high proportion of “not evaluated” is the main reason for not achieving the target. This finding was common also in previous years when assessing treatment outcomes among new smear-positive cases only. Small numbers in Maldives create high annual fluctuation of figures for other unsuccessful treatment outcomes.

Also, Thailand did not reach the treatment success rate target due to relatively high CFR (7%) and non-evaluated cases (6%), the latter probably due to recording and reporting issues that affect overall TB control activities. Case-fatality rate may be partially explained by high case fatality among HIV-positive TB cases (16%) and partially by a high proportion of cases in old age groups that are more prone to die of any cause.

After Thailand, the second highest CFR were registered in Sri Lanka (5.5%). In the Region, the highest “lost to follow-up” rates among new and relapse cases were observed in India and Indonesia (6% and 5% respectively); Indonesia also has a high proportion of non-evaluated cases.

As expected, the success rate among previously treated cases (excluding relapse) is lower than in new cases, being 75% for the whole Region and ranging from 63% to 90% within the countries (it is 100% in Maldives, but the cohort has only one case). Similarly, CFR rate and failure rate among previously treated cases are higher, being 7% and 3% respectively for the whole Region; case fatality is ranging between 5% in Indonesia and 12% in Myanmar, while failure rate ranges between 0% in Timor-Leste and 18% in Bhutan. The rate of “lost to follow-up” among previously treated cases is high in the Region (12%), and it is particularly high in Sri Lanka (23%), Indonesia (15%) and India (13%). Although historical data available for all retreatment cases (including relapse) until 2011 cohort indicate that the defaulting rate in all countries was slightly decreasing, these high default rates among re-treatment cases are a cause of concern. In fact, high “lost to follow-up” rate as well as high failure rate is an alert because these cases could be expected to have multi-drug resistance.

Table 4: Treatment outcomes expressed as percentage among cases notified in 2012 by type of cases in Member States of the SEA Region

Countries	New and relapse cases*						Previously treated cases*					
	Cases registered	Cured or treatment completed	Failure rate	Case fatality rate	Lost to follow up rate	Not evaluated/transfer out	Cases registered	Cured or treatment completed	Failure rate	Case fatality rate	Lost to follow up rate	Not evaluated/transfer out
Bangladesh	164 587	92.0	0.6	4.1	1.6	1.8	4 899	82.1	0.9	6.4	3.6	7.0
Bhutan	1 141	91.6	2.7	3.4	0.5	1.8	17	70.6	17.6	5.9	0.0	5.9
Democratic People's Republic of Korea	91 885	91.7	2.6	2.5	2.2	1.0	7 514	83.9	5.6	6.4	2.4	1.6
India	1 288 141	87.7	1.3	3.9	5.8	1.2	177 695	74.4	2.7	6.6	12.8	3.6
Indonesia	328 824	85.5	0.5	2.3	5.4	6.4	2 600	70.5	3.3	5.2	14.8	6.2
Maldives	109	78.9	0.9	6.4	0.0	13.8	1	100.0	0.0	0.0	0.0	0.0
Myanmar	136 905	88.5	1.3	3.9	4.8	1.4	11 537	69.9	6.6	11.5	8.0	4.0
Nepal	34 350	90.8	1.5	3.0	2.0	2.6	445	77.3	5.8	5.6	7.6	3.6
Sri Lanka	8 752	86.1	0.8	5.5	4.2	3.4	188	67.0	1.0	11.0	14.0	7.0
Thailand	58 185	81.4	1.2	7.4	4.5	5.6	1 439	63.0	4.3	10.1	11.7	10.8
Timor-Leste	1 445	89.4	1.0	3.7	4.4	1.5	39	89.7	0.0	10.3	0.0	0.0
SEAR	2 114 324	87.8	1.2	3.7	5.1	2.2	206 374	74.6	3.0	6.8	11.9	3.7

*Myanmar, Sri Lanka and Timor-Leste included the relapse cases in the previously treated cases and not in the new cases

Source: Annual Reports, National TB programmes, SEAR Member states, 2014;

N.B. Sum of treatment outcomes may be >100% due to rounding of decimals. For some countries there are discrepancies between cases notified in 2012, published in previous reports and cases notified reported as denominator in this table. Figures may change due to delayed reporting of some units, data quality checks during the past year, revision of completeness of surveillance data, etc.

2.4 Community-based surveys to estimate prevalence of pulmonary tuberculosis, annual risk of tuberculosis infection (ARTI) and mortality due to TB

A number of community-based surveys have been carried out in the Region at different times to estimate the prevalence of PTB. Most of the surveys conducted were at sub-national level and the screening methodology varies across the surveys, reducing the comparability of outcomes. The currently recommended methodology (symptom screening and chest X-ray) was applied during nationwide surveys only in Myanmar (2006 and 2010), Thailand (2012) and Indonesia (2013). Screening based on symptoms and X-ray was used also in some subnational surveys in India (the repeated surveys in Thiruvallur district of Tamil Nadu, Bangalore, Wardha and most recently Gujarat). However, miniature mass radiographs were used which produce a low quality image with less sensitivity than chest radiography with auto-processor or digital technology.

Results of surveys undertaken between 1990 and 2010, already published in the “TB control in South-East Asia, 2013” annual report show large in-country and between-country variability. For surveys conducted between 2011 and 2014, final results are not yet available and cannot be reported.

Information from prevalence surveys have been largely used in the Region to revise burden estimates as well as trends over time when data from repeated surveys were available.

In India, results from the four rounds of prevalence surveys in Thiruvallur district in Tamil Nadu, between 1999 and 2006, and those conducted in pre-DOTS period (between 1968 and 1986) in the same area were used to estimate an overall decline in the prevalence of smear-positive as well as culture-positive PTB, compared with no decline in the pre-DOTS era. Point estimates from the most recent six district/sub-district level surveys show a variable level of TB prevalence in different geographical areas and provide important information for the revision of national burden estimates. A state-level prevalence survey in Gujarat was completed in 2012, and preliminary results indicate prevalence levels of TB within the range, although towards the upper limit, of prevalence rates measured during surveys conducted between 2007 and 2009; however, final results are not yet available.

In Indonesia, the national-level prevalence survey conducted during 2004 supported the estimation of declining trend because it demonstrated a three-fold decline in prevalence rates when compared to results of district-level surveys carried out during the 1980s. Results of 2013 surveys are not yet available, but preliminary data suggest that the prevalence level should be significantly revised upward, although a declining trend seems confirmed.

In Bangladesh, the comparability of results from sub-national prevalence surveys carried out in the early 2000s and the nationwide survey conducted in 2009 was limited by the different methodologies adopted. Information on point estimates and possibly on trend over time will be provided by the prevalence survey planned for 2015.

In Myanmar, prevalence estimates were significantly revised upward based on the results of the TB prevalence survey in Yangon district in 2006 and the nationwide survey in 2010. Direct measurement of trend will be provided by a repeated survey planned for 2017.

In Thailand, preliminary results from the 2012–2013 prevalence survey are available only for non-Bangkok clusters. Comparison between the 2012–2013 survey and 1991 survey indicates that prevalence of smear-positive PTB almost halved and bacteriologically positive PTB also declined, although more slowly. Current estimates are likely to be slightly revised only. However, final results should account for Bangkok clusters that seem to have considerably higher prevalence than the rest of the country.

Tuberculin surveys to estimate ARTI among children carried out in the Member States of the Region from 1990 onwards were reported in “Tuberculosis control in South-East Asia, 2013” annual report and no newer information is available for this report. It is currently recommended not to use ARTI estimates to estimate disease incidence and derive prevalence, since the assumptions needed to link ARTI and incidence were shown to be not valid anymore. Results from repeated ARTI surveys were mainly used to estimate trends over time and in SEAR. They have been used for estimation in Bhutan, Democratic People’s Republic of Korea and India⁵.

5 Refer to “Tuberculosis control in South-East Asia, 2013 Report” for additional information

A limited number of TB mortality studies based on vital registration and verification of the cause of death (COD) through verbal autopsies, have been carried out in the Region. In India, in 2003–2008, a series of large community-based mortality sub-national surveys were conducted using verbal autopsy and methodology endorsed by the Registrar General in Andhra Pradesh, Orissa, Thiruvallur, Tamil Nadu in one Kolkata slum and in rural Andhra Pradesh. These surveys showed an average TB mortality rate of 36 per 100 000 population (range 28–76). Additional information has emerged from the 2002–2007 AIIMS Ballabgarh community-based prospective mortality survey, which reported TB mortality of 40 per 100 000 person/years. The nationally-representative One Million Deaths study, accounting for deaths from 2001–2003, has informally reported TB deaths of 77 and 40 per 100 000 person years for men and women respectively; the One Million Death study is still ongoing to collect information about avoidable deaths between 1998 and 2014.

In Indonesia, verbal autopsy-based mortality studies carried out at seven sites at sub-national level, during 2006–2008, revealed that TB was ranked first to third among the leading cod in the different provinces. Myanmar is planning to conduct a nationwide TB mortality survey in 2015.

3.1 Burden of DR-TB

Well-functioning national TB control programmes in the Region achieving high treatment success rates have resulted in maintaining the slow but steady decline in TB incidence rates during the past decade. This has also led to low levels (2.2, range: 1.6–2.8%) of MDR among newly-detected cases; the South-East Asia Region and the Americas have the lowest proportion of MDR-TB among new cases. Among previously treated cases in the Region, MDR-TB rate is estimated to be higher, around 16% (range: 11–21%) and the Region has the second lowest proportion of MDR-TB among retreatment TB patients. However, given the large number of TB cases in the SEA Region, this translates to a total of 89 000 (range: 75 000–100 000) estimated MDR-TB cases among notified PTB cases, accounting for 30% of the world's MDR-TB cases in 2013. Four of the 27 high MDR-TB-burden countries are in the SEA Region: Bangladesh, India, Indonesia and Myanmar.

The country-wise estimated burden of MDR-TB is based on nationwide drug resistance survey (DRS) or models based on sub-national DRS or generic model applied to the whole Region; estimates and sources of estimate are presented in Table 5.

To improve estimates of DR-TB, RNTCP India with support from WHO has launched the National Anti-tuberculosis Drug Resistance Survey 2014–2015 in a representative sample of both newly diagnosed and previously treated TB cases. Indonesia is planning to conduct a national DRS using a new algorithm that includes Xpert MTB/RIF to screen specimens for rifampicin resistance and identifying those requesting further testing. Indonesia is also gradually implementing drug resistance sentinel surveillance (covering six provinces in 2013) to provide data geographically representative of the whole country. Among the countries in the Region, Sri Lanka reached almost full coverage of DST testing among retreatment cases, allowing direct measurement of MDR-TB prevalence among this sub-group of TB cases.

Table 5: Estimated MDR-TB cases and rates in Member States of SEA Region, 2013

Country	Source of estimates	% MDR among new TB cases (95% CI)	% MDR among previously treated TB cases (95% CI)	Estimated number of MDR-TB among all pulmonary TB cases notified in 2013 (95% CI)
Bangladesh	DRS, 2012	1.4 (0.7–2.5)	29 (24–34)	4 700 (3 200–6 900)
Bhutan	Model, DRS, 2013 ^a	2.2 (1.8–2.7)	35 (21–52)	47 (30–66)
DPR Korea*	model	2.2 (1.8–2.7)	16 (12–20)	3 900 (3 100–4 900)
India	model ^b	2.2 (1.9–2.6)	15 (11–19)	61 000 (47 000–76 000)
Indonesia	model ^c	1.9 (1.4–2.5)	12 (8.1–17)	6 800 (4 970–9 100)
Maldives	model	2.2 (1.8–2.7)	16 (12–20)	2 (1–2)
Myanmar	DRS, 2012–2013	5.0 (3.1–6.8)	27 (15–39)	9 000 (5 300–12 500)
Nepal	DRS, 2011	2.2 (1.3–3.8)	15 (10–23)	1 110 (700–1 760)
Sri Lanka	DRS, 2006 DRS, 2013 ^d	0.18 (0–0.99)	0.58 (0.07–2.1)	15 (0–74)
Thailand	DRS, 2012	2.0 (1.4–2.8)	19 (14–25)	1 880 (1 370–2 700)
Timor-Leste	model	2.2 (1.8–2.7)	16 (12–20)	83 (67–102)
SEAR	model	2.2 (1.8–2.7)	16 (12–20)	89 000 (70 000–110 000)

^a Estimates for previously treated TB patients are based on DRS results; sample size for new TB cases was too small to estimate MDR-TB prevalence in this subgroup and estimates are based on regional model

^b Estimates based on sub-national DRS conducted in three states between 2006 and 2009

^c Model based on three sub-national surveys: DRS in Mimika District in 2004, Central Java province in 2006 and East Java province in 2010

^d Estimates for previously treated TB patients are based on results from DRS that had 99% coverage among retreatment cases in 2013; estimate for MDR-TB prevalence among new cases is based on results from previous DRS conducted in 2006

*Democratic People's Republic of Korea

DRS = drug resistance surveillance or survey data; CI = confidence interval; MDR-TB = multidrug-resistant TB

Sources: Annual Reports, National TB programmes, SEAR Member states, 2014;

3.2 Response to DR-TB in the Region

In 2011, the WHO Regional office for South-East Asia published the “South-East-Asia Regional Response Plan for Drug-resistant TB Care and Control” in collaboration with WHO Country Offices. In 2012, the Regional Green Light Committee (rGLC) was established in the WHO Regional Office for South-East Asia. A Regional Advisory Committee on MDR-TB was established to provide clear guidance on new policies and strategies for PMDT in countries of the Region. During recent years, steady progress has been made in the Region in detecting MDR-TB cases and initiating them on treatment. The r-GLC had approved the case management of patients with MDR-TB under national programmes in 10 Member States and almost all countries moved to PMDT and are in the process of expanding case finding capacity and treatment and care services.

Bangladesh, Democratic People’s Republic of Korea, India, Indonesia, Myanmar, Nepal, and Thailand developed clear PMDT expansion plans and other countries included PMDT as a component of the overall national strategic plans for TB control. In India, since September 2012, all 35 states have been providing MDR-TB diagnostic and treatment services and by March 2013, all districts were covered by PMDT services. In 2012 Bangladesh initiated Community-based Programmatic Management of MDR-TB (CPMDT) and in 2014, 316 outpatient DR-TB teams were formed and 2524 health-care workers were trained to continue MDR-TB care after initiation of the treatment (4–8 weeks) in the five chest disease hospitals (CDH) and one NGO (Damien Foundation) providing MDR-TB care. In Indonesia, by the end of 2014, there were a total of 28 PMDT referral centres, 10 sub-referral centres and 777 treatment centres across the country, almost double of the coverage in 2013; M/XDR TB interventions include further expansion of PMDT sites, policy for ambulatory treatment, “Borderless Approach” and integration of PMDT services into the national health insurance system. In Myanmar, according to the scale-up plan developed for 2011–2015, by the end of 2014, 14 Regions/States and 68 townships had diagnostic capacity through Xpert MTB/RIF and MDR-TB treatment centres: there are plans to expand MDR-TB diagnosis, treatment and care to all Regions/States by 2016. Nepal has already established ambulatory case management services for MDR-TB throughout the country; currently, there are 13 treatment and 73 sub-treatment centres offering MDR-TB treatment services through primary health care (PHC) services and health facilities managed by other sectors; in 2011, hostels for DR-TB cases have been established.

Maldives continues to treat the few cases detected through the National Tuberculosis Institute, Bangalore (India) on a case-by-case basis (no case was detected in 2013). Bhutan started enrolling cases in 2010 and provides treatment through three referral hospitals. Since 2011, Sri Lanka is enrolling patients that are treated initially at the National Hospital of Respiratory Diseases and then referred for continuation of treatment at the chest clinics in their respective districts. In Timor-Leste, there is a GLC project in place since 2011: the treatment is initiated by one NGO inpatient MDR-TB ward in the district of Liquiça and six NGO facilities are providing ambulatory care after the intensive phase. There are five NGOs which support the NTP in identifying TB suspects and referring them to DOTS facilities for diagnosis and treatment. In the Democratic People's Republic of Korea, the growing number of MDR-TB cases notified and initiated on treatment is showing a rapid increase of MDR-TB diagnostic and management capacity. In Thailand, most patients with DR-TB are diagnosed and managed by university, regional/provincial and some private hospitals (about 100 treatment units throughout the country), which procure second-line anti-TB drugs (SLD) using local resources such as the Government Pharmaceutical Organization.

In 2013, according to country reports, about 280 000 TB patients in the Region were tested for susceptibility to rifampicin using phenotypic DST or WHO-recommended rapid molecular diagnostics; 26 000 laboratory confirmed MDR-TB or rifampicin-resistant cases who are not laboratory-confirmed MDR cases (RR/MDR-TB) were notified, being 30% of estimated MDR-TB cases among all notified TB cases. Almost 24 000 patients had been registered for MDR-TB treatment in the Region, corresponding to 91% of notified RR/MDR-TB cases, and being over 30% of the reported MDR-TB cases put on treatment compared to the previous year (Table 6). Data available from the first two or three quarters of 2014 (from the four MDR-TB high-burden countries in the Region) confirm the increasing uptake of PMDT activities, since more than 22 000 MDR-TB cases were reported and 92% of them were reported on treatment.

However, the numbers reported are often incomplete (i.e. Thailand estimates 75% underreporting of MDR-TB cases detected and on treatment), inconsistent with the expansion of PMDT and not fully responding to drug-resistance reporting requirements. Some countries could not report RR/MDR-TB cases correctly because the information on further confirmation of RR-TB as MDR-TB cases is missing, causing either underreporting (if RR-TB cases were omitted) or over-reporting (if some RR-TB cases are counted twice as RR-TB and MDR-TB).

Disaggregation by laboratory confirmed and non-laboratory confirmed patients initiated on MDR-TB treatment is often lacking, limiting the assessment of the gap between diagnosis and enrolment on treatment.

There is also often inconsistency between data from DRS and number of RR/MDR-TB cases reported and poor disaggregated by history of treatment (new or previously treated cases). According to data reported, only 1% and 6% of new and retreatment cases respectively were tested for resistance to rifampicin. However, for India, data on DST testing are reported as cumulative of all cases, limiting the assessment of the South-East Asia Region in terms of achievement of targets set for testing among new and previously treated patients. Considering the overall reported number of patients tested for DST, 12% of all reported patients were tested.

R&R system for DR-TB has been revised in all countries of the Region to be consistent with the international recommendations and to capture data about detection and enrolment on treatment. However, in several countries, there is need to strengthen the system and quality of data.

Treatment success rates for MDR-TB patients enrolled on SLD in 2011 were available for all countries except Thailand that implemented the R&R system for DR-TB in 2012 and Democratic People's Republic of Korea and Timor-Leste that started enrolment of patients in 2012. Average regional treatment success rate was 54% for 2011 cohort, higher than for 2010 cohort; at country level, treatment success rates ranged between 25% in Maldives and 50% in India to 85% in Bhutan and 83% in Sri Lanka. Among unfavourable treatment outcomes, death rate was 21%, the highest among all WHO Regions.

Extensively drug resistant TB (XDR-TB) has also been reported from six countries (Bangladesh, India, Indonesia, Myanmar, Nepal and Thailand) in the Region. In total, 979 XDR-TB cases were reported in 2013 and 43% of them were started on XDR-TB treatment.

In December 2011, Mumbai, India, also reported cases of so called "totally DR-TB" that pose an extremely difficult challenge to clinicians and public health authorities. As a result, besides strengthening PMDT activities, the national regulations governing private sales of anti-TB medication were reinforced and in May 2012, India made TB a notifiable disease.

Table 6: Number of RR/MDR-TB cases notified and started on treatment in Member States of SEA Region, 2013

Country	Estimated number of MDR-TB among all pulmonary TB cases notified (Best estimate)	Number of RR/MDR-TB cases notified	Proportion of estimated MDR-TB cases that were notified (%)	Proportion of RR/MDR-TB cases notified started on treatment (%)*
Bangladesh	4 700	544**	12	126
Bhutan	47	47	100	104
DPR Korea****	3 900	187	5	91
India	61 000	23 157	38	91
Indonesia	6 800	848	12	95
Maldives	2	0	–	–
Myanmar	9 000	968	11	69
Nepal	1 110	477	43	81
Sri Lanka	15	4	27	100
Thailand	1 880	230***	12	100
Timor-Leste	83	2	2	100
SEAR	88 537	26 464	30	91

Source: Annual Reports, National TB programmes, SEAR Member states, 2014

*Some countries reported overall number of patients on MDR-TB treatment, without clear disaggregation between laboratory and non-laboratory confirmed

**In Bangladesh 679 RR-TB have been detected. However, they cannot be considered additional drug-resistant cases to confirmed MDR-TB as it was not possible to report how many of them were lately diagnosed to be MDR-TB

***Thailand was not able to report RR-TB cases; only confirmed MDR-TB were reported

**** Democratic People's Republic of Korea

Although the proportion of RR/MDR-TB cases diagnosed is still low, below the target of 50%, considerable efforts have been made in the Region to expand capacity for quality assured drug susceptibility testing (DST) and there was a remarkable increase in RR/MDR-TB cases notified, with a very high proportion of patients started on treatment in most countries in the Region as a whole with high treatment success rates in some of the countries. Further efforts are needed to reach the targets set for MDR-TB case-detection rate, DST testing and treatment outcomes, including enhancement of R&R systems to base the South-East Asia Region assessment on more complete and accurate data.

4

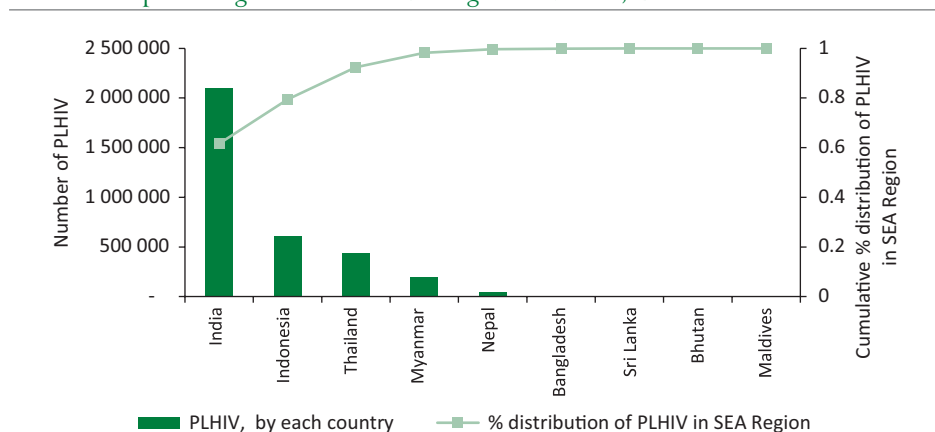
Addressing the co-epidemics of TB and HIV

4.1 Impact of HIV on TB in the Region

In 2013, 3.4 (2.9–4.0) million persons were estimated to be living with HIV/AIDS (PLHIV) in SEAR, constituting nearly 10% of PLHIV globally. There were an estimated 230 000 new HIV infections in the Region and 190 000 AIDS-related deaths in 2013; new infections declined by over 34% from 2001 to 2013. Women (15 years and above) account for nearly 37% of the total number of PLHIV in the SEA Region.

Magnitude of the infection varies and five countries namely, India, Indonesia, Myanmar, Nepal and Thailand together account for almost 99% of the HIV burden in the Region (Figure 15).

Figure 15 Number of people living with HIV (PLHIV) by country and cumulative percentage of cases in SEA Region countries, 2013



Source: UNAIDS AIDS report 2013

The overall HIV prevalence among the adult population was low (0.3%) in the Region in 2013. Thailand was the only country with a prevalence of over 1%. The estimated number of annual new infections is showing a downward trend in India, Myanmar, Nepal and Thailand compared to 2001. Nepal has reduced new infections by more than 80%, while Thailand and Myanmar have reduced incidence by about 70%, and India by 50%. In Indonesia, however, the HIV epidemic is still on the rise; it has registered an almost three-fold increase since 2001. (Table 7).

Table 7: Estimated HIV prevalence among adult populations and the number of people living with HIV infection in Member States of the SEA Region, 2013

Country	Estimated number of people newly infected with HIV	Estimated adult (15-49 years) HIV prevalence (%)	Estimated number of people living with HIV
Bangladesh	1 300	<0.1	9 500
Bhutan	<200	0.1	<1 000
DPR Korea*	No reported HIV positive individual till date		
India	130 000	0.3	2 100 000
Indonesia	80 000	0.5	640 000
Maldives	N/A	<0.1	<100
Myanmar	6 700	0.6	190 000
Nepal	1 300	0.2	39 000
Sri Lanka	<500	<0.1	2 900
Thailand	8 200	1.1	440 000
Timor-Leste	N/A	N/A	N/A
Total	230 000	0.3	3.4 million

Source: Health sector response to HIV in the South-East Asia Region, 2013

*Democratic People's Republic of Korea

The Region is distinguished by a complex, heterogeneous HIV epidemic at different stages across different countries and geographical areas within individual countries. Myanmar and Thailand have more homogenous HIV prevalence

among populations living in different geographical areas. In India, the epidemic is more concentrated in some states and districts: approximately two-thirds of the estimated HIV burden in India is concentrated in six states in the South and North-East, which make up only a third of the country's population. In Nepal, increasing HIV prevalence among high-risk groups such as intravenous drug users (IDU), has raised concerns about the potential risk of a generalized HIV epidemic. Bangladesh has a significant rising epidemic compared to previous years, although the epidemic is mainly concentrated in high-risk groups, for example, a recent survey revealed an HIV prevalence of 7% among IDU. In Indonesia, where the overall prevalence of HIV is low, <1%, three provinces have reported much higher rates of HIV: the Papua Region has a low level generalized epidemic with adult HIV prevalence of over 2%. HIV prevalence is estimated to be low in Bhutan, Maldives, Sri Lanka and Timor-Leste. HIV has till date not been reported from the Democratic People's Republic of Korea.

A significant proportion of PLHIV are also infected with tubercle bacilli and are thus at a high risk of developing TB. However, most of the incident TB cases in the Region are among HIV-negative people. In 2013, SEAR accounted for about 15% of the global burden of new HIV-positive TB cases. Four countries in the Region are among the 41 global high HIV-burden countries (India, Indonesia, Myanmar and Thailand). The estimated incidence of HIV-positive TB cases in 2013 is 170 000 corresponding to 9 per 100 000 population in the whole Region and 5% of all estimated TB incident cases, but rates vary widely among countries (Table 8). The number of deaths for HIV disease resulting in TB (as per International Classification of Diseases (ICD-10) definition) is estimated to be 48 000 in 2013, corresponding to a rate of 2.6 per 100 000 population; deaths due to HIV resulting in TB are to be considered additional to deaths due to TB among HIV-negative patients. Considering all TB deaths, associated or not with HIV, the death toll in the Region in 2013 increased to almost 500 000.

In SEAR, direct measurement of the prevalence of HIV among incident cases of TB was done in Myanmar, Nepal, Sri Lanka and Timor-Leste through HIV sentinel surveillance; India, Myanmar, Sri Lanka and Thailand also conducted national surveys; results from provider-initiated testing and counselling with at least 50% coverage of testing are available only for Bhutan, India and Thailand. All other countries rely on indirect estimates.

Table 8: HIV/TB burden in Member States of the SEA Region, best estimates and uncertainly bounds, 2013

Country	Incidence of HIV-positive TB cases		Mortality among HIV-positive TB cases	
	Number	Rate per 100 000 population	Number	Rate per 100 000 population
Bangladesh	410 (180–460)	0.26 (0.1–0.3)	160 (10–240)	0.1 (0.07–0.15)
Bhutan	<10 (<10–<10)	0.15 (0.14–0.17)	0	0
DPR Korea*	120 (56–130)	0.5 (0.2–0.5)	18 (10–30)	0.07 (0.04–0.12)
India	120 000 (100 000–140 000)	9.7 (8–11)	38 000 (31 000–44 000)	3 (2.5–3.5)
Indonesia	15 000 (8 700–20 000)	5.8 (3.5–7.8)	3 900 (2 200–6 200)	1.6 (0.9–2.5)
Maldives	<10 (<10–<10)	0.07 (0.03–0.08)	0	0
Myanmar	17 000 (16 000–18 000)	33 (30–34)	4 300 (3 300–5 300)	8 (6.3–9.9)
Nepal	1 600 (660–1 800)	5.6 (2.4–6.4)	320 (170–510)	1.2 (0.6–1.8)
Sri Lanka	25 (10–47)	0.12 (0.04–0.22)	<10 (<10–10)	0.03 (0.01–0.05)
Thailand	12 000 (10 000–13 000)	17 (15–19)	1 900 (1 300–2 400)	2.8 (2–3.6)
Timor-Leste	NA	NA	0	0
Total	170 000 (150 000–190 000)	9 (8.1–10)	48 000 (42 000–55 000)	2.6 (2.2–3)

Source: Global Tuberculosis Control: WHO report 2014, World Health Organization, Geneva 2014. WHO/HTM/TB/2014.08

Note: Figures are rounded off. NA=not available

*Democratic People's Republic of Korea

4.2 TB/HIV control activities in the Region

The need to address TB-HIV is well understood in the Region. A Regional Response Plan for TB/HIV collaboration, 2012–2015 has been developed, adapting global strategies and guidelines to the unique needs of the Region.

National TB/HIV policies and guidelines, and a comprehensive package of interventions (i.e. joint advocacy and coordination between TB and HIV national programmes, training of staff, integrated service delivery, referral of patients, R&R for TB/HIV collaborative activities, etc.) are being implemented in all countries except the Democratic People's Republic of Korea where HIV testing

in select TB cases with history of travel is being undertaken; however, the pace of implementation and outcomes differ across countries. TB/HIV activities are extensive in Thailand where high and continuously increasing coverage of HIV testing in TB cases, TB screening among HIV-positive patients, CPT and ART coverage among TB/HIV co-infected patients are reported. In Thailand, care and treatment for HIV-infected persons is free of charge and is covered by all three insurance agencies and widely available through the National Health Security Office. Services are being further expanded in India (full coverage of all 35 States reached in 2012), in Myanmar (28 sites are providing TB/HIV collaborative activities) and in Indonesia (all 33 provinces and 200 ART facilities are currently covered by TB/HIV activities).

Intensified case-finding is steadily increasing at integrated/HIV counselling, testing and care centres, and cross-referrals between the TB and HIV programmes have been strengthened; integrated management is becoming more widely available as HIV services expand. Particularly in India, the nationwide scale-up of intensified TB/HIV package including intensified TB case-finding at all HIV testing centres (integrated counselling and testing centres - ICTC) and ART centres led to identification of about 90 000 TB patients, contributing to 5% of the overall number of TB cases notified in 2013; additionally, it led to an over 30% increase of HIV testing and initiation on ART among HIV-positive TB patients in just two years, which positively impacts overall regional indicators.

In 2013, a total of 43% of TB patients in the Region knew their HIV status, and 88% and 81% of TB/HIV co-infected patients were put on CPT and ART respectively (Table 9). Although more progress is needed, the Region is rapidly achieving increasingly higher targets in the TB/HIV collaborative activities particularly with regard to ART coverage (it was 61% in 2012).

Infection control measures have been included in national plans in Bangladesh, Bhutan, Democratic People's Republic of Korea, India, Indonesia, Myanmar, Nepal, Sri Lanka, Thailand and Timor-Leste.

The TB recording and reporting systems in countries have been revised to include information on TB/HIV co-infection. However, the availability of data on HIV among TB cases remains suboptimal in some countries, including high HIV-burden countries such as Indonesia, and there is an urgent need to scale up and report on the screening of TB cases for HIV infection, and vice-versa.

Table 9: Achievements in TB/HIV collaborative activities in Member States of the SEA Region, 2013

Country	Incidence of HIV-positive TB cases (number - best estimate)	TB patients with known HIV status (%)	Number of HIV positive TB patients identified	HIV positive TB patients on ART (%)	HIV positive TB patients on CPT (%)
Bangladesh	410	1	68	90	100
Bhutan	<10	100	1	100	0
DPR Korea*	120	0	0	-	-
India	120 000	63	44 027	88	95
Indonesia	15 000	2	1 599	21	30
Maldives	<10	9	0	-	-
Myanmar	17 000	12	5 413	74	89
Nepal	1 600	11	65	100	-
Sri Lanka	25	49	37	100	100
Thailand	12 000	83	8 245	59	63
Timor-Leste	NA	41	7	100	100
Total	170 000	43	59 462	81	88

Source: Global Tuberculosis Control: WHO report 2014, World Health Organization, Geneva 2014. WHO/HTM/TB/2014.08; and Annual Reports, National TB programmes, SEAR Member states, 2014

*Democratic People's Republic of Korea

Isoniazid preventive treatment (IPT) for PLHIV proved to be difficult to implement for several reasons and it is not national policy in most countries. However, Myanmar conducted a pilot project on IPT in nine townships and 3134 PLHIV were reportedly provided with IPT between 2009 and 2012; from 2013 IPT is being mainstreamed but the uptake remains low (468 PLHIV were reported to be receiving IPT in 2013). Thailand was implementing IPT pilot projects, but no consensus has been reached yet on adoption of IPT as national policy. India has conducted operational research on IPT, adopted the policy of IPT in HIV-infected cases and the programme is planning to roll-out IPT in 2015. Bhutan has included IPT in national guidelines. In Indonesia, an IPT pilot was successfully completed in four hospitals where 73% of PLHIV received IPT and 81% of the patients completed 6/12 months regimen. In 2014, NTP scaled up implementation to 33 hospitals in eight provinces and by late September 2014, 58% of 649 eligible PLHIV were initiated on IPT. In Nepal, IPT started to be offered in 2014 in only five ART sites where 32% of new HIV patients enrolled on treatment received IPT; scale-up to 90% of ART sites is planned during 2015.

5.1 Strengthening national laboratory networks

Considerable efforts are being made to strengthen the national laboratory networks, both in terms of geographical expansion and introduction of newer technologies.

Quality-assured smear microscopy services are available through increasingly larger laboratory networks in all the 11 Member States. In 2013, nine of the 11 Member States reached or surpassed the target of one microscopy laboratory per 100 000 population.

National Reference Laboratories (NRL) in all Member countries (with the exception of Maldives and Timor-Leste) have capacity for mycobacterial culture and DST; however, only two reached the target of one culture and DST facility per 5 million population. Although culture and DST capacity is limited in some countries, efforts have been made in all countries to strengthen laboratory capacity according to national plans and with the support of supranational reference laboratories (SNRL).

For most countries that have at least one NRL accredited for quality assurance for culture and DST, expansion of culture and DST capacities is ongoing, both in terms of implementation of newer technologies and establishment of new laboratories. In Bangladesh, two additional laboratories were accredited in 2012 and one additional regional reference laboratory was established in 2014. In Bhutan, the Public Health Laboratory has been accredited for culture and DST on solid media; liquid culture and LPA have been recently introduced. In

Indonesia, there are currently 46 culture facilities, among which the number of quality assured laboratories increased from five in 2012 to 18 in 2013: external quality assessment (EQA) for DST was carried out with acceptable performance for FLD in 10 of them; two laboratories have been recently equipped with LPA. In Myanmar, the two NRL have been equipped with liquid culture, FL-DST susceptibility testing, rapid immunoassay for species identification and line probe assay for rapid diagnosis of MDR-TB; a newly established third laboratory is performing solid cultures only and in 2015, additional culture laboratories will be established in two more sites. By the end of 2014, India was relying on a network of 62 accredited laboratories (from the NTP, medical colleges, private sector and operated by NGOs) to undertake quality assured culture and DST for the programme; of these, 50 are also implementing rapid tests through LPA for diagnosis of MDR-TB cases and 11 perform second-line DST. In Nepal, upgrading of one regional laboratory for culture and DST is planned for 2015, in addition to the existing two quality assured national reference laboratories. Sri Lanka is planning to establish two new culture laboratories. In Thailand, culture capacity was expanded up to 65 culture facilities, 18 of which are performing FL-DST, also through rapid DST (specifically HAIN Genotype MTBDRplustest); in 2013, all laboratories were quality assured.

All 11 Member countries have formally established linkages with SNRL, within and outside the Region. The National Institute of Research in Tuberculosis (NIRT) formerly Tuberculosis Research Centre, Chennai, India, and the Bureau of TB at Bangkok, Thailand, are the two designated SNRL in this Region. These two laboratories are part of a global network of 32 SNRL. In 2014, the National Institute of TB and Respiratory Diseases in New Delhi, India became an SRL-National Centre of Excellence (SRL-CE); the SRL-CE are part of the NRL network and have similar terms of reference to that of an SRL, but with an in-country focus for its laboratory strengthening and capacity-building activities. NRL in some countries are linked to SRL outside the Region: Bangladesh to the SRL in Antwerp, Belgium; Democratic People's Republic of Korea to the SRL in Hong Kong; Indonesia to the laboratory at Adelaide, Australia, and Nepal to the Gauting laboratory in Germany.

India, Indonesia, Nepal and Thailand have in-country capacity to undertake DST for SLD to determine the extent of XDR-TB. Reference laboratories in Bangladesh, Indonesia, Myanmar and Nepal are engaged in rapid surveys for XDR-TB among mycobacterial isolates from patients who have failed re-

treatment regimens, through in-country facilities or linking with the SNRL in the global network. Bangladesh has been included in a new project to assess levels of resistance to fluoroquinolones and pyrazinamide among TB patients using both phenotypic and genotypic testing methods to assess the feasibility of the introduction of new drugs and shorter regimens for TB treatment.

Introduction of newer molecular and liquid culture technology for the management of MDR-TB in high-burden countries in the Region is ongoing with assistance through the EXPAND TB project, the Global Laboratory Initiative (GLI), FIND and SEARO. In 2013, the multinational project TBXpert also was launched, aiming to enable further roll-out and scale-up of Xpert MTB/RIF in targeted low- and middle-income countries. Following WHO endorsement of Xpert MTB/RIF as a rapid test for diagnosis of TB and resistance to rifampicin, and the issuance of guidelines, all Member States in the Region, excluding Maldives, are adopting, testing or scaling up Xpert MTB/RIF. In eight countries, the Xpert MTB/RIF have been included in algorithms as an initial test for the diagnosis of DR-TB among persons at risk and in six countries for diagnosis of TB in persons at risk of HIV-associated TB. Five are target countries for the TBXpert project (Bangladesh, India, Indonesia, Myanmar and Nepal). By the end of 2014, Bangladesh scaled up Xpert to a total of 39 sites; seven Xpert MTB/RIF machines provided by the TBXpert initiative are being used to target the urban areas of Dhaka. Bhutan, with support of GF NFM, is planning to install Xpert machines in four district hospitals to improve the diagnosis of MDR-TB. The Democratic People's Republic of Korea installed one machine in the NRL and conducted a small-scale TB DR study; expansion at regional level is planned. India conducted a feasibility study of introducing Xpert MTB/RIF in RNTCP under programmatic conditions in 12 states, and following its results, is planning to expand Xpert to 300 sites to be used for diagnosis of DR-TB and TB/HIV. In 2014, Xpert was installed in 89 sites and is used under the programme policy document. In Indonesia, Xpert is implemented in 41 sites including 25 Xpert instruments to address DR-TB in urban area of Jakarta; an additional 43 Xpert MTB/RIF machine are under procurement to support PMDT expansion and national DRS. In 2014, Xpert machines were installed in Myanmar in 24 sites and it is planned to provide all States and Regions with diagnostic capacity through Xpert MTB/RIF and MDR-TB treatment centres. In 2014, Nepal had 22 Xpert machines in place, including some installed in mobile units to conduct intensified case detection among vulnerable and hard-to-reach groups. In Sri Lanka and Thailand that deployed one and 14 Xpert machines respectively, in 2012–2013, there was no further scale-up. In Timor-Leste, three Xpert MTB/

RIF machines are available for diagnosis of MDR suspects, TB/HIV and smear-negatives in places where there is no access to X-rays.

5.2 Paediatric TB

Since 2006, WHO is putting emphasis on childhood TB, by issuing guidance on management and treatment of tuberculosis in children. In the second edition of “Guidance for NTP on management of paediatric TB” issued in 2014, Xpert MTB/RIF is recommended as an initial test in children who are suspected to have TB, including extra-pulmonary TB, and MDR-TB or HIV-associated TB. The second edition includes revised dosages for children and the STEP-TB project was launched to support development of child-friendly formulations. In 2014, WHO also published the “Childhood TB: training toolkit”. GF is providing an opportunity to include childhood TB as a programmatic area to be funded.

The first edition of guidelines for diagnosis and treatment of paediatric TB have been widely disseminated in the Region, although efforts towards control of childhood TB are uneven among countries.

Indonesia has the highest proportion of paediatric TB cases in the Region. The country revised the diagnostic algorithms for childhood TB to include Xpert MTB/RIF and is planning to establish community-based contact investigation and provision of IPT for exposed children <5 years of age, integrated TB screening in MCH, nutrition, and HIV programmes and provide training on childhood TB. In India, guidelines have been disseminated and patient-wise drug boxes for children are available under the programme. In Bangladesh, the NTP has involved the Bangladesh Paediatric Association in the TB control programme to train the doctors and health-care workers (HCWs) on child TB diagnosis and management: the project started with development of two training modules followed by the development of facilitators’ guide and training of district and sub-district level doctors including HCW. IPT is provided to eligible children living in the families of active TB patients as part of NTP policy (in 2013 about 2996 children were evaluated and 321 were registered for IPT). National guidelines for the management of childhood TB have been finalized in Myanmar that included paediatricians in the expert committee on DR-TB; Myanmar reported a decrease in over-diagnosis among children. In Democratic People’s Republic of Korea, training materials on paediatric TB treatment were developed and training conducted in children-related facilities at the central and provincial levels. In Nepal, a Childhood TB Management section was introduced in the NTP General Manual.

Most countries in the Region transitioned from Global Drug Facility (GDF) to direct procurement of paediatric formulations of anti-TB drugs. In 2014, Bangladesh, the Democratic People's Republic of Korea, and Myanmar received grants for anti-TB paediatric formulations through GDF.

Despite the achievements mentioned above, paediatric TB remains a neglected area, as shown by the very low notification rate in the age group below 15 years. National guidelines, updated according to new international guidelines, should be widely disseminated and staff trained on paediatric TB management in all Member States in order to increase TB case detection in the paediatric population.

In 2013, notification data with breakdown by paediatric age groups were available for seven of the 11 Member States.

5.3 Public and private partnerships

A major strategy towards increasing case detection and treatment success rates has been the inclusion of public health-care providers operating outside the Ministry of Health, such as the railways, military, the corporate sector and prison health services, as well as private providers in TB management. Particularly in some countries, the percentage of patients seeking services through the private health sector is very high. Currently, all Member countries have clear policies and strategies to involve other sectors. As a regional average, the contribution of notification of new TB cases from these sectors was about 19% in 2013; however, this proportion is underestimated, because in some countries, the R&R system does not allow proper breakdown by source of reporting. The contribution to TB control of non-NTP public and private providers is also underestimated because TB cases detected are often not reported to NTP.

In India, from 2012 onwards, the reporting from the private and non-NTP public sector is expected to increase due to the introduction of TB in the list of notifiable diseases. Indonesia is exploring new PPM approaches, matching with country needs, including mandatory notification and social business models; following the results of the TB prevalence survey that showed a high level of underreporting from private providers, PPM strategies are likely to be better tailored and PPM activities strengthened.

In several countries, universities and medical schools are contributing to evidence-based policies and strategies through technical advisory groups at national level.

The International Standards of TB Care have been endorsed by professional bodies and medical associations in Bangladesh, Democratic People's Republic of Korea, India, Indonesia, Maldives, Myanmar, Nepal, Sri Lanka and Thailand. Intersectoral collaboration and public–private partnerships for delivery of services have been further scaled up in eight Member countries (Bangladesh, India, Indonesia, Myanmar, Nepal, Sri Lanka, Thailand and Timor-Leste). More than 1500 medical colleges, 90 000 private practitioners, 2000 large public and private hospitals, 250 corporate institutions, 2500 nongovernmental organizations, nearly 100 faith-based organizations and over 900 prisons are now working with national TB control programmes. The number of private practitioners involved in PPM activities is increasing sharply, particularly in India, thanks to the successful partnership with the Indian Medical Association (IMA).

Other recent initiatives have been the formal inclusion of the principles and practices of TB control in pre-service training and establishment of referral mechanisms through providing lists of DOTS centres to teaching institutes. Indonesia has also introduced coordination meetings between community health facilities and hospitals to improve transfer mechanisms between lung clinics and puskesmas. In Myanmar, where PPM strategies were revised and prioritized based on 2009 TB prevalence survey results, services have been resumed and scaled up throughout the network of Sun Quality Clinics and the Myanmar Medical Association.

More than 1000 private laboratories are now included in national diagnostic networks and undergo quality assurance mechanisms. Indonesia has intensified training of staff of private and public hospitals and laboratories. India launched the Initiative for Promoting Affordable, Quality TB Tests (IPAQT), an innovative approach aiming to increase access to rapid, accurate and affordable diagnostics for patients treated in the private sector: the initiative involves a consortium of 50 private laboratories (approximately 3000 franchisee laboratories and over 10 000 specimen collection centres) supported by not-for-profit stakeholders, aiming to allow concessional prices for Xpert MTB/RIF, LPA and liquid culture in the private sector through agreements with producer companies.

Partnership with international and national NGOs enable TB service delivery in remote areas and among marginalized populations in several countries of the Region. The work of Bangladesh Rural Advancement Committee (BRAC) and Damien Foundation through MoU with the Government in Bangladesh is an outstanding example of large-scale service delivery by NGOs that is contributing to achieving national targets for TB control.

More than several thousand community-based initiatives are also being incorporated into routine service delivery by national programmes.

Business alliances in the Region such as the Thai Business Coalition and the Business Alliance in India are emerging as players from the non-health private sector introducing TB services into their workplaces. In Bangladesh, collaboration with the garment manufacturing sector, which accounts for three million employees and is one of the largest industrial sectors, was formalized and plans developed for providing TB services in this sector.

Examples of successful approaches are multiplying in the Region and should be systematically documented in order to replicate winning models in similar settings in the countries of Region.

5.4 Resources for TB control

Domestic funding for TB control is increasing in the Region and accounted for 54% of the estimated budget for national TB control programmes in 2014; international funds account for the remaining 45% and a large proportion of these funds is provided by the Global Fund to fight AIDS, TB and Malaria (GF). In 2014, the one fifth of the estimated budget was unfunded. Ten Member countries currently benefit from funds mobilized through the GF to over the previous rounds of GF grants and through the Single Streaming Funding, Transitional Funding Mechanism and New Funding Model. Eight countries submitted a concept note or application for the NFM in 2014. Nepal is successfully implementing the national strategy application (NSA) grant. Myanmar was one of the early applicants under the New Funding Model, covering the period 2013–2016.

In addition, nine Member countries benefit from funds from other development partners and donor governments with the exception of Bhutan and Maldives, where the only external funds are provided through WHO country budgets.

Considering the threshold of 2.3 key health personnel per 1000 population, five of the 11 Member States have sufficient human resources for health. Staff turnover, adequate training and management of human resources is a common challenge for most countries in the Region. Human resource development (HRD) plans are available for six countries in the Region.

All 11 Member countries continue to access quality-assured and affordable anti-TB drugs on a regular basis through grants or direct procurement services of GDF. All countries in the Region successfully transitioned from grants to direct procurement services using domestic sources, GF, World Bank, or other sources of bilateral funding for adult anti-TB drugs. An exceptional extended GDF grant of drugs was secured for the Democratic People's Republic of Korea (covering adult formulation only for one province).

Second-line anti-TB drugs are secured through different funding sources in countries through the GDF procurement system. In Bangladesh, it is mainly the GF and partly from USAID; Bhutan from GF; Democratic People's Republic of Korea from GF; India partly by GF and the rest from domestic resources; Indonesia by GF; Myanmar by GF, 3MDG funds, and domestic resources; Nepal from the GF; Sri Lanka from Global Fund; Thailand mainly from domestic resources and partly from GF and Timor-Leste from GF.

5.5 Operational research

National TB programmes and partners are engaged in carrying forward several operational research projects. Several other research projects are supported by WHO country offices through funds available at the country level from the Global Fund. Examples are KAP studies in Timor-Leste; public-private mix (PPM) models in Bangladesh, India, and Myanmar; hospital DOTS in Indonesia; seasonality in TB notifications; use of IPT in India, Indonesia and Myanmar, and outcomes from cross-border TB control in Thailand; feasibility study on use of Xpert MTB/RIF under programmatic conditions in India; mortality studies in India, Indonesia and Myanmar; cross-sectional community-based survey to identify where TB patients access treatment in India; studies on approaches to community-based TB care and strategies to serve hard-to-reach groups or high-risk groups (i.e. patients with diabetes) in several countries.

Table 10: Status of NSP development for the post-2015 period in Member States of the South-East Asia Region

Member States	Period of current NSP	Status of updates for post-2015 period
Bangladesh	2102–2016	National Strategic Plan for TB Control has been revised for 2015–2020, incorporating Post-2015 Global TB strategy with technical support of WHO
Bhutan	2012–2016	The country is planning a mid-term review of NSP and it will be revised accordingly based on the review findings
DPR Korea	2015–2018	NSP was recently updated
India	2012–2017	NSP period is in line with the nation's five-year plan. However with the new strategies being developed by the programme, there would be substantial revisions in 2015
Indonesia	2010–2014	NSP for the 2015–2019 period was developed and incorporates post-2015 Global TB Strategy and revised disease burden estimates
Maldives	2014–2019	Mid-term review to be undertaken in 2016
Myanmar	<ul style="list-style-type: none"> – 2011–2015 – 2012–2015 supplement – Has been extended till 2016 to incorporate NFM 	Next NSP will cover 2016–2020 and development will start and should be completed during 2015
Nepal	Jul 2010–Jul 2015	Draft NSP Jul 2015–Jul 2020 produced by NTP with support from WHO consultant. NSP to be finalized shortly by NTP and WCO
Sri Lanka	2015–2020	The previous NSP for the period 2012–2016 was updated and costed
Thailand	2011–2016	Draft NSP 2015–2019 was finalized in October 2014 and final changes need to be made by BTB and it has to be endorsed by MoPH
Timor-Leste	2012–2015	NSP for 2015–2020 was developed based on the Joint Monitoring Mission 2013 report and recommendations

Source: TB unit, CDS, SEARO/WHO

National workshops on operations research priority-setting and dissemination are held regularly in India. In collaboration with Union and other stakeholders, India is conducting operational research in several areas.

Bangladesh, India, Indonesia, Myanmar, Nepal, Sri Lanka and Thailand have benefited by several TBREACH-approved projects.

5.6 National Strategic Plans

National strategic plans (NSP) for TB control are available in the 11 Member States and addressing all programmatic areas under the current Stop TB strategy and the End TB Strategy (post–2015 Global TB Strategy). Countries with NSP covering the period until 2014 have developed new NSP to cover the five-year period 2015–2020 and include post–2015 global TB strategy and recommendations. Also, most countries with NSP covering a period beyond 2014 have revised and updated their plans (Table 10).

Some NSP address the needs of populations at higher risk and living in cross-border areas according to each country's specificity, pursuing higher and earlier case detection and quality case management.

6.1 Technical assistance in implementation of STOP TB Strategy

All 11 Member States in the Region continue to receive technical assistance through the WHO Regional Office for South-East Asia and country offices, in coordination and collaboration with international technical partners, namely, the Centers for Disease Control and Prevention (CDC), USA, the Royal Foundation for Tuberculosis in the Netherlands (KNCV), U.S. Agency for International Development (USAID), USAID-supported TBCARE I and II, Foundation for Innovative New Diagnostics (FIND), PATH, the Institute of Tropical Medicine in Antwerp, Belgium, and the UNION. The three WHO Collaborating Centres, namely, the National TB Institute (NTI), Bangalore, India, the National Institute of Research in Tuberculosis (NIRT), Chennai, India, and the SAARC TB and HIV/AIDS Centre in Kathmandu, Nepal, and technical partners based in countries in the Region also actively provided technical assistance to national TB programmes during 2014. The National Institute of TB and Respiratory Diseases (NITRD), New Delhi, and the All India Institute of Medical Sciences (AIIMS), New Delhi were recently designated as WHO Collaborating Centres.

To provide overall guidance to countries, the Regional Office updated and disseminated the Regional Strategic Plan 2012–2015 for TB control in the Region. In January 2015, the process to update the Regional Strategic Plan for TB control beyond 2015 started and the updated plan is expected to be finalized by November 2015. The updated plan will adopt key principles and strategies, pillars and components (integrated, patient centered care and prevention, bold policies

and supportive systems, intensified research and innovation) of the global “End of TB Strategy: 2016–2035” and the Stop TB Partnership’s “Global Plan to Stop TB 2016–2020”. The updated Regional Strategic Plan aims to support Member countries in reducing TB mortality and incidence in line with the global targets as set in resolution WHA67.1, to guide the countries in addressing the persisting and emerging epidemiological and demographic challenges and to advance universal health coverage and robust health systems. The updating process will include consultation with the SEA Regional Technical Working Group on Tuberculosis as well as Member States.

The WHO Regional Office and country offices are providing support to countries to develop or revise NSP covering the post-2015 period. WHO support for NSP was particularly important in Indonesia, Maldives, Nepal and Sri Lanka. Maldives also received support to develop the overall National Health Plan.

Technical missions were undertaken to all 11 Member countries during 2014 to provide support to national programmes in various areas: laboratory assessments and laboratory capacity-building, strengthening laboratory quality control and assurance, culture and DST, introduction of rapid molecular tests, development and implementation of guidelines and/or national strategies for TB, human resource development for TB control, MDR-TB, TB-HIV, childhood TB, infection control, PPM, improvement of drug procurement and supply management, data management and use, and impact assessments. The Regional Office laid particular focus on implementation of DR-TB control and provided support on the scale-up of PMDT.

Technical support was provided to Bangladesh, the Democratic People’s Republic of Korea, India, Indonesia, Maldives, Myanmar, Nepal, Sri Lanka, Thailand and Timor-Leste to either revise national plans or to develop MDR-TB control expansion plans.

Technical assistance is ongoing to India and Indonesia to scale up implementation of the PPM approach. A national workshop on PPM was supported in Nepal.

The TB Technical Assistance Mechanism (TBTEAM) has been utilized to provide technical assistance to countries. The SEAR TBTEAM focal point identified national TBTEAM focal point(s) in collaboration with all national and external partners involved in respective countries. SEAR TBTEAM regularly monitors the

functioning of the national TBTEAM to ensure that information is up to date and that they are performing the tasks in the standard terms of reference for a national TBTEAM focal point. The regional roster of experts was further expanded and all proposed technical assistance missions to countries mapped, with the aim of deploying suitable consultants to meet the technical assistance requirements of countries. This is also serving to facilitate seeking additional funding from GF, USAID, TBREACH, UNITAID and other partners to support the necessary technical assistance to countries.

6.2 Regional Green Light Committee (rGLC)

To provide more coordinated and quality support to the implementation and expansion of PMDT, rGLC was established in 2012. The rGLC acts as a Secretariat to the MDR-TB Advisory Group to support Member States in meeting the challenges of DR-TB. The rGLC Secretariat has a memorandum of understanding with WHO and GF and its objective is to provide clear guidance on new policies and strategies for PMDT interventions in countries of the Region. The rGLC “package of services” was defined and the *modus operandi* was endorsed. rGLC is supporting the implementation of the Regional Response Plan for MDR-TB, ensuring that country PMDT plans reflect programmatic recommendations on the response to DR-TB, including recording and reporting of the standard indicators selected for the Region, and that the reports of monitoring mission are reviewed and structured according to the standard template. rGLC is also supporting coordination of needed high quality technical assistance and resource mobilization for countries that have PMDT expansion plans.

Some of the programmatic recommendations of rGLC include the need to prioritize risk groups and develop algorithms for use of WHO-approved rapid diagnostics in order to improve case-finding and diagnosis; move toward self-sufficient in-country diagnostic capacity, and create linkages with SRL for technical support; move forward ambulatory case management; strengthen infection control; monitor community mobilization efforts at country level; encourage research on WRD’s and DRS surveys.

Some of the strategies to ensure effective support to countries are: to explore identification of centre of excellence in MDR-TB clinical management at the regional level; establishment of regional PMDT training centre to enhance managerial and technical capacities for the management of DR-TB within the

Region; possibility of a regional proposal to address cross-border issues and the treatment of migrants.

The third and fourth meetings of the MDR-TB Advisory Committee were held in April and November 2013 respectively. The fifth was held in May 2014 and the sixth in February 2015.

In 2014, monitoring missions for PMDT were conducted in Bangladesh, Bhutan, Democratic People's Republic of Korea, India, Indonesia, Myanmar and Nepal.

6.3 Strengthening national laboratory networks

Technical assistance, coordinated through WHO, is being provided through the SNRL based at the Institute of Medical and Veterinary Science (Australia); Institute of Tropical Medicine (Belgium); Central Reference Laboratory; Gauting (Germany); the National Institute of Research in Tuberculosis (India) and the National Tuberculosis Institute (India), the Bureau of TB at Bangkok (Thailand), and the Department of Health, SAR (Hong Kong), to help establish culture and DST facilities in countries in a phased manner, in line with national plans. All 11 countries have formally established linkages with SNRL. Additionally, India receives support from the newly established SRL-National Centre of Excellence (SRL-CE) at the NITRD, that belongs to the NRL network and has similar terms of reference to that of an SRL but has an in-country focus.

Continuous support to strengthen capacity for quality assurance, culture and DST, was provided to Bangladesh, Bhutan, Democratic People's Republic of Korea, India, Indonesia, Myanmar, Nepal and Thailand. As a result, all 11 Member States have quality assured smear microscopy, culture and first-line DST is available in all countries (through in-country facilities or through linkage with SNRL) and four countries developed capacity for quality assured second-line DST.

In 2014, missions by EXPAND TB (Expanding Access to New Diagnostics for TB) project were conducted in Bangladesh, India, Indonesia and Myanmar. EXPAND TB is a collaborative effort between WHO, GLI, FIND and GDF, to ensure access to quality-assured new diagnostic technologies, endorsed by WHO, including liquid culture, rapid speciation, rapid DST and molecular line probe assay; diagnostic technologies are properly integrated into TB control programmes and implemented in appropriate laboratories in countries and local know-how and

sustainability are promoted through technology transfer efforts. As per 2014 information, newer diagnostics were available in all Member States of the Region except Maldives.

6.4 Capacity-building, information exchange

Training, exchange of information at global and regional level, and in-country capacity-building have been the key areas of work for the WHO Regional Office and country office staff during the past years.

In 2014, the Regional Office and country offices have also supported facilitation of several national-level training and workshops in all countries and capacity was built in various technical areas.

In 2014, all Member States participated in various meetings organized by the SEA Regional Office and WHO HQ. These included:

- Training of Trainers (ToT) workshop for PMDT, 19–27 March 2014, SEARO, New Delhi
- Meeting of the SEA Regional Technical Working Group on TB, 28–29 April 2014, SEARO, New Delhi
- Fifth Regional Advisory Committee Meeting on MDR--TB, 29–31 May 2014, Mumbai, India
- Joint WHO/Global Fund Workshop on Scaling up Public–Private Mix for TB Care and Control in High Impact Asia Countries, 25–27 June 2014, SEARO, New Delhi
- Global Consultation on Childhood TB for High Burden Countries in the Eastern Mediterranean, South-East Asia and Western Pacific regions, Jakarta, Indonesia, 29 September–1 October 2014
- SEA Regional Meeting of National Tuberculosis Control Programme Managers and Partners, 10–14 November 2014, New Delhi, India

WHO staff participated in the workshop on development of national strategic planning for tuberculosis control, Divonne, France; Expert consultation on PPM for management of DR-TB, Geneva, Switzerland; Annual meeting of the Childhood TB subgroup and 45th Union World Conference on Lung Health and TB Symposium on Post-2015 Global TB Strategy, Barcelona, Spain.

The SEAR TB Technical Working Group is functional and meets bi-annually. It effectively guided the regional TB control programme, particularly in relation to the implementation of the DOTS and STOP TB strategy in general.

6.5 Resource mobilization

Several Member States were assisted in mobilizing resources from development partners and donor governments during the year.

Bangladesh, Bhutan, Democratic People's Republic of Korea, Nepal, Sri Lanka and Timor-Leste were supported by WHO to develop a concept note (CN) for the New Funding Model of the Global Fund. Thailand was supported in the development of a joint TB/HV CN for the New Funding Model of the GF.

All countries (except Maldives) receive support for management of GF grants and funding. USAID reports were elaborated and are available for Bangladesh, India, Indonesia, Myanmar and Regional Office.

The activities undertaken and coordinated by the TB unit at the Regional Office were supported almost entirely through USAID regional funding. Some funding was also received through the Global TB Programme at WHO/HQ, for organizing regional workshops.

6.6 Ensuring regular supplies of drugs and improving procurement and supply management

WHO has coordinated and facilitated technical support to the countries through GDF missions in anti-tuberculosis drug procurement, storage, and management.

Eight countries were supported in capacity-building for drug management: Bangladesh, the Democratic People's Republic of Korea, Indonesia, Maldives, Myanmar, Nepal, Sri Lanka, and Timor-Leste. Assistance continued to be provided for timely procurement of anti-TB drugs mainly through direct procurement mechanisms. In fact, access to anti-tuberculosis medicines has improved as most Member States have successfully transitioned from grants to direct procurement for FLD, predominantly funded by the GF. All 11 countries embarked on the use of GDF services and products and accessed the low-cost and quality assured fixed-dosage combination drugs. No stock-outs were reported from any country at the point of treatment delivery.

An exceptional extended GDF grant was secured for Democratic People's Republic of Korea (100% of paediatric formulation and adult formulation only for one province). GDF grants for paediatric formulations were also made to Bangladesh and Myanmar. SLD were procured through GDF and funded by GF in all countries except Maldives where the Ministry of Health is procuring second-line drugs on a case-by-case basis; in Thailand, FLD are procured using domestic funding and local resources such as the Government Pharmaceutical Organization, but SLD are procured from GDF using GF funding.

6.7 Operational research

Bangladesh, India, Indonesia and Myanmar were supported in the elaboration of operational research protocols in order to address country needs and innovative approaches.

India, Myanmar and Thailand were assisted in developing protocols for initiating INH preventive therapy at selected sites and India and Myanmar used evidence collected to mainstream it as national policy.

6.8 Coordination, collaboration and partnerships

To mobilize greater commitment for TB control in the Region, WHO at country, regional and headquarters levels continued to interact with several donor and development partners.

Staff from the country offices participated and contributed to workshops and meetings held by WHO/headquarters and partner agencies, namely: STAG meeting, Regional Advisers' meeting, TBTEAM meeting, Union Conference, Global Laboratory and Drug-resistant Initiatives.

6.9 Monitoring and evaluation, and TB burden estimates

Over the past few years, interventions to support impact assessments were made in several Member States in the form of prevalence or annual risk of infection surveys, mortality surveys, in-depth analysis of several years' programme data to determine trends and revision of burden estimates.

In 2014, support for prevalence surveys at different stages was provided to four countries. Thailand was supported in the finalization of analysis of data;

Indonesia was supported in finalization of field operations implementation and analysis of data and the report; and Bangladesh received support in preparation for the TB prevalence survey initiated in 2015 (development of survey protocol, procurement plan, standard operation procedures and implementation plan).

Assistance to India and Indonesia was provided in preparation for the national DRS to be conducted in 2015, including development of DRS protocol.

Joint external monitoring missions (JEMM) on TB control were completed in Bangladesh, Bhutan, the Democratic People's Republic of Korea, Myanmar and Sri Lanka.

Bangladesh, Bhutan, the Democratic People's Republic of Korea and Nepal were supported by WHO to conduct an epidemiological analysis that was instrumental in preparing concept notes for the GF, as well as useful for monitoring and evaluation of TB control activities and revision of country strategies.

Sri Lanka received support to finalize the report of the in-depth epidemiological analysis of historical data to better assess TB burden that was conducted in 2013.

In 2014, Indonesia and Thailand participated in a workshop organized by WHO to develop protocols for inventory studies, based on WHO guidelines, to improve their burden estimate by measuring the entity of under-notification and evaluate where efforts to collaborate with public and private sector providers are needed.

WHO also provided technical support to several countries for strengthening routine surveillance systems. Efforts are being made to strengthen national TB surveillance systems, focusing on quality of data, with the main emphasis on completeness of case reporting, accurate compilation and reporting of data, and implementation of the new reporting framework.

Bangladesh

With a population of about 157 million, Bangladesh is among countries with the highest burden of TB. The estimated prevalence and incidence rates of all forms of tuberculosis were 402 and 224 respectively per 100 000 population in 2013. Estimates have been revised slightly downward following a TB epidemiological and impact analysis conducted in March 2014. However, the burden estimates have not been officially approved by NTP and it plans to reassess them jointly with WHO, following the completion of the prevalence survey in 2016. The protocol for the TB Prevalence Survey has been finalized and approved by Ministry of Health and Family Welfare. Major equipment (X-ray machine, Xpert machines) and vehicles have been received and procurement of small items and reagents is under process. Standard Operating Procedures (SOP) have been developed through stakeholders' workshops and being finalized by the Institute of Epidemiology, Disease Control and Research (IEDCR). Forms and cards have been developed by IEDCR in consultation with NTP. Recruitment and training of staff and field testing has been completed and piloting and actual field implementation will be held in 2015. The draft report will be available in 2016.

In 2013, the notification rate of all forms of TB and new bacteriologically confirmed cases was 119 and 68 respectively, showing an increase of 18% and 3% respectively compared to 2011. Treatment success rate among new and relapse cases (all types) is above 90% since 2007, and it was 92% in 2012 cohort. In 2012, cohort treatment success rates among re-treatment cases was 82%; among a cohort of 63 HIV-positive TB cases, treatment success was 81%.

The number of peripheral laboratories performing smear microscopy has increased steadily over recent years, from 1072 in 2012 to 1089 in 2013, corresponding to 0.7 per 100 000 population, to provide greater access to TB diagnostic services. In 2013, as in the previous year, EQA was carried out for all microscopy laboratories, 94% of them showing acceptable performance. Following the WHO recommendation, NTP plans to gradually replace the light microscopes with LED to improve the capacity and quality of sputum microscopy. To support this national initiative, TB CARE II procured and distributed 200 LED microscopes

in the country. To use the new microscopes, over 300 staff were trained on LED microscopy. The focus of the training is to update laboratory technicians' skills in sample collection, smearing and staining, microscopic examination by LED, smear evaluation, recording and reporting, supply management, quality assurance, preparation of reagents, preservation of microscopes, and troubleshooting.

In 2013, there were three accredited laboratories performing culture and DST for FLD; for two of them, EQA was carried out showing acceptable performance. One laboratory provides line probe assays (LPA) testing. Despite the number of culture and DST, capacity was tripled, compared to 2011. National coverage of culture and DST is still low, considering the size of the population (0.1 laboratory per 5 million population). Besides the existing laboratories, one regional TB reference laboratory (RTRL) was established in Khulna in 2014 and will become functional in March 2015 after completion of standardization of culture. Another RTRL in Sylhet division is being established and will be completed in 2015. DST for second-line drugs is available in NTRL that is linked to the Supranational Reference Laboratory in Antwerp, Belgium, since 2007. Bangladesh is participating in the EXPAND project and achievements in 2014 include increased MDR-TB case detection and reduced turnaround time to 23 days for liquid culture and three days for LPA; increased biosafety at the NTRL and capacity development of laboratory staff.

Xpert MTB/RIF was first introduced in Bangladesh in March 2012 with the support of the TB CARE II project. Till December 2014, a total of 39 Xpert MTB/RIF machines were functioning at different settings in the country, including six machines in Dhaka city. Initially, only DR-TB suspects were tested by Xpert MTB/RIF and in 2013, a total of 5747 DR-TB suspects were tested. Bangladesh was included in the UNITAID TB Xpert project with support from the Stop TB Partnership and TBREACH initiative. Through this project, seven Xpert MTB/RIF instruments have been implemented in order to provide access to free diagnosis to high-risk patients in Dhaka through innovative social business models including private screening centres and other partnering locations. Xpert MTB/RIF assay was included in an algorithm as the initial diagnostic test for TB in persons at risk of HIV-associated TB, for diagnosis of smear-negative TB cases and for the diagnosis of drug-resistant TB among persons at risk.

Due to the size of the population and reported TB cases, Bangladesh is among the 27 MDR-TB high burden countries, despite data from previous DRS indicating

low levels of MDR-TB. The results of the first national DRS completed in 2012 confirmed a low proportion of new TB cases that have MDR-TB (1.4%, confidence intervals 0.7–2.5), but the proportion among retreated cases was revised upwards (28.5%, confidence intervals 24–34). The total number of estimated MDR-TB cases among notified cases in 2013 was 4700. Coverage of routine surveillance of drug resistance is still low, being 0.1% and 50% among new and re-treatment TB cases respectively; however, it shows a remarkable increase compared to 2012 levels (testing among retreatment cases was 7% only).

MDR-TB care is provided by the National Institute and Hospital of Diseases of Chest in Dhaka, the chest disease hospital (CDH) in Chittagong, Khulna, Sylhet, and Pabna as well as the Damien Foundation (NGO partner of NTP). The latter is providing MDR-TB services as an operational research project in designated geographical areas following a nine-month regimen; the Damien Foundation has its own reference laboratory capable of performing culture and DST for FLD. As per WHO recommendation, NTP Bangladesh has initiated CPMDT in 2012 with technical assistance from WHO and TB CARE II project. SOP for CPMDT and training modules were developed (2011–2012); 316 outpatient DR-TB teams were formed and 2524 HCW were trained on CPMDT in 2014. DR-TB treatment initiation was also decentralized through minor renovation of existing CDH and training of doctors and health workers of CDH. A total of 278 hospital beds are now available under NTP for initiation of DR-TB treatment. Within 4–8 weeks when two consecutive sputum (weekly interval) samples become negative, the patients are handed over to outpatient DR-TB teams to continue the treatment under CPMDT. Thus, national capacity for inpatient management of MDR-TB cases has increased.

In 2013, a total of 544 MDR-TB cases were confirmed and notified; 679 RR-TB were detected. However, they cannot be considered additional DR-TB cases as it was not possible to report how many of the RR-TB cases were diagnosed to be MDR-TB. In total, 684 RR/MDR-TB patients were started on second-line treatment, of which 28% were started on nine-month regimen by Damien Foundation under an operational research project. Data from the first semester of 2014 show considerable increase of capacity for MDR-TB diagnosis and treatment: in this period, 520 MDR-TB cases were reported and 369 RR/MRD-TB cases were started on treatment. In 2013, three of the five XDR-TB patients diagnosed were started on treatment. Two patients treated in the private sector had bedaquiline added to the treatment regimen under compassionate use. Bangladesh is one of the five

countries selected for a project to assess levels of resistance to fluoroquinolones and pyrazinamide in order to provide guidance to development of algorithms and introduction of new treatment regimens. For the cohort of MDR-TB patients enrolled for treatment in 2011, the success rate was 68%. The rate increased to 72% according to the report of cases registered during the first three quarters of 2012.

Bangladesh introduced mHealth information system in 2013 and is in the process of updating the mHealth applications, expanding it to all the CPMDT districts, and using it as a tool for routine monitoring of DOTS for patients, administration of drugs, and treatment adherence by patients. Updated mHealth system will enable to analyse and generate reports and graphs on patient data by geographic units, treatment status, gender. Currently, mHealth system is operational in 33 districts and is being scaled up to cover the remaining CPMDT districts.

HIV prevalence in the adult general population is low (less than 1%) in Bangladesh except for IDU, among whom a recent survey revealed an HIV prevalence of 7%. National TB/HIV operational guidelines were developed in 2009 and there is a national TB/HIV committee, although effective collaboration between the national AIDS, STI and TB programmes needs to be strengthened. A limited number of NGOs provide HIV counselling, prevention and care for TB-HIV co-infected individuals. The number of TB patients tested in 2013 for HIV was 2067, corresponding to 1% of all TB patients notified in the same year; HIV-positive TB cases detected were 68 (3% of all tested) and all of them started ART and 90% started CPT. TB screening was reported for 607 HIV-positive patients.

Child TB (CTB) activities are progressing steadily in Bangladesh. National guidelines on CTB management have been published in 2012. With the support of TB CARE II project, NTP has involved the Bangladesh Paediatric Association in the TB Control Programme to train the doctors and HCW on CTB diagnosis and management in order to increase the case-detection rate of CTB in Bangladesh. The project started with development of two training modules followed by the facilitators' guide and training of district and sub-district level doctors including HCW. In 2013, TB cases among children of 0–14 years old represented 2.8% of all new TB cases detected, of which 13% were in the age group 0–4 years. Providing IPT to eligible children living in the families of active TB patients is part of NTP

policy. About 2996 children were evaluated and 321 children registered for IPT; among the registered children, 78 completed the full course of prophylaxis in 2014.

The number of people with diabetes is rising rapidly. The growing prevalence of diabetes poses a challenge for TB control, as uncontrolled diabetes leads to a greater risk of developing TB. In this context, NTP with the support of TB CARE II has initiated a project with the Bangladesh Diabetic Shomity with the ultimate goal of addressing the vulnerability of the diabetic patients to acquire TB disease. In 2014, a total 457 health professionals were oriented and 179 physicians participated in a three-day training on management of TB and diabetes. A total of 4848 diabetics with symptoms of TB have been referred by the health professionals for sputum microscopy; among them 500 smear-positive and 265 smear-negative patients were detected.

The TB Infection Control Operational Guidelines were published in 2011 and translated into the local language (Bangla) in 2014. The practical approach to lung health (PAL) guidelines have been published and three batches of TOT have been completed. After the TOT, 99 medical doctors have been trained on PAL.

TB services are part of an essential services package under the Health, Population and Nutrition Sector Development Programme (HPNSDP) which is implemented through the PHC system of the country. Bangladesh is an outstanding example of implementing TB control in partnership with NGOs. Community-based DOTS through village doctors and the network of *shasthya shebikas* (female community health volunteers) is the most common mechanism for supervising drug intake. In 2013, data about community-based activities were available for 55% of all basic management units (BMU): in these BMU, 71 784 TB cases were referred by community health workers and/or community volunteers, being 44% of all TB cases notified. Collaboration with garment manufacturers, which accounts for three million employees and is one of the largest industrial sectors, was formalized and plans developed for providing TB services in these companies. Several stakeholders in the private and corporate sectors are involved in TB control and in rendering services in line with international standards for TB care. Totally, 110 non-NTP public providers (including public, medical college and military hospitals, and the prison system) and 85 private providers have been involved so far, contributing to about 23 146 cases notified in 2013 (90% from private providers and 10% from non-NTP public providers).

WHO piloted electronic registration of TB data using e-TB manager software in six sites in 2010 and now NTP with the support of WHO and Management Sciences for Health (MSH), it has been expanded to 210 sites. WHO is also supporting the organization of 15-day basic computer training for field-level government and NGO staff. Following this basic computer training, MSH Bangladesh organizes the training on e-TB manager software. At present, data are being collected from the field both in hard and soft copies and this will be continued until the e-TB manager is fully operational throughout the country.

A human resources development (HRD) plan has been developed and a focal point for HR designated at the central level. NTP guidelines have been included in the curricula for basic training of different categories of health staff. A “Handbook on Tuberculosis for MBBS students” based on NTP Guidelines was published in 2013 in collaboration with the Centre for Medical Education and TB CARE II. The international standard of TB care (ISTC) has been formally endorsed by professional associations.

A joint monitoring mission was successfully conducted in April 2014 and following its recommendations, the National Strategic Plan for 2015–2020 was updated. A concept note for the application to the New Funding Mechanism of Global Fund was submitted in June 2014 and approved by the Global Fund for the period of June 2015 to December 2017. Currently the TB programme is also getting support from the Global Fund through Rounds 3, 5, 8 and 10. This support is channelled through two principal recipients: the External Resource Division of the Ministry of Finance for NTP (Government) and BRAC for NGO consortium. In addition, USAID provides financial assistance to the NTP through TB CAREII, MSH and WHO, while several other donors are funding TB activities through NGOs. Some support for TB control is also made available through HPNSDP. However, domestic funding is very limited, representing 5% of the budget for 2014. More than 60% of the budget estimated for TB control activities in 2014 was unfunded. WHO provides strong technical and operational support to the programme.

Major achievements

The Major achievements of NTP in Bangladesh are as follows:

- The sixth joint monitoring mission conducted during 30 March–10 April 2014 and report published;
- EPI data analysis completed;

- Revised Strategic Plan for National Tuberculosis Control Programme (2015–2020) finalized;
- a CN for the application to the NFM of the GF submitted in June 2014 and approved by GF for the period June 2015–December 2017;
- fifth edition of national guidelines and operational manual for tuberculosis control and second edition of national guidelines and operational manual for PMDT published;
- MDR-TB management scaled up in Pabna, Khulna and Sylhet;
- cPMDT started in 2012 and gradually expanded to the whole country;
- two training modules on CTB developed, followed by facilitators' guide and training of district and sub-district level doctors including HCW;
- first edition of national guidelines and operational manual on PAL at PHC level and participants' module on PAL, Bangladesh and guidelines on PAL for nurse/HA/FWA/paramedics in Bangla published.
- national monitoring and evaluation plan for tuberculosis control (2011–2015) and MDR-TB expansion plan (2012–2017) published;
- number of microscopy laboratories were increased from 1072 to 1089;
- number of centres with Xpert MTB/RIF machines increased from 12 to 27;
- electronic registration of TB data using e-TB Manager software is running in 210 sites;
- observed World TB Day 2014 and published fact sheet on tuberculosis (in Bangla);
- further expansion of public–private mix for TB control with involvement of Bangladesh knitwear manufacturers and exporters association to provide TB control services programme in knitting industries; and
- handbook on tuberculosis for MBBS students published.

Major challenges

The major challenges faced by NTP are as follows:

- ensuring uninterrupted supply of drug and logistics;
- establishing system for assessing quality of anti-TB drugs;

- strengthening procurement, supply and management system;
- ensuring sustainability of skilled and trained staff at different levels.;
- strengthening laboratory services including expansion of culture and DST;
- scaling-up the management of DR-TB and community PMDT;
- further scaling up and strengthening private–public collaborative interventions;
- strengthening linkages with the national AIDS and STI programmes for TB/HIV;
- sustaining and controlling the quality of DOTS;
- further improving case-notification of smear-negative, extra-pulmonary TB cases;
- improving capacity for diagnosis and management of child TB cases and TB with co-morbidity;
- sustaining partnerships with NGOs, the private sector, academic institutes and in workplaces in TB control;
- reaching the hard-to-reach population in islands and marshy lands; and
- financial sustainability;

Activities planned for 2015

The following activities are planned for 2015:

- TB prevalence survey in 2015–2016.
- The Global Fund using NFM Grant signing.
- piloting shorter regimen for MDR-TB management as operational research;
- establishing of RTRL at Sylhet for culture and DST in a phased manner;
- scaling up PAL activity;
- expanding TB/HIV collaborative activities in a phased manner;
- developing capacity for wider implementation of TB/HIV, MDR-TB and PPM DOTS interventions;
- expanding private–public collaborative activities further;

- strengthening the procurement and supply management system;
- strengthening supervision and monitoring;
- scaling-up of e-TB Manager;
- implementation of TB infection control;
- Capacity-building for diagnosis and management of smear-negative, extra-pulmonary and childhood TB;
- Establishing a pharmacovigilance system and conducting drug quality assessment;
- Conducting operational research on validation of data, TB–diabetes relationship and TB lymphadenitis;
- establishing of electronic LMIS; and
- scaling-up Xpert MTB/RIF sites.

Figure 16: Case-notifications by type of patients, 2013

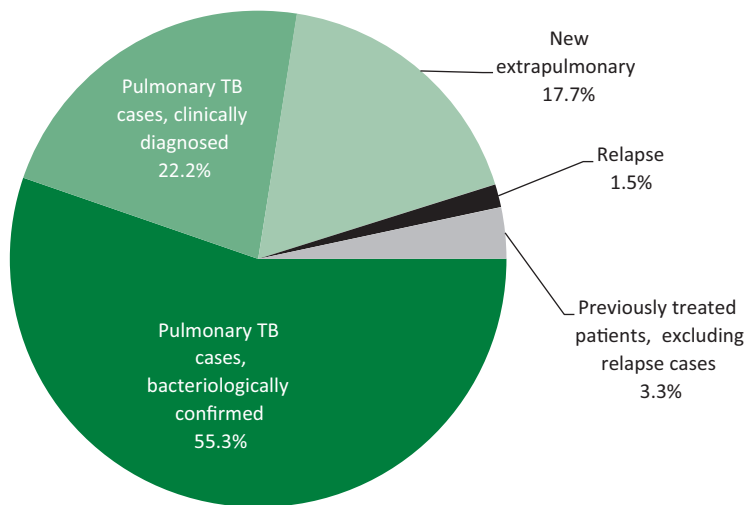


Figure 17: Trends in TB case-notifications, 1995–2013

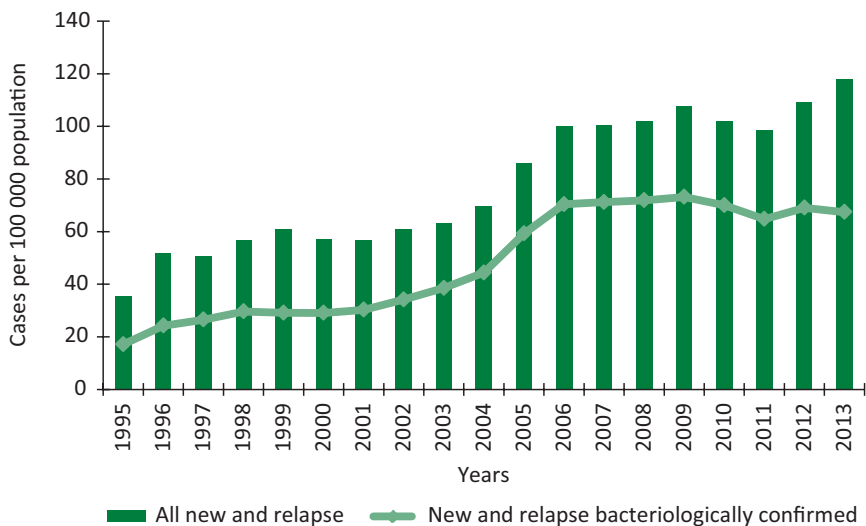


Figure 18: New TB cases (all types) by sex and age groups per 100 000 population, 2013

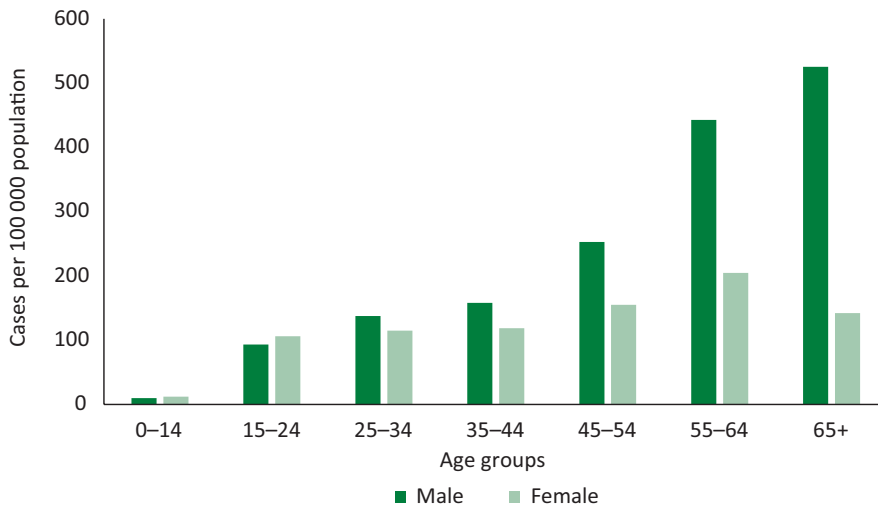


Figure 19: Treatment outcomes by type of cases, 2012 cohort (2011 cohort for RR/MDR-TB cases)

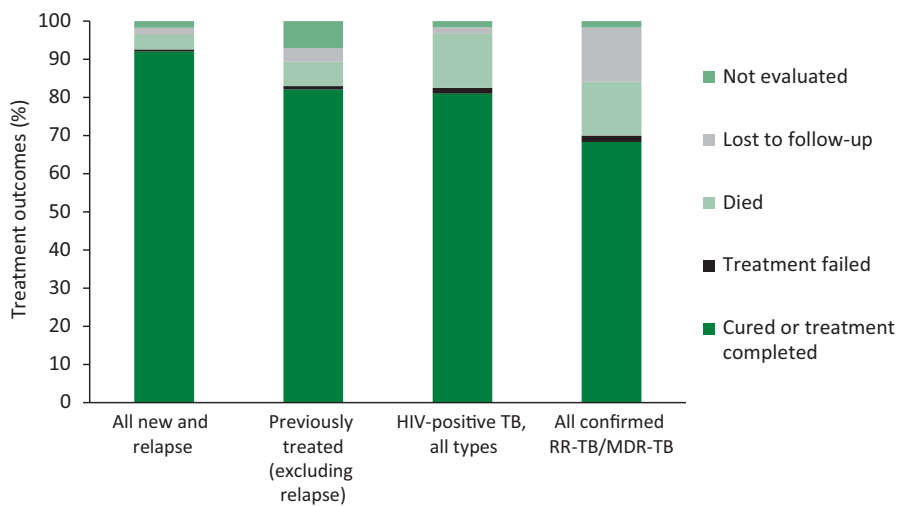


Figure 20: Trends in treatment success rate by type of cases, 1995–2012

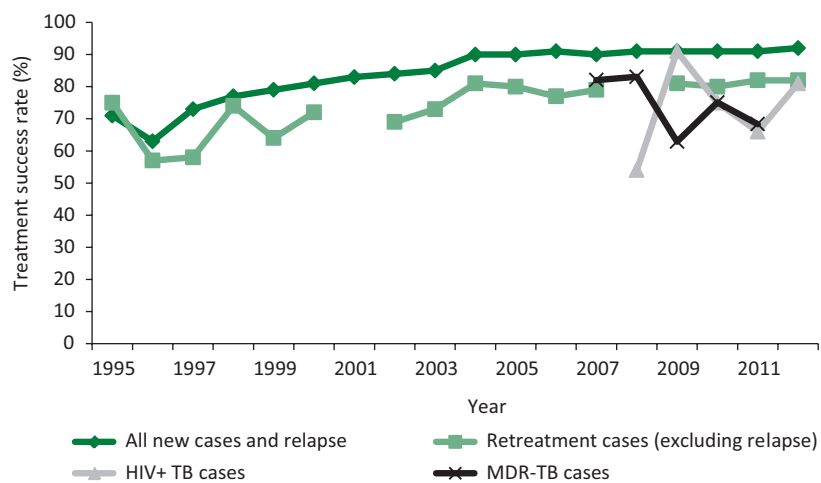


Table 11: Estimates and notification rates for 2013, Bangladesh*

Population**	156 594 962
Incidence of all forms of TB	350 000 (310 000–400 000)
Incidence rate of all forms of TB (per 100 000 population per year)	224 (199–253)
Prevalence of all forms of TB	630 000 (330 000–1 000 000)
Prevalence rate of all forms of TB (per 100 000 population)	402 (210–656)
TB death rate (of all forms of TB, excluding HIV per 100 000 population per year)	51 (33–69)
Number of new (all forms) and relapse TB cases notified	184 506
Notification rate of new and relapse TB cases (per 100 000 population for the year 2013)	119
Notification rate of new bacteriologically confirmed cases (per 100 000 population for the year 2013)	68
Case-detection rate (all forms of TB)	53 (47–59)
Treatment success rate (%) of all new and relapse TBcases for 2012 cohort	92

*Estimated incidence, prevalence and mortality rates and numbers have not been officially approved by the National TB Programme and should be considered provisional; reassessment should be done following the prevalence survey planned in 2015

**Source: United Nations, Department of Economic and Social Affairs, Population Division (2013). World Population Prospects: The 2012 Revision, DVD Edition.

Bhutan

With a population of approximately 750 000, Bhutan had an estimated TB prevalence and incidence rate (of all forms of TB) 196 and 169 respectively per 100 000 population in 2013. All TB burden indicators are estimated to be decreasing over time. The notification rate of all forms of TB (new cases and relapses) and new bacteriologically confirmed cases were 143 and 56 respectively, showing a steady decrease since 2010, particularly for all TB cases. The treatment success for the cohort of all new and relapse cases registered during 2012 was 92%; success rate is steadily equal to or above 90% since 2007. Since 2003, the treatment success rate for retreatment cases was 75% or above; however, in the 2012 cohort, the treatment success rate was slightly lower (72%), with a treatment failure rate of 19%. The TB control programme is fully integrated into the general health services with the majority of activities decentralized to the districts.

Efforts to improve access to TB services for vulnerable populations were made according to the work-plan of the Global Fund Transitional Funding Mechanism (GF TFM) grant. Screening of migrant workers was conducted in eight districts where major projects and construction activities are being undertaken to improve case-finding among the vulnerable populations. About 64 people were found to be TB symptomatic, of which one had smear-positive TB. Symptomatic screening and educational programmes on TB are being carried out in all the districts covering monastic institutions. In 2014, training of indigenous physicians was conducted to establish partnership with the indigenous unit for referral of presumptive TB cases along with inclusion of referral information in the TB treatment card. As the report has not been received, it is presumed that none of the indigenous units have identified TB suspects and referred them.

The DRS was completed in 2013 to better assess drug resistance levels in the country; the results of this survey suggests a higher drug resistance rate than previous WHO estimates, with around 5% prevalence of MDR-TB among new cases and 35% among previously treated cases.

In 2013, coverage of DRS as well as MDR-TB case detection increased remarkably: 34% of all new cases notified and 57% of retreatment cases were tested for drug resistance; 39 MDR-TB cases were diagnosed among new cases tested for DST (proportion of 21%), nine among re-treatment cases (proportion of 45%), and 15 among cases with history unknown. A total of 49 MDR-TB cases were diagnosed in 2013: of these, 47 had been laboratory confirmed and two were clinically diagnosed. All 49 MDR-TB cases diagnosed had been enrolled on treatment; of them 12 cases reported through clinical judgement were enrolled on treatment and were later confirmed through laboratory tests. GLC approval for the management of MDR-TB cases has been obtained in 2009, guidelines for MDR-TB management have been finalized, medical doctors trained on MDR-TB management and SLD being procured through GDF/GLC. For the MDR-TB cohort of 2011, the treatment success rate was 85%.

The Public Health Laboratory (PHL) has been linked to the regional SNRL in Bangkok, Thailand, and accredited for culture and first-line DST; EQA showed acceptable performance in 2013. DST for SLD is not available in the country and the samples are being shipped to NSRL in Bangkok for testing. Additional laboratory technicians were trained for undertaking quality-assured culture and DST. DST is currently indicated for all re-treatment cases and all smear-positive cases initiated on treatment: all backlog samples had been tested for culture and DST and the delay in providing the result has been reduced. Liquid culture facility has been recently introduced at PHL and the process of validating liquid DST result is ongoing. In 2014, the LPA was established through GF support to speed up the diagnosis of MDR-TB. PHL has improved in providing results to the districts after the introduction of LPA. Through the support of the NFM grant, there is a plan to introduce Expert MTB/RIF machines in four district hospitals to improve the diagnosis of MDR-TB among various categories of patients.

The prevalence of HIV infection in the general population is low, being 0.02%. HIV sentinel surveillance carried out in previous years has also revealed a low level of HIV infection among TB patients. Policies for referral of TB patients to HIV counselling and testing, CPT and ART are being implemented, and policies for IPT, and TB-HIV collaborative activities are included in the NSP for TB Control 2012–2016. A national body responsible for coordinating TB-HIV activities has been formed. Development of new TB/HIV guidelines, including a recording and reporting system to capture implementation of collaborative activities was

completed and training of all relevant HCW was conducted. In 2013, all notified TB cases were tested for HIV; one HIV-positive TB case was detected and started on ART but not CPT.

NTP has introduced fixed-dose combination (FDC) drugs, replacing single-drug formulations for first-line treatment for both adult and paediatric cases. The adult and paediatric FDC of anti-TB drugs are procured through the GDF through the Royal Government of Bhutan funding. Guidelines on management of TB have been revised and trainings conducted for medical doctors involved in TB control activities. A comprehensive HRD master plan is in place in the HR Division of the Ministry of Health. The programme coordinates with the Human Resource Division at the central level on HR management issues.

There is strong collaboration between NTP and partners, including the military hospitals. All military hospitals are involved in delivering TB services. The NTP is financially supported by the government and GF (Round 6 and TFM grant). NTP has submitted the TB NFM CN application to GF and it is expected that for the next three years, it will be supported through this grant.

Major achievements

The following are the major activities that were successfully conducted in 2013 and 2014:

- treatment success rate of new smear-positive cases maintained at > 90%;
- GF NFM CN submitted for five key modules;
- training of medical officers and health workers conducted on national TB-HIV guidelines;
- conducted GLC and GDF Mission through WHO support;
- conducted laboratory assessment visit by SNRL;
- laboratory capacity strengthened with the introduction of liquid culture and DST plus LPA;
- strengthened patient follow-up using mobile technology;
- observed World TB Day in all 20 districts;
- procured FLD and SLD through GDF/GLC;

- strengthened monitoring and supervision visits to the reporting centres;
- completed DRS;
- training of new laboratory technicians on sputum microscopy undertaken;
- completed MDR-TB study on factors associated with development of MDR-TB in TB patients; and
- conducted annual TB review meeting.

Major challenges

The major challenges faced in Bhutan are as follows:

- DOT implementation throughout the course of treatment;
- emergence and gradual rise of MDR-TB;
- human resources especially in terms of technical capacity;
- ensuring adequate funding for TB control;
- delay in sample shipment from districts to the PHL; and
- inadequate community participation.

Activities planned for 2015

The following activities are planned for 2015:

- conducting refresher training for laboratory technicians who are found poor on proficiency;
- procuring FLD and SLD through GDF/GLC;
- establishing Xpert MTB/RIF machines for rapid diagnosis of MDR-TB;
- strengthening monitoring and supervision;
- strengthening the partnership with the indigenous unit for referral of presumptive TB cases;
- strengthening the follow-up of cases using communication technology;
- engaging multisectoral task force for advocacy, communication and social mobilization;
- strengthening TB/HIV collaboration;

- strengthen laboratory and clinical capacity for diagnosis of TB and MDR-TB;
- improve access to TB services for vulnerable populations such as migrant workers and monastic institutions;
- commemoration of World TB Day;
- hold annual TB laboratory and TB review meetings;
- quality assessment visit to the PHL by the SNRL; and
- conduct annual GDF/GLC mission.

Figure 21: Case-notifications by type of patients, 2013

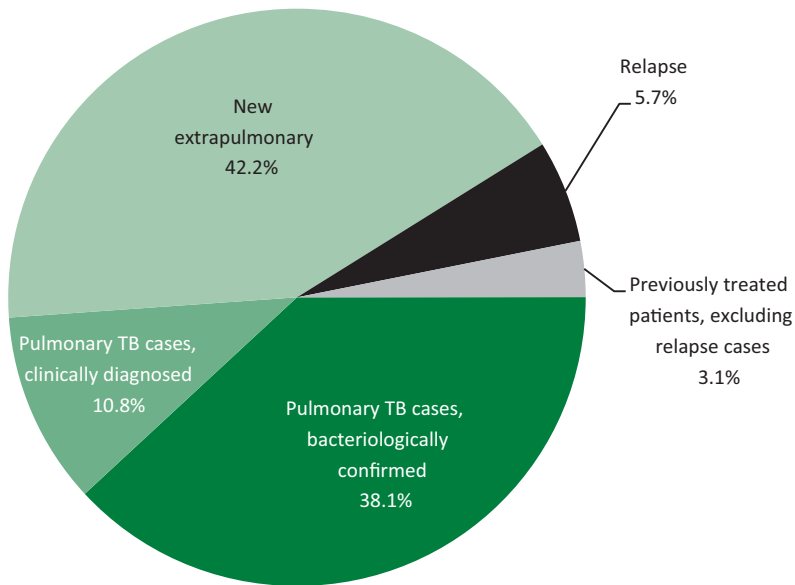


Figure 22: Trends in TB case-notifications, 1995–2013

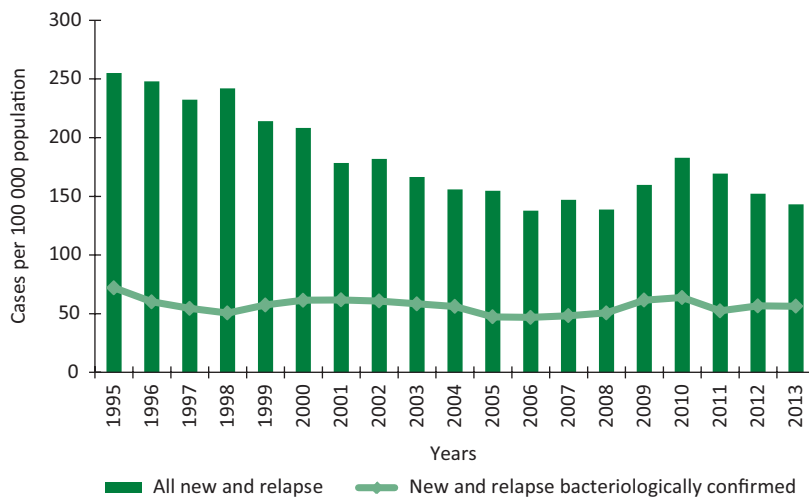


Figure 23: New (all types) and relapse TB cases by sex and age groups per 100 000 population, 2013

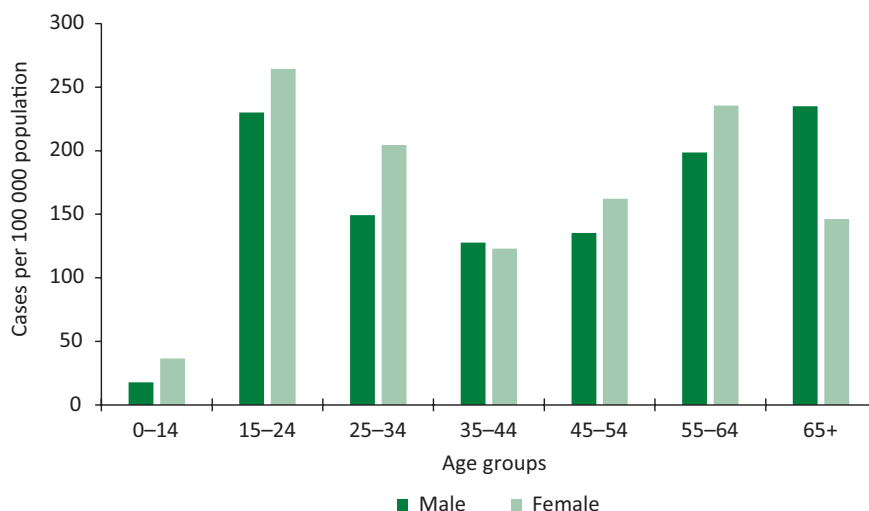


Figure 24: Treatment outcomes by type of cases, 2012 cohort (2011 cohort for RR/MDR-TB cases)

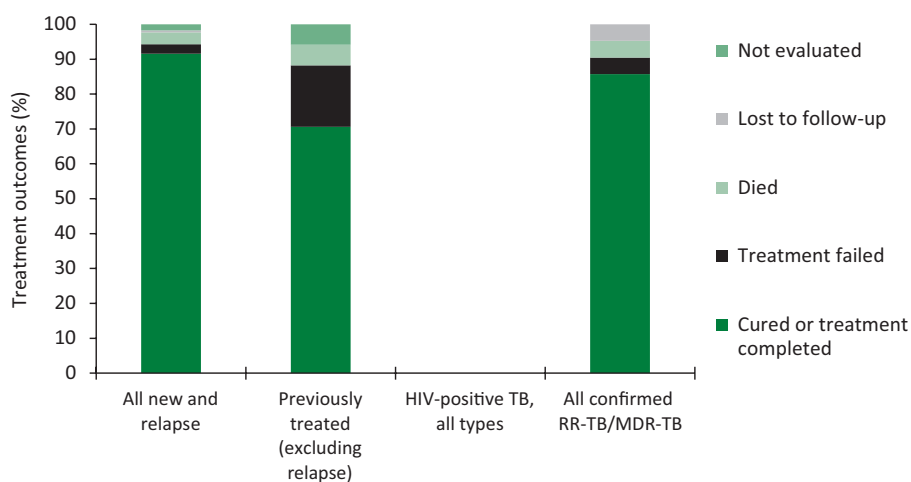


Figure 25: Trends in treatment success rate by type of cases, 1995–2012

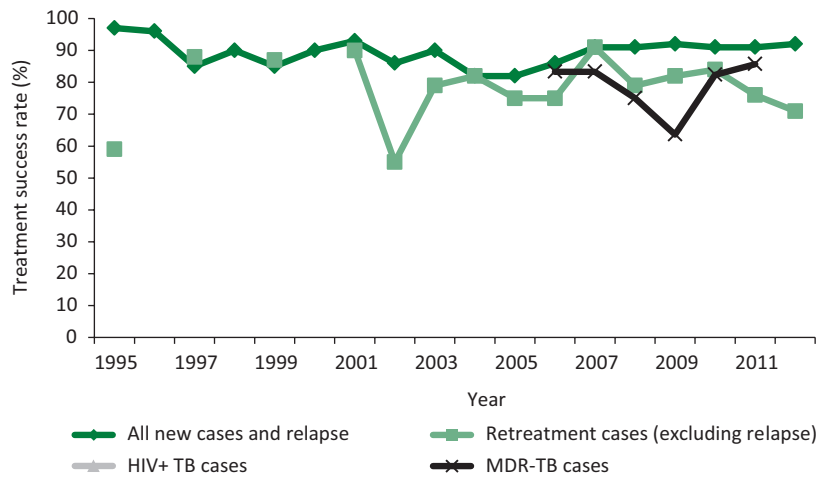


Table 12: Estimates and notification rates for 2013, Bhutan

Population*	753 947
Incidence of all forms of TB	1300 (1200–1400)
Incidence rate of all forms of TB (per 100 000 population per year)	169 (156–190)
Prevalence of all forms of TB	1500 (500–3000)
Prevalence rate of all forms of TB (per 100 000 population per year)	196 (67–393)
TB death rate (of all forms of TB, excluding HIV per 100 000 population per year)	12 (6.9–23)
Number of new (all forms) and relapse TB cases notified	1 080
Notification rate of new and relapse TB cases (per 100 000 population for the year 2013)	143
Notification rate of new bacteriologically confirmed cases (per 100 000 population for the year 2013)	56
Case-detection rate (all forms of TB)	85 (76–92)
Treatment success rate (%) of all new and relapse TB cases for 2012 cohort	92

*Source: United Nations, Department of Economic and Social Affairs, Population Division (2013). World Population Prospects: The 2012 Revision, DVD Edition.

Democratic People's Republic of Korea

With a population of about 25 million, the Democratic People's Republic of Korea has an annual incidence and prevalence of TB (all forms) of 429 and 536 respectively per 100 000 population. In 2013, the notification rate of all forms of TB and new bacteriologically confirmed cases were 392 and 135 respectively, showing a continuation of the increasing trend registered since 2006, particularly for all type of cases. In fact, to close the detection gap shown by the revision upwards of incidence estimates based on a national ARTI survey in 2007, intensified active case-finding in the community was adopted as a supplementary method for case-finding. Additionally, integration of previously non-DOTS sectors has led to an increase in case-notifications. The burden estimates were further revised upwards in 2012, because the case-detection rate exceeded 100%: for 2013, the case-detection rate for all forms of TB is estimated to be 91%. The treatment success rate of all types of new TB cases has been above 85% since 2001, sustained 90% or above since 2008 cohort (it was 92% in 2012 cohort). High treatment success rate was also reported for retreatment TB cases; being over 80% since 2008 (it was 84% in 2012 cohort).

Democratic People's Republic of Korea is planning to implement a TB prevalence survey in 2015 to better assess the real burden of TB in the country. Since 2013, the NTP and relevant international organizations including UNICEF and WHO have started working to develop the protocol for the prevalence survey. To support this endeavour, the WHO country office coordinated the international review of the country's national TB prevalence survey protocol. Based on the study protocol, NTP developed the implementation plan. Procurement of survey equipment is being processed and once it is delivered, the prevalence survey will be initiated.

Laboratory capacity has been strengthened in the country as a priority. The National Reference Laboratory at the Central TB Institute in Pyongyang regularly undertakes culture and DST for FLD. NRL is currently supported by the

nongovernmental organization, Christian Friends of Korea, Stanford University, WHO, GF and UNICEF. In 2014, EQA was carried out in NRL using 30 panels provided by Hong Kong SNRL and the results will be available in March 2015. The number of smear microscopy laboratories has been expanding in the last three years, from 320 in 2012 to 336 in 2013, at 1.3 smear laboratory per 100 000 population. EQA is regularly carried out in all smear microscopy laboratories and 91% showed acceptable results. An Xpert MTB/RIF system was established in the NRL in 2013 and 552 cartridges were used during the year. In the beginning of 2014, NTP organized a small-scale rifampicin resistance survey in one selected province to evaluate the drug resistance situation in the country.

Currently, MDR-TB is estimated to be 2.2% among new cases and 16.7% among retreatment cases based on WHO modelling. The result of a small-scale TB drug-resistance study with Xpert MTB/RIF was in conformity with the estimation: the study showed 2.2% and 16.3% RR-TB prevalence amongst new and retreatment cases respectively. Guidelines for MDR-TB management were developed in October 2011 and it was revised based on experience from PMDT extension in the country during 2014. NTP adopted the standard regimen recommended by WHO. SLD are being procured through GDF with GF support. DRS is done amongst retreatment cases only and in 2013 the coverage of DST was 1.5% in this group. In 2013, 187 RR/MDR-TB cases were notified, showing a rapid increase of MDR-TB diagnostic capacity. In 2013, a total of 170 MDR-TB cases, of which 103 were laboratory confirmed, were enrolled on second-line treatment under programmatic conditions. Treatment outcomes for MDR-TB patients are not yet available because enrolment on second-line treatment started in 2012.

No HIV infection has been reported in the country till date. However, surveillance is being maintained and HIV testing in select TB cases with history of travel is being undertaken.

Civil society organizations such as the Youth League, Trade Union, Women's Association and Unions of Agricultural Working People are collaborating with NTP to increase awareness of TB, support suspect referral and treatment adherence.

Training materials on paediatric TB treatment have been developed and training conducted and orientation meetings on childhood TB with children-related facilities at central and provincial levels have been held since 2012. In 2013, 6% of new cases reported (all types) were among 0–14 year old children, of which 14% were in the age group of 0–4 years.

A multi-year strategic plan for 2008–2015 was developed in line with the global plan to stop TB and the regional plan for TB control. In August 2014 the plan was updated for the period 2015–2018. The government allocation supports about one third of the programmes' funding requirements in 2014 in terms of staffing, infrastructure, drugs and surveillance. WHO continues to provide support to the national programme in terms of technical assistance, implementation of the GF Grant, training health staff, strengthening TB diagnostic services, upgrading infrastructure, and monitoring and evaluation.

In May 2014, the first Joint Monitoring Mission of the NTP was held. The recommendations of JMM provided valuable inputs to update the national TB strategic plan and develop the application for the GF NFM grant support for the TB grant. On October 2014, Democratic People's Republic of Korea applied for the NFM of GF for an allocation of US\$ 28.6 million for a three year period.

Currently, anti-TB drugs are being procured through the GF Round 8 TB grant for which UNICEF, Democratic People's Republic of Korea is the Principal Recipient. GDF provides paediatric anti-TB drugs for the whole country and adult drugs for one province not covered by the GF grant. Support for SLD is also received through the GF and the Eugene Bell Foundation in selected sanatoria.

Major achievements

The major achievements of NTP in the country are:

- Xpert MTB/RIF machine installed in NRL and is fully operational;
- high case-detection and treatment success rates sustained;
- M&E and supervision of DOTS implementation strengthened;
- health facilities in other sectors actively involved in TB control activity;
- GF supported project is being implemented satisfactorily;
- regular supplies of anti-TB drugs ensured through GF and GDF;
- logistic management system for drug supply and management strengthened;
- national TB Strategy updated in line with JMM recommendations;
- PMDT is being rolled out in a phased manner;

- initiated establishment of a RTRL; and
- human resource capacity strengthened through regular training (programme management, laboratory work and EQA, ACSM, supply management, data management).

Major challenges

The main challenges faced are:

- inadequate resources and capacity for expanding PMDT for the benefit of all MDR-TB patients;
- suboptimal capacity for diagnosis of childhood TB and procurement of quality assured paediatric anti-TB drugs;
- resource mobilization for establishing RTRL;
- strengthening EQA in line with international recommendations; and
- long lead time required for the procurement of key commodities.

Activities planned for 2015

The following activities are planned for 2015:

- preparing for and starting TB prevalence survey in 2015;
- strengthening of coordination with other sectors, particularly the mining industry;
- undertaking systematic supportive supervision at all levels;
- establishing more Xpert MTB/RIF systems at regional level;
- expanding programmatic management of DR-TB for better geographical coverage;
- refurbishing of key MDR-TB wards at provincial level;
- harmonizing the MDR-TB treatment regimen with NTP and other donors;
- providing technical support to NTRL to accelerate the accreditation process;
- initiating operation of Hamhung RTRL; and
- mobilizing additional resources through the GF-NFM.

Figure 26: Case-notifications by type of patients, 2013

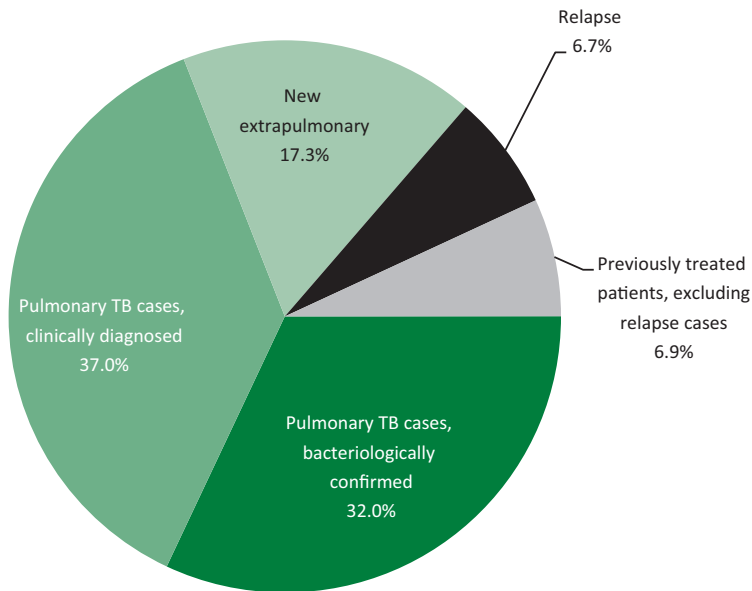


Figure 27: Trends in TB case-notifications, 1995–2013

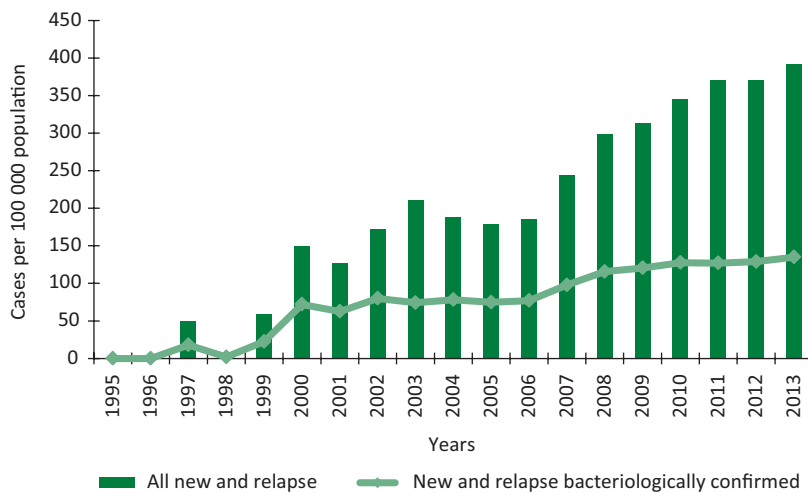


Figure 28: New (all types) TB cases by sex and age groups per 100 000 population, 2013

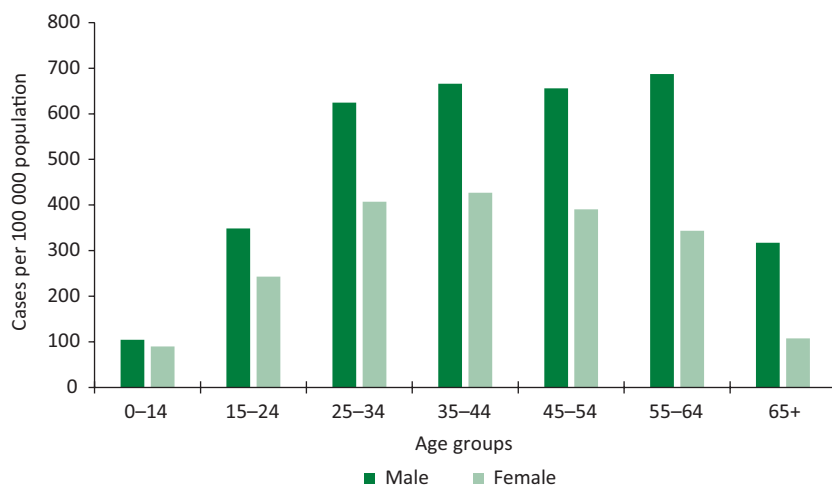


Figure 29: Treatment outcomes by type of cases, 2012

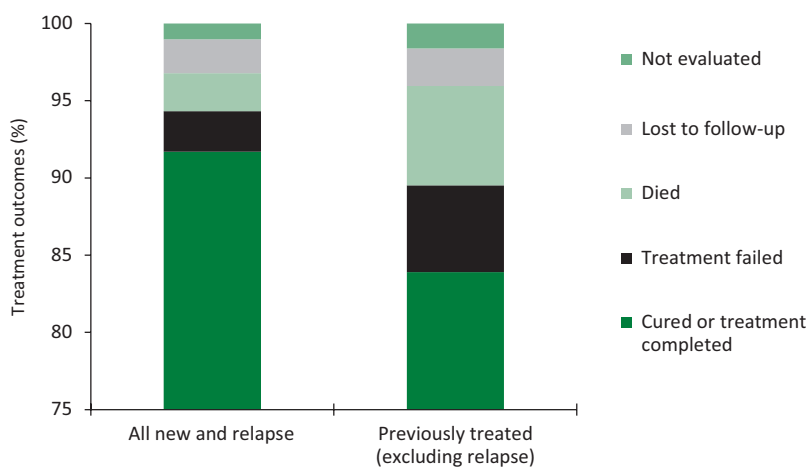


Figure 30: Trends in treatment success rate by type of cases, 1995–2012

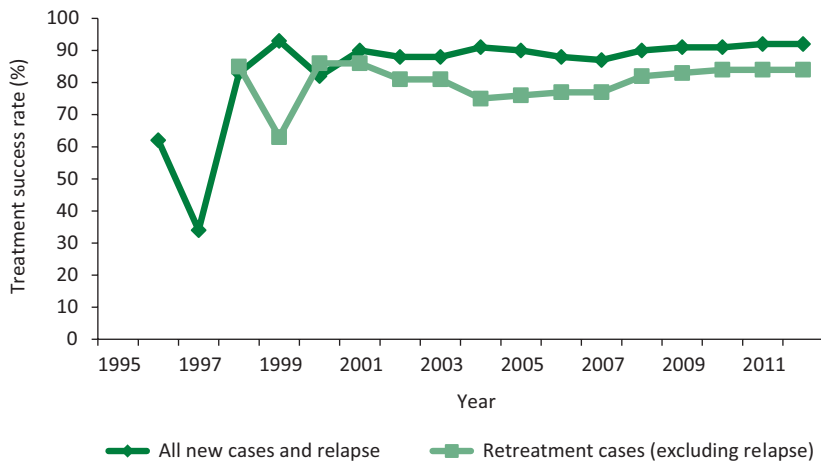


Table 12: Estimates and notification rates for 2013, Democratic People's Republic of Korea

Population*	24 895 480
Incidence of all forms of TB	110 000 (100 000–110 000)
Incidence rate of all forms of TB (per 100 000 population per year)	429 (401–456)
Prevalence of all forms of TB	130 000 (36 000–290 000)
Prevalence rate of all forms of TB (per 100 000 population per year)	536 (146–1 175)
TB death rate (of all forms of TB, excluding HIV per 100 000 population per year)	27 (12–46)
Number of new (all forms) and relapse TB cases notified	97 665
Notification rate of new and relapse TB cases (per 100 000 population for the year 2013)	392
Notification rate of new bacteriologically confirmed cases (per 100 000 population for the year 2013)	135
Case-detection rate (all forms of TB)	91 (86–98)
Treatment success rate (%) of all new and relapse TB cases for 2012 cohort	92

*Source: United Nations, Department of Economic and Social Affairs, Population Division (2013). World Population Prospects: The 2012 Revision, DVD Edition.

India

With a population of about 1252 million, India is the largest country in the Region. It is ranked first among the high-burden countries and contributed 24% of the estimated global incident TB cases and about 20% of global TB-related deaths in 2013.

The country initiated the process to have its own national estimates for disease burden and two rounds of consultations were held with national and international experts in 2011 and 2012. WHO estimates were revised based on results of these consultations. Prevalence and incidence rates of all forms of tuberculosis were 211 and 171 respectively per 100 000 population in 2013, showing a steady decline compared to previous years. The notification rate of all forms of TB (new and relapse) and bacteriologically confirmed cases were 99 and 50 respectively per 100 000 population in 2013; the notification rate of all TB cases was 113. Despite efforts to increase detection of TB cases and achievements in terms of incidence and prevalence reduction, the case-detection rate of all forms of TB was estimated to be 58% in 2013. Low case-detection rate is likely to be affected by under-notification from the private sector. A cross-sectional community-based survey of 30 districts suggests that about 50% of detected cases are not reported to the NTP, a finding confirmed in a recent prevalence survey in Gujarat state. Preliminary results of the Gujarat survey that included 87 530 people (participation rate 90%) show a crude prevalence rate of all laboratory confirmed pulmonary TB cases of 383 (341–424) per 100 000 population.

Since its inception in 1997, the RNTCP has initiated almost 20 million patients on treatment. Since 2005, the programme has consistently achieved and exceeded the global target of 85% treatment success rate among new smear-positive cases, as well as among all new and relapse TB cases, with 88% for the cohort of patients registered in 2012, slightly below the newly set target of 90% success rate. In the 2012 cohort, the treatment success rate for retreatment cases (excluding relapse) and HIV-positive TB cases (all forms) was 74% and 77% respectively; among retreatment cases the higher proportion of unsuccessful treatment was related to “lost to follow-up” (13%), and among HIV-positive cases to deaths (13%).

By the end of 2014, a total of 62 laboratories from the public sector (NTP and medical colleges), the private sector and operated by NGOs, were accredited by the RNTCP to undertake quality assured culture and drug sensitivity testing including 11 laboratories, doing second-line DST; they all demonstrated acceptable performance during EQA. Twenty-one laboratories use liquid culture technology. In addition, 50 laboratories including four from the private sector implemented LPA for diagnosis of MDR-TB cases. By 2014, rapid DST through Xpert MTB/RIF was implemented in 89 sites, representing a significant scale-up compared to 54 sites in 2013.

EQA was carried out in all of the 13 048 smear microscopy laboratories in the country. However, results were not available at the national level. The target of at least one smear microscopy laboratory per 100 000 population has been reached (in 2013 the figure was 1.04/100 000 pop.); with the rapid increase in the number of accredited culture and DST laboratories, the target of one laboratory per 5 million population has not been reached yet (in 2014, the figure was 0.5 culture and DST facility per 5 million pop.). However, considering any access to drug resistance testing, including Xpert MTB/RIF, India achieved a coverage of 0.8 per 5 million population in 2014. In 2013, in addition to the existing SNRL in Chennai, the NITR in New Delhi, India became an SRL-National Centre of Excellence (SRL-CE). The SRL-CE has similar terms of reference to that of an SNRL, but with an in-country focus for its laboratory strengthening and capacity building activities.

Following the banning of commercial serology for TB diagnosis in 2012, the Initiative for Promoting Affordable, Quality TB Tests (IPAQT) was launched in March 2013: it is a consortium of 75 private laboratories (approximately 3000 franchisee laboratories and over 10 000 specimen collection centres) supported by not-for-profit stakeholders, aiming to allow concessional prices for Xpert MTB/RIF, first-LPA and liquid culture in the private sector through agreements with producer companies. Participating laboratories must be quality assured, notify TB cases to RNTCP, adhere to a ceiling price when charging patients and cannot use any tests that are not recommended by WHO and RNTCP. IPAQT is an innovative approach to increase access to rapid, accurate and affordable diagnostics for patients treated in the private sector.

SOP for second-line DST, guidelines for certification of laboratories for second-line DST and a guidance document on policy to use Xpert MTB/RIF under programme were developed in 2013. Following the interim results of feasibility

study of introducing Xpert MTB/RIF in RNTCP under programmatic conditions (RNTCP-FIND-WHO CBNAAT Project), conducted across 18 tuberculosis units (TUs) in 12 states, Xpert MTB/RIF assay was included into an algorithm as the initial diagnostic test for TB in persons at risk of HIV-associated TB and for the diagnosis of DR-TB among persons at risk.

MDR-TB prevalence is estimated to be low (2.2% among new cases and 15% among retreatment cases) based on sub-national DRS conducted in three states between 2006 and 2009. In order to have more representative estimates, RNTCP with support from WHO has launched the National Antituberculosis Drug Resistance Survey 2014–2015 in a representative sample of both newly diagnosed sputum smear-positive PTB cases and previously treated sputum smear-positive PTB cases. Despite the low MDR-TB prevalence, due to the size of the population and number of TB cases reported annually, India ranks first among the 27 MDR-TB high-burden countries worldwide, contributing to 21% of all MDR-TB cases estimated among notified cases. RNTCP has developed a plan to considerably scale up MDR-TB services in order to treat at least 40 000 MDR-TB patients in the country per annum by 2017, supported by GF, UNITAID and domestic funds to enable a rapid expansion of MDR-TB services in the next few years. India is also a target country for the EXPAND-TB and TBXpert global projects aiming to strengthen diagnostic capacity. Since September 2013, all 35 states across 704 districts covering the entire population (100%) of the country are providing MDR-TB diagnostic and treatment services. In 2013, India detected 23 157 MDR-TB cases including rifampicin-resistant cases (RR-TB) detected using Xpert MTB/RIF, being 37% of the estimated number among notified PTB cases; this represents a remarkable increase in MDR-TB notification, 33% increase compared to 2012 and a four-fold increase compared to 2011. From January to September 2014, 19 297 MDR-TB including RR-TB cases were detected, confirming rapid scale-up of MDR-TB diagnosis capacity. From January to September 2014, SLD resistance was tested in 2184 MDR-TB cases and 939 XDR-TB cases including ofloxacin-resistant cases were detected. Also, enrolment on treatment is showing a significant increase and despite the increasing detection of cases, the proportion of patients started on treatment is stable. In 2013, 21 092 laboratory confirmed MDR-TB and 392 XDR-TB cases were started on second-line standard treatment, being 91% and 70% respectively of cases diagnosed. From January to September 2014, 18 276 laboratory confirmed MDR-TB and 879 XDR-TB cases were started on second-line standard treatment, being 95% and 94% respectively of cases diagnosed. Treatment outcomes of 2011 cohort showed a 50% success rate, higher than

the 2010 cohort, and 23% of the death rate. RNTCP is developing guidelines and regulation of newer anti-TB drugs in India. To look into the possibility of introduction of bedaquiline in India, a protocol for a multicentric study is being finalized.

It is estimated that around 2.4 million Indians are currently living with HIV. According to country-level data HIV prevalence among incident TB patients is estimated to be 5.95% (95% CI: 5.93%–5.97%). The incident HIV-positive TB cases in 2013 were estimated to be 120 000 and India is among the 41 TB/HIV high-burden countries. Since 2008, the revised “National framework of joint TB/HIV collaborative activities” has been implemented and an “intensified TB/HIV package” has been rolled out and expanded to all 35 states of India. Intensified TB case-finding has been implemented nationwide at all HIV testing centres (known as integrated counselling and testing centres, ICTC) and ART centres. In 2013, 786 922 TB suspects were referred from ICTC and ART centres to RNTCP and of them 89 420 were diagnosed as having TB, contributing to 5% of the overall number of TB cases notified. In 2013, 887 903 TB patients (63% of total TB patients registered) were tested for HIV; 44 027 (5% of those tested) were diagnosed as HIV-positive and were offered access to HIV care. The percentage of TB patients tested for HIV is increasing significantly (it was 45% in 2011 and 56% in 2012) as well as the access to ART that increased from 59% in 2012 to 88% in 2013. Ninety-five percent of diagnosed HIV-positive TB cases were offered access to CPT.

In 2013, the Government of India adopted the policy of IPT in HIV-infected cases and the programme is planning to roll out IPT in 2015.

RNTCP piloted the guidelines for airborne infection control in health-care facilities (provisional version) in three states in 35 health-care facilities ranging from high-end tertiary care facilities to primary health centres; the guidelines have been finalized after the pilot conclusion. In 2013, 110 DR TB wards were established with airborne infection control measures.

RNTCP is progressively involving an ever greater number of care providers. RNTCP revised and operationalized guidelines and schemes for collaborative PPM TB activities with NGOs and the private sector, and updated training material specifically designed for private practitioners. Utilizing support received under the Global Fund’s Single Stream Funding, RNTCP has further expanded its PPM TB activities. The programme has forged a successful partnership with IMA, the

Catholic Bishops' Conference of India (CBCI), PATH, The Union and World Vision India. The PPM project with IMA has been expanded to 16, and that with CBCI to 19 states across the country. As a result of the collaboration with IMA, 86 626 private medical practitioners have been sensitized on RNTCP, 14 982 private doctors in 15 states have been trained, 4134 DOTS centres and 95 DMCs are functional under this project. Efforts towards systematic and comprehensive engagement of pharmacists and chemists to provide training and possibly accreditation is also ongoing and an MoU has been signed between the Central TB Division and key sector associations (IPA, AIOCD, PCI, SEARPharm, FIP): in 2014, training of trainers (ToT) and state-level training were conducted, and 1031 community pharmacists have undergone modular training, 350 pharmacists are referring suspects to RNTCP and 23 are working as DOTS providers.

By 2014, RNTCP had involved 2569 NGOs and 13 150 private practitioners; 150 corporate hospitals and 330 medical colleges are implementing RNTCP.

In 2013, the overall number of TB patients notified by non-NTP public providers was 199 564, (of which 87% were from medical colleges) and 85 439 by private, corporate and voluntary providers (of which 50% were from medical colleges and 46% from private health facilities). Totally, PPM contributed 23% of the reported cases in 2013 (increasing its proportion of 16% in 2012).

Health services are administered in a decentralized manner at the level of the states and union territories through diverse public and private sector facilities. Policies for TB control activities are formulated at the central level in consultation with other stakeholders, with the Central TB Division in the Ministry of Health and Family Welfare having overall responsibility for RNTCP. RNTCP has a strategic plan in place for 2012–2017; plan and budgets are aligned with the national health plan. The National Rural Health Mission provides an opportunity for strengthening TB service delivery at the grass-roots level. A focal point for HRD has been designated at the central level. The EPI centre software has been successfully transitioned to a Windows-based system. RNTCP has developed a case- based, web-based patient tracking and real time programme data management system for all forms of TB (Nikshay); a mobile application was developed for private providers. The recording and reporting system is aligned with WHO "Definitions and reporting framework – 2013 revision". By end-2014, 82 309 private health facilities were registered for TB notification in Nikshay and cumulatively 1 643 521 TB patients were notified from the private sector through this tool.

India is successfully implementing urban TB control models. An example is the 'Mumbai Mission for TB Control', released in March 2013 that formulated a blue print to ensure universal access to TB care. This has a comprehensive programme for reaching the last TB patient in vulnerable areas especially the slums of Mumbai; it details further scaling up of diagnostic and treatment facilities in Mumbai, ensuring sensitization of every first point health-care contact with RNTCP protocols. Mumbai also launched a massive awareness campaign—"Mumbai Mission for TB Control Awareness campaign" with famous film star Mr Amitabh Bachchan as campaign ambassador.

Important infrastructure development in terms of decentralized management units were created in Chennai and Kolkata. Urban TB projects are planned in another 30 cities, starting in 2015.

Encouraging results have been achieved in three pilot projects in which free anti-TB drugs for all TB patients including the private sector are provided to achieve universal access following "Standards for TB Care in India". Once a qualified practitioner diagnoses and decides to treat a TB patient outside the scope of RNTCP, s/he will notify the case using ICT-enabled mechanisms and prescription details relevant to anti-TB drugs are shared with the contact centre. Based on it, a unique voucher number is generated and shared with practitioner and patient. The voucher number written on the prescription is carried by the patient to the chemist. The voucher is validated by the chemist with help of the contact centre and free anti-TB drugs are given to patients. The patient is contacted telephonically for confirmation of receipt of free medicine and later at home, for extending public health services like contact screening, adherence and infection control counselling, HIV testing and DST services etc.

RNTCP was supported by the World Bank, United Kingdom Department for International Development (DFID), GF, USAID, UNITAID and other partners during the period 2007–2013 and has since transitioned to an increased budgetary support from domestic resources: domestic resources contributed to 66% of the overall budget in 2013; no budget gap was identified for 2014. In August 2014 India applied for the GF grant under NFM. GF, UNITAID, WHO, USAID and other partners continue to provide technical support to the programme.

Major achievements

The major achievements of RNCTP are as follows:

- Since its inception, the programme has initiated more than 19 million patients on treatment, thus saving more than 3.1 million additional lives.
- Since 2007, RNTCP has also achieved the new smear-positive case-detection rate of more than 70% in line with the global targets for TB control while maintaining the treatment success rate of >85%.
- Decentralized diagnosis through a network of more than 13 000 quality-assured sputum microscopy laboratories; to ensure quality of sputum microscopy, EQA is being routinely conducted throughout the country as per a standardized protocol based on international guidelines (on site evaluation, panel testing and blinded crosschecking).
- Treatment services were decentralized through a network of more than 640 000 DOT centres/providers using patient-wise boxes both for adults and paediatric patients.
- Engagement of the new cadre of community-based accredited social and health activists (ASHA) was increasing.
- Successful involvement of 330 medical colleges, 2569 NGOs, 13 150 private practitioners and over 150 corporate sector health units was achieved.
- Revised RNTCP guidelines and schemes for involvement of NGOs and private providers in RNTCP activities was implemented.
- A national framework for TB-HIV collaborative activities was implemented nation-wide, with “intensified TB/HIV package” implemented in all 35 states.
- Sixty two laboratories were accredited for TB culture and DST.
- By March 2013, all districts in the country were covered by PMDT services. As on September 2013, a cumulative total of 276 149 suspects were being tested for MDR-TB and 36725 MDR-TB patients and 351 XDR-TB patients initiated on treatment.
- The programme has developed a case-based, web-based notification system (Nikshay).
- The programme has developed “Standards of TB Care in India” which has triggered important advancement in early case-detection and effective treatment for all TB patients.

- The Programme has developed protocol for diagnosis and treatment of non-MDR drug resistant TB in 2014 and will be implementing DST-guided treatment for such patients in 2015.
- A NACO-RNTCP-WHO collaborative project for intensified TB case-detection among PLHIV attending antiretroviral treatment (ART) centres was launched in 2014 with completion of training of trainers. Implementation in 30 ART centres in five southern states will start in early 2015. This project will use Xpert MTB/RIF for early TB diagnosis with necessary changes in diagnostic algorithm, use daily FDC anti-TB drugs, pilot isoniazid prophylaxis, implement AIDS information centres in ART centres and institute pharmaco-vigilance in these sites.
- In a workshop “TB-India Vision 2020”, RNTCP has developed strategies for intensified TB control activities for achieving 2020 TB targets.
- Mumbai launched a massive awareness campaign: “Mumbai Mission for TB Control Awareness campaign” with famous film star Mr Amitabh Bachchan as campaign ambassador.
- Universal access to free anti-TB drugs pilot projects launched in three sites, Patna in Bihar, Mehsana in Gujarat and Mumbai in Maharashtra.
- Under the GF Round 9 project, civil society organizations are undertaking activities in 374 districts across 23 states to enhance the visibility and reach of the programme and engage with communities and community-based care providers to improve TB care and control.
- During 2014, central internal evaluation of the programme performance and implementation status of RNTCP was conducted every month in two districts in a state on a one-to-one basis along with review of their activity plans to improve programme performance.

Major challenges

The major challenges faced by RNTCP are as follows:

- ineffective and delayed diagnosis of TB in both the private and public sector;
- patients accessing private providers not linked or engaged with RNTCP;
- large-scale expansion of patient notification from the private sector;

- Inadequate staffing at all levels, to be addressed through improved HRD, to reduce reliance on a limited pool of TB-dedicated staff;
- alleviating weaknesses in supervision capacity and quality, as well as in planning, monitoring and evaluation;
- enforcement of regulations for prescribing and sale of anti-TB drugs; promoting rational use of first- and second-line anti-TB drugs outside the programme to prevent MDR and XDR TB; and
- developing and implementing airborne infection control measures in health facilities.

Activities planned for 2015

The following activities have been planned in 2015:

- maintaining and further improving both the quality and reach of services to move towards achieving universal access;
- planning a joint monitoring mission in April 2015 to review the progress made for universal access and recommend changes required for moving towards implementation of End TB strategy;
- implementing revised diagnostic algorithm for early detection of TB cases and treatment protocols including DST-guided treatment for drug resistant cases;
- taking major initiatives for urban TB control models, in 30 cities;
- taking innovative private sector engagement initiatives including social franchising.;
- planning laboratory scale-up to further expand the network of quality assured laboratories;
- deploying 300 additional XpertMTB/RIF machines to address laboratory capacity deficits in hard-to-reach areas for decentralized DST;
- piloting intensified TB case-finding in ART centres and piloting IPT;
- disseminating the “Standards for TB Care in India”;
- deploying revised schemes for involvement of NGOs and private practitioners across the country;

- finalizing revised technical and operational guidelines for early case-detection including revision of diagnostic algorithm, contact tracing, active case-finding etc;
- evaluating the effect of the revised diagnostic algorithm, suspect and case definitions on case notifications;
- developing and testing ICT for notification and drug management;
- scaling up of Nikshay, the case-based, web-based patient tracking and data management system for all forms of TB including use of mobile apps, call centre notification systems; and
- scaling up of strategies for universal access to free treatment for all TB patients diagnosed and managed in the public and private sectors across the country using private provider interface agencies.

Figure 31: Case-notifications by type of patients, 2013

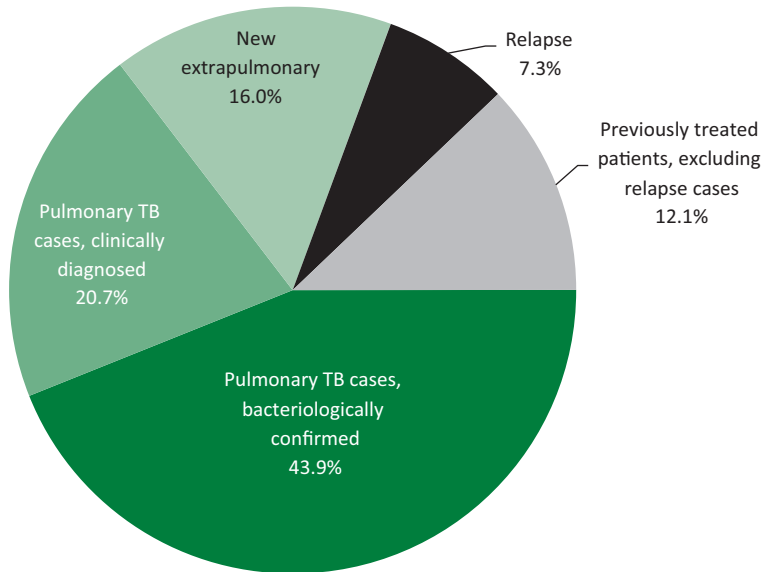


Figure 32: Trends in TB case-notifications, 1995–2013

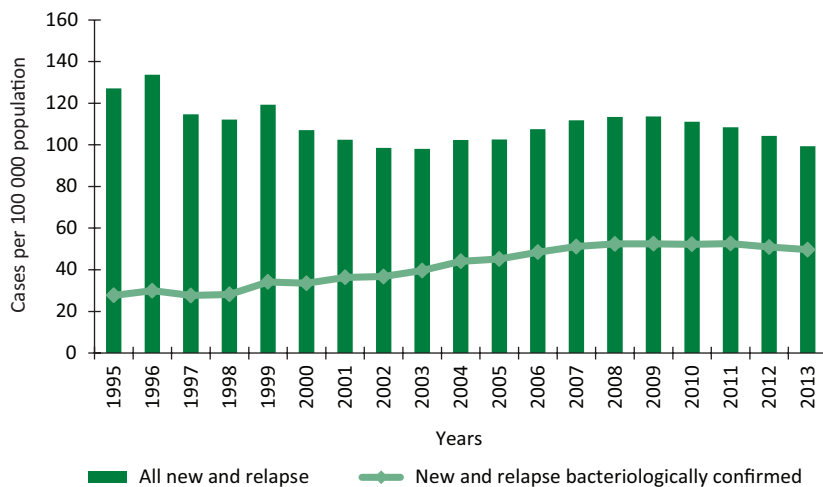


Figure 33: Treatment outcomes by type of cases, 2012 cohort
(2011 cohort for RR/MDR-TB cases)

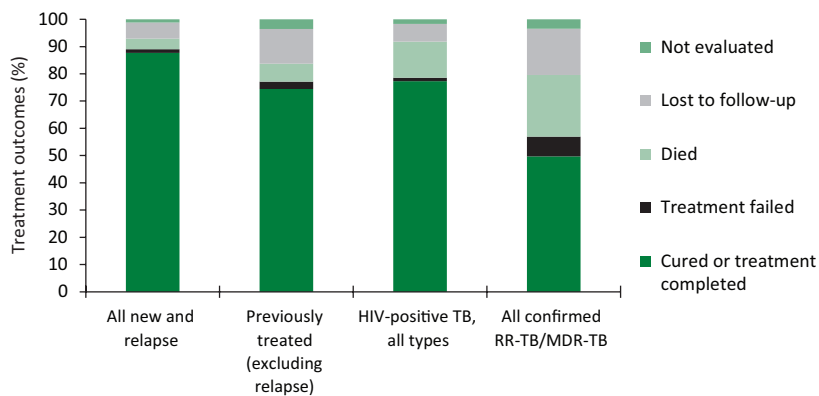


Figure 34: Trends in treatment success rate by type of cases, 1995–2012

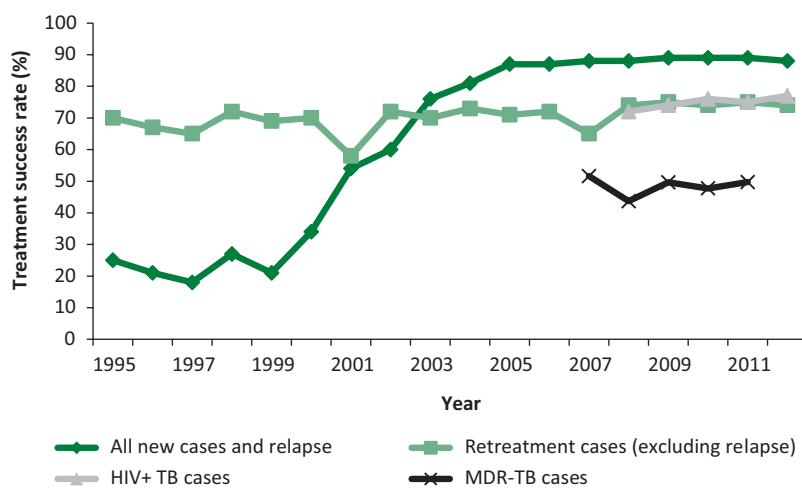


Table 13: Estimates and notification rates for 2013, India

Population*	1252139596
Incidence of all forms of TB	2 100 000 (2 000 000–2 300 000)
Incidence rate of all forms of TB (per 100 000 population per year)	171 (162–184)
Prevalence of all forms of TB	2 600 000 (1 800 000–3 700 000)
Prevalence rate of all forms of TB (per 100 000 population per year)	211 (143–294)
TB death rate (of all forms of TB, excluding HIV per 100 000 population per year)	19 (12–28)
Number of new (all forms) and relapse TB cases notified	1243 905
Notification rate of new and relapse TB cases (per 100 000 population for the year 2013)	99
Notification rate of new bacteriologically confirmed cases (per 100 000 population for the year 2012)	51
Case-detection rate (all forms of TB)	58 (54–61)
Treatment success rate (%) of all new and relapse TB cases for 2012 cohort	88

*Source: United Nations, Department of Economic and Social Affairs, Population Division (2013). World Population Prospects: The 2012 Revision, DVD Edition.

Indonesia

With a population of about 250 million, Indonesia is among countries with the highest TB burden globally. To better assess TB burden estimates and trends in the country, Indonesia started a nationwide TB prevalence survey in April 2013: 67 946 persons from 156 clusters participated in the survey, which targeted only clusters' residents aged over 15 years. Based on the survey results, burden estimates have been revised upward. However, survey results have not been endorsed by the Ministry of Health of Indonesia. At the time of writing this report, estimates still in use show prevalence and incidence rates of all forms of tuberculosis at 272 and 183 respectively per 100 000 population in 2013. The notification rate of all forms of TB and new bacteriologically confirmed cases were 130 and 79 respectively per 100 000 population, showing a fairly stable trend in recent years, following a steep increase in the early 2000s. The case-detection rate for all forms of TB is estimated to be 81% in 2013, although it is expected to decrease according to new estimates. The National Basic Health Survey 2013 revealed only 44% of diagnosed and treated TB cases being notified by NTP. Consistently, the prevalence survey reported that almost 50% of the survey participants who were under TB treatment at the time of the interview took the treatment in the private sector.

Treatment success rate among new and relapse TB cases (all types) was consistently above the target of 85% in the last decade. For the cohort of patients registered in 2012, the success rate was 86% with a relatively high rate of "lost to follow-up" and "not evaluated" (5% and 6% respectively); for the same cohort, success rate among retreatment cases was 71%, with 15% of "lost to follow-up". For the 2012 cohort, for the first time, Indonesia reported treatment outcomes of HIV-positive TB cases (size of the cohort was 1353 patients): success rate was 49%, death rate was 24% and "lost to follow-up" 17%.

The national TB control programme collaborated with all stakeholders, including other units of the MoH, other ministries, technical partners, health providers, community representatives and civil society organizations, to develop a new NSP 2015–2019. The newly developed strategic plan incorporates all 2013

JEMM recommendations, new Global “END TB” strategy targets, the new national development plan and the new national health agenda, including universal health coverage. The NSP aims a more ambitious target for the next five years, which includes a 15% reduction of TB incidence and 35% reduction of TB mortality by 2019.

The TB programme is scaling up public–public and public–private partnerships, resulting in increased notification by hospitals and clinics being linked to the national TB programme. In 2013, 9044 NTP providers, 946 non-NTP public providers and 912 private providers were engaged in the programme and actively collaborated with NTP. The non-NTP public providers include 168 prisons and 180 military/police hospitals. Totally, an additional 283 non-NTP providers were engaged in 2014, compared to 2013. In 2013, the total contribution from non-NTP providers to case notification was 29% (93 513 cases); 72% of this came from non-NTP public providers. The number of cases contributed by non-NTP private, corporate and voluntary providers increased six-fold from 2012 to 2013, totalling 26 345 cases notified to NTP.

The support of quality DOTS expansion in public and private hospitals, and private practitioners relied on standarization and accreditation system. Collaborating with the Ministry of Education, teaching of principles and practices of DOTS has been integrated into the national medical school curriculum and implemented at all 74 schools of medicines in Indonesia. New PPM approaches, matching with country needs, are being considered, including mandatory notification and social business models. Indonesia is implementing the UNITAID TBXpert project: with support from the Stop TB Partnership and TBREACH initiative 25 Xpert MTB/RIF instruments were implemented to provide wider access to diagnosis to high-risk patients in Jakarta through innovative social business models including private screening centres and other partnering locations. From November 2013–August 2014, more than 10 769 patients were tested with these machines in several sites in Jakarta, resulting in 1969 confirmed TB patients and 170 RR-TB.

ISTC has been endorsed by the professional associations and further adapted by MoH into a formal document, known as PNPK TB or National Medical Practice Guideline. ISTC now has a legal frame with legal obligation. Following PNPK/ISTC standards is now mandatory among clinicians in Indonesia.

Advocacy, communication and social mobilization (ACSM) activities are being scaled up in different provinces. National Stop TB Partnerships Forum Indonesia was established on 30 May 2013, aiming to accelerate social and political action to stop the spread of TB in Indonesia. The members of the Forum Indonesia include 65 organizations/institutions, which can be grouped into eight categories: government, community-based organizations, academia, professional associations, the private sector, health-care institutions, international partners and individuals. Active community engagement is an important component of TB control activities: in 2013, data about community involvement were reported by 9% of BMU, showing that 42% of TB cases notified by these BMUs were cases referred by community health workers /community volunteers. Community health workers / volunteers also provided treatment adherence support to patients who have high potential to default; among patients that received this support the treatment success rate was 54% that can be considered the risk reduction of “lost to follow-up”. Indonesia is implementing a recording and reporting system to better capture the contribution of community involvement to TB notification and treatment outcomes, and in 2013, was among the few countries able to report some data.

Indonesia relies on a network of 5566 smear microscopy laboratories, corresponding to 2.2 laboratories per 100 000 population; in 2013, EQA was conducted in 47% of smear microscopy laboratories and 75% showed acceptable performance. Efforts to expand and strengthen the national laboratory network are ongoing, with assistance from the SNRL in Adelaide, Australia. In 2014, there were 46 laboratories capable of constructing for culture test of which 18 are quality-assured for culture and 10 have been certified for DST. DST for SLD is available in the country and LPA is in use in two laboratories. In 2014, Xpert MTB/RIF roll-out expanded to 41 sites, from 23 in 2013, and 9305 cartridges were used. Xpert MTB/RIF was included into an algorithm as the initial diagnostic test for the diagnosis of DR-TB among persons at risk, for TB in persons at risk of HIV-associated TB and CTB.

The number of retreatment cases is steadily below 3%, and reported failure to first-line treatment is low (steadily around 0.5%). However, these data are mainly from DOTS centres; data from the private sector and non-NTP public sector are not yet extensively captured by the NTP. There are no nationwide representative data on prevalence of MDR-TB. Sub-national DRS have been conducted in Mimika District (2004), showing 2% MDR-TB cases among newly diagnosed TB cases,

and in Central Java province (2006) showing MDR rate of 1.8% among the new cases and 17% among re-treatment cases. Another DRS conducted in 2010 in East Java province revealed MDR prevalence of 2% and 9.7% among new and retreatment cases respectively. Indonesia is planning to conduct a national DRS using a new algorithm that includes Xpert MTB/RIF to screen specimens for rifampicin resistance and identifying those requesting further testing. By 2013, Drug Resistance Sentinel Surveillance was implemented in six provinces and will be expanded gradually, following the country PMDT expansion. The sentinel DRS is aiming to provide data geographically representative of the whole country. In 2013, 39% of retreatment cases notified was tested for DST, representing a significant increase from 10% in 2012. Among cases (all types) tested in 2013, 20% were confirmed RR/MDR-TB cases. Taking into account the lessons learnt from DR TB sentinel surveillance 2012–2013 and the National TB Prevalence Survey 2013, NTP had decide to conduct a national DR-TB survey in 2015 as a first step to regular DR-TB surveillance.

Even if MDR-TB prevalence is considered to be low, due to the large size of population and the number of TB cases reported annually, Indonesia is one of the 27 MDR-TB high- burden countries worldwide. In 2009, national PMDT was started, treatment guidelines developed and MDR-TB diagnostic and treatment services commenced at two urban sites. By Q4 of 2014, there were a total of 28 PMDT referral centres, 10 sub-referral centres and 777 treatment centres across the country. M/XDR TB specific strategies and interventions include further expansion of PMDT sites, policy for ambulatory treatment, “borderless approach” and integration of PMDT services into the National Health Insurance system (New ICD-10 coding for DR-TB presumptive and confirmed cases). In 2013, 502 MDR-TB and 346 RR-TB cases were detected and by December 2014, 1685 RR/MDR-TB cases were detected, showing a steadily increasing diagnostic capacity compared to previous years. In 2013, 587 confirmed MDR-TB cases and 222 RR-TB patients were initiated on second-line standard treatment; an additional 1248 MDR-TB cases (confirmed or unconfirmed) were started on treatment by December 2014. Among the 2011 cohort of MDR-TB patients enrolled for treatment, the success rate was 60%, the death rate was 15% and “lost to follow-up” 24%. In 2013, 441 MRD-TB cases were tested for resistance to SLD; 14 XDR-TB cases were diagnosed and 10 started XDR-TB treatment. Of the six XDR-TB cases started on treatment in 2011, three were cured or completed treatment and three were “lost to follow-up”.

It is estimated that the prevalence of HIV among the adult population is 0.4% nationally, and there are an estimated 591 000 PLHIV in the country. While HIV is characterized as a concentrated epidemic in Indonesia, it is at the stage of a generalized epidemic in Papua province, with an HIV prevalence of 2.4% in the general population. The estimated number of people co-infected with TB/HIV is 15 000 (ranging between 8700 and 20 000) and Indonesia is listed among the 41 TB/HIV high-burden countries. The estimated prevalence of HIV among incident TB cases is 3% nationally. In some provinces, the reported TB/HIV co-infection rate is reported to be much higher, e.g. in Papua (14%) and Bali (3.9%). The national policy for TB-HIV collaboration activities is in place and guidelines and training materials have been developed. The NTP has revised the recording and reporting system, to include the information on TB-HIV. By the end of 2014, there were a total of 1391 health facilities provided with voluntary confidential counselling and testing (VCCT) and provider-initiated HIV testing and counselling (PITC), and 448 health facilities provided care, support and treatment, including 328 ARV hospitals and 120 satellites. The top priority of NTP is to provide quality DOTS services at all ART facilities. Currently, 200 CST facilities are implementing DOTS. Facilities for CD4 counts are available in 181 health facilities across the country. In 2014, 2% of TB cases were reported being tested for HIV. However, this low proportion was mainly due to delay in completeness of reporting due to the transition to web-based system for reporting and difficulty related to the different format of TB register previously in use. Of the TB patients tested, 33% were HIV-positive; 7621 TB patients tested for HIV, of which 1599 (21%) were HIV positive, and 477 (30%) were on CPT and 332 (21%) on ARV respectively. However, the indicators for TB/HIV activities are better when considering reports from TB/HIV sites: in 2013 in 63 TB/HIV sites, among 12 904 TB patients 2074 were tested for HIV (16%): 856 (41%) were HIV-positive, 410 (48%) started/continued on ARV and 720 (84%) are put on CPT. IPT pilot was successfully completed in four hospitals: 205 out of 281 (73%) PLHIV received IPT and 167 (81%) of the patients completed 6/12 months regimen. In 2014, NTP scaled up implementation of IPT to 33 hospitals in eight provinces, so that by late September 2014, 5805 PLHIV were screened for TB, 649 were eligible for IPT and 375 (58%) were initiated on IPT.

A comprehensive HRD plan is in place and a focal point for HR has been designated at the central and provincial levels. Drug management is showing good improvement; there is generally a good supply of FLD and SLD at all levels. All PMDT sites were trained in management of SLD to ensure availability of stocks. Since 2010, all FLD were procured using Government of Indonesia budget. In the last three years, no drug stock-outs have been reported.

Indonesia is transitioning to a full national web- and case-based electronic recording and reporting system; by the end of 2014, more than 87% of districts level reported through SITT (Integrated TB Information System). The next phase of SITT where health facilities are able to upload their data directly into the web is under progress. However, several challenges such as lack of human resource capacity and internet infrastructure in many parts of the country are hampering the process. In 2013, a national assessment of the TB surveillance system was undertaken using the newly developed WHO “Checklist of standards and benchmarks for TB surveillance and vital registration systems”; results showed that 97% of all districts reported data, but since TB reporting is not a legal requirement, not all TB cases were reported to NTP. On the basis of identified gaps, a list of costed priority activities was outlined: among others, the implementation of mandatory notification policy, scaling up the sample vital registration system, implementation of DRS or DR sentinel surveillance, implementation of nationally representative survey of HIV prevalence among TB patients, and inventory study to assess level of underreporting. An investment plan was developed and financing was secured for implementation in collaboration with NPT, WHO and GF. As per recommendations, DR sentinel surveillance is being expanded, DRS is being planned, and on September 2014 a protocol for an inventory study was developed during a workshop held in Indonesia and also targeting other four high-burden countries.

NTP’s plan and budget are aligned with the national health sector development plan. However, in the past, there were challenges due to the decentralization of health services down to district level. In 2011, NTP formulated a policy known as “exit strategy”, anticipating less reliance on external funding and by mobilizing funds at the sub-national level for programme operational costs and funds from universal health coverage insurance scheme for patients costs. In 2014, domestic funds contributed to 13% of the overall budget and the funding gap was 57% of the estimated budget needs for that year.

The Indonesian programme has received support from several sources including the GF (round 8, 10 and SSF) and USAID through TB CARE I. A joint TB/ HIV CN for the NFM of the GF was submitted and under development and budget allocated for TB NFM is around US\$ 30 million. Indonesia is a recipient under the EXPAND-TB project aimed at strengthening laboratory capacity and uptake of newer tools. Technical assistance is being provided by WHO, KNCV, MSH, Family Health International 360 (FHI360), Japan Anti-TB Association (JATA), ATS, Union and IVMS.

Major achievements

PMDT:

- (1) Long-term PMDT plans (2015–2019) finalized in thirty-three provinces (out of 34 provinces in the country) aiming to achieve universal access of DR-TB patients by 2018;
- (2) increased RR/MDR TB diagnosis and treatment capacity;
- (3) PMDT services provided in 28 provinces;
- (4) further decentralization of PMDT services: 64% of MDR-TB patients continuing treatment at satellite health centre (452/708 MDR TB patients as per September 2013);
- (5) financial support for PMDT expansion plan and implementation, including training, renovation, networking, treatment and patient support continued by GF. HR strengthening supported by GF by hiring 17 provincial PMDT technical officers and five similar positions at the national level.

Laboratory:

- (1) ten laboratories certified for FLD DST and quality assured by SRL IMVS Adelaide, including five also for SLD DST; eight other laboratories in the pipeline for certification; and
- (2) additional 43 Xpert MTB/RIF machines under procurement to support PMDT expansion.

TB/HIV:

- (1) thirteen highest HIV-burden districts implementing the test and treat policy resulting in an increased number of testing of TB and HIV patients; further scale-up planned for more districts;
- (2) coverage of CPT and ARV increasing among HIV-positive TB patients and IPT implementation being expanded, following the successfully completed pilot;
- (3) All 33 provinces initiated their TB-HIV plans; and
- (4) Xpert MTB/RIF used for diagnosis of TB in HIV patients in 38 ART hospitals.

PPM:

- (1) hospital accreditation for TB services implemented; 26 hospitals accredited so far;
- (2) ninety-seven pulmonologists engaged by NTP through Indonesian pulmonologist associations in Jakarta and Banten provinces; further scale-up to six other provinces is underway; and
- (3) of 382 prisons and detention centres, 221 implemented DOTS (58%), 181 (47%) conducted entry screening, and 35 (9%) conducted mass screening annually; twenty-six large prisons have TB/HIV services; success referral rate was 79%, the treatment success rate for new cases 80% and for retreatment cases 50%; as many as 31 MDR-TB patients in the prison system have been identified and put on treatment.

Others:

- (1) national prevalence survey completed;
- (2) National TB Control Strategic plan for 2016–2019 was finalized in December 2014;
- (3) National medical guideline for TB (PNPK) was finalized and disseminated; official launch of this document occurred during 2014 World TB day commemoration;
- (4) E-TB Manager is being implemented in almost all PMDT sites (100% referral centres and 80% sub-referral centres);
- (5) electronic web-based TB information system phase 1 implemented in all 33 provinces to strengthen the national TB surveillance system; SITT phase 2 is under training and dissemination process;
- (6) further development to synchronize TB data with the health information system underway; first links developed for ETB Manager and SITT.

Major challenges

PMDT:

The following are the main challenges faced by the NTP.

- (1) While TB control is largely funded through the NTP, it is critical that the provinces/districts fund certain components of PMDT through their budgets. Provincial/district commitment for PMDT varies, depending on the perceived priority for TB and MDR-TB.

- (2) When staffing at the provincial health office is inadequate, it may result in disconnection between the clinical (at hospital level) and programmatic services.
- (3) Despite availability of free diagnostic and treatment services to MDR-TB patients, there are several direct and indirect costs borne by the patients (i.e. cost of travel, time required adhering to clinic-based DOT, loss of employment). These constraints have an impact on treatment adherence and outcomes. While the scope of insurance coverage is expanding in Indonesia, it still does not sufficiently cover all costs; many of the costs are on reimbursable basis which means that the patient will have to spend first, and reimbursement often implies excessive bureaucracy and paper work.
- (4) As the programme shifts to electronic recording and reporting (R&R), some initial difficulties have been observed in logistics management if the data entry is not complete or timely.
- (5) A very low proportion of retreatment cases are being notified (main reason appears to be misclassification of retreatment cases as new cases due to inadequate history taking) and this reduces the chance of early screening for drug resistance.
- (6) Although there has been significant reduction in treatment delay for MDR-TB cases, delays up to six months were observed; a significant proportion of diagnosed MDR-TB cases (as high as 20–30% in certain large hospitals) is not placed on treatment.
- (7) While the treatment success rates were good for the 2009 and 2010 cohorts, high levels of “lost to follow-up” and death amongst the enrolled MDR-TB patients (15% and 24% respectively) for the 2011 cohort were observed.
- (8) NTP and clinicians face problems on availability of additional SLD. There are also very limited options for constituting a regimen for pre-XDR and XDR.
- (9) Many of the satellite centres are not fully aware about the management of adverse events for mild side effects and unnecessarily refer them to the referral hospitals; this practice often leads to delays and improper management.

Laboratories:

- (1) The roles and responsibilities of the laboratory regulatory body under MoH (BPPM/ BUK) are not well executed and NTP still engaged into laboratory strengthening issues;
- (2) EQA for smear microscopy is weak;
- (3) NRL lack capacity to undertake their roles more effectively;
- (4) There is a huge gap regarding existing laboratory infrastructure, equipment, HR to meet needs for C/DST laboratory expansion and support Xpert MTB/RIF training and supervision;
- (5) There is under-utilization of Xpert MTB/RIF, due to weak patient referral and/or the absence of a rapid and reliable system for movement of specimens/isolates across the network.

TB/HIV:

- (1) There is no official structure for TB and HIV/AIDS programme coordination at national level with sufficient staffing to monitor TB/HIV collaboration activities; some provinces/districts/health facilities do not have TB/HIV forum/ working group. Joint planning and M&E also not regularly done.
- (2) There is no systematic national surveillance among TB patients.
- (3) Coverage of HIV testing among TB patients and number of TB HIV patients with ARV is still low. Scale up of IPT is limited.
- (4) There is limited access to Xpert MTB/ RIF and the number of health facilities with Xpert MTB/RIF to diagnose TB in HIV patients is still low.
- (5) There is intermittent dosage at the continuation phase.

PPM:

- (1) Cure rates of patients treated in hospitals are low (only 50% in private hospitals and 66% in public hospitals) due to high loss to follow-up rates (around 15%).
- (2) Large majority of private providers are not yet engaged and not implementing national TB standards and guidelines; limited number of private providers engaged in PMDT.
- (3) Limited resources are available for prisons to implement TB including MDR and TB/HIV activities.

- (4) Diagnosis of TB in children is still low. Tuberculin tests are not available in all health facilities and many paediatricians do not follow the diagnostic algorithm.
- (5) The volume of TB drugs circulating in the private sector is larger than in NTP and irrational drugs use is widespread.
- (6) Reaching the unreached and underserved population (poorest, remote, borders, islands and migrants areas) is a challenge.
- (7) There is low notification of TB cases from all health providers. A significant proportion of TB patients seek care in health facilities which do not notify the cases to TB programme.
- (8) Mortality estimation is difficult, because no systematic cause of death recording is in place in the districts and provinces.

Activities planned for 2015

Following activities are planned for 2015:

Intensified case-finding:

- generating demand for services by increasing public knowledge of TB symptoms and how to access services;
- conducting active case-finding among vulnerable populations and in geographic areas of high burden;
- systematically tracing and evaluating household contacts of PTB cases;
- establishing and implementing mandatory case-notification for all providers;
- maintaining and improving the quality of basic TB services at all levels;
- expanding the availability of diagnostics to detect smear-negative, extra-pulmonary, and DR-TB in adults and children;
- conducting an inventory study to measure the magnitude of TB under-notification.

PPM:

- expanding hospital engagement with a focus on proper referral, reducing in default rate, and linking all general hospitals with the DOTS and PMDT network;

- expanding private provider engagement by implementing the certification scheme being developed by the Indonesian Medical Association, and scaling up successful pilots of the Indonesian Pulmonologist Association/Indonesian Medical Association;
- engaging provincial and district branches of professional organizations, in particular the Indonesian Medical Association (IDI), Indonesian Nurses Association (PPNI), and the Indonesian Pharmacist Association (IAI) to promote rational drug use, adoption of standardized TB treatment regimens, and patient adherence support; and
- expanding treatment services to keep up with the increased demand, including quality-assured drug supplies, trained HR, and patient-centered support for treatment.

Childhood TB (CTB):

- establishing community-based contact investigation and provision of IPT for exposed children < 5 years of age;
- establishing integrated TB screening in MCH, nutrition, and HIV programmes and providing community outreach and education about childhood TB;
- expanding and strengthening health provider engagement in providing paediatric TB services; and
- improving access to and ensuring the quality of CTB diagnostic and treatment services.

TB/HIV:

- developing and/or strengthening mechanisms for TB and HIV programme collaboration at national, provincial and district levels, with first priority to areas of high burden;
- intensifying TB case-finding among PLHIV and those at risk for HIV;
- offering HIV counselling, testing, and prevention to all TB patients, with implementation of opt-out testing in high-HIV burden areas;
- providing integrated high-quality treatment for TB/HIV patients (one-stop service);

- scaling up IPT in all ART referral hospitals, primary health centres, prisons, and military settings; and
- implementing infection control measures (the TemPO strategy) in health facilities treating TB, MDR-TB, and HIV patients and providing national guidelines on facility design that promote good airborne infection control.

PMDT:

- preventing the spread of drug-resistant forms of TB through universal access to high-quality services for DR-TB and infection control in health facilities and the community;
- providing patient-centred care for all MDR-TB patients including adherence support;
- strengthening political commitment to PMDT at all levels and mobilize resources through partnership with stakeholders and community-based organizations;
- improving management and ownership of PMDT services at the sub-national level; and
- conducting a national DRS to support an assessment of burden and plan for PMDT scale-up.

Others:

- advocating to increase commitment and contribution from local governments to support TB control through civil society involvement;
- engaging National Health Protection System (SJKN) to cover TB service expenditure;
- supporting initiation of TB and diabetes collaborative activities;
- supporting capacity strengthening of TB staff on DOTS, PMDT, TB/HIV and other key areas; and
- collaborating with all partners to prevent problem of drug and commodity stock-out.

Figure 35: Case-notifications by type of patients, 2013

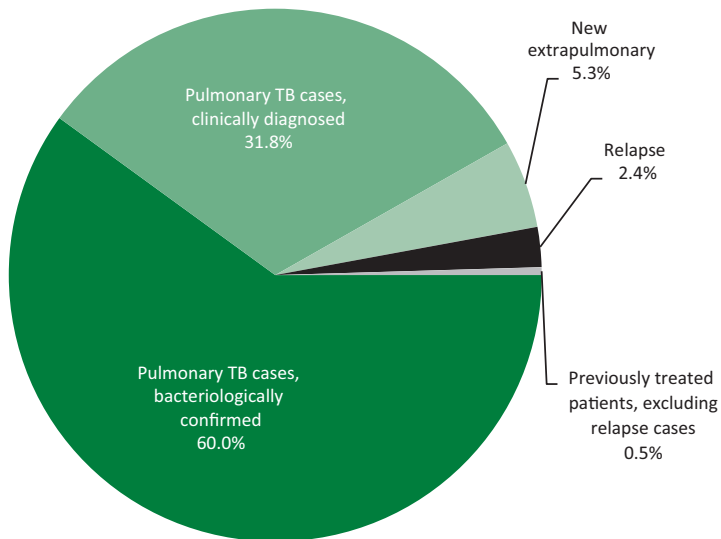


Figure 36: Trends in TB case-notifications, 1995–2013

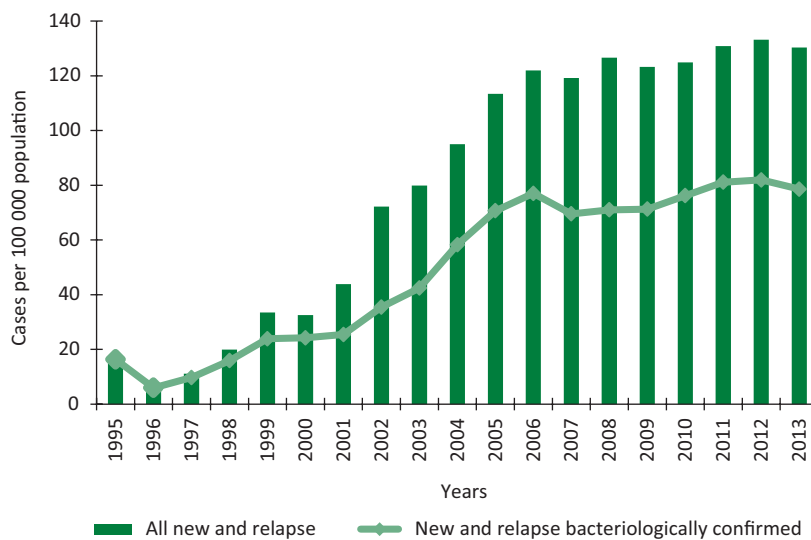


Figure 37: New (all types) and relapse TB cases by sex and age groups per 100 000 population, 2013

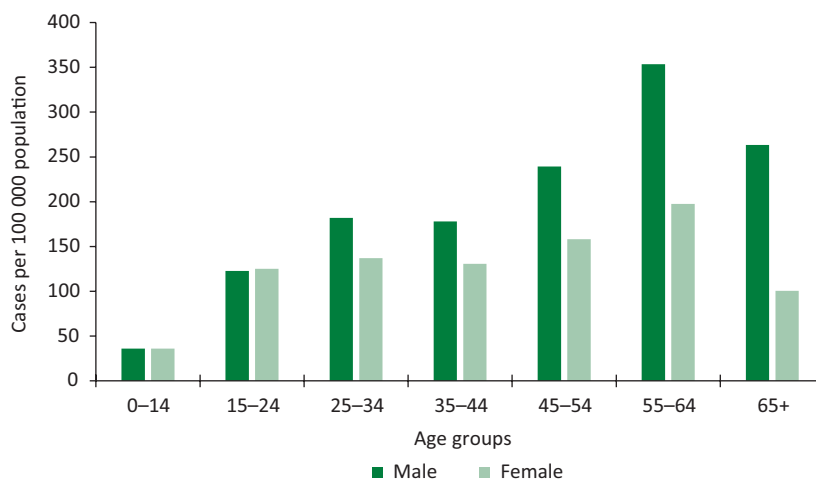


Figure 38: Treatment outcomes by type of cases, 2012 cohort (2011 cohort for RR/MDR-TB cases)

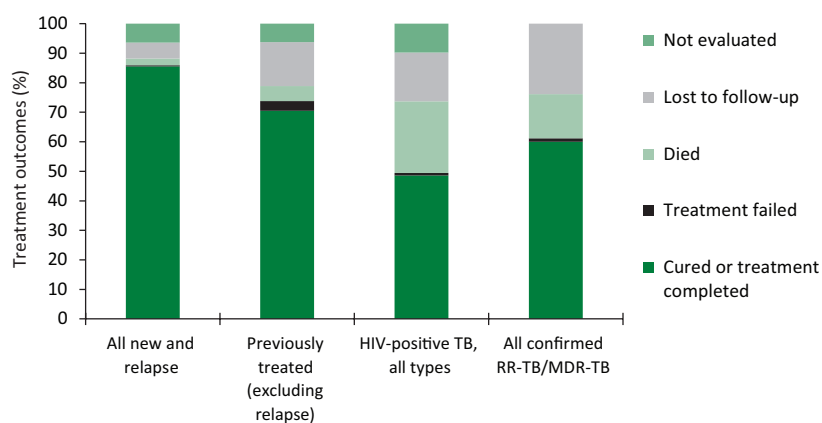


Figure 39: Trends in treatment success rate by type of cases, 1995–2012

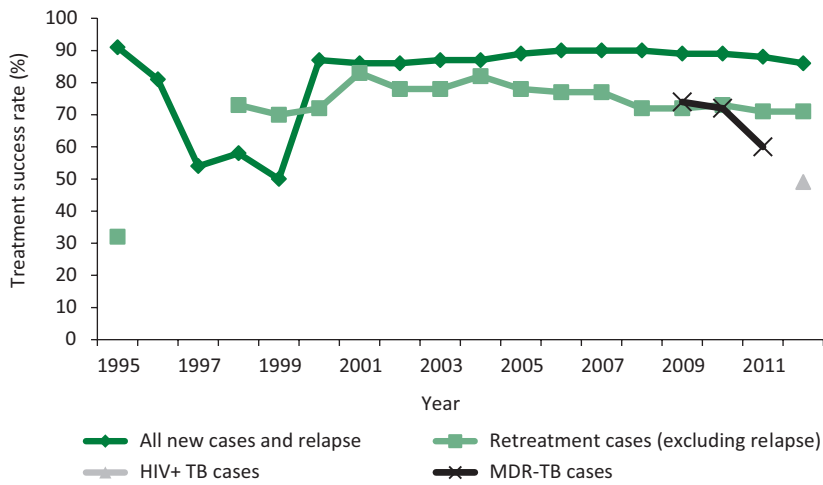


Table 14: Estimates* and notification rates for 2013, Indonesia

Population**	249 865 631
Incidence of all forms of TB	460 000 (410 000–520 000)
Incidence rate of all forms of TB (per 100 000 population per year)	183 (164–207)
Prevalence of all forms of TB	680 000 (340 000–1 100 000)
Prevalence rate of all forms of TB (per 100 000 population per year)	272 (138–450)
TB death rate (of all forms of TB, excluding HIV per 100 000 population per year)	25 (14–37)
Number of new (all forms) and relapse TB cases notified	325 582
Notification rate of new and relapse TB cases (per 100 000 population for the year 2013)	130
Notification rate of new bacteriologically confirmed cases (per 100 000 population for the year 2013)	79
Case-detection rate (all forms of TB)	81 (59–118)
Treatment success rate (%) of all new and relapse TB cases for 2012 cohort	86

**Source: United Nations, Department of Economic and Social Affairs, Population Division (2013). World Population Prospects: The 2012 Revision, DVD Edition.

Maldives

With a population of about 345 000, Maldives has an estimated prevalence and incidence rate of all forms of TB at 57 and 40 respectively per 100 000 population. The notification rate of all forms of TB and new smear-positive cases was 33 and 23 respectively, showing no change compared to 2012, but a relative increase of bacteriologically confirmed cases; in the last two years, the notification rate was higher compared to a steady decrease in the previous five years. Nine percent of TB cases were diagnosed among migrant workers. Treatment success rate among new and relapse cases (all types) was 79% for the cohort of patients registered in 2012. Treatment success rate is below the 85% target since 2007, with the exception of 2011 cohort, mainly because of defaulters and non-evaluated cases (the latter are 14% in 2012 cohort).

The NTP of the Health Protection Agency (HPA) continues to act as a central body for registration, planning, monitoring and evaluation of the TB control activities since its establishment in 1976. In 2013, the NSP for TB control 2014–2018 was developed. Continuous support has been received from WHO and from curative services both in the public and private sectors in the country, in TB case finding, treatment, record keeping, follow-up of TB patients and contact-tracing activities. In 2013, only two cases were reported by non-NTP public providers. All anti-TB drugs are available only through the government-run national TB control programme.

The main objectives of NTP are to effectively improve and strengthen TB preventive activities, in addition to diagnosis and treatment of TB cases. In this regard, establishment of critical infrastructure and HRD for intensified case-finding, early case detection and strengthening the microscopy network are critical. In 2013, there were 70 smear microscopy laboratories; EQA was not conducted for any laboratory. There is one culture facility in the country. DST, if deemed clinically necessary, is undertaken by shipment of samples to NTI, Bangalore, India, which is the designated SNRL for the country. MDR-TB patients are managed clinically at the Indira Gandhi Memorial Hospital in Malé, and treatment is based on individualized regimens. SLD for the management of these

cases are procured by the Ministry of Health on a case-by-case basis through GDF. In 2013, six patients were tested for drug resistance but no RR/MDR-TB case was detected. Of the four MDR-TB cases enrolled on treatment in 2011, one completed the treatment, one was “lost to follow-up” and two died.

At present, priority has been given to improve and strengthen the TB preventive activities, raise awareness, and to cure as many patients as possible and to provide better services to the community. In this regard efforts have been made to improve the quality of services in terms of case-holding and case management. Work has been initiated to establish diagnostic facilities at regional and atoll levels. Regular mass screening for high-risk populations, such as prison inmates and drug users is done. As a result of the intensified activities, the programme has maintained the same trend of TB prevalence for the past few years. Also, the programme has made efforts to develop close coordination and collaboration with other health establishments, especially private health care institutions, in identifying and accurately reporting identified cases. Social mobilization for increased community involvement, collaboration with civil society organizations (such as Journey and Society for Health Education), and utilization of available services and strengthening NTP management have been identified as key areas.

Available data suggest that TB is relatively uncommon in Maldives; HIV prevalence is estimated to be less than 0.01% in the adult population and TB/HIV is not a major problem yet. HIV testing for all TB patients who are above 15 years was initiated in December 2011. In 2013, 10 TB patients were tested for HIV and none resulted positive.

Funding for TB control activities is domestic, and in 2014, the estimated funding gap was 18%. NTP is technically supported by WHO and benefits from an on-going grant from GDF for FLD.

Major achievements

NTP has achieved the following.

- NTP continues to show excellent case detection and treatment success rates and in the overall quality of DOTS services.
- Diagnosis and treatment policies are in accordance with WHO guidelines.

- Quality assured, WHO-recommended FLD and SLD are purchased from GDF through ministry of health funds and provided free of charge to patients.
- Direct observation of the treatment for full course of treatment is in place due to the well-functioning DOT centres at all health facilities.
- Screening of all HIV-positive cases for active TB is in place in collaboration with the HIV programme since 2003 and all TB-positive cases for HIV began treatment from 1 December 2011 onwards.
- All the contacts of sputum-positive TB patients are identified and screened.

Major challenges

The main challenges faced are:

- There is shortage of human and financial capacity to implement, fully control and coordinate all TB-related activities in the country.
- No quality control has been carried out for smear microscopy.
- No capacity is available in the country for DST: no adequate system of sputum transport has been established with external TB laboratory for DST for diagnoses as well as for follow-up for X/MDR TB patients.
- Levels of collaboration between all care-providers and the NTP are inadequate.
- Ensuring adequate supervision and monitoring of DOTS centres in the regions and atolls is a challenge.
- A strong stigma is associated with TB which may prevent diagnosis or lead to primary default after diagnosis.
- Patients frequently seek medical care from other countries, which do not follow any set policy with regard to anti-TB drugs; this has led to the emergence of drug resistance in the Region.
- The social stigma attached to the disease lingers as a residue in people's minds as an incurable/fatal condition. Changing this takes time.

Activities planned for 2015

The following activities are planned for 2015:

- finalization and endorsement of the NSP for TB control in Maldives 2015–2019;
- review and revision of the national guideline for PMDT and the national guideline for TB control;
- development of treatment guidelines, SOP and protocols for TB screening in special institutions;
- strengthening tuberculosis surveillance and monitoring;
- promotional activities to mark the World TB Day – 2015; and
- conducting DOTS administration training for health-care providers.

Figure 40: Case-notifications by type of patients, 2013

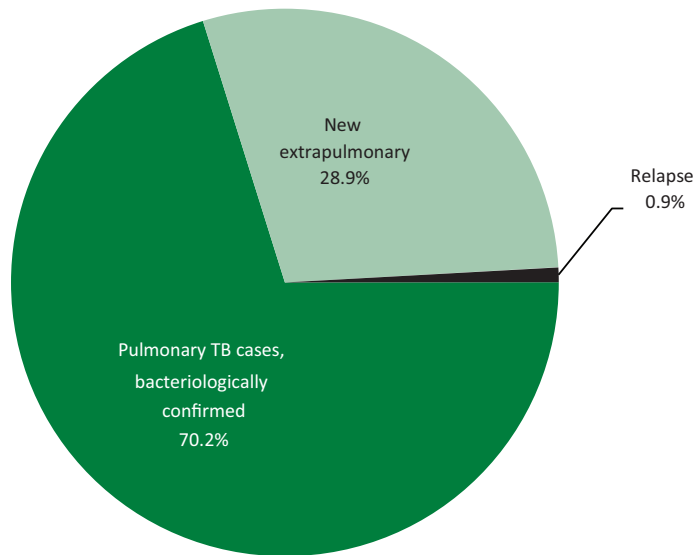


Figure 41: Trends in TB case-notifications, 1995–2013

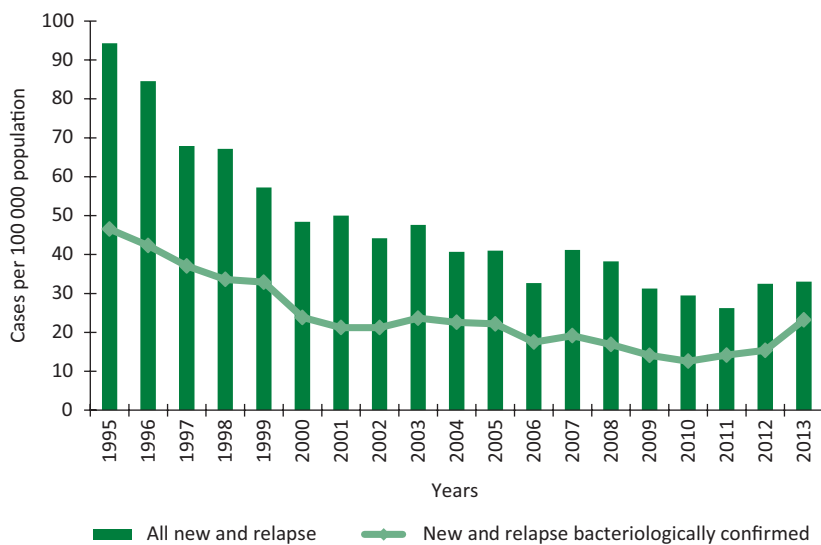


Figure 42: New (all types) and relapse TB cases by sex and age groups per 100 000 population, 2013

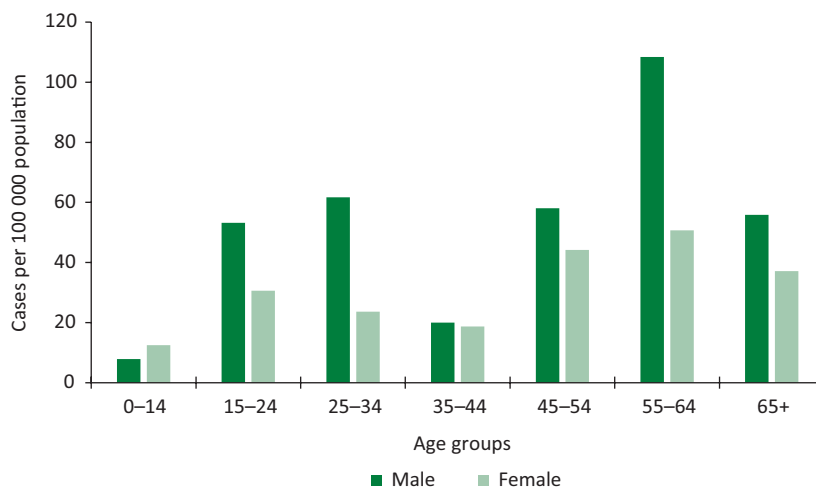


Figure 43: Treatment outcomes by type of cases, 2012 cohort (2011 cohort for RR/MDR-TB cases)

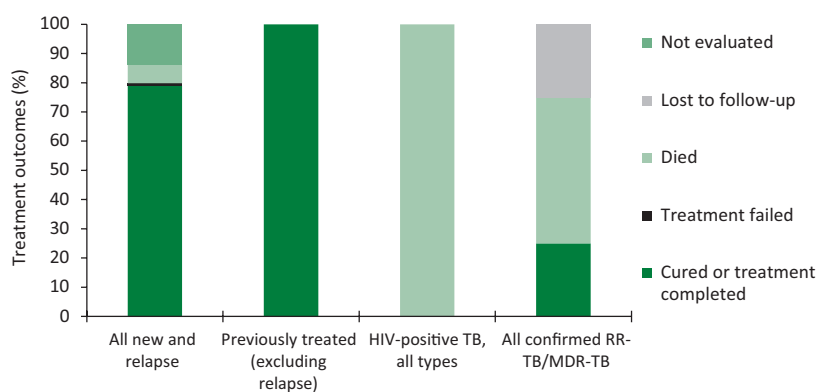


Figure 44: Trends in treatment success rate by type of cases, 1995–2012

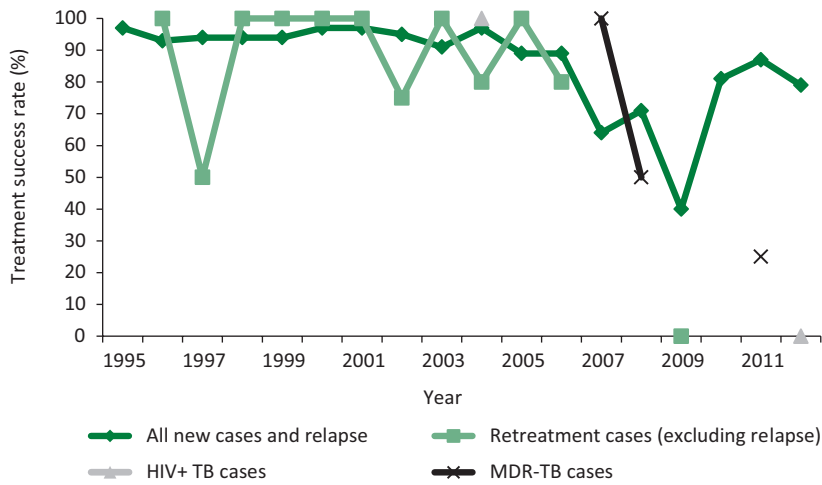


Table 15: Estimates and notification rates for 2013, Maldives

Population*	345 023
Incidence of all forms of TB	140 (120–150)
Incidence rate of all forms of TB (per 100 000 population per year)	40 (34–44)
Prevalence of all forms of TB	200 (94–340)
Prevalence rate of all forms of TB (per 100 000 population per year)	57 (27–97)
TB death rate (of all forms of TB, excluding HIV per 100 000 population per year)	2.2 (1.8–2.6)
Number of new (all forms) and relapse TB cases notified	114
Notification rate of new and relapse TB cases (per 100 000 population for the year 2013)	33
Notification rate of new bacteriologically confirmed cases (per 100 000 population for the year 2013)	23
Case-detection rate (all forms of TB)	83 (75–97)
Treatment success rate (%) of all new and relapse TB cases for 2012 cohort	79

*Source: United Nations, Department of Economic and Social Affairs, Population Division (2013). World Population Prospects: The 2012 Revision, DVD Edition.

Myanmar

Myanmar is among the 22 countries with the highest burden of TB worldwide and TB control is a priority in the country's National Health Plan. The country endorsed the Stop TB Strategy 2007 and started implementation of the broad spectrum of TB control activities in the entire country.

Based on the results of the prevalence survey conducted in 2009–2010, WHO revised the estimated prevalence and incidence rates of all forms of tuberculosis upward. For 2013, these rates were estimated to be 473 and 373 respectively per 100 000 population. Data from the prevalence survey were suggestive of significant ongoing transmission; however, a downward trend of smear-positive symptomatic TB was also shown. To better assess trends in TB burden, Myanmar is planning to repeat the prevalence survey in 2017. The 2010 survey provided important information about reasons for missing cases that is being used to improve case-finding strategies.

In 2013, the notification rates of all forms of TB (including all new cases and relapse) was 253 per 100 000, reverting the slightly increasing trend for all TB cases observed since 2008; given that since 2008, the notification rate of new bacteriologically confirmed cases is fairly stable around 80 per 100 000 population, annual variation is related to new extra-pulmonary cases, whose proportion among new cases is consistently decreasing, and clinically diagnosed PTB cases. The decrease in clinically diagnosed TB cases is partially due to improved management of CTB to address over-diagnosis. Treatment success rate among all new cases was 89% for the cohort of patients registered in 2012; among retreatment cases (including relapses) registered in 2012 the success rate was 70.8% and the death rate was 11.6%.

The reference laboratories in Yangon and Mandalay perform cultures and first-line DST (both conventional method and rapid test); a third laboratory (in Taunggyi) is performing solid cultures only. Second-line DST is being undertaken at the SNRL in Bangkok. With support from EXPAND-TB (Expanding Access to New Diagnostics for TB) the two national reference laboratories have been equipped with liquid culture, FLDST, and rapid immunoassay for species identification and

LPA for rapid diagnosis of MDR-TB. With the upgraded laboratory capacity, MDR-TB can be detected within three to seven days. Myanmar is one of the countries participating in UNITAID's TB Xpert project, aiming to expand the availability and use of Xpert MTB/RIF: by the end of 2013, Xpert MTB/RIF was implemented in 24 sites and 14 246 tests were performed. Xpert MTB/RIF assay was included in an algorithm as the initial diagnostic test for TB in persons at risk of HIV-associated TB and for the diagnosis of drug-resistant TB among persons at risk. The number of smear microscopy laboratories is being constantly expanded and increased from 464 in 2012 to 486 in 2013, almost reaching the target of one laboratory per 100 000 (this indicator was 0.94 in 2013); according to EQA carried out in 97% of the laboratories, 98.6% reported slide concordance rate.

Myanmar is on the list of the 27 MDR-TB high-burden countries worldwide. The third nationwide DRS, carried out in 2012–2013, had shown an MDR-TB prevalence of 5% (95% confidence interval (C.I.): 3.1%–6.8%) among new and 27% (95% C.I.: 15.0%–39.2%) among previously treated cases. The latter result is significantly higher than the 2008 DRS survey. The Ministry of Health has established an expert committee on drug-resistant TB including chest physicians, general physicians, ART physicians, paediatrician, microbiologists and other staff from NTP, WHO and NGOs, to oversee the national response. After the conclusion of a GLC-approved pilot project for treatment of MDR-TB (301 patients enrolled among category II failures, with a cure rate of 71%), the NTP is mainstreaming MDR-TB management as a routine programme component. A MDR-TB scale-up plan was developed to build capacity for diagnosis, treatment and care for 10 000 MDR-TB patients over five years; in April 2011, r-GLC GF the expansion of MDR-TB management with financial support of the GF and Three Diseases Fund. In 2013, new MDR-TB guidelines were launched. In 2014, 14 regions/states and 68 townships had diagnostic capacity through Xpert MTB/RIF and MDR-TB treatment centres: there are plans to expand MDR-TB diagnosis, treatment and care to all regions/states by 2016. Information on testing for drug resistance (through any of the WHO approved tests) in 2013 is provided by selected sites and townships and, although these indicate a high percentage of testing among new and retreatment cases, data could not be considered representative of the entire country. In 2013, 881 MDR-TB cases were diagnosed, being around 10% more than cases detected in 2012; additionally 87 RR-TB were diagnosed. Although the diagnostic capacity increased remarkably, the gap between cases detected and started on treatment was important, as 667 patients were started on second-line treatment in 2013.

However, the gap between diagnosed and treated cases seems to be reducing: in fact, between January and June 2014, 587 of the 738 MDR-TB cases detected were started on treatment. In 2013, among the 71 MDR-TB cases tested for SLD resistance, only one XDR-TB case was detected. Treatment success rate for all MDR-TB cases enrolled on treatment in 2011 was 71%; 11% were “lost to follow-up” and 17% died; considering exclusively the PMDT cohort (from Yangon and Mandalay of 50 patients) the success rate was 80%.

While the national prevalence of HIV infection is estimated at 0.47% of the adult population in 2013, the prevalence of HIV among TB patients was reported to be 9.2% (confidence intervals: 8.2%–10.2%), based on data from the 2013 HIV sentinel survey. At the end of 2013, TB/HIV collaborative activities are being implemented jointly by NTP and the National AIDS Programme in 28 sites. HIV screening for TB patients is presently available through 28 VCCT sites. CPT was included in national guidelines. Data for TB/HIV collaborative activities conducted in 2013 in these 28 sites were reported by the Union, MSF-Holland, MSF-Switzerland and MDM: 12% of all TB patients were tested for HIV and 32% of them were found positive; 89% of TB/HIV co-infected patients were receiving CPT and 74% of them were receiving ART (slightly lower proportion than in 2012). Of 8463 known HIV-positive patients belonging to the 2012 cohort, the treatment success rate was 69.6%.

A pilot project to provide IPT to PLHIV was conducted in nine townships and 3134 PLHIV were reported being provided with IPT between August 2009 and June 2012. From 2013 the IPT is being mainstreamed but the uptake remains low.

An update of the five-year Strategic Plan 2011–2015 was released in 2012. It was developed in light of the prevalence survey results and the recommendations of the joint monitoring mission conducted in November 2011. This plan and its budget are aligned with the national health sector development plan. A TB Diagnosis Plan was developed covering the period 2014–2018. It outlines the NTP’s goals of increasing access to quality-assured AFB microscopy, quality X-ray exam and reading, and rapid laboratory diagnosis in order to diagnose TB among AFB-negative patients, especially PLHIV and MDR-TB among people at risk for M/XDR-TB.

To address the component of increasing case-finding, NTP has engaged private providers through partnerships with the Myanmar Medical Association and the Sun Quality Health network of PSI, which together accounted for 21% of

TB notifications (all forms) in 2013 nationally. Other national and international NGOs have developed community programmes aimed at identifying and referring presumed TB cases. The collaboration with non-NTP public providers, such as public hospitals and prisons, was contributing 3% of TB notifications. With support of The Union and Population Services International (PSI), two projects on innovative approaches to increase case-finding and early detection (TBREACH initiative) were implemented in 2012. The Union as well as PSI adopted an active approach at the community level, with PSI also engaging private pharmacies and drug sellers. Guidelines on community involvement in TB prevention, care and control were developed with national and international partner organizations. Myanmar was among the few countries able to report data on community referral from all BMU: the number of cases referred by community health workers and/or community volunteers was 1% of all TB cases notified in 2013 nationwide (the contribution was much higher within the communities where these activities were implemented); among TB patients receiving treatment adherence support (data reported by 45% of BMU) treatment success rate was 85%.

NTP is being supported by increased funding from the government (15% of the 2014 estimated budget was from domestic sources), supplemented significantly by funding from external sources such as GDF GF, Japan International Cooperation Agency (JICA), USAID, UNITAID, WHO, TBREACH, and the Three Millennium Development Goals (3 MDG) Fund. However, in 2014, there was a funding gap of 35% of the estimated budget for TB control activities.

Myanmar was one of the early applicants under the NFM, covering the period 2013–2016. Grant agreements have been signed with two principal recipients for a combined amount of up to US\$ 90.8 million for the four-year period.

Major achievements

The achievements of NTP are as follows.

- Major expansion of MDR-TB has taken place with a significant reduction in the number of patients on the waiting list for treatment and good programme outcomes have been maintained.
- NTP was successful in securing additional funding from GF (US\$ 18.6 million on top of what was committed through NFM), 3MDG Fund (US\$ 38 million) and USAID, resulting in a much reduced funding gap for the coming three years.

- A DRS was successfully completed. Results have been used to steer the programme (e.g. fast-tracked coverage for MDR-TB for Yangon Region).
- Guidelines were developed for active case-finding in various settings. Dedicated action control teams were constituted, composed of NTP and NGO staff.
- Engagement of private general practitioners and public hospitals has been scaled up and is being consolidated.

Major challenges

NTP faces the following challenges.

- The gap between estimated TB and MDR-TB burden and notified cases remains significant and will require expansion of innovative strategies.
- Though much reduced, the funding gap is still significant and efforts will be needed to reduce this gap as well as secure funds for TB care and prevention beyond 2016.
- Further expansion of MDR-TB services will depend on different actors working in a coordinated fashion, including devolving services down to the community level. Innovative mechanisms will need to be evaluated.
- Further expansion of TB/HIV collaborative activities is a challenge.

Activities planned for 2015

The following activities are planned for 2015.

- Implementation of active case-finding will be scaled up through the deployment of dedicated teams in hard-to-reach, remote areas, border areas, urban slums; as well as through identifying presumed TB cases among people attending health services (pregnant women, elderly, diabetes, etc.).
- expansion of PMDT project will be accelerated in 25 new townships and TB/HIV collaborative activities in 108 new townships by the end of 2018.
- Under the GF's NFM grant for TB, NTP will progressively expand TB/HIV collaboration to cover 330 townships by 2016. Scale-up of MDR-TB is also planned up to 108 townships.
- Culture laboratories will be established in two more sites (Mawlamyaing and Naypyidaw).

Figure 45: Case-notifications by type of patients, 2013

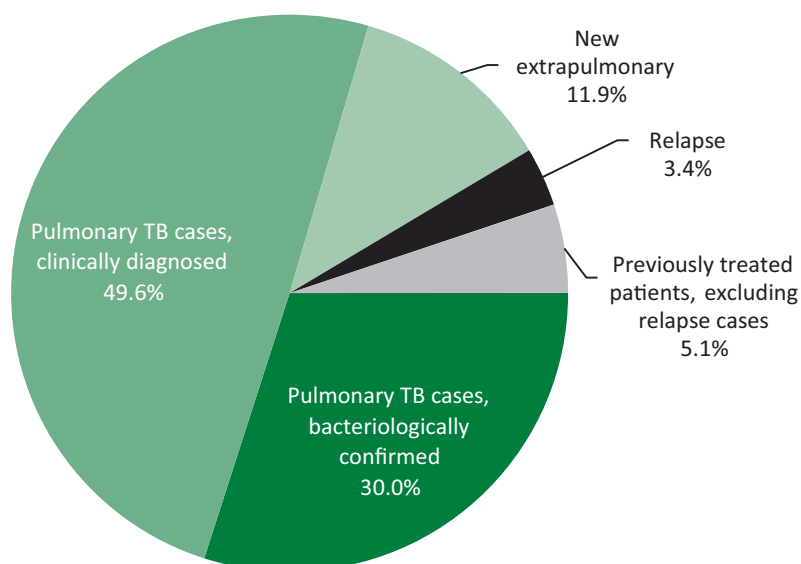


Figure 46: Trends in TB case-notifications, 1995–2013

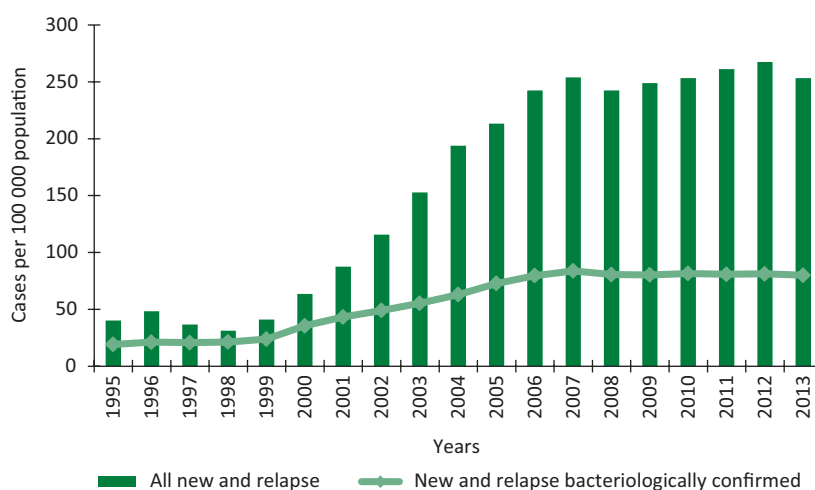
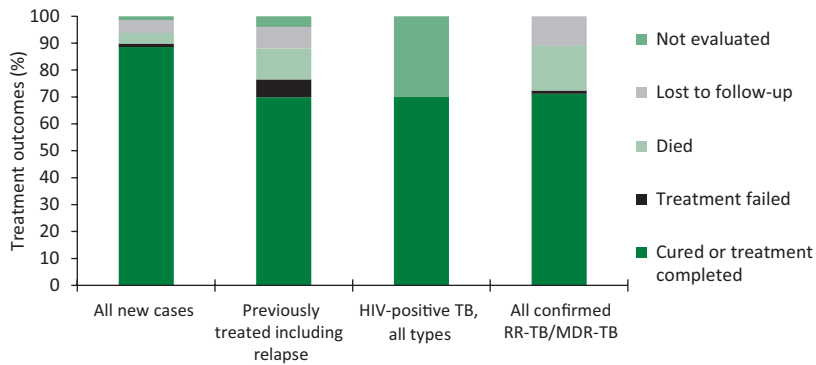


Figure 47: Treatment outcomes by type of cases, 2012 cohort
(2011 cohort for RR/MDR-TB cases)*



*For HIV positive TB cohort the results were reported only in terms of cured or treatment completed and unsuccessful outcomes (including treatment failed, died, lost to follow up and not evaluated)

Figure 48: Trends in treatment success rate by type of cases, 1995–2012

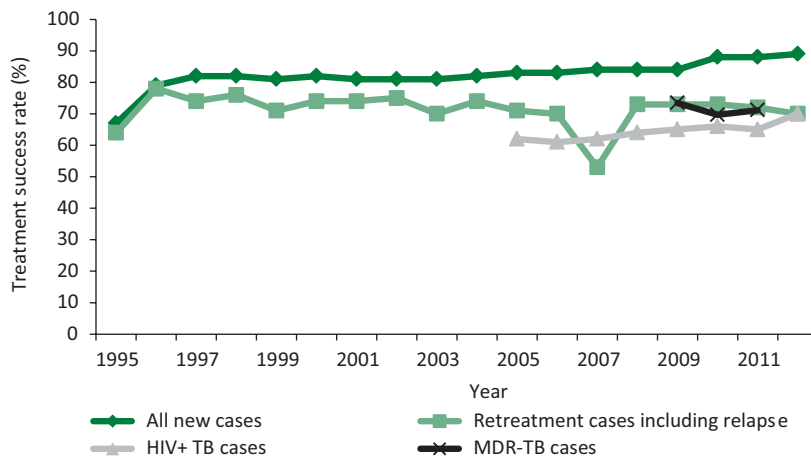


Table 16: Estimates and notification rates for 2013, Myanmar

Population*	53 259 018
Incidence of all forms of TB	200 000 (180 000–220 000)
Incidence rate of all forms of TB (per 100 000 population per year)	373 (340–413)
Prevalence of all forms of TB	250 000 (190 000–320 000)
Prevalence rate of all forms of TB (per 100 000 population per year)	473 (364–595)
TB death rate (of all forms of TB, excluding HIV per 100 000 population per year)	49 (29–71)
Number of new (all forms) and relapse TB cases notified	134 855
Notification rate of new and relapse TB cases (per 100 000 population for the year 2013)	253**
Notification rate of new bacteriologically confirmed cases (per 100 000 population for the year 2013)	80**
Case-detection rate (all forms of TB)	68 (61–74)
Treatment success rate (%) of all new and relapse TB cases for 2012 cohort	89

*Source: United Nations, Department of Economic and Social Affairs, Population Division (2013). World Population Prospects: The 2012 Revision, DVD Edition.

**In country the population figure used, provided by the MoH is 47 796 627, therefore notification rates are 282 and 89 per 100 000 population for all TB cases and bacteriologically confirmed respectively

Nepal

With a population of about 28 million, Nepal has an estimated incidence and prevalence of all forms of TB at 156 and 211 respectively per 100 000 population (in 2013). The notification rate of all forms of TB and new bacteriologically confirmed cases was 122 and 54 respectively, showing a decreased rate for all forms of TB compared to previous years. This mainly related to decreased notification of clinically diagnosed PTB cases; this decrease is known to be greatly related to reduction of misdiagnosis due to introduction of Xpert MTB/RIF as an initial confirmation test for TB. Sustained high case-detection and a slight shift to the older age groups during the last five years suggest a recent decline in TB burden in Nepal. An epidemiological appraisal took place in November 2014; however, to better understand the real burden of disease, age distribution and possible reasons for missing out TB cases, Nepal is planning to conduct a prevalence survey in 2015. The protocol and implementation plan were prepared in collaboration with RIT-Japan and national staff underwent WHO training in Indonesia. A NTP survey coordinator has been appointed and field operations should start in 2015 for an expected duration of 18 months.

Treatment success rate among new and relapse cases (all types) was 90% for the cohort of patients registered in 2012, and is consistently above the target of 85% since 2001. In the last decade also the success rate among retreatment cases has been high, ranging 80–85%.

Tuberculosis control is identified as a top priority programme within the Ministry of Health and Population. NTP's plan and budget are aligned with the national health sector development plan and the NSP for 2015–2020 is being developed, incorporating recommendations of the programme review done in 2013. NTP has several fully dedicated staff at central, regional and district levels. In addition, a programme management unit was set up in 2009 at NTC to help with planning, implementation and monitoring of activities supported by GF. Full DOTS institutional coverage was reached in the primary health system, including 100% coverage in PHC centres, health posts, and sub-health posts in the country. Decentralization of services, outreach projects and strong community involvement

are contributing significantly to increase case-detection and access to TB diagnosis and treatment. To better assess impact of community engagement the current R&R system of NTP is being amended in order to capture the contribution of the community; information will be available in the 2015 annual report.

Intensified case-finding strategies are also being initiated through the TBREACH project: in 2012, nine Xpert MTB/RIF machines granted by the STOP TB Partnership have been deployed to increase case-detection of sputum smear negative, HIV-infected and MDR-TB cases. In 2013 and 2014, NTP procured with GF funds and received from WHO, TBXpert and additional Xpert MTB/RIF machines and cartridges. A national NGO (HERD), using Xpert machines received through the TBREACH project, started conducting intensified case detection among vulnerable groups (slum dwellers, migrants, prisoners, Buddhist monks in monasteries, carpet weavers, contacts of SS+ cases, etc.) by deploying mobile units (vans carrying Xpert machines) to hard-to-reach and underserved locations. In 2013, a total of 22 Xpert MTB/RIF sites were available and 10 256 cartridges were used. Xpert MTB/RIF assay was included in an algorithm as the initial diagnostic test for TB in persons at risk of DR-TB and HIV-associated TB and for sputum smear-negative cases with suggestive signs of TB on chest radiology.

The number of smear microscopy laboratories increased to 553 in 2013, reaching 2.0 smear microscopy laboratory per 100 000 population. QA activities are regularly carried out in all regions: in 2013, results were available for a higher proportion of laboratories (83% compared to 61% in the previous year), the percentage of laboratories showing no major error remained high as in the previous year (98%).

In 2011, the German-Nepal Tuberculosis Project (GENETUP) lab (NGO-run laboratory in public–private partnership with NTP) conducted nationwide DRS on a sample of 806 patients (664 new cases and 142 previously treated cases). Compared to 2007, nationwide DRS, results showed a very slight decline of MDR-TB prevalence among new cases (2.2%, CI: 1.3%–3.8%) but a rather sharp increase (15.4%, CI: 10.1%–22.7%) among re-treatment cases. Overall, MDR-TB prevalence among TB cases in Nepal is 4.7% (CI: 3.3%–6.5%); estimated MDR-TB cases among notified PTB cases in 2013 were, therefore, 2110. Culture and DST (for first and second-line drugs) facilities are provided by two quality assured laboratories: the NRL at NTC and the GENETUP laboratory, both located in Kathmandu and supervised by the SNRL at Gauting, Germany. In 2013, 13% of new cases and 25%

of retreatment cases were tested for drug resistance. Since testing new cases for DR-TB is not in the national policy, the proportion of new cases tested is mainly the result of smear-negative patients tested with Xpert MTB/RIF to confirm TB. A total of 327 MDR-TB and 150 RR/TB cases were detected in 2013 and 388 of them were started on second-line standard treatment. In 2013 also, 15 XDR-TB cases were diagnosed and 11 were started on XDR-TB treatment.

Nepal was one of the first countries globally to introduce ambulatory MDR-TB case management in 2005 diagnosing and treating Category II failures and other laboratory-confirmed MDR-TB cases under a GLC approved project. The management of MDR-TB on an ambulatory basis has been expanded to all five regions in the country. Currently, there are 13 treatment and 73 sub-treatment centres offering MDR-TB treatment services through PHC services and health facilities managed by other sectors. Further improvement of MDR-TB management has been achieved since 2011 through establishment of hostels for DR-TB cases, introduction of a 20-month treatment regimen for MDR-TB patients, revision of the National Drug Resistant Tuberculosis Management Manual and the 2013–2016 PMDT Expansion Plan. An electronic database for MDR-TB cases on treatment based on OpenMRS is expected to be introduced in 2015. Treatment success rates for RR/MDR-TB and XDR-TB patients enrolled on treatment in 2011 were 72% and 31% respectively; CFR was 6% among RR/MDR-TB cases and 56% among XDR-TB cases.

Estimated HIV prevalence among the adult population in Nepal is 0.23%. Sentinel surveys of HIV among TB patients conducted in 2011–2012 showed HIV prevalence of 2.4% among TB patients. Another sentinel survey was in operation during 2014. The country has established a national working group on TB/HIV and a national TB/HIV coordination committee. The national strategy for TB/HIV has been officially endorsed by the Ministry of Health and Population. Joint planning, evaluation and logistics management, information-sharing, advocacy and operational research have been planned by the two programmes. In 2013, 3773 TB patients were tested (11% of notified cases) and 65 were found HIV-positive (1.7%); all TB/HIV cases detected were enrolled on ART and CPT was offered to patients with CD4 count of less than 350 cells/ml. In 2014, IPT began to be offered and only five ART sites were providing IPT to 32% of adults and children newly enrolled in HIV care during the year; scale-up to 90% of ART sites is planned during 2015.

Guidance on infection control has been incorporated in DR-TB guidelines.

The programme, working in close collaboration with national and international implementing partners, has successfully involved private practitioners in major cities. The expansion of PPM has led to the engagement of several NGOs, public hospitals, all 20 medical college hospitals, both in the public and private sectors and two major prisons in the country. The military hospital is also collaborating with NTP in providing TB services. In 2013, 6% of all notified cases were reported by non-NTP public providers and 8% by private providers and NGOs, contributing to overall 14% of all annual cases notified.

Data management is presently paper-based; the revised WHO framework was introduced in July 2014 and relevant updated forms have been used by reporting units starting from November 2014. The programme is also using an Excel-based system, but it is planning to upgrade the OpenMRS platform for DR-TB to include also susceptible TB. The PAL was introduced in 2007 and expanded to cover 19 districts in 2013; and within these 19 districts expansion to the health post level will be carried out.

NTP is heavily dependent on donor funding: only 19% of the estimated budget for TB control activities in 2014 was from domestic funding. The programme also received support through the GF rounds 4 and 7 and successfully applied for NSA grant. The current agreement of NSA phase 2 will end in mid-2015 and carry over funds would flow through the NFM until 2017. For the national prevalence survey, funding is being received from GF, Norwegian Lung Association and the Government of Nepal.

Major achievements

The following are the main achievements of NTP:

- successful implementation and nationwide coverage of MDR/XDR-TB management programme, with 41 of the 75 districts covered by DR-TB centres and sub-centres;
- full DOTS health institutional coverage in the primary health system including PHC centres, health posts and sub-health posts in the country;
- revision of national DR-TB management manual;

- revision of NTP general manual (with introduction of CTB management section);
- development of infection control policy and strategy;
- uninterrupted supply of first and second-line and paediatric QA TB medicines through GDF;
- revision of PMDT expansion plan;
- expansion of Xpert technology in several districts and development of national algorithms for their use;
- collaboration with the National Centre for AIDS & STD Control to implement IPT in five ART clinics and conducting evaluation;
- kick-started intensified case-finding addressed to various marginalized and vulnerable groups (contacts, HIV-infected, slum dwellers, migrants, prisoners, residents of mountainous districts, etc.);
- introduction of community DOTS in 11 districts;
- establishment of DR-home with enhanced services – DOTS, availability of in-house 24/7 medical services;
- enhancing active case detection by door-to-door mobilization of mothers' groups; and
- conducted microscopic camps in all the districts.

Major challenges

The major challenges facing NTP are:

- increasing trend in DR and XDR cases;
- addressing stagnant case-notification in some districts;
- implementing of proper and effective TB/HIV collaborative activities, including PITC and Three Is;
- harnessing the potential offered by a rampant yet poorly regulated private health sector through the adoption and expansion of most suitable PPM model(s); and
- financing NTP by moving away from the heavy dependence on external funding and specifically on one major donor (GF).

Activities planned for 2015

The following activities are planned for 2015:

- initiation of prevalence survey;
- study on TB among diabetic patients and vice-versa;
- meaningful involvement of private practitioners in DOTS and re-structuring DOTS services to make them more user-friendly;
- scaling up various other forms of intensified case-finding;
- introduction of infection control in TB programme settings;
- increasing case-detection of MDR, TB/HIV and SS cases by strategically deploying the Xpert MTB/RIF machines;
- expansion of PAL initiative to all health facilities in the 19 districts;
- expansion and consolidation of TB/HIV collaborative activities;
- finalization of NSP July 2015–19 July 2020;
- diversification of resource mobilization initiatives;
- countrywide consolidation of newly adopted revised R&R formats;
- establishment of five additional DR-TB hostels inside governmental health institutions;
- upgrading of three regional laboratories (two for sputum culture, one for culture and DST); and
- remodelling PPM activities.

Figure 49: Case-notifications by type of patients, 2013

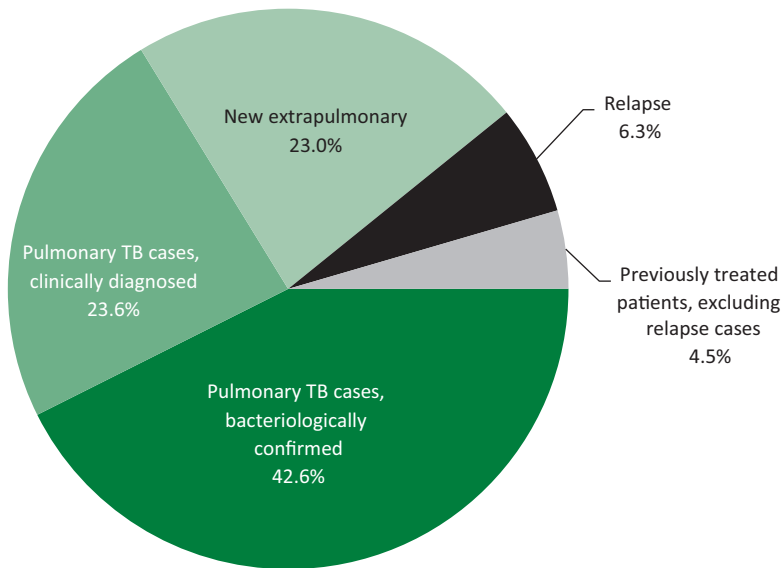


Figure 50: Trends in TB case-notifications, 1995–2013

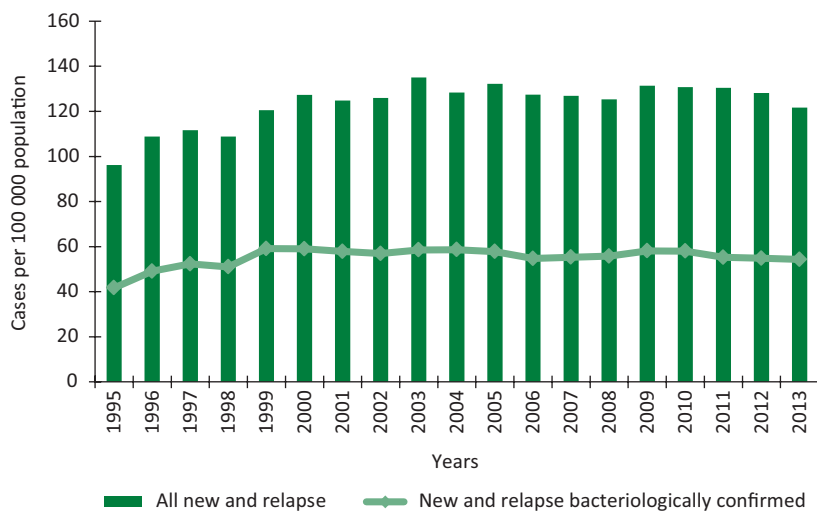


Figure 51: New (all types) TB cases by sex and age groups per 100 000 population, 2013

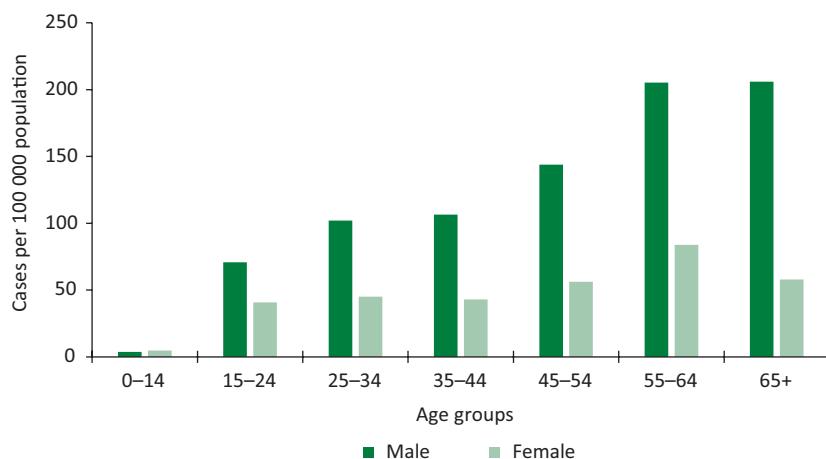


Figure 52: Treatment outcomes by type of cases, 2012 cohort (2011 cohort for RR/MDR-TB cases)

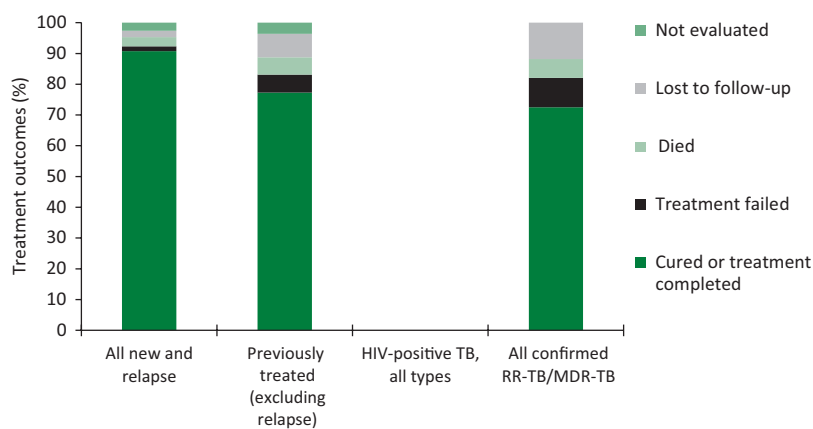


Figure 53: Trends in treatment success rate by type of cases, 1995–2012

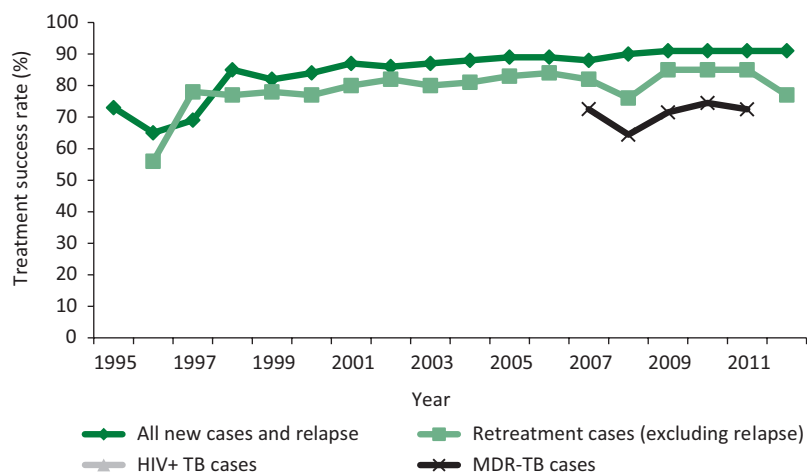


Table 17: Estimates and notification rates for 2013, Nepal

Population*	27 797 457
Incidence of all forms of TB	43 000 (39 000–49 000)
Incidence rate of all forms of TB (per 100 000 population per year)	156 (139–178)
Prevalence of all forms of TB	59 000 (27 000–100 000)
Prevalence rate of all forms of TB (per 100 000 population per year)	211 (99–365)
TB death rate (of all forms of TB, excluding HIV per 100 000 population per year)	17 (7.4–27)
Number of new (all forms) and relapse TB cases notified	33 834
Notification rate of new and relapse TB cases (per 100 000 population for the year 2013)	122
Notification rate of new bacteriologically confirmed cases (per 100 000 population for the year 2013)	54
Case-detection rate (all forms of TB)	78 (68–87)
Treatment success rate (%) of all new and relapse TB cases for 2012 cohort	9

*Source: *United Nations, Department of Economic and Social Affairs, Population Division (2013). World Population Prospects: The 2012 Revision, DVD Edition.

Sri Lanka

The country has an estimated population of 21 million and is among the low TB prevalence countries in the Region. The estimated prevalence and incidence rates of all forms of tuberculosis were 103 and 66 respectively per 100 000 population, in 2013. The notification rate of all new and relapse TB cases (all types) and new bacteriologically confirmed cases were 44 and 21 respectively per 100 000 population; while the notification of laboratory confirmed cases is fairly stable over time, the notification of clinically diagnosed cases in 2012–2013 was lower than in the period 2006–2011, despite there being no downscaling of NTP activities. An innovative case-finding strategy is being implemented through TB/diabetes collaborative activities; the pilot phase has been completed, but data are yet to be analysed. It is planned to conduct sensitization programmes for health staff working in diabetes clinics throughout the country. Mass screening in prisons, including the largest prison in Colombo district, has been conducted.

Sri Lanka reached and has sustained the target of 85% treatment success rate among all new TB cases since 2004; the success rate was 86.5% for the cohort of patients registered in 2012. In the same cohort, the success rate was 67% for retreatment TB cases. Treatment success rate in retreatment cases dropped in 2012 cohort as it was above 70% since 2005; this is mainly due to a large proportion of “lost to follow-up” (14%). Among new cases, the overall default rate has dropped from 15% to 4% in the last decade, due to intensified defaulter tracing efforts involving the district and field public health Inspectors and other categories of health staff.

Laboratory network strengthening is ongoing. In 2013, the number of smear microscopy laboratories increased to 214 (being 1.0 laboratory per 100 000 population); for 89% of them, EQA was carried out and for 95% the results showed acceptable performance. Currently, there are three quality assured culture facilities. DST for FLD is performed in one laboratory through conventional methods and LPA. One Xpert MTB/RIF was deployed in the country in 2012 and it is mainly used for detection of MDR-TB among MDR-TB suspects (it was included

as an initial test for this purpose in diagnostic algorithm); in 2013, 150 cartridges were used.

A national DRS was completed in 2006, and this confirmed the very low levels of drug resistance: resistance to any drug was 1.4% among new patients and 8.8% among previously treated cases in the country; the prevalence of MDR-TB was 0.17% (1 out of 595 isolates). The protocol for a repeated DRS has been developed with the technical assistance of WHO. The planned DRS to be conducted, funded through GF NFM interim funding. Culture and DST is to be performed for all patients who fail initial anti-TB treatment regimens, at the time of initiation of treatment for all sputum smear-negative TB patients, patients commencing re-treatment regimens, contacts of MDR-TB cases, health-care workers, HIV-infected TB cases, migrants, drug addicts and prisoners. In 2013, testing for drug resistance was very high among retreatment cases (99%) and increased to 21% among new cases. Only three MDR-TB cases and one RR-TB case were detected in 2013; all of them were started on treatment. The programme initiated MDR-TB case management under r-GLC approval with support through GF in 2010. MDR-TB is diagnosed at the NRL which is supported by the SNRL at NIRT, Chennai, India. Patients are treated initially at the National Hospital of Respiratory Diseases; afterwards they are referred for continuation of treatment at the chest clinics in their respective districts. National guidelines for the management of MDR-TB have been developed. The cohort of MDR-TB patients started on treatment in 2011 includes only six patients: five were cured or completed treatment and one died.

HIV co-infection rate among TB patients was estimated at 0.07% in 2011. Since 1993, TB patients have been included under the HIV sentinel sero-surveillance survey and the data show consistently low TB/HIV co-infection rate. In 2013, 49% of notified TB cases were tested for HIV, compared to 36% of cases tested in 2012 as a result of expansion of HIV screening done in all district chest clinics and improved reporting; 37 TB patients of all tested were found to be HIV-positive (0.8%) and they are all on CTP and ART, showing very significant improvement of TB/HIV care compared to the previous year. In 2013, screening for TB was done and recorded for 97% of HIV-positive patients enrolled in HIV care and 5% of HIV patients newly enrolled on treatment received IPT.

Public-private collaborative projects have been initiated on a limited scale. Non-NTP public providers including government hospitals (38 public hospitals

including teaching hospitals and five military hospitals), public medical colleges, prisons, armed forces and police contributed 756 TB patients to case notification in 2013, being 8% of the total. The private sector contributed 406 TB patients (4% of the total).

ISTC will be used as a tool for establishing effective TB services within other sectors. There is a plan for initiation of PAL and piloting was initiated in five districts; however, outcomes of the pilot indicate poor sustainability due to turnover of staff and insufficient motivation. TB infection control activities in chest clinics were implemented, infection control committees established and staff trained; it was reported that 0.5 per 1000 health workers had TB in 2013.

NTP's plan and budget are aligned with the national health sector development plan. The NSP for 2015–2020 was updated, taking into consideration the recommendations of the Joint Monitoring Mission in 2014 and the findings of epidemiological analysis, as well as dialogue between multiple stakeholders in the country. The government provides the major part of funding for the TB programme (49% of estimated budget for 2014 TB control activities was domestically funded), with additional resources from GF Round 6 (ending in 2014), and WHO. New grant application for allocation of US\$9 million was submitted to GF.

Major achievements

The main achievements of NTP are as follows:

- reaching and sustaining the global targets:
 - strengthening active case detection among high-risk categories such as prisoners, drug addicts;
 - strengthening collaboration between non-NTP care providers; and
 - expansion of diagnostic facilities through establishing new culture laboratories at Galle and Jaffna.
- integration of TB surveillance and control activities into the primary health care settings;
- improvement of the quality of DOTS provision;

- strengthening of TB control activities in the northern province by infrastructure development and human resource mobilization;
- further expanding the service coverage by consultant respiratory physicians;
- implementing TB infection control activities in chest clinics;
- sustaining the control of MDR-TB and TB/HIV co-infection; and
- undertaking operational research on TB-related deaths.

Major challenges

The major challenges faced by NTP are as follows:

- maintaining adequate number of human resources in the face of high turnover of trained staff;
- reaching the unreached population groups (e.g. population groups with limited access to services, urban slums, prison population, and population in tea and rubber estates);
- addressing TB control among migratory working population from high-burden countries;
- expansion of diagnostic services with WHO-recommended new rapid diagnostics;
- involvement of all care providers in TB control (health and non-health);
- improved focus on paediatric TB;
- overcoming TB-related stigma; and
- financial sustainability.

Activities planned for 2015

The following activities are planned for 2015:

- expansion of the use of new technology in laboratory diagnostics of TB and MDR-TB;
- establishment of two regional TB culture laboratories (Galle and Jaffna);
- capacity-building of central and district staff by training on procurement and supply management, MDR-TB, TB/HIV co-infection, IT literacy, data management, operational research and productivity;

- completion of infrastructure development at National Reference Laboratory, upgrading to BSL-3 level;
- further expansion of community DOTS provision;
- decentralization of TB control activities in Colombo district;
- integration of TB case detection and management with selected general health institutions on a pilot basis;
- estimation of burden of TB in the country using indirect methods of assessment;
- updating national manual in accordance with the recommendations made by the Joint Monitoring Mission;
- updating training modules;
- strengthening public–private mix in TB control by establishing DOT centres in private hospitals, linking private institutions to the programme data management system and improving proficiency of private laboratories;
- further integrating TB control with existing PHC network including improved defaulter tracing and contact screening through field public health inspectors;
- printing and distribution of manuals and guidelines;
- conducting DRS, and pharmacovigilance survey on TB;
- carrying out comprehensive island-wide KAP survey;
- development of a comprehensive ACSM plan based on the results of a KAP survey and implementation;
- strengthening active screening among high-risk categories such as prisoners, migrants, drug addicts, urban slum dwellers, estate population health care workers, etc;
- expansion of screening facilities for TB among diabetics, chronic kidney disease patients; and
- strengthening central and peripheral-level monitoring mechanisms.

Figure 54: Case-notifications by type of patients, 2013

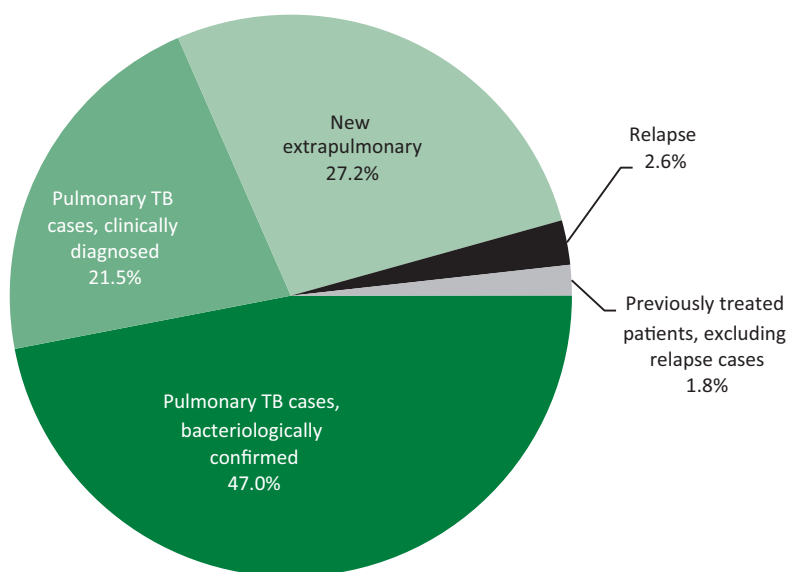


Figure 55: Trends in TB case-notifications, 1995–2013

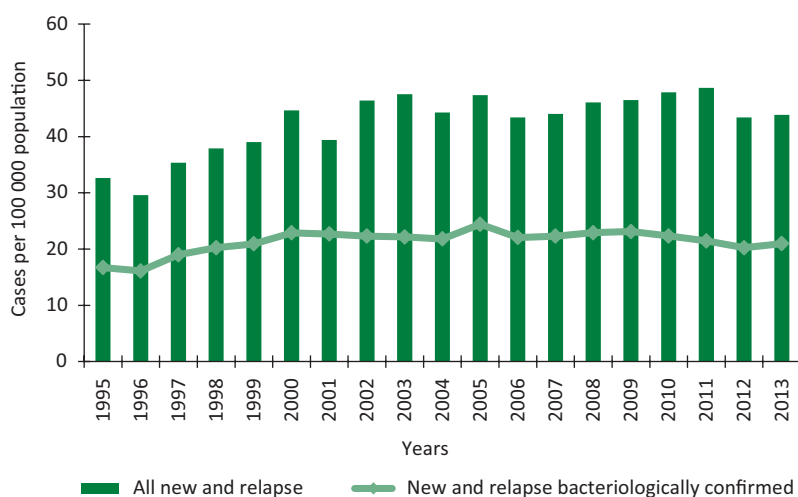


Figure 56: New (all types) and relapse TB cases by sex and age groups per 100 000 population, 2013

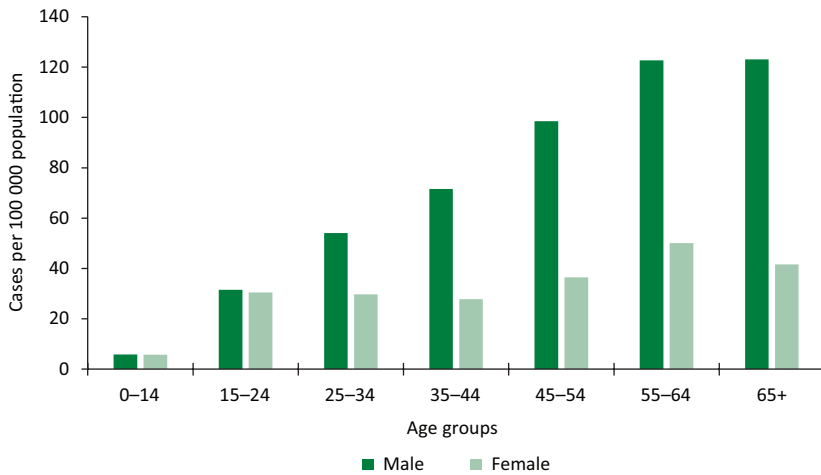


Figure 57: Treatment outcomes by type of cases, 2012 cohort (2011 cohort for RR/MDR-TB cases)

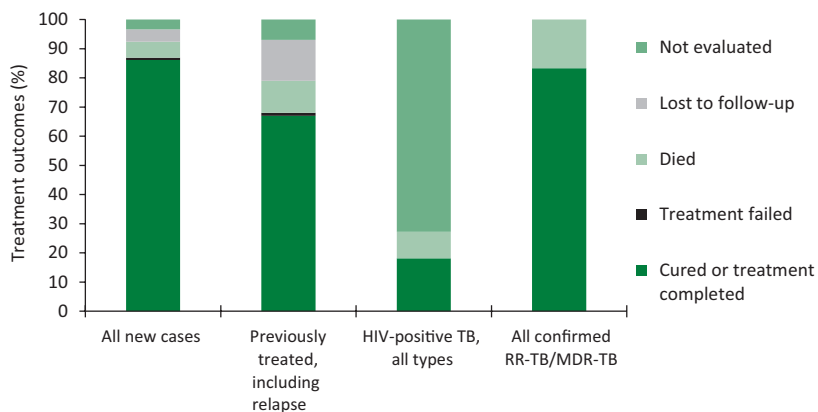


Figure 58: Trends in treatment success rate by type of cases, 1995–2012

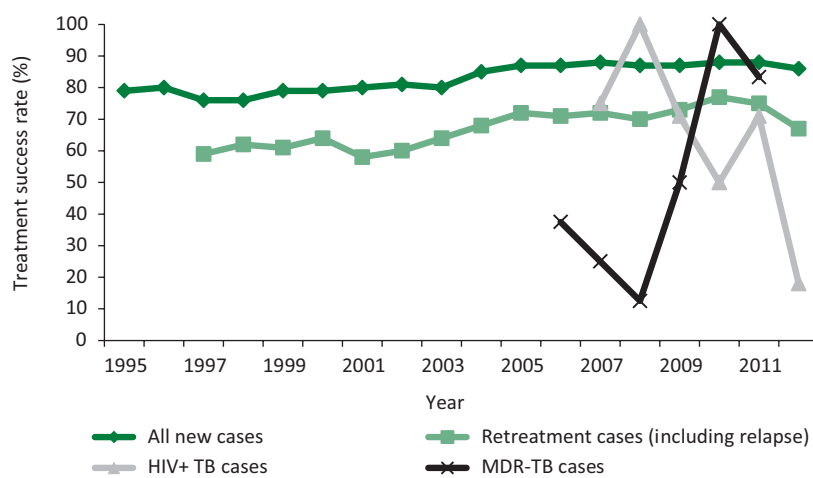


Table 17: Estimates and notification rates for 2013, Sri Lanka

Population*	21 273 228
Incidence of all forms of TB	14 000 (13 000–16 000)
Incidence rate of all forms of TB (per 100 000 population per year)	66 (59–75)
Prevalence of all forms of TB	22 000 (11 000–36 000)
Prevalence rate of all forms of TB (per 100 000 population per year)	103 (53–170)
TB death rate (of all forms of TB, excluding HIV per 100 000 population per year)	1.3 (1.0–1.6)
Number of new (all forms) and relapse TB cases notified	9 329
Notification rate of new and relapse TB cases (per 100 000 population for the year 2013)	44
Notification rate of new bacteriologically confirmed cases (per 100 000 population for the year 2013)	21
Case-detection rate (all forms of TB)	66 (59–74)
Treatment success rate (%) of all new and relapse TB cases for 2012 cohort	86

*Source: United Nations, Department of Economic and Social Affairs, Population Division (2013). World Population Prospects: The 2012 Revision, DVD Edition.

Thailand

With a population of approximately 67 million Thailand is among the 22 high TB burden countries. In 2013, the estimated prevalence and incidence rates of all forms of TB were 149 and 119 respectively per 100 000 population. In 2013 Thailand concluded field operations of its fourth national TB prevalence survey (the previous one was conducted in 2006). The survey was conducted in two phases, firstly in non-Bangkok clusters with a participation rate of 79%, and secondly in Bangkok clusters with a participation rate of 26%: a total of 76 331 people aged 15 years or more participated in the survey. The screening methodology included symptoms suggestive of TB and chest X-ray; laboratory confirmation of two sputum samples (spot and morning) was done through smear microscopy and solid culture. Based on non-Bangkok clusters the preliminary results show a prevalence of smear-positive cases and bacteriologically-positive cases of 110 (95%CI: 54–224) and 253 (95% CI: 187–342) respectively per 100 000 population, among adult population (15 years and above). Data are currently being analysed and adjusted: final results will allow improvement of current burden estimates, as well as better definition of trends, and guide future TB programming.

TB services are available in any hospital in Thailand. Widespread effective coverage of health insurance enables affected persons to afford the cost of diagnosis, treatment and much of the care for all forms of TB. It is estimated that since 2000, almost 600 000 patients have been diagnosed and treated and 220 000 lives saved (compared to no treatment). However, access to TB services is to some extent limited for uninsured patients and efforts towards universal coverage of services are needed. Despite this limitation, Thailand has made considerable progress in expanding and enhancing TB diagnosis and care, particularly among vulnerable populations, such as migrants (4% of cases notified in 2013 were foreign born), PLHIV, and populations in closed settings. A new policy of making health insurance packages available to all categories of migrants has been announced by the Ministry of Public Health in November 2013 and implementation has commenced although there are several

challenges to be addressed to achieve full universal access, especially in some settings. The notification rate of new and relapse TB cases (all forms) and new bacteriologically confirmed cases were 95 and 49 respectively, in 2013, showing an increase towards the levels observed from 2009 to 2011, following a drop in 2012. Considering that mandatory notification for TB is not enforced and that the surveillance system is under-performing (as showed by assessment of the TB surveillance system using the WHO “Checklist of standards and benchmarks for TB surveillance and vital registration systems”), the notification rate is likely to be affected by under-reporting to NTP more than by under-diagnosis.

The treatment success rate among new and relapse TB cases (all types) was 81% for the cohort of patients registered in 2012, falling below the target of 85% treatment success rate; among the unfavourable outcomes were “case-fatality rate” (7%) and “not evaluated” (6%). Further efforts to increase completeness of reporting could impact positively on overall treatment outcomes; in fact, by targeting large urban settings such as Bangkok, “not evaluated” cases decreased by 70% in the last five years. Treatment success rate is higher among bacteriologically-confirmed cases (in past years 85% target of cured/treatment completed rate was reached among smear-positive cases) than among pulmonary clinically diagnosed and extra-pulmonary TB cases. Among other factors, increase in success rate is challenged by a high notification rate in those over 64 years (highest age-specific rate among both female and male – age-disaggregated data are available for smear-positive cases only), where patients are prone to die for any cause. Another challenge to improve the treatment success rate is represented by low treatment success rate and high case-fatality among HIV-positive TB cases (70% and 16% respectively in 2012 cohort). Treatment success rate among retreatment cases (excluding relapse) was still rather low, being 63% in 2012 cohort, and the proportion of “lost to follow-up” and “not evaluated” was 11% and 12% respectively.

In SEAR, Thailand has the highest HIV burden with 459 688 people living with HIV in 2013, including 193 965 women and 8830 children, corresponding to an estimated 1.1% of the adult population being infected with HIV (Asian Epidemic Model, 2013 estimation). Since the peak was reached in 2000 (26%), the estimated HIV prevalence among incident TB cases has declined yearly, reaching 15% in 2013, when 12 000 HIV-positive incident TB cases were estimated corresponding to a rate of 17 per 100 000 population. Substantial progress has been made in implementing TB/HIV collaborative activities throughout the

country. PITC of TB patients has been integrated into national guidelines and are implemented throughout the country. Routine HIV screening is recommended nationally for all registered TB patients; in 2013, the HIV counselling and testing rate among TB patients was 83% (increased from 72% in the previous year), and 15% among all those tested were found to be HIV-positive, corresponding to 8245 patients. Care and treatment for HIV-infected persons is free of charge and it is covered by all three insurance agencies and widely available through the National Health Security Office (NHSO) and the GF supported programmes. CPT and ART was provided to, 63% and 59% respectively of HIV-positive TB patients. ART coverage needs further expansion although progress is being made: in 2013, a total of 4890 TB/HIV patients were started on ART, compared to 4538 in 2012. In 2013, according to reported data, 41% of all estimated HIV-positive incident TB cases received treatment for both TB and HIV. Early initiation on ART could be enhanced by increasing awareness of doctors on management of TB/HIV patients, reducing holding-back factors such as the concern about immune reconstruction inflammatory syndrome. Improved identification of HIV-infected TB patients, together with effective linkages to care and treatment will be required to significantly reduce TB mortality rates that in 2013 were estimated to be 12 and 2.8 per 100 000 population for all TB and TB/HIV co-infection respectively. Intensified case-finding among newly detected HIV-positive patients has been initiated. Routine and periodic symptomatic screening for TB among HIV-infected patients is undertaken in all hospitals under the MoPH and some hospitals in the private and non-MoPH public sector during the initial diagnosis, on follow-up visits and when the decision to initiate ART is made. In clinical practice all HIV patients are screened for TB routinely, although this information is not formally reported by the private sector.

The fourth national DRS was completed in 2012, and results shown that there has been no significant increase of MDR-TB prevalence among new cases (2.03%) and a considerable decrease of MDR-TB prevalence among previously treated cases (18.88%) since the 2006 survey. Thailand has an extensive laboratory network for culture and drug resistance testing. The 65 culture laboratories represent 4.8 laboratories per 5 million population, above the global target for culture availability and DST is available in 18 sites at selected regional laboratories, representing 1.3 DST facility per 5 million population; all DST laboratories demonstrated acceptable performance at EQA in 2013. Rapid DST, specifically HAIN Genotype MTBDRplustest and Xpert MTB/RIF

(implemented in 14 sites), have been introduced; Xpert MTB/RIF was introduced as an initial test in diagnostic algorithms for patients at risk of DR-TB. However, due to decentralization of laboratory services and the number of private sector laboratories also undertaking TB diagnosis, maintaining QA is one of the key challenges faced by the NTP. For smear microscopy laboratories (1081 in 2013) the external quality control reached 90% of facilities and 90% of them showed acceptable performance. Laboratory strengthening is being supported through domestic funding, additional funding from GF and Thailand Ministry of Public Health and US/CDC collaboration. The NRL has capacity for second-line DST, and has been formally designated as the second SNRL in SEAR. Culture, DST (including with rapid tests) and SLD for eligible patients (failure of any treatment regimen, contacts of MDR-TB cases, patient commencing re-treatment regimen) are available free of cost for Thai citizens through NHSO. For prisoners and HIV-positive with presumed TB NHSO covers cost for conventional culture. However, the new GF proposal would extend the availability of free rapid tests for these categories too. In 2013, 10% of notified new TB cases and 12% of retreatment cases were tested for drug resistance. NTP reported 230 MDR-TB cases detected in 2013 and all have been started on treatment, showing that access to treatment improved remarkably. However, the reporting of MDR-TB cases is incomplete and not timely and the number of notified patients does not reflect the real diagnostic and case-finding capacity; NHSO indicates that more than 1000 MDR-TB patients (based on bacteriological or clinical criteria) were started on second-line treatment in 2013. Data on RR-TB cases detected are currently not available. However, all RR-TB cases are expected to be further tested with standard methods and be reported as MDR-TB cases if applicable. In 2013, five XDR-TB cases were diagnosed and started on treatment. Since the revised R&R system was implemented in 2012, treatment outcomes for 2011 cohort are not available.

At present, most patients with DR-TB are diagnosed and managed by university, regional/provincial and some private hospitals, which procure SLD using local resources such as the Government Pharmaceutical Organization. GF was providing support to approximately one fourth of the MDR-TB management sites. However, the Thai government is transitioning out of GF funding to achieve full domestic funding in 2017. In the new GF CN, only funding for SLD for less than 100 patients was included.

The national electronic database (TB Clinical Management - TBCM), developed to improve real-time reporting and case management, currently covers the whole country, although effective coverage of the system is about 60%. Current guidance and recommendation of Thai MoPH is to integrate as much as possible disease-specific databases with the national HMIS system. Therefore, at the moment, there is rethinking on ongoing investment and expansion of the TBCM. In 2013 Thailand conducted a national assessment of the TB surveillance system using the WHO “Checklist of standards and benchmarks for TB surveillance” that identified problems such as reports missing from a large proportion of teaching hospitals and private providers, several platforms in use for reporting; on the basis of identified gaps, a list of costed priority activities was outlined and an investment plan was developed.

TB services are fully integrated within PHC. Thailand has made remarkable progress in involving NGOs and the private sector in TB control activities. Private hospital associations and NGOs (World Vision International, American Refugee Committee, the Raks Thai Foundation and International Committee of the Red Cross (ICRC), FHI 360) provide TB care according to International Standards for TB care. In 2014, the public providers reporting to NTP were only prisons: 1402 cases were reported contributing to around 2% of the total of cases notified. Under-notification is known to be important in the urban areas of Bangkok where only 21 of the 97 hospitals notify TB cases to the NTP. Of the nearly 397 private hospitals, only 30 reported TB cases to the NTP in 2014 (1907 cases contributing to around 2–3% of all cases).

The NSP for TB care and prevention was updated for 2015–2020, based on recommendations of the Fifth Joint International Monitoring Mission and Review of the NTP conducted in 2013 and multiple stakeholders’ meetings. The country’s TB programme is supported mainly by the government budget through the NHSO; about 70% of the estimated budget for 2014 was covered by domestic funds (accounting only for NHSO, not considering other sources such as other insurance agencies). NTP and NHSO have ensured an uninterrupted supply of anti-TB drugs at all levels, and the delivery of services throughout the country. Additional support has been provided by GF Single Stream Funding (2012–2014) and NFM (2015–2016), and Thai–US CDC Collaboration, ICRC and WHO.

Major achievements

The major achievements of NTP in Thailand are as follows:

- sustained collaboration and evidence-based programme financing achieved through ongoing dialogue and planning using a regular platform for communication between the Bureau of TB, NHSO, academics, BMA and other partners;
- sustained high utilization rate for TB/HIV patients (83% of TB patients counselled and tested for HIV in 2013);
- progress towards sustained TB services among marginalized populations such as migrants and cross-border populations through domestic government funding sustained;
- specific focus on TB control achieved by negotiating dedicated funds for TB screening and control in 143 prisons from the GF and the NHSO;
- single CN for TB-HIV in order to support better integration and collaboration approved and a grant of over US\$ 40 million secured for 2015–2016;
- introduction and progressive scale-up of molecular diagnostics, including domestic funding from NHSO to reimburse their cost;
- updated TB Guidelines finalized;
- accreditation system for quality TB care according to international standards implemented across the country;
- prevalence survey and DRS completed;
- PMDT reporting and recording system established;
- epidemiological assessment and review completed;
- revision of NSP for the period of 2015–2019 completed;
- significant improvements in case-notification achieved;

Major challenges

The major challenges faced are as follows:

- improving quality of DOTS under the decentralized health system and in large urban centres (i.e. Bangkok or capital districts of each province);
- improving case-notifications further;

- harmonizing monitoring and reporting systems;
- national level roll-out of molecular diagnostic tools for intensified case finding and reduction of diagnosis time;
- rolling-out new treatment guidelines, particularly for DR-TB.
- further strengthening of TB/HIV integrated activities, particularly revitalization of the TB/HIV committee, intensified case-finding among known HIV-positive people and generation of consensus on IPT;
- revising records and reports of drug-sensitive TB to monitor all indicators of detection, enrolment, interim results and final outcomes in line with new 2013 WHO revised definitions;
- strengthening referral system between MDR-TB hospitals in the capital districts and community hospitals where MDR/XDR-TB patients live;
- better systematic management and regular supervision of programme activities in the context of decentralization;
- effectively involving private hospitals in TB control;
- sustaining gains in implementing TB control activities in the Bangkok metropolitan area;
- addressing human resource management constraints at the central and regional levels; and
- setting up effective cross-border data sharing and referral networks for TB control in preparation for the ASEAN Community 2015, when the Mekong Region will see free movement of people and goods in the region;

Activities planned for 2015

The following activities are planned for 2015:

- capacity-building of health staff at primary care units whose location is closer to patients' home in decentralized settings and in large urban centres (i.e. Bangkok) to enhance treatment adherence;
- ongoing decentralization of laboratory services to support early case-finding being implemented, so that all regional laboratories are able to provide quality assured DST and molecular diagnostics by end-2015 and meet quality assurance requirements;

- strengthening of regular supervision, monitoring and evaluation of the programme;
- supporting integration of electronic and web-based reporting and recording system with national HMIS systems;
- revising the R&R system of M/XDR-TB to be consistent with the international recommendations;
- increasing the involvement of private hospitals and ensuring that practices are in line with the national and international guidelines; and
- supporting key stakeholders in the government and private sector for greater commitment to address fragmented service delivery, and improving regulation of the private sector.

Figure 59: Case-notifications by type of patients, 2013

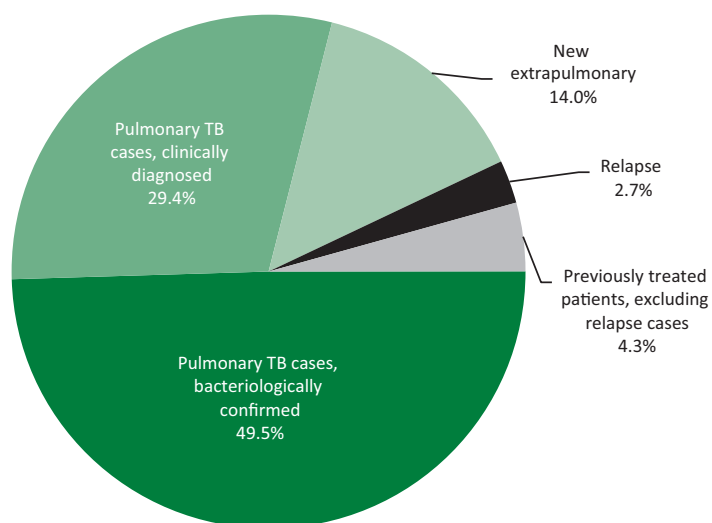


Figure 60: Trends in TB case-notifications, 1995–2013

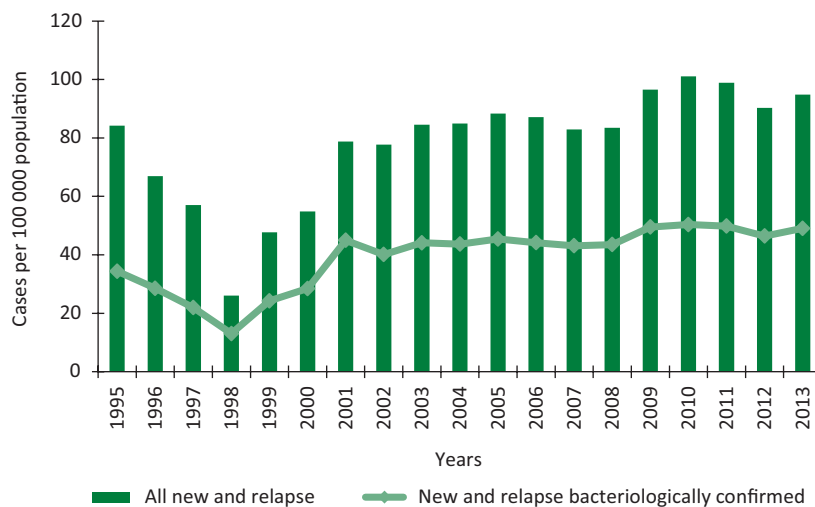


Figure 61: Treatment outcomes by type of cases, 2012 cohort
(2011 cohort for RR/MDR-TB cases)

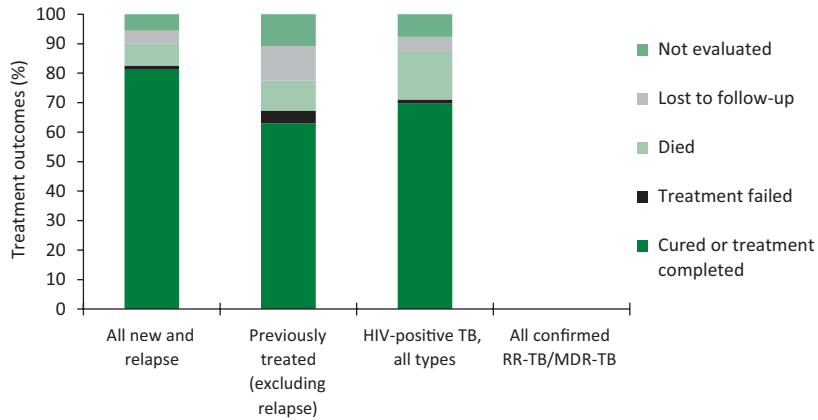


Figure 62: Trends in treatment success rate by type of cases, 1995–2012

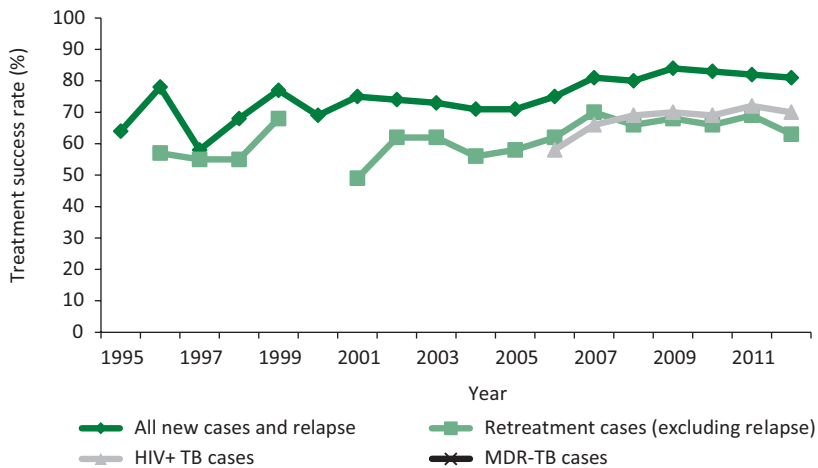


Table 18: Estimates and notification rates for 2013, Thailand

Population*	67 010 502
Incidence of all forms of TB	80 000 (71 000–90 000)
Incidence rate of all forms of TB (per 100 000 population per year)	119 (106–134)
Prevalence of all forms of TB	100 000 (48 000–170 000)
Prevalence rate of all forms of TB (per 100 000 population per year)	149 (72–252)
TB death rate (of all forms of TB, excluding HIV per 100 000 population per year)	12 (7–18)
Number of new (all forms) and relapse TB cases notified	63 541
Notification rate of new and relapse TB cases (per 100 000 population for the year 2013)	95
Notification rate of new bacteriologically confirmed cases (per 100 000 population for the year 2013)	49
Case-detection rate (all forms of TB)	80 (71–89)
Treatment success rate (%) of all new and relapse TB cases for 2012 cohort	81

*Source: United Nations, Department of Economic and Social Affairs, Population Division (2013). World Population Prospects: The 2012 Revision, DVD Edition.

Timor-Leste

With a population of about 1.1 million, Timor-Leste is a low TB burden country. However, incidence and prevalence rates of all TB cases are estimated to be high, being 498 and 802 respectively per 100 000 population in 2013 (source: Global TB report 2014). These estimates were calculated during an in-country workshop and are based on results of a comprehensive TB epidemiological assessment conducted in 2013 that covered level of under-diagnosis/under-reporting as well as degree of over-diagnosis/over-reporting. In 2013 the notification rate was 332 and 138 per 100 000 population for new and relapse TB cases (all forms) and bacteriologically-confirmed cases respectively (rates used in-country are slightly lower because they are calculated using projections of census data). While notification of bacteriologically-confirmed cases is stable since 2010, the notification of PTB cases, clinically diagnosed is consistently decreasing. Considering ongoing efforts to control TB, this could be the result of reduced mis-diagnosis of TB cases without laboratory confirmation instead of decreased case detection. Treatment success rate among new TB cases (all types) was 89% for the cohort of patients registered in 2012.

NTP has established services in all 13 districts and 65 sub-districts of the country; district TB coordinators are working with the district health management teams in all districts and in the 65 community health centres at the sub-district level. Community health centres have been strengthened and better funded in order to include support for conducting outreach activities at the village level through the *servisu integradu da saúde comunitária* initiative.

Presently, 18 microscopy centres are based in public and NGO facilities (12 in the districts and six in Dili). The new LQAS system for the quality assurance system was recently developed and the nationwide EQA system will be rolled-out in 2015. All laboratory technicians are trained in the new quality assurance protocol. No conventional culture and DST facility is available in the country but linkage was established with the SNRL at the NIRT in Chennai, India in 2014. Additionally, three Xpert MTB/RIF machines are available for diagnosis of MDR suspects, TB/HIV and smear-negatives in places where there is no access to X Rays. DST facility

is being developed in the country with support of Korea International Cooperation Agency (KOICA) and the DST laboratory will be functional by end-2016.

Six NGO facilities are providing ambulatory care and one is providing in-patient MDR-TB management. There are five NGOs which support NTP in identifying TB suspects and in referring them to DOTS facilities for diagnosis and treatment. There is good collaboration between NGOs and private clinics with NTP; in 2013, 189 cases were reported by private, corporate and voluntary providers, being 5% of all notified cases.

MDR-TB rates are estimated to be low, being 2.2% among newly diagnosed and 16% among previously treated TB cases. An r-GLC-approved MDR-TB case management project is in place. In 2013 two confirmed MDR-TB cases were identified (both were initially detected by Xpert MTB/RIF and further confirmed by conventional culture and DST); both the cases were enrolled on second-line treatment. The treatment is initiated by MDR-TB clinical specialists and cases are admitted to NGO inpatient MDR-TB ward, Klibur Domin in the district of Liquiça, for the intensive phase. GDF has provided necessary SLD, with funding supported through GF.

HIV remains relatively uncommon in Timor-Leste. In 2013, data from sentinel sites for surveillance of HIV in TB patients showed 0.38% of TB/HIV co-infection rate (95% CI: 0–1.25). A TB/HIV coordinating body at the national level is being established. Initial training for staff at VCT has been completed and a formal mechanism for referral from VCT to DOTS centres has been initiated. In 2013, 41% of all TB patients were tested for HIV (more than double of those tested in 2012) and 0.5% of them were found positive; all were started on ART.

The national Stop TB strategy plan was updated for 2015–2020. Continued funding under GF was secured for TB control activities through the Transitional Funding Mechanism (2014–2015) and NFM (2016–2017). The Ministry of Health supports all staff costs, infrastructure and basic resources and contributed 23% of the estimated budget for 2014.

Major achievements

- NTP Manual revised including the most recent WHO recommendations and training for doctors and health workers is under way;
- all R&R tools are revised according to the new WHO definition and will be rolled-out in 2015;
- NSP (2015–2020) developed based on the Joint Monitoring Mission 2013 report and recommendations;
- continuing funding from the GF will be secured through NFM for 2016–2017;
- laboratory EQA protocol is being rolled-out nationwide and training of the laboratory technicians has been completed;
- TB/HIV collaboration continued to be further strengthened through joint planning at the national level and through coordination meetings at the district level;
- doctors and health workers have been trained on the new training manual for doctors and health workers;
- ensured availability of TB and MDR-TB drugs at all times in the country; and
- TB infection control guidelines used for training of health workers and doctors.

Major challenges

- improving quality of DOTS implementation specially with rifampicin in the continuation phase of the Cat I treatment;
- ensuring adequate access to TB services in many remote and hilly areas through a reliable transport system;
- promoting adherence to standard diagnostic and treatment practices by all levels of health staff;
- implementing the new EQA protocol nationwide and work on adequate number of microscopy centres in the country; and
- lack of paediatrician and expert doctor at community health centre level to diagnose TB in children and young adults.

Activities planned for 2015

- application for NFM for TB funding for 2016–2017;
- institutionalization of the QA system for TB microscopy and Xpert MTB/RIF;
- implement the revised NTP manual;
- nationwide roll-out of better regimen for TB treatment according to the new TB guideline;
- continue meetings of TB Technical Working group and PMDT committee;
- strengthen PMDT activities;
- improve involvement of community volunteers in TB suspect referral and DOT provision;
- improve routine programme data recording and reporting, and feedback to districts;
- strengthen regular supervision from national to district level and from district level to sub-district level;
- improving programme management capacity at national and district levels; and
- continue regular quarterly review meetings with staff from all levels.

Figure 63: Case-notifications by type of patients, 2013

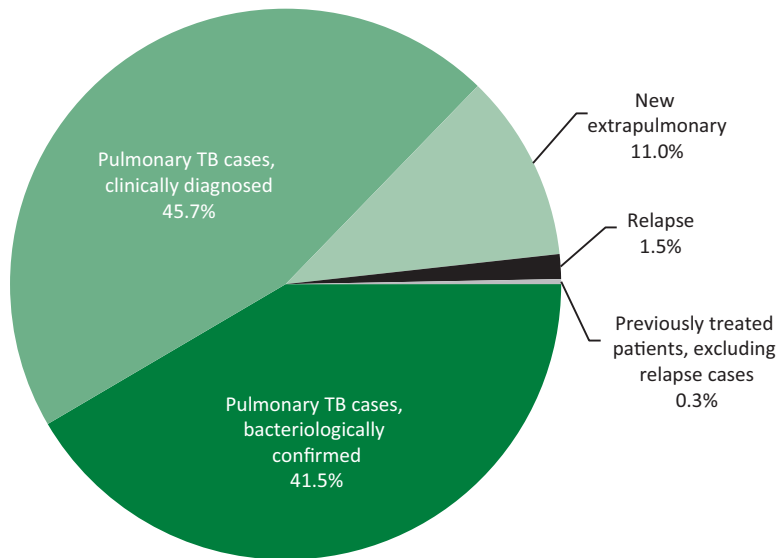


Figure 64: Trends in TB case-notifications, 1995–2013

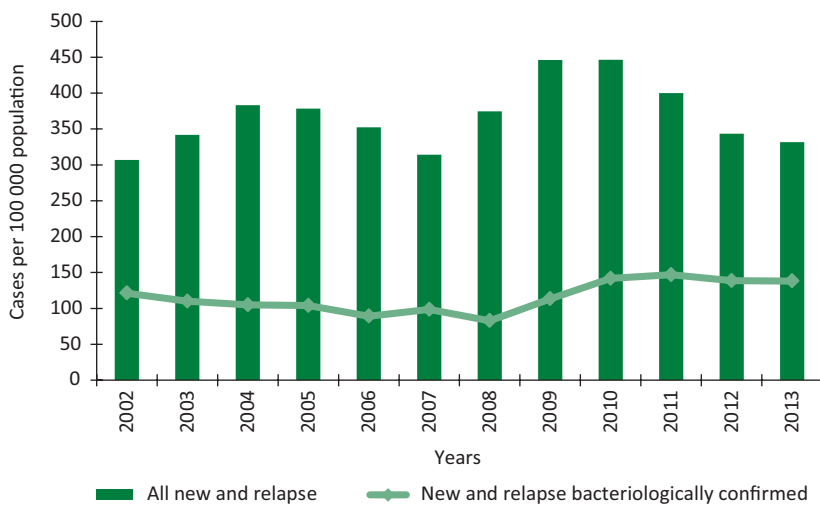


Figure 65: New TB cases (clinically diagnosed and extrapulmonary only) by sex and age groups per 100 000 population, 2013

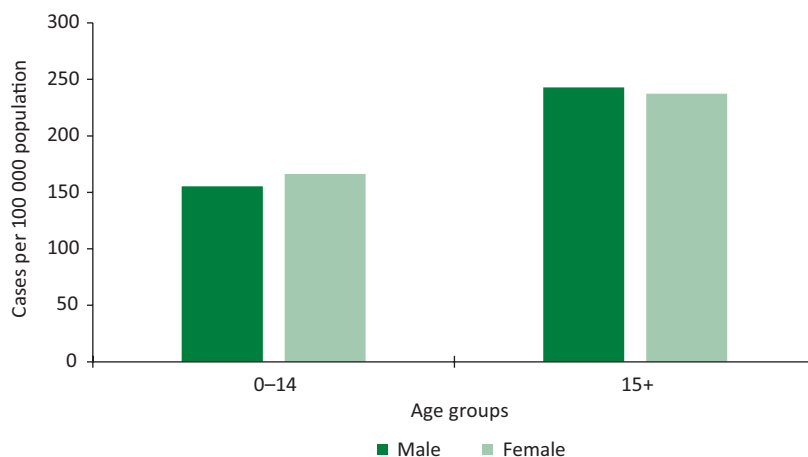


Figure 66: Treatment outcomes by type of cases, 2012 cohort (2011 cohort for RR/MDR-TB cases)

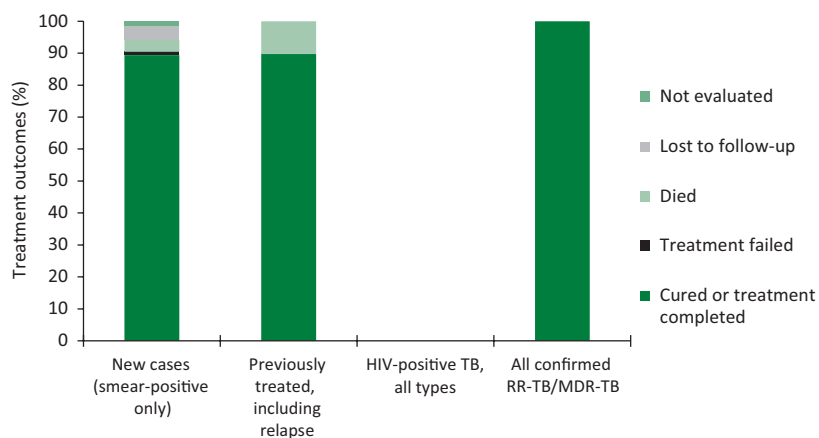


Figure 67: Trends in treatment success rate by type of cases, 1995–2012

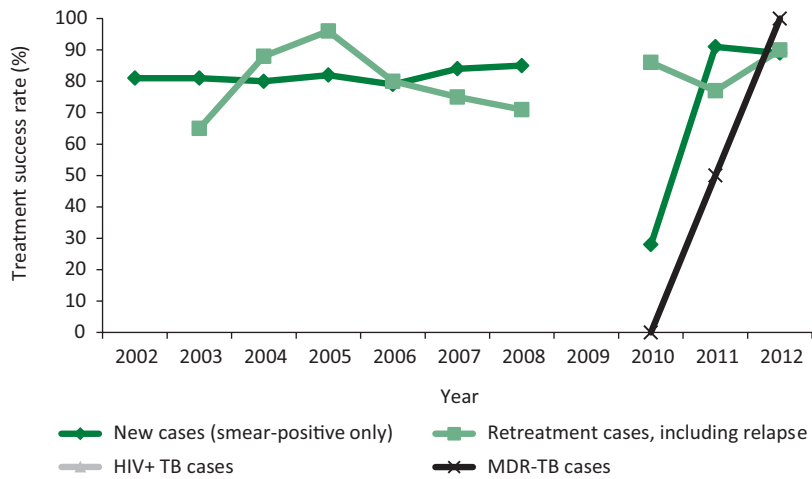


Table 19: Estimates and notification rates for 2013, Timor Leste

Population*	1 132 879
Incidence of all forms of TB	5 600 (4 600–6 700)
Incidence rate of all forms of TB (per 100 000 population per year)	498 (409–596)
Prevalence of all forms of TB	9 000 (3 800–15 000)
Prevalence rate of all forms of TB (per 100 000 population per year)	802 (394–1351)
TB death rate (of all forms of TB, excluding HIV per 100 000 population per year)	87 (33–132)
Number of new (all forms) and relapse TB cases notified	3 757
Notification rate of new and relapse TB cases (per 100 000 population for the year 2013)	332
Notification rate of new bacteriologically confirmed cases (per 100 000 population for the year 2013)	138
Case-detection rate (all forms of TB)	67 (56–81)
Treatment success rate (%) of all new TB cases for 2012 cohort	89

*Source: United Nations, Department of Economic and Social Affairs, Population Division (2013). World Population Prospects: The 2012 Revision, DVD Edition.

Situation analysis of achievement of MDG goal 6 for tuberculosis

For each country in SEAR the progress towards the achievement of Millennium Development Goal (MDG) 6, to combat HIV/AIDS, malaria and other diseases, was analysed for the extent of tuberculosis control.

The MDG target for tuberculosis control is:

- by 2015 halt and begin to reverse the incidence of tuberculosis.

Country status towards the achievement of indicators' targets linked to the MDG and endorsed by the Stop TB Partnership, was analysed:

- to halve TB prevalence rate by 2015, compared with 1990 levels; and
- to halve TB death rate by 2015, compared with 1990 levels.

Trends over time from 1990 to 2012 and projections for the years 2013–2015 were used to analyse prevalence and mortality targets¹. Trends and projections have uncertainty bands whose width reflects the quality and completeness of data on which estimates are based.

Besides MDG, the summary table below includes information regarding the status of countries in SEAR toward the achievement of additional targets of the Global Plan to STOP TB 2011–2015²; all indicators reported refer to 2013, although several countries provided figures for 2014 that indicate further progress.

¹ For details on methodology used to estimate TB burden rates and projections refer to the online Technical Appendix of "Global Tuberculosis Control: WHO report 2014". http://www.who.int/tb/publications/global_report/gtbr14_online_technical_appendix.pdf

² For details on TB control activities linked to the Global Plan indicators presented, refer to the country profiles in this report

Table 20: Summary table on situation towards achieving MDG targets and Stop TB strategy targets for all 11 Member States in the SEA Region in 2013 (N.B. for indicators that have confidence intervals, only the best estimate is shown)

Category	Indicator	Target	Bangladesh	Bhutan	DPRK*	India	Indonesia	Maldives	Myanmar	Nepal	Sri Lanka	Thailand	Timor-Leste
TB burden	Incidence rate	1990 level falling	T: <226 R: 224	T: <777 R: 169	T: <384 R: 429	T: <217 R: 171	T: <453 R: 403	T: <146 R: 40	T: <395 R: 373	T: <164 R: 156	T: <66 R: 66	T: <138 R: 119	T: <498 R: 498
	Prevalence rate	50% of 1990 level	T: 252 R: 402	T: ≤883 R: 196	T: ≤240 R: 536	T: ≤233 R: 211	T: ≤523 R: 660	T: ≤143 R: 57	T: ≤447 R: 473	T: ≤174 R: 211	T: ≤56 R: 103	T: ≤106 R: 149	T: ≤404 R: 802
	Mortality rate	50% of 1990 level	T: ≤40 R: 51	T: ≤138 R: 12	T: ≤55 R: 27	T: ≤19 R: 19	T: ≤33 R: 42	T: ≤14 R: 2	T: ≤77 R: 49	T: ≤26 R: 17	T: ≤4 R: 6	T: ≤10 R: 12	T: ≤45 R: 87
Treatment	Treatment success rate (annual cohort)	≥85%	92%	92%	92%	88%	86%	79%	89%	91%	86%	81%	89%
TB case-detection	Number of cases notified and treated (all new and relapse)	N/A	184 506	1 080	97 665	1 243 905	325 582	114	134 855	33 834	9 329	63 541	3 757
	Case detection rate (all types)	≥70%	53%	85%	91%	58%	71%	83%	68%	78%	66%	80%	67%
TB/HIV	% of TB patients tested for HIV	100%	1%	100%	0%	63%	2%	9%	12%	11%	49%	83%	41%
	% of HIV-positive TB patients treated with ART	100%	100%	100%	0%	88%	21%	-b	74%	100%	100%	59%	100%
MDR-TB	% of estimated MDR-TB cases notified	≥50%	12%	100%	5%	37%	12%	0%	11%	43%	27%	12%	2%
	% of previously treated TB patients tested for MDR-TB	100%	50%	29%	1%	-c	39%	100%	70% ^d	25%	99%	12%	3%
	% of new TB patients tested for MDR-TB	20%	<1%	44%	0%	-c	<1%	6%	13% ^d	13%	21%	10%	0%
	Treatment success rate (annual cohort)	≥75%	68%	86%	-	50%	60%	25%	71%	72%	83%	-	100%

Category	Indicator	Target	Bangladesh	Bhutan	DPRK*	India	Indonesia	Maldives	Myanmar	Nepal	Sri Lanka	Thailand	Timor-Leste
Laboratory	Number of laboratories with sputum smear microscopy per 100 000 pop.	≥1	0.7	4.6	1.3	1.0	2.2	20.3	0.9	2.0	1.0	1.6	1.6
	Number of laboratories with culture and DST per 5 million pop.	≥1	<0.1	6.6	0.2	0.2	0.2	0	0.2	0.4	0.2	1.3	0

Note: T = Target; R = result

^a Incidence, prevalence and mortality rate estimates for Indonesia are being revised. In this table old burden estimates already published in the previous report are included.

^b No HIV-positive TB case was detected in 2013

^c India did not provide breakdown between retreatment and new cases tested for drug resistance. In total 17% of all notified TB cases were tested for drug resistance in 2013

^d Data are from selected sites/townships and testing could have been done for special reasons; therefore figures could not be considered representative of the whole country.

*Democratic People's Republic of Korea

Source: *Global Tuberculosis Control*: WHO report 2014, World Health Organization, Geneva 2014. WHO/HTM/TB/2014.08

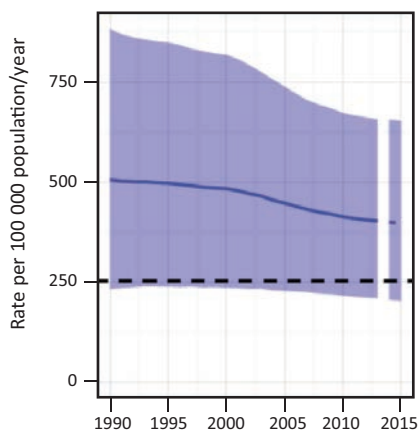
Bangladesh

In March 2014, a TB epidemiological and impact analysis was conducted, leading to downward revision of burden estimates and a slight revision of trends. However, estimates and projections still have very large uncertainty bounds underlining the need for more accurate calculations. Following the national prevalence survey planned for 2015, estimates will be revised. However, based on current figures, TB prevalence rate (best estimate) is showing a declining trend from 1990 to 2013, with acceleration in the early 2000s and at a slower pace in the last five years. According to projections till 2015, it seems unlikely that Bangladesh will reach the target of halving TB prevalence by 2015 compared to 1990 baseline (Graph 1).

The TB mortality rate is showing a declining trend from 1990 to 2013, following a similar pattern of prevalence trend. Despite progress in reducing mortality (decreased by about 36% in 2013 compared to 1990 level), according to projections, it seems unlikely that Bangladesh will reach the target of halving TB mortality by 2015 compared to 1990 baseline (Graph 2).

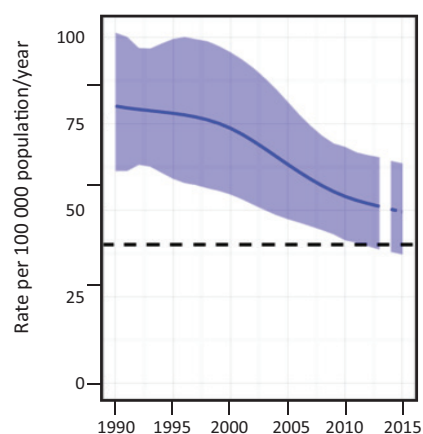
The analysis of trend in TB incidence from the notification data proves to be difficult because of the considerable change in case notification due to important case-finding efforts. Current data suggest only a minor decrease in TB incidence rate since 1990, from 225.7 to 224.2 per 100 000 population in 2013 (Graph 3). Uncertainty bounds of estimates, especially in the upper bound, are larger in most recent years reflecting the need for additional information in order to better assess whether Bangladesh is actually on track to achieve the target of reverting the TB incidence trend. In fact, despite the good performance of TB programme on treatment success rate (target of 90% was reached in 2004), estimated case detection of all forms of TB is still low (53% in 2013) suggesting that it is unlikely that Bangladesh will reach the MDG target by 2015.

Graph 1: Trend in estimated TB prevalence rates 1990–2013 and forecast TB prevalence rates 2014–2015, Bangladesh



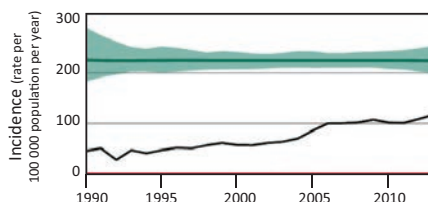
(Shaded areas represent uncertainty bands. The horizontal dashed line represents the target of a 50% reduction by 2015 compared with 1990. The other dashed line shows projections up to 2015)

Graph 2: Trend in estimated TB mortality rates 1990–2013 and forecast TB prevalence rates 2014–2015, Bangladesh



(Shaded areas represent uncertainty bands. The horizontal dashed line represents the target of a 50% reduction by 2015 compared with 1990. The other dashed line shows projections up to 2015)

Graph 3: Trend in case-notification rates (new and relapse cases, all forms) and estimated TB incidence rates, 1990–2013, Bangladesh



(Black line represents notification rate, green line represents estimated incidence, red line represents incidence of HIV-positive TB cases only, shaded areas represent uncertainty bands)

Source: *Global Tuberculosis Control: WHO report 2014*, World Health Organization, Geneva 2014. WHO/HTM/TB/2014.08

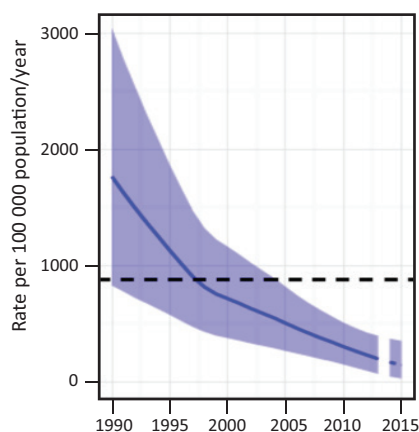
Bhutan

The TB prevalence rate has been showing a constant declining trend from 1990 to 2013, and Bhutan has already reached the target of halving TB prevalence by 2015 compared to 1990 baseline (Graph 1). Projection for 2014–2015 indicates no deviation from the current trend and even the large upper uncertainty bound falls far below the target confirming that Bhutan is achieving the target.

The TB mortality rate follows the same declining trend as prevalence, and the target of halving TB mortality by 2015 compared to 1990 baseline was reached before 2000; projections till 2015 confirm that Bhutan has reached the mortality reduction target (Graph 2).

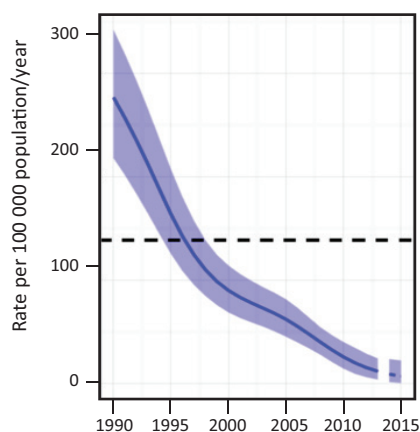
The analysis of trend in TB incidence from the notifications data shows a steady decline in the past decade. In 2008–2010, the annual notification data showed an increasing trend that was followed by a decline in the next triennium: the observed bump was most likely due to further case finding efforts (Graph 3) and estimates suggest a consistent reduction of incidence over time. Despite low HIV prevalence in the population, estimates of incidence of HIV-positive TB cases show a slightly increasing trend after 2008 (from 6 to 8 per 100 000 population) that might challenge TB control achievements in the future. Although Bhutan has already achieved the MDG target of reverting TB incidence by 2015, efforts should be made to maintain current achievements and to address emerging new challenges in TB control.

Graph 1: Trend in estimated TB prevalence rates 1990–2013 and forecast TB prevalence rates 2014–2015, Bhutan



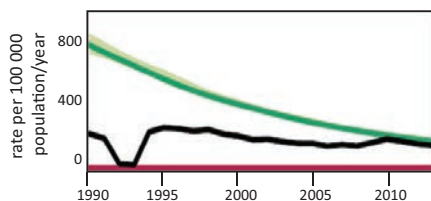
(Shaded areas represent uncertainty bands. The horizontal dashed line represents the target of a 50% reduction by 2015 compared with 1990. The other dashed line shows projections up to 2015)

Graph 2: Trend in estimated TB mortality rates 1990–2013 and forecast TB prevalence rates 2014–2015, Bhutan



(Shaded areas represent uncertainty bands. The horizontal dashed line represents the target of a 50% reduction by 2015 compared with 1990. The other dashed line shows projections up to 2015)

Graph 3: Trend in case-notification rates (new and relapse cases, all forms) and estimated TB incidence rates, 1990–2013, Bhutan



(Black line represents notification rate, green line represents estimated incidence, red line represents incidence of HIV-positive TB cases only, shaded areas represent uncertainty bands)

Source: *Global Tuberculosis Control: WHO report 2014*, World Health Organization, Geneva 2014. WHO/HTM/TB/2014.08

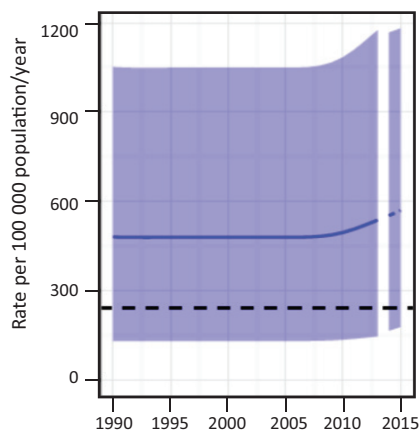
Democratic People's Republic of Korea

The TB prevalence rate was estimated to be steady from 1990 to 2007 and to increase afterwards based on trend of notification rate; between 2007 and 2013 is estimated about 10% increase (Graph 1). Projections for 2014–15 confirm this increasing prevalence trend and it seems highly unlikely that Democratic People's Republic of Korea will reach the target of 50% reduction of 1990 level. However, uncertainty bounds are very wide, particularly the upper band, and estimates and projections could not be considered reliable.

The TB mortality rate and its trend rely on better quality data, including some data from vital registration, and uncertainty bounds are rather narrow. TB mortality seems to sharply decrease starting from the early 1990s, going beyond the target of 50% reduction of 1990 level already achieved six years ago, and a couple of years later even the upper uncertainty bound was below the target (Graph 2). Projections until 2015 confirm this achievement.

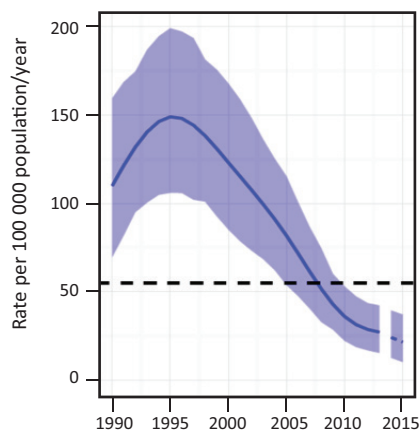
The analysis of trend in TB incidence from the notifications data proves to be difficult due to the substantial change in case-notification; increased notification rate is likely to be related to strong case-detection efforts and laboratory strengthening. However, active case-finding, enhanced reporting of cases and other efforts to address TB do not appear sufficient to justify the trend of notification rate, especially considering that the case-detection rate is estimated to be high (91% in 2013). It is, therefore, likely that TB incidence in the Democratic People's Republic of Korea is indeed increasing (Graph 3). Although it seems unlikely that the country would achieve the target of reverting the TB incidence trend by 2015, additional information would be useful in order to better assess current TB epidemiological profile.

Graph 1: Trend in estimated TB prevalence rates 1990–2013 and forecast TB prevalence rates 2014–2015, Democratic People’s Republic of Korea



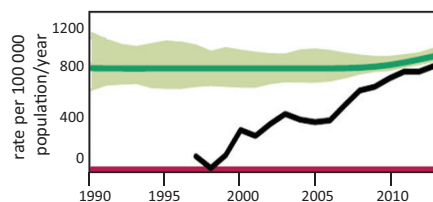
(Shaded areas represent uncertainty bands. The horizontal dashed line represents the target of a 50% reduction by 2015 compared with 1990. The other dashed line shows projections up to 2015)

Graph 2: Trend in estimated TB mortality rates 1990–2013 and forecast TB prevalence rates 2014–2015, Democratic People’s Republic of Korea



(Shaded areas represent uncertainty bands. The horizontal dashed line represents the target of a 50% reduction by 2015 compared with 1990. The other dashed line shows projections up to 2015)

Graph 3: Trend in case-notification rates (new and relapse cases, all forms) and estimated TB incidence rates, 1990–2013 Democratic People’s Republic of Korea



(Black line represents notification rate, green line represents estimated incidence, red line represents incidence of HIV-positive TB cases only, shaded areas represent uncertainty bands)

Source: *Global Tuberculosis Control: WHO report 2014*, World Health Organization, Geneva 2014. WHO/HTM/TB/2014.08

India¹

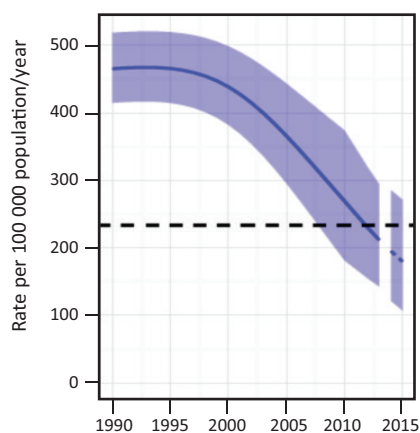
The TB prevalence rate is showing a steady and important declining trend since 2000; in 2013 the best estimate of prevalence fell under the target of 50% reduction of 1990 level by 2015 (Graph 1). Projections for 2014–2015 showing a continuation of the current trend reaching over 60% reduction of the 1990 level by 2015. Despite the large uncertainty interval (even larger for projections) with the upper bound being partially above the target, India is highly likely to reach prevalence target by 2015.

The TB mortality rate follows a flat trend from 1990 to 2003, with declining slope afterwards. In 2013 the mortality rate was just above the target and projections until 2015 suggest that India is likely to reach the target of halving 1990 mortality rate by 2015, even though projected estimates have a large upper uncertainty bound partially above the target (Graph 2).

The analysis of trend in TB incidence from the notifications data shows that incidence started to revert in mid-2000's (Graph 3). In fact, taking into consideration efforts and achievements in TB control and recent revision of TB burden estimates, the declining trend of notification rate is considered to reflect a real decrease in TB incidence. The achievement of India towards halting and reverting TB incidence by 2015 (MDG goal for TB control) positively reflects the overall situation of SEAR towards achievement of MDG goals.

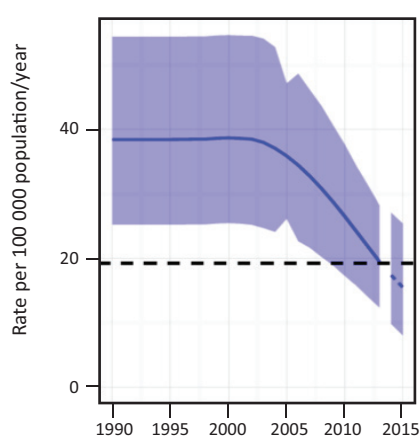
¹ All graphs are based on provisional estimates [not yet endorsed by (GoI)]

Graph 1: Trend in estimated TB prevalence rates 1990–2013 and forecast TB prevalence rates 2014–2015, India



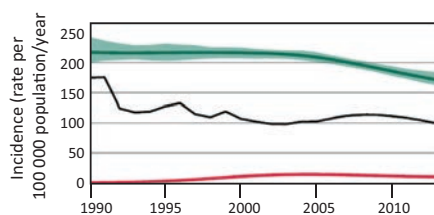
(Shaded areas represent uncertainty bands. The horizontal dashed line represents the target of a 50% reduction by 2015 compared with 1990. The other dashed line shows projections up to 2015)

Graph 2: Trend in estimated TB mortality rates 1990–2013 and forecast TB prevalence rates 2014–2015, India



(Shaded areas represent uncertainty bands. The horizontal dashed line represents the target of a 50% reduction by 2015 compared with 1990. The other dashed line shows projections up to 2015)

Graph 3: Trend in case-notification rates (new and relapse cases, all forms) and estimated TB incidence rates, 1990–2013, India



(Black line represents notification rate, green line represents estimated incidence, red line represents incidence of HIV-positive TB cases only, shaded areas represent uncertainty bands)

Source: Global Tuberculosis Control: WHO report 2014, World Health Organization, Geneva 2014. WHO/HTM/TB/2014.08

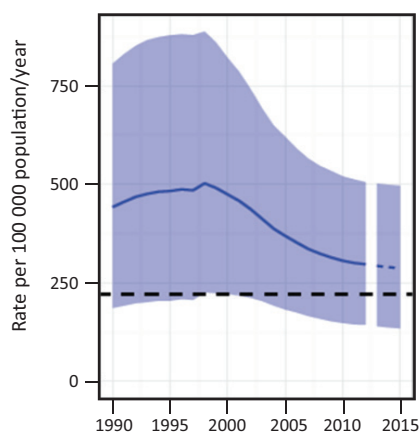
Indonesia

Burden estimates for Indonesia and their trends are being revised based on the results of the TB prevalence survey finalized in 2014. At the time of the publication of this report, new estimates were not officially approved and could not be used for assessment of country situation towards achievements of MDG goals. Therefore, Indonesia's assessment has been postponed until new and more accurate estimates are released.

However, old prevalence and mortality estimates were suggesting that Indonesia is on track for reaching the MDG targets of halving the mortality rate compared to 1990 baseline by 2015, but it is not on track for halving the prevalence rate (Graph 1 and 2). Nonetheless, it must be considered that old estimates are known to be affected by very large uncertainty bounds and projections until 2015 carry even larger uncertainty, making them unreliable to predict the likelihood of Indonesia reaching MDG targets.

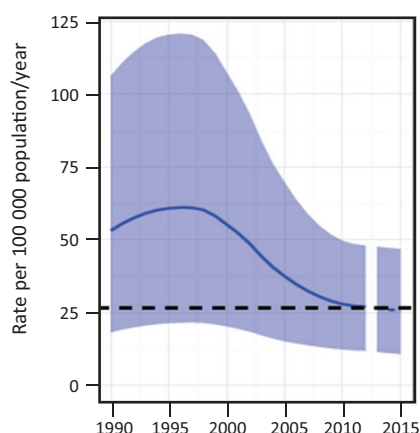
Increased notification rates over time, with a slower pace in the last five years, are likely to reflect the important case-detection efforts and should not be related to an increase in real incidence. Therefore, independently of revision of absolute value of incidence rate figures, it is estimated that incidence started to revert over the last decade (Graph 3), being well on track to achieve the MDG goal of incidence reduction by 2015.

Graph 1: Trend in estimated TB prevalence rates 1990–2012 and forecast TB prevalence rates 2013–2015, Indonesia



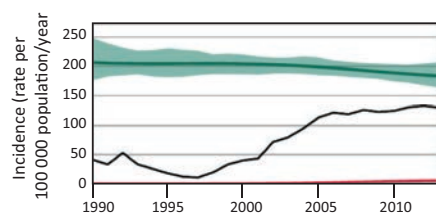
(Shaded areas represent uncertainty bands. The horizontal dashed line represents the target of a 50% reduction by 2015 compared with 1990. The other dashed line shows projections up to 2015)

Graph 2: Trend in estimated TB mortality rates 1990–2012 and forecast TB prevalence rates 2013–2015, Indonesia



(Shaded areas represent uncertainty bands. The horizontal dashed line represents the target of a 50% reduction by 2015 compared with 1990. The other dashed line shows projections up to 2015)

Graph 3: Trend in case-notification rates (new and relapse cases, all forms) and estimated TB incidence rates (old estimates, currently under revision), 1990–2013, Indonesia



(Black line represents notification rate, green line represents estimated incidence, red line represents incidence of HIV-positive TB cases only, shaded areas represent uncertainty bands)

Source: Global Tuberculosis Control: WHO report 2014, World Health Organization, Geneva 2014. WHO/HTM/TB/2014.08

Maldives

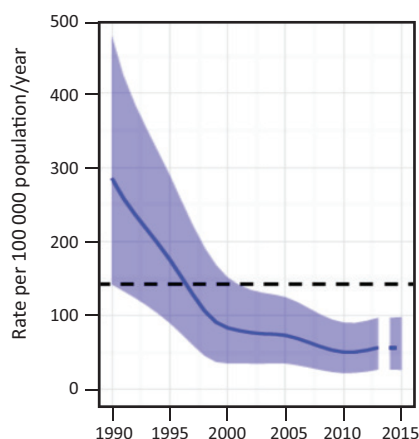
The TB prevalence rate is showing a steep decline from 1990 to 2000, with reduction of prevalence to over 70% of the 1990 level. A further decline in prevalence although not so steep, reached 57 per 100 000 population in 2013 which is the lowest in the SEA Region. Despite some fluctuations in the annual rate and relatively large confidence intervals, estimates are consistently below the target and projections for 2014–2015 confirm that Maldives is very likely to maintain a low prevalence rate (Graph 1).

The TB mortality rate follows a similar overall trend as the prevalence rate, with a sharp decline until 2004 and consistent low rates until 2013 (the spike in 2002 could be considered an outlier). Projections until 2015 show stabilization of mortality rate to very low level, around 2 per 100 000 population with narrow uncertainly bounds, far below the MDG target (Graph 2).

Also, the incidence target was achieved, with a steady and important decrease of incidence throughout the last 20 years (Graph 3). In fact, taking into consideration efforts and achievements in TB control, the declining trend of notification rate is considered to reflect a real decrease in TB incidence.

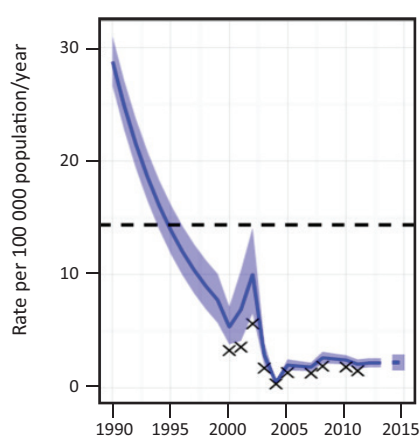
TB epidemiology in Maldives seems to be shifting from an epidemic phase to low endemic phase. However, efforts towards TB control should continue to be strengthened as estimated incidence is still 40 per 100 000 population (above 20/100 000 threshold for low incidence country) and the shift of infection to older age groups expected in a country transitioning to low endemic phase is still not clearly observed. In fact the notification rate decreased in all age groups but more sharply in the 15–34 age group. However, due to small numbers, notification rates have large annual fluctuations hampering proper interpretation. Relatively high rates in males aged 15–34 years may be also explained by TB occurring in foreign-born migrants that represent 8% of all TB cases notified.

Graph 1: Trend in estimated TB prevalence rates 1990–2013 and forecast TB prevalence rates 2014–2015, Maldives



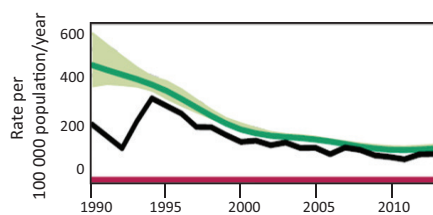
(Shaded areas represent uncertainty bands. The horizontal dashed line represents the target of a 50% reduction by 2015 compared with 1990. The other dashed line shows projections up to 2015)

Graph 2: Trend in estimated TB mortality rates 1990–2013 and forecast TB prevalence rates 2014–2015, Maldives



(Shaded areas represent uncertainty bands. The horizontal dashed line represents the target of a 50% reduction by 2015 compared with 1990. The other dashed line shows projections up to 2015. The "x" symbol represents the mortality data from vital statistics reported by Maldives that were adjusted to account for incomplete coverage - deaths with no reported cause - and ill-defined causes but not for miscoding of causes of deaths))

Graph 3: Trend in case-notification rates (new and relapse cases, all forms) and estimated TB incidence rates, 1990–2013, Maldives



(Black line represents notification rate, green line represents estimated incidence, red line represents incidence of HIV-positive TB cases only, shaded areas represent uncertainty bands)

Source: *Global Tuberculosis Control: WHO report 2014*, World Health Organization, Geneva 2014. WHO/HTM/TB/2014.08

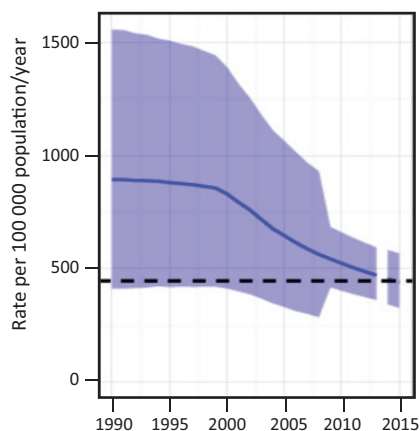
Myanmar

The TB prevalence rate was estimated to have a rather flat trend until 2000 and decreased afterwards almost reaching 50% reduction of the 1990 prevalence level in 2013. Projections for 2014-2015 suggest that if the current rate of progress continues, Myanmar could achieve 50% reduction by 2015, although the uncertainty upper bound would lie almost entirely above the target line (Graph 1). Myanmar is planning to conduct another prevalence survey in 2017 to provide direct measurement of prevalence trend.

The TB mortality rate follows a steep declining slope from 1998 until 2010, and already in 2006 the target of 50% reduction of 1990 mortality baseline was achieved. Estimates after 2006 as well as projections until 2015 indicate a continuing declining trend, with the upper uncertainty bound entirely below the target, indicating Myanmar would achieve halving the 1990 mortality rate by 2015 (Graph 2).

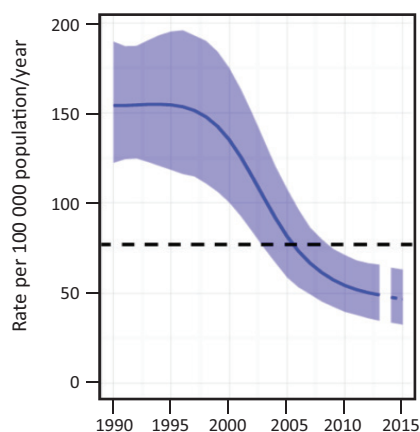
The analysis of trend in TB incidence (of all cases and HIV-positive TB cases) from the notifications data shows that incidence slightly increased from 1990 to 2002; afterwards, due to remarkable case detection efforts and strengthening of TB control activities, the trend started to revert and in 2013 incidence was lower than the 1990 level (Graph 3). Considering large overlapping of uncertainty bands around best incidence estimates, the reversion of trend is less clear. Incidence of HIV-positive TB cases is also slightly reverting suggesting that the HIV epidemic is not likely to jeopardize achievement in TB control in the near future. Overall, Myanmar seems to be on track for achieving the MDG target for incidence reduction.

Graph 1: Trend in estimated TB prevalence rates 1990–2013 and forecast TB prevalence rates 2014–2015, Myanmar



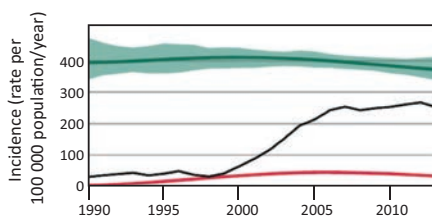
(Shaded areas represent uncertainty bands. The horizontal dashed line represents the target of a 50% reduction by 2015 compared with 1990. The other dashed line shows projections up to 2015)

Graph 2: Trend in estimated TB mortality rates 1990–2013 and forecast TB prevalence rates 2014–2015, Myanmar



(Shaded areas represent uncertainty bands. The horizontal dashed line represents the target of a 50% reduction by 2015 compared with 1990. The other dashed line shows projections up to 2015)

Graph 3: Trend in case-notification rates (new and relapse cases, all forms) and estimated TB incidence rates, 1990–2013, Myanmar



(Black line represents notification rate, green line represents estimated incidence, red line represents incidence of HIV-positive TB cases only, shaded areas represent uncertainty bands)

Source: Global Tuberculosis Control: WHO report 2014, World Health Organization, Geneva 2014. WHO/HTM/TB/2014.08

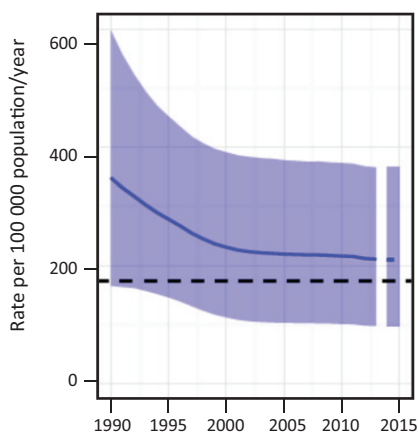
Nepal

The TB prevalence rate, after showing a declining trend from 1990 to 2000, stabilized at around 220 per 100 000 population, and in the last five years is further decreasing; projections for 2014-2015 suggest that the prevalence rate is likely to continue decreasing slightly but the progress rate seems insufficient to reach the MDG target of halving the prevalence rate compared to 1990 baseline (Graph 1). Estimates and projections are affected by wide uncertainty bounds reflecting the need for improving current estimates; Nepal is indeed planning to conduct a prevalence survey in 2015 in order to better understand the real burden in the country and the reasons for missing cases despite continuous efforts in expanding coverage of TB services and outreach activities.

As with prevalence, TB mortality rate is also showing a rather flat trend after 2002, following a sharp declining trend in the previous decade up to a more than 50% decrease from the 1990 baseline. Although projections until 2015 do not suggest any further decrease compared to the 2013 mortality rate, the MDG mortality goal is expected to be achieved as even the upper uncertainly bound is below the target (Graph 2).

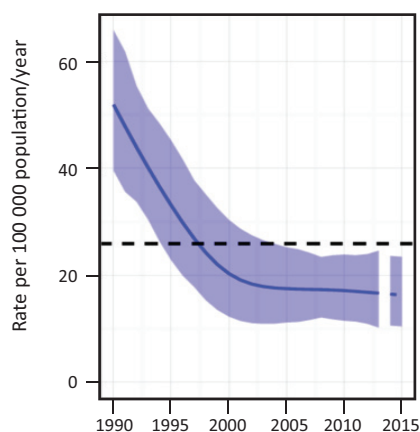
The analysis of trend in TB incidence from the notifications data shows a fairly constant trend in notifications of all TB cases as well as bacteriologically-confirmed cases in the last decade, despite significant case-finding efforts and expansion of population coverage for TB service delivery. However, in 2013 notification rates seem to confirm the slight decrease that started to occur in 2012. The flat trend of previous years was interpreted as the result of increased case detection combined with slightly decreasing incidence, and in light of 2012–2013 results the incidence is estimated to begin to revert (Graph 3). Therefore, Nepal seems on track to achieve incidence target by 2015. The incidence rate of HIV-positive TB cases is estimated to be slightly increasing and, although the rate is too small to jeopardize overall achievement in TB control, efforts should be strengthened in order to manage emerging challenges.

Graph 1: Trend in estimated TB prevalence rates 1990–2013 and forecast TB prevalence rates 2014–2015, Nepal



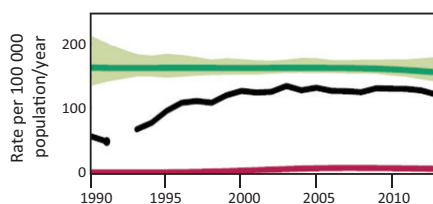
(Shaded areas represent uncertainty bands. The horizontal dashed line represents the target of a 50% reduction by 2015 compared with 1990. The other dashed line shows projections up to 2015)

Graph 2: Trend in estimated TB mortality rates 1990–2013 and forecast TB prevalence rates 2014–2015, Nepal



(Shaded areas represent uncertainty bands. The horizontal dashed line represents the target of a 50% reduction by 2015 compared with 1990. The other dashed line shows projections up to 2015)

Graph 3: Trend in case-notification rates (new and relapse cases, all forms) and estimated TB incidence rates, 1990–2013, Nepal



(Black line represents notification rate, green line represents estimated incidence, red line represents incidence of HIV-positive TB cases only, shaded areas represent uncertainty bands)

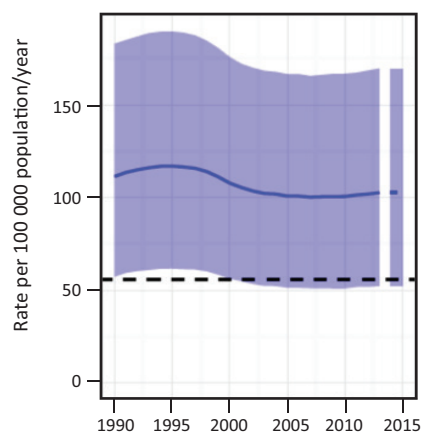
Sri Lanka

The TB prevalence rate shows an overall declining trend from the mid-1990s to 2010 reaching 100 per 100 000 population prevalence; from 2010 to 2013, the prevalence rate was increasing very slightly and projections suggest that the rate is stabilizing at 103 per 100 000 population by 2015. Although burden estimates and projections have very large uncertainty bounds and such a minor recent increase of best estimates is negligible, the currently projected trend suggests that it is very unlikely that Sri Lanka will reach the target of halving TB prevalence by 2015 compared to 1990 baseline (Graph 1).

The TB mortality rate shows an increasing trend from 1990 to 1996, followed by a decline between 1997 and 2006 and flat a trend from 2006 onwards at a low rate of 5 per 100 000 population with narrow uncertainty bands. The flat trend is mainly related to non-availability of vital statistics in recent years; most up to date and reliable vital statistics are needed to better assess achievements of Sri Lanka in mortality reduction, because current data could have underestimated the impact of TB control activities on TB mortality over the last seven years. Considering current trend estimates, despite progress in reducing mortality (decreased by more than 20% in 2013 compared to 1990 level), according to projections until 2015, it seems unlikely that Sri Lanka could reach the target of halving TB mortality compared to 1990 baseline by 2015 (Graph 2). However, considering the 2000 baseline, that represent the peak of TB mortality rate in the last two decades and the inception of TB control under DOTS conditions, Sri Lanka halved the mortality rate in 2006.

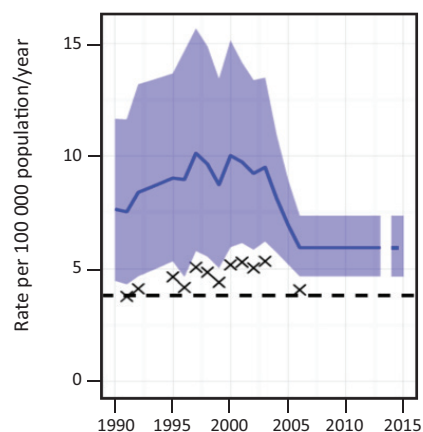
The notification rate has been increasing from 1995 to 2000 and remained fairly stable until 2013, despite minor fluctuations. Implementation of DOTS in a phased manner between 1997 and 2005 (phased expansion of microscopy laboratory network and recruitment/training of staff) might partly explain the slow pace of increase in case-notifications. There is no evidence of modification in TB determinants which could have led to a significant change in TB incidence. Current data were considered insufficient to determine reliable trend, therefore incidence was assumed to follow a horizontal trend going through the most recent estimate of incidence (Graph 3). Additional information is needed in order to better assess whether Sri Lanka would achieve the target of reverting the TB incidence trend by 2015.

Graph 1: Trend in estimated TB prevalence rates 1990–2013 and forecast TB prevalence rates 2014–2015, Sri Lanka



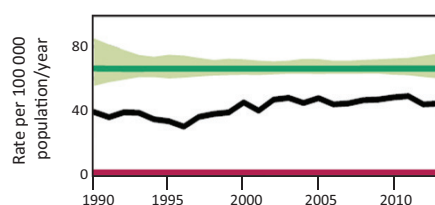
(Shaded areas represent uncertainty bands. The horizontal dashed line represents the target of a 50% reduction by 2015 compared with 1990. The other dashed line shows projections up to 2015)

Graph 2: Trend in estimated TB mortality rates 1990–2013 and forecast TB prevalence rates 2014–2015, Sri Lanka



(Shaded areas represent uncertainty bands. The horizontal dashed line represents the target of a 50% reduction by 2015 compared with 1990. The other dashed line shows projections up to 2015. The "x" symbol represents the mortality data from vital statistics reported by Sri Lanka that were adjusted to account for incomplete coverage - deaths with no reported cause - and ill-defined causes but not for miscoding of causes of deaths)

Graph 3: Trend in case-notification rates (new and relapse cases, all forms) and estimated TB incidence rates, 1990–2013, Sri Lanka



(Black line represents notification rate, green line represents estimated incidence, red line represents incidence of HIV-positive TB cases only, shaded areas represent uncertainty bands)

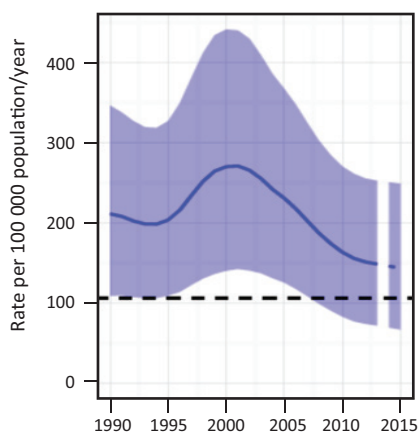
Thailand

After a minor decrease in the early 1990s, TB prevalence sharply increased and peaked in 2000; it started consistently declining afterwards, but due to this bell-shape trend, the 2013 prevalence rate was only 30% lower than the 1990 baseline, although it decreased by 46% compared to the peak in 2000. Projections for 2014–2015 indicate a further decline, but it seems unlikely at the current rate of progress that Thailand will achieve the target of halving the 1990 prevalence rate by 2015 (Graph 1). However, estimates and projections are affected by wide uncertainty bands. Estimates will be revised according to the results of the recently concluded prevalence survey.

TB mortality trend mirrors the prevalence trend, reaching a 37% reduction in 2013 compared to the 1990 baseline and 50% reduction compared to the peak in 2000. Projections for 2014–2015 show a continuation of the recent declining trend up to almost 50% of the 1990 level by 2015 (lower uncertainty bound falls below target); it seems possible that Thailand could achieve the target of mortality reduction by increasing TB mortality control efforts and accelerating the current rate of progress (Graph 2).

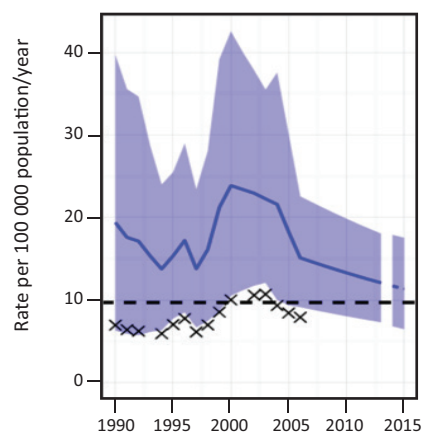
The analysis of notifications data indicates a substantial change in case notification rate over time, especially between 1995 and 2000; that is most probably due to disruption of reporting and recording system and possibly to discontinuation of services. After 2000, the notification rate shows constant slight increase, although with minor annual fluctuations. This trend is likely to be related to changes in the TB programme (i.e. case finding efforts, improvement of the quality of smear laboratories and implementation of TB/HIV and PPM activities) leading to more successful control of TB that also impacted TB epidemiology. The impact of the HIV epidemic in terms of incident HIV -positive TB cases seems to be decreasing from the early 2000s onwards, even though at a lower pace in recent years. Similarly, other factors might impact TB incidence in the rapidly changing environment in Thailand (i.e. GDP, access to care, etc.). It is, therefore, estimated that TB incidence temporarily increased in the early 2000s and started decreasing until 2013 reaching 30% reduction compared to the peak in 2002 and 14% reduction compared to 1990 (Graph 3). Hence, Thailand is achieving the target to revert TB incidence by 2015.

Graph 1: Trend in estimated TB prevalence rates 1990–2013 and forecast TB prevalence rates 2014–2015, Thailand



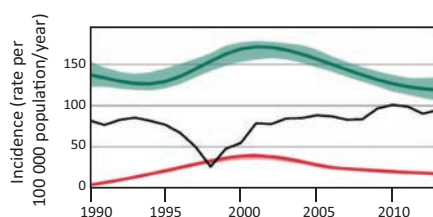
(Shaded areas represent uncertainty bands. The horizontal dashed line represents the target of a 50% reduction by 2015 compared with 1990. The other dashed line shows projections up to 2015)

Graph 2: Trend in estimated TB mortality rates 1990–2013 and forecast TB prevalence rates 2014–2015, Thailand



(Shaded areas represent uncertainty bands. The horizontal dashed line represents the target of a 50% reduction by 2015 compared with 1990. The other dashed line shows projections up to 2015. The "x" symbol represents the mortality data from vital statistics reported by Thailand that were adjusted to account for incomplete coverage - deaths with no reported cause - and ill-defined causes but not for miscoding of causes of deaths)

Graph 3: Trend in case-notification rates (new and relapse cases, all forms) and estimated TB incidence rates, 1990–2013, Thailand



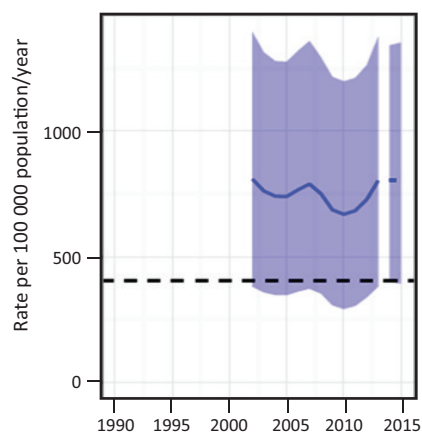
(Black line represents notification rate, green line represents estimated incidence, red line represents incidence of HIV-positive TB cases only, shaded areas represent uncertainty bands)

Timor-Leste

TB burden estimates for Timor-Leste have been recently revised by WHO based on in-depth analysis of available in-country data. According to the estimated trend Timor-Leste is unlikely to halve the 1990 level of prevalence and mortality by 2015 (Graphs 1 and 2). In fact, prevalence and mortality rates are both estimated to be increasing in the last three years following overall decreasing trend of the previous decade. However all burden estimates are still affected by very large uncertainty bands (even larger for projections) and country performance towards MDG targets is difficult to be assessed on the basis of available information.

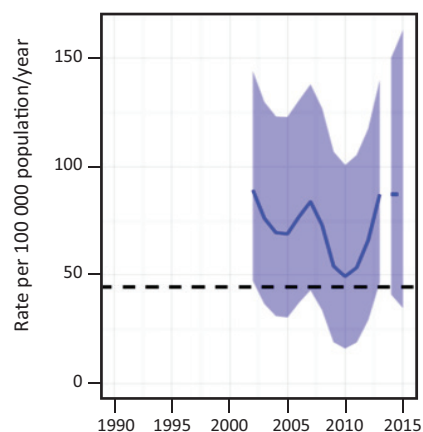
The analysis of trend in TB incidence from the notifications data proves to be difficult due to high fluctuation of notification rates and quality issues related to recording and reporting. Changes in case-notification may have been influenced by political instability leading to a flux of refugees and migration of population to the peripheral areas, although they are likely to be mainly related to case-finding efforts by the national TB programme, such as increased number of hospitals, health facilities providing TB services, microscopy centres and TB doctors and staff. Fluctuation of notification rate of TB cases concerns mainly clinically diagnosed pulmonary TB cases which are over 50% of all new and relapse cases; this finding could be related to difficulties to confirm the diagnosis and the recent decrease in notification rate may reflect reduced misdiagnosis of these cases. Notification rate of bacteriologically confirmed TB cases is more stable and follow overall increasing trend. Altogether, current data were considered insufficient to determine reliable TB incidence trend; therefore incidence was assumed to follow a horizontal trend going through the most recent estimate of incidence (Graph 3). Additional information is needed in order to better assess whether Timor-Leste would achieve the target of reverting TB incidence trend by 2015.

Graph 1: Trend in estimated TB prevalence rates 1990–2013 and forecast TB prevalence rates 2014–2015, Timor Leste



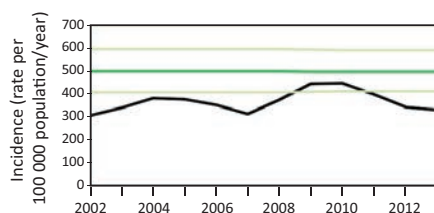
(Shaded areas represent uncertainty bands. The horizontal dashed line represents the target of a 50% reduction by 2015 compared with 1990. The other dashed line shows projections up to 2015)

Graph 2: Trend in estimated TB mortality rates 1990–2013 and forecast TB prevalence rates 2014–2015, Timor Leste



(Shaded areas represent uncertainty bands. The horizontal dashed line represents the target of a 50% reduction by 2015 compared with 1990. The other dashed line shows projections up to 2015)

Graph 3: Trend in case-notification rates (new and relapse cases, all forms) and estimated TB incidence rates, 1990–2013, Thailand



(Black line represents notification rate, green line represents estimated incidence, red line represents incidence of HIV-positive TB cases only, shaded areas represent uncertainty bands)