CHALLENGE TB YEAR 3 ANNUAL REPORT

October 1st 2016 - September 30th 2017

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CHALLENGE TB

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msh
Management Sciences for Health

PATH

The Union
International Union Against Tuberculosis and Lung Disease
Health solutions for the poor

World Health Organization

CTB

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Abbreviations

ACF	Active Case Finding
ACSM	Advocacy Communication Social Mobilization
AFB	Acid Fast Bacilli
ART	Antiretroviral therapy
ATS	American Thoracic Society
BDQ	Bedaquiline
BSL	Biosafely Level
CDR	Case Detection Rate
C/DST	Culture/Drug Susceptibility Testing
CHW	Community Health Worker
CI	Contact Investigation
CTB	Challenge TB
CXR	Chest X-ray
DLM	Delamanid
DM	Diabetes Melitus
DOT	Directly Observed Treatment
DOTS	Directly Observed Treatment Short Course
DR	Drug Resistance
DR-TB	Drug-Resistant TB
DRS	Drug Resistance Survey
DST	Drug Susceptibility Testing
EQA	External Quality Assurance
ERR	Electronic Recording & Reporting
GDF	Global Drug Facility
GF	Global Fund for Aids, Tuberculosis and Malaria
GLI	Global Laboratory Initiative
HCW	Healthcare Worker
HF	Health Facility
HR	Human Resources
HRD	Human Resource Development
IC	Infection Control
ICF	Intensive Case Finding
IPAC	Portuguese Institute of Accreditation
IPT	Isoniazid Preventative Therapy
IRD	Interactive Research and Development
JATA	Japan Anti-Tuberculosis Association
KNCV	KNCV Tuberculosis Foundation
LGA	Local Government Areas
LQMS	Laboratory quality management system
MDR	Multi Drug Resistance
MDR-TB	Multidrug-Resistant Tuberculosis
M&E	Monitoring and Evaluation
MMT	Methadone Maintenance Clinics
MOH	Ministry of Health
MOHDGEC	MOH Community Development, Gender, Elderly and Children
MSH	Management Sciences for Health
ND&R	New Drugs & Regimens
NGO	Non-Governmental Organization
NPHL	National Public Health laboratory
NRL	National Reference Laboratory
NTP	National TB Program
NTRL	National Tuberculosis Reference Laboratory
OR	Operations Research
PCA	Patient-Centered Approach
PEPAR	U.S. President's Emergency Plan for AIDS
PHC	Primary Health Care
PLHIV	People Living with HIV/AIDS
PMDT	Programmatic Management of Drug-resistant Tuberculosis
PPM	Private Public Mix
PTE	Pre-Treatment Evaluation
RH	Referral Hospitals
RIF	Rifampicin
RR-TB	Rifampicin-Resistant TB
SAE	Serious Adverse Event
SDG	Sustainable Development Goals
SLD	Second Line Drug
SL-LPA	Second Line-Line Probe Assay
SRL	Supra-national Reference Laboratory
SOP	Standard Operating Procedure
STBLCP	State TB and Leprosy Control Program
STTA	Short-term Technical Assistance
STR	Shorter Treatment Regimen
TA	Technical Assistance
TB	Tuberculosis
TB CAP	Tuberculosis Control Assistance Program
TBCTA	Tuberculosis Coalition for Technical Assistance
TB-IC	Tuberculosis Infection Control
TIC	Treatment Initiation Center
TSR	Treatment Success Rate
TST	Tuberculin Skin Test
UMTBC	Upper Myanmar TB Center
UNSE	UN Special Envoy
USAID	United States Agency for International Development
USG	United States Government
WHO	World Health Organization
WoW	Wellness on Wheels
XDR-TB	Extensively Drug-Resistant Tuberculosis
Xpert	GeneXpert Mtb/Rif

Contents

Executive Summary

In Year 3, October 2016-September 2017, Challenge TB continued contributing to the United States Government (USG) Global TB strategy (2015-2019) for TB care and prevention by implementing 22 country projects, one regional project, and seven global core-funded projects. Within this framework the priorities at country level are determined by the local USAID missions, based on local USG priorities, National Strategic Plans to eliminate TB, and the funding landscape. Challenge TB programming is complementary to domestic investments, other USAID-funded projects, GFATM, and other donors.

The main focus in Year 3 was on strategies and interventions to increase the diagnosis and notification of patients, and successfully treating them in the public /private sector; expansion of rapid diagnosis of drug-resistant TB; and increasing access to new drugs and better treatment regimens for drug-resistant TB.

This year, Challenge TB contributed to successful Global Fund proposal development in 18 countries, leveraging both Global Fund and domestic funding for the scale-up and expansion of Challenge TB mediated interventions, multiplying the effect of Challenge TB investments.

Challenge TB provides technical assistance (TA) at both national and local levels, following USAID mission priorities and ensuring alignment with NSP's and complementarity to other international partners, such as the Global Fund.

In addition, Challenge TB implements priority activities in selected geographical areas in the 22 countries, which means that interventions vary per country based on specific needs and in different years.

Over the last three years, the 22 Challenge TB countries - in collaboration with national TB programs (NTPs) and other partners - have cumulatively diagnosed and treated over 9.5 million drug-sensitive TB (DS-TB) patients. During the same period, 22 Challenge TB countries diagnosed 172,597 drug-resistant TB patients (DR-TB), 90% of whom accessed MDR-TB treatment.

All Challenge TB countries have adopted GeneXpert as the first diagnostic test for MDR-TB; all have some capacity for second line DST (SL-DST) and increasingly implement molecular SL-DST; 10 countries are implementing shorter MDR-TB treatment regimens (STR); 17 countries are implementing the use of the new TB drug Bedaquiline, and 7 countries the use of the new TB drug Delamanid.

Since its availability in 2010, piloting and scale-up of the Xpert MTB/Rif test was supported by TB CARE I, all Challenge TB supported countries are now utilizing the test. The number of machines increased from 992 in 2015 to 2,569 in 2017, and the number of tests performed increased from 415,364 in 2015 to 608,568 in the first half of 2017. Indonesia and India showed the largest scale-up and the highest number of platforms (India from 0 in 2015 to 628 in 2017, Indonesia from 62 in 2015 to 450 in 2017).

Comparing Year 3 to Year 1 there is a positive trend in increased case notification among Challenge TB countries (9%); MDR/RR-TB diagnosis and enrolment to care increased 27% and 26% respectively compared to 2014 baseline); and the diagnosis of childhood TB was intensified, with 8 of the 22 Challenge TB countries reaching 10% proportion of childhood TB among notified patients in 2016. The number of patients successfully treated among the 22 Challenge TB countries increased by 10%.

ART coverage is above 87% and IPT uptake increased by 38% (but still remains low at 41%) in the 13 of the 22 Challenge TB countries that are among the World Health Organization high TB/HIV burden countries.

Key areas of focus next year include intensifying, scaling-up and coordination with other partners on Finding and Treating all the Missing Patients (FTMPs), ensuring optimization, and where necessary scale-up of GeneXpert use and link to diagnostic connectivity, scale-up of new drugs and regimens for MDR-TB, data quality and effective use of electronic reporting systems, and TA to Global Fund implementation.


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Introduction

Challenge TB is USAID's flagship global mechanism for implementing the United States Government (USG) TB strategy as well as contributing to TB/HIV activities under the U.S. President's Emergency Plan for AIDS Relief (PEPFAR).

Launched on October 1, 2014, this five-year cooperative agreement (2014-2019) builds and expands upon previous USAID global projects, namely TB CARE I (2010-2015), the Tuberculosis Control Assistance Program (TB CAP, 2005-2010) and Tuberculosis Control Technical Assistance (TBCTA, 2000-2005). KNCV Tuberculosis Foundation (KNCV), which also led the aforementioned projects, leads a unique and experienced coalition of nine partners implementing Challenge TB. The coalition partners are: American Thoracic Society (ATS), FHI 360, Interactive Research and Development (IRD), International Union Against Tuberculosis and Lung Disease (The Union), Japan Anti-Tuberculosis Association (JATA), Management Sciences for Health (MSH), PATH and the World Health Organization (WHO). Working closely with Ministries of Health (MOH), USAID, Global Fund (GF), the Stop TB Partnership and other key stakeholders at the global, regional, national, and community level, Challenge TB contributes to the global End TB Strategy targets:

Aligned with the USG strategy to prevent and control TB, Challenge TB has 3 objectives and 11 sub-objectives, each with several focus areas for interventions:

Objective 1: Improved access to high-quality patient-centered TB, DR-TB & TB/HIV services by:

1. Improving the enabling environment
2. Ensuring a comprehensive, high quality diagnostic network
3. Strengthening patient-centered care and treatment

Objective 2: Prevent transmission and disease progression by:

4. Targeted screening for active TB
5. Implementing infection control measures
6. Managing latent TB infection

Objective 3: Strengthen TB service delivery platforms by:

7. Enhancing political commitment and leadership
8. Building comprehensive partnerships and informed community engagement
9. Strengthening drug and commodity management systems
10. Ensuring quality data, surveillance and monitoring & evaluation
11. Supporting human resource development.

Challenge TB implements projects at the country, regional and global level with the majority of the project's work being done through country-specific projects (22 in Year 3).

At the regional level, Challenge TB continued implementation of the East Africa Region project. Through core funding, Challenge TB is also working on six projects that have implications for global TB prevention and care.

Where We Work

VISION

A world free of TB

IMPACT

By 2035
Reduce TB incidence rate by 90%
Reduce TB mortality rate by 90%

EXPECTED OUTCOMES

2015-2019
Reduce TB incidence rate by 25%
Maintain treatment success rate at 90%
Successfully treat 13 million patients
Initiate treatment for 360,000 DR-TB patients
Provide Anti-retroviral therapy for 100% of TB/HIV patients

Objective 1

Improve access to high quality TB, DR-TB, and TB/HIV services

Objective 2

Prevent transmission and disease progression

Objective 3

Strengthen TB service delivery platforms

Objective 4

Accelerate research and innovation

Reporting Framework and Process

This report is based on the Challenge TB M&E framework and the (sub-) objectives on page 8 which are all in line with USG TB strategic framework and include 22 mandatory indicators. Analysis was based on trend and distribution over a period of three years in Challenge TB supported areas. Data on GeneXpert, PMDT (Shorter Treatment Regimen/New Drugs and Regimens), and GF support are based on national data. The progress of Challenge TB countries towards the targets of the USG framework are in Annex 1. Actions taken in response to the external management review of the Challenge TB project are in Annex 2. Annex 3 gives a summary of the expected key end-of-project achievements at the country level.

Key Achievements

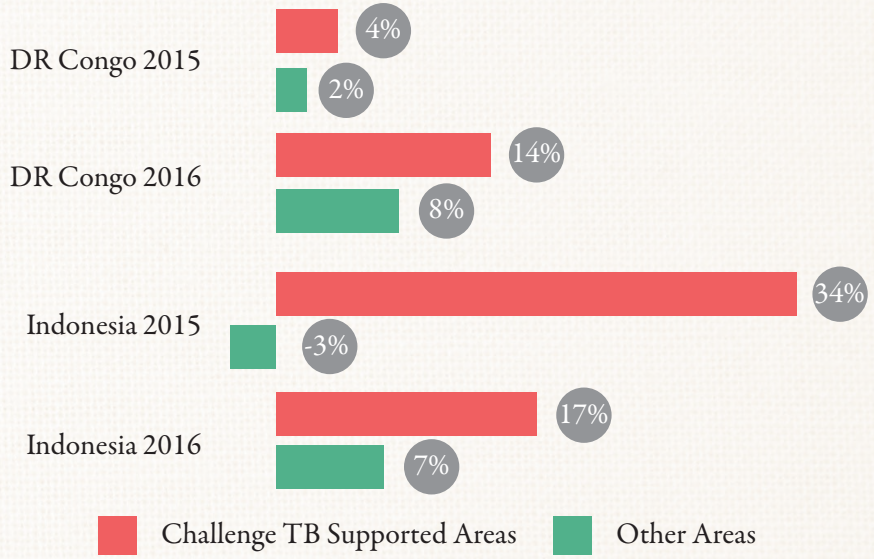
Acceleration towards finding the missing patients

Case notification increased by 9% in 14 Challenge TB countries, and despite Challenge TB only working in specific geographical areas, this had a significant contribution to national case notification in most countries. For example, in DR Congo and Indonesia, the Challenge TB supported areas more than proportionately contributed to the national increases in case finding in 2016 of 13% and 11% respectively. Challenge TB areas contributed 42% and 68% of the national increase, with only 28% and 11% of the population respectively.

In DR Congo the acceleration in treatment coverage was achieved by community case-finding. In Indonesia the engagement of public and private hospitals and better surveillance (notification) were the main interventions. Challenge TB areas demonstrated the effectiveness of these strategies, which were then scaled-up and show that intensive support in limited geographical areas can have national impact.

As a result, in DR Congo the reported treatment coverage rate (case detection rate) increased from 47% in 2015 to 51% in 2016. In Indonesia the reported treatment coverage rate increased from 32% in 2015 to 36% in 2016, in 2017 the scale-up in priority provinces is expected to achieve a treatment coverage rate of close to 50%.

Rates of Increase in Treatment Coverage in Areas With and Without Challenge TB Support in DR Congo and Indonesia



Managing GeneXpert Scale-up

The USAID-funded TB CARE I project played an important role in the piloting, operationalization and regulatory imbedding of Xpert MTB/Rif testing in countries. The scale-up is co-funded by GFATM and domestic budgets; Challenge TB is playing an important role in assisting countries to manage the scale-up. Successful examples are Nigeria (connectivity) and Indonesia, where Challenge TB supported the planning, establishment of regional Xpert teams, Xpert training and quantification of cartridges. The country teams shared experiences and lessons learnt on the roll out processes. All Challenge TB supported countries are now using the test. The number of platforms in Challenge TB countries increased from 992 in 2015 to 2,569 in 2017, and the number of tests performed increased from 415,364 in 2015 to 608,568 in the first half of 2017. This resulted in an increase of DST coverage among new patients from 6% in 2014 to 17% in 2017 and among previously treated patients from 35% in 2014 to 61% by September 2017 in 14 high DR-TB burden Challenge TB countries.

New Drugs and Regimens

After WHO endorsement of the shorter regimen for uncomplicated MDR-TB in May 2016, Challenge TB facilitated the introduction of the STR, resulting in seven more Challenge TB countries deploying the new regimens, in addition to Bangladesh, DR Congo, and Vietnam. As a result, in 2017 918 MDR-TB patients started STR treatment in a total of 333 treatment sites in different stages of decentralization. In the coming months six more countries will be ready to implement the STR.

Challenge TB continues the programmatic implementation of Bedaquiline (BDQ) and Delamanid (DLM) complementary to efforts by other partners, ensuring sustainable nationwide access to this life saving treatment for patients with (pre-)XDR or intolerance to drugs in conventional or shorter MDR regimens. At the same time, Challenge TB spearheads the development of systems for active pharmacovigilance with monitoring and management of adverse events (aDSM), ensuring patients access these new drugs and regimens under safe conditions.

By the end of Year 3 patients in 16 countries had access to BDQ, and to DLM in 7 countries.

The combined introduction of the STR and individualized regimens containing new drugs means that full implementation of the triage approach is now within reach in 13 of the 22 Challenge TB countries, with four others expected to follow during the coming year – a revolution in the management of MDR-TB and in combination with more patient-centered support, an important factor in improving treatment results.

Global Fund

This year in 19 Challenge TB countries, through the Challenge TB Global Fund Hub, Challenge TB played an important role in the development of new Global Fund funding requests for the period 2018 – 2020. With an investment of 50 short-term technical assistance (STTA) missions and intensive in-country support, 18 out of the 19 submissions were successful, only one (the Nigeria TB/HIV request) is due for re-submission in early 2018.

In many countries NTP's are realizing the scale-up of Challenge TB mediated interventions through a combination of the uptake of new drugs and diagnostics in health insurance TB packages, and Global Fund budgets, while capacity-building for scale-up is often a part of Global Fund budgets. The uptake of new interventions is increasingly financed directly through local budgets (e.g., Xpert machines and cartridges for scale-up in Indonesia are partially domestically funded).

Trends Per Thematic Area

Enhancing private/non-NTP sector contribution

An important focus of Challenge TB is to develop and assist in the implementation of approaches to find more of the "missing" TB patients by expanding access to and demand for high-quality TB diagnostic and treatment services particularly among private and non-NTP sector providers. In addition, Challenge TB ensures that systems are in place that enable diagnosed patients to be notified to NTPs.

In 2016, 26% of patients in Challenge TB countries were from the private/non-NTP public sector, an increase from 19% in 2014 and 24% in 2015.

Bangladesh, India, and Indonesia were the top three Challenge TB countries with 46%, 32%, and 30% of their total number of reported patients notified by private providers (2016).

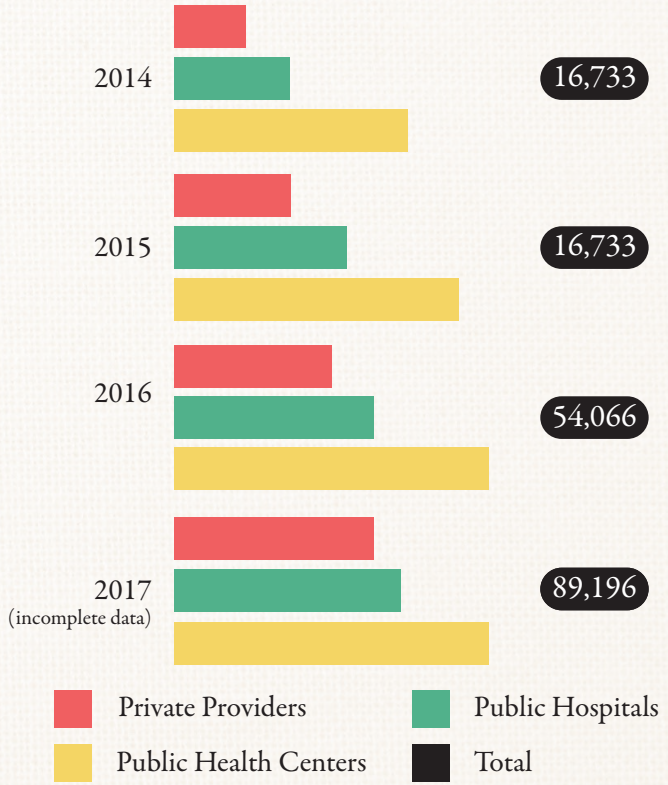
In Year 4, Public-Private Mix (PPM) engagement continues to be the key interventions under the FTMPs strategic initiative in priority countries.

Country highlights

Indonesia, in collaboration with the NTP and professional societies, invested in the engagement in TB services of hospitals from both the public and private sectors, steadily increasing the proportion of combined notification from these sectors in Challenge TB supported areas from the 2014 baseline of 44% to 58% in 2017. The total contribution from the private sector increased by 157%, from public hospitals by 96 %, and from health centers by 31%, resulting in a combined notification increase of at least 71% (2017 data incomplete) in Challenge TB supported areas.

At the same time Challenge TB assisted the NTP and partners to incorporate this approach in the development of the national district PPM strategy, combining specific activities for hospital engagement with the development of sub-district networks of GP's, laboratories, pharmacies, civil society organizations (CSOs) with an important role in the implementation for the professional societies and associations of (private) GP's, laboratories, hospitals, and pharmacies. The district PPM approach is underpinned by the ministry of health legislation on the mandatory notification of TB, and health insurance finance for TB services.

The Contribution of non-NTP Public and Private Sector to Increasing TB Notification in Challenge TB Supported Areas in Indonesia



Trends Per Thematic Area

Bangladesh assisted the NTP in the development of a national operational plan for PPM 2017-2020. The plan details what activities will be implemented, how, where, and by which partner. Challenge TB also implemented a set of interventions which included: training on the *International Standards of TB Care* for four professional organizations which will now include these in their continuous medical education; development of an M&E system for NTP that enables PPM activities to be tracked; and the training of drug vendors and pharmacists on the identification and referral of presumptive TB patients.

Nigeria engaged and trained 2,367 Patent Medicine Vendors (PMVs) on the identification of people with presumptive TB and referral for diagnosis and treatment. As a result these PMVs referred nearly 18,979 people with presumptive TB, of whom 1,568 (8%) were diagnosed with TB and treated, showing just how effective this intervention was.

In Burma Challenge TB invested in the training of 347 drug vendors in identifying persons with presumed TB, by PSI, who have a good track record of implementing a successful health franchise among general practitioners. In Quarters 1-3 this resulted in the diagnosis of 233 TB patients (22%) (9 in Quarter 1, 82 in Quarter 2, and 142 in Quarter 3) out of 1,073 persons referred with presumptive TB. Challenge TB also supported the development of a data collection system for the notification of patients diagnosed in PPM.

In India the Challenge TB PPM initiative mapped 29,496 private providers in three states. The project promotes and facilitates the utilization of GeneXpert and chest X-ray for the diagnosis of TB. Fifty-one percent of the 3,675 TB patients were diagnosed using GeneXpert, including 440 patients with RR-TB. The project continues to increase case-finding and notification from the private sector and implement measures to reduce the loss of patients after diagnosis. Routine HIV screening among diagnosed TB patients was implemented in 198 private facilities, which screened 4,942 patients of whom 155 (3%) were HIV positive and referred for ART.

Trends Per Thematic Area

CB-DOTS/Community Referrals

Community-based activities under Challenge TB continued to increase in Year 3, with 9% of all patients in 2016 across being notified through referrals from community health workers (CHWs) or community volunteers. Bangladesh and Ethiopia have the highest proportion of patients notified (2016) through community referral, at 43% and 34%, respectively.

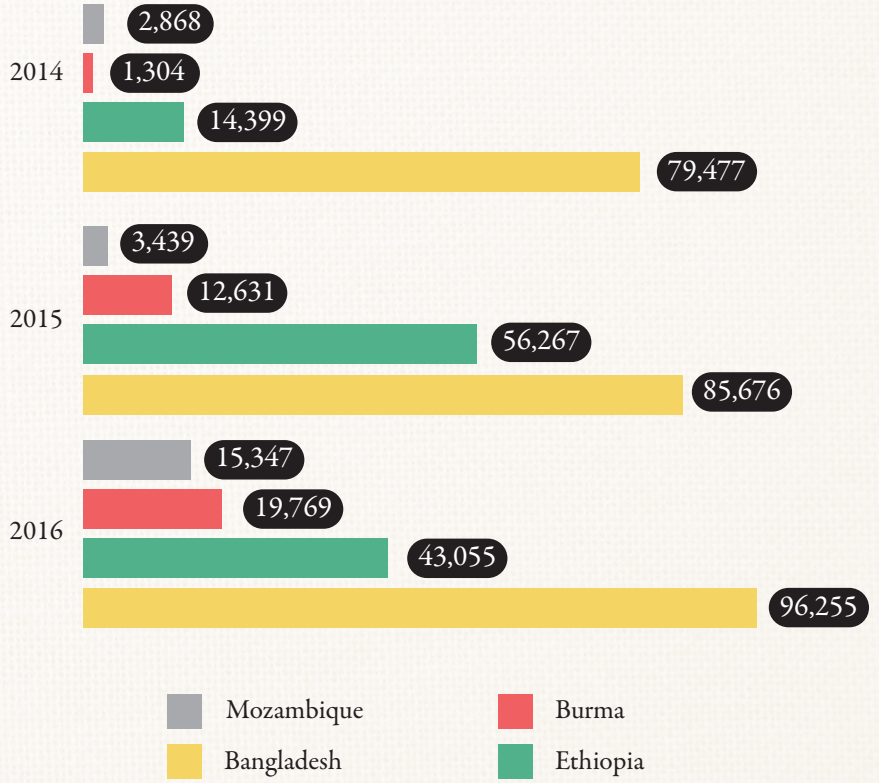
In **Afghanistan,** CB-DOTS is an approach that ensures that people living in remote and hard-to-reach areas have access to TB services. This approach was implemented in 15 provinces, where more than 14,000 HCWs have been trained (2015-2017) and contributed to case notification. As a result, the CB-DOTS coverage increased from 391 health facilities (HFs) in 2015 to 624 HFs in 2017 (a 63% increase). This resulted in 40,239 people being reported with presumptive TB (a 27% increase compared to 2016). This led to a 66% increase in the number of TB patients diagnosed (all forms of TB) between 2016 and 2017 (from 1,758 in 2016, to 2,921 in 2017). In 2017, 2,921 (9%) of TB patients (all forms) received their treatment under the supervision of a CHW, a 65% increase compared to 2016 (1,765).

In **Mozambique** the CB-DOTS approach first developed under TB CARE I was further expanded in Year 3 and 32% of all notifications in Challenge TB supported provinces in the first three quarters of 2017 were referred by CHWs, compared to 12% and 27% in 2015 and 2016 respectively, with 10,575 patients notified after referral by CHWs.

In **DR Congo** the number of patients notified after referral by CHWs increased each year from 740 patients in 2015 to 3,663 TB cases in 2016, and 3,955 in the first three quarters of 2017. This reflects a contribution from this intervention which increased from 2% in 2015, 9% in 2016, to 12% in 2017, of all notified patients in Challenge TB supported areas. Although the coverage of community involvement in Challenge TB supported areas remains low (~30%), it is expected that in 2017 these activities will notify more than 5,000 TB cases (all forms).

In **Ethiopia** Challenge TB provides support to the work of MOH employed Health Extension Workers (HEWs) in Challenge TB supported areas. These workers conduct house-to-house visits for general health education, detection, and referral of persons who are ill including presumptive TB patients. In Year 3, 25% of all notified patients were referred by HEWs.

The Trend of Community Referrals in Four Countries



Trends Per Thematic Area

Strengthening Diagnostics/Laboratory networks

Challenge TB continued to strengthen diagnostic networks in all countries, with the aim of increasing the number and proportion of patients who have a rapid and correct diagnosis, and are treated with the appropriate regimen. Challenge TB supported the expansion of access to GeneXpert testing and second-line line probe assay (SL-LPA) testing as well as the rapid utilization of test results for appropriate patient management by installing and expanding diagnostic connectivity systems. In addition, capacity building and TA were prioritized for effective and efficient integrated sample transportation, maintenance of laboratory equipment, quality assurance in all laboratory activities including for phenotypic DST testing (first- and second-line), and efficient digital laboratory information systems.

Increasing number of laboratory operational plans

In Year 3, 17 countries had developed national laboratory operational plans. Vietnam, Burma, and Indonesia are making good progress in implementing national laboratory operational plans following the standards.

Five countries (Botswana, Cambodia, South Sudan, Tajikistan, and Ukraine) do not have national laboratory strategic plans for various reasons. Botswana is finalizing its national TB strategic plan in Year 4, and we aim to support the development of a laboratory operational plan in Year 5. The Cambodia and South Sudan country projects were closing and Challenge TB was not asked to provide TA on this matter, which is also the case in Tajikistan and Ukraine. Challenge TB continues to promote and support all countries in having laboratory operational plans based on national TB strategic plans and national laboratory strategic plans. Challenge TB provides long-term TA and STTA to the countries listed above to support laboratory network strengthening.

Existence of national TB laboratory operational plan used to prioritize, plan and implement interventions

	2014	2015	2016	2017
Vietnam	Available, follows standards, implemented, shows progress towards annual targets	Available, follows standards, implemented, shows progress towards annual targets	Available, follows standards, implemented, shows progress towards annual targets	Available, follows standards, implemented, shows progress towards annual targets
Kyrgyzstan	Available, does not follow standards, not implemented	Available, does not follow standards, not implemented	Available, follows standards, but not implemented	Available, follows standards, but not implemented
Mozambique	Available, does not follow standards, not implemented	Available, does not follow standards, not implemented	Available, follows standards, but not implemented	Available, follows standards, but not implemented
Afghanistan	Available, does not follow standards, not implemented	Available, does not follow standards, not implemented	Available, does not follow standards, not implemented	Available, does not follow standards, not implemented
India	Available, does not follow standards, not implemented	Available, does not follow standards, not implemented	Available, does not follow standards, not implemented	Available, does not follow standards, not implemented
Burma	Not available	Available, does not follow standards, not implemented	Available, follows standards, implemented, shows progress towards annual targets	Available, follows standards, implemented, shows progress towards annual targets
Ethiopia	Not available	Available, does not follow standards, not implemented	Available, does not follow standards, not implemented	Available, follows standards, but not implemented
Namibia	Not available	Available, does not follow standards, not implemented	Available, does not follow standards, not implemented	Available, follows standards, but not implemented
Malawi	Not available	Not available	Available, does not follow standards, not implemented	Available, follows standards, but not implemented
Indonesia	Not available	Not available	Available, does not follow standards, not implemented	Available, follows standards, implemented, shows progress towards annual targets
DR Congo	Not available	Not available	Available, does not follow standards, not implemented	Available, follows standards, but not implemented
Bangladesh	Not available	Not available	Not available	Available, follows standards, but not implemented
Nigeria	Not available	Not available	Not available	Available, follows standards, but not implemented
Zambia	Not available	Not available	Not available	Available, follows standards, but not implemented
Zimbabwe	Not available	Not available	Not available	Available, follows standards, but not implemented
Tanzania	Not available	Not available	Not available	Available, does not follow standards, not implemented
Uzbekistan	Not available	Not available	Not available	Available, does not follow standards, not implemented
Botswana	Not available	Not available	Not available	Not available
Cambodia	Not available	Not available	Not available	Not available
South Sudan	Not available	Not available	Not available	Not available
Tajikistan	Not available	Not available	Not available	Not available
Ukraine	Not available	Not available	Not available	Not available

Available, follows standards, implemented, shows progress towards annual targets

Available, does not follow standards, not implemented

Available, follows standards, but not implemented

Not available

ONE *of* THOUSANDS

Since the Challenge TB project in Cambodia began doing contact investigation and active case-finding at pagodas, many thousands of people have been diagnosed, treated, and cured of TB and are back living healthy and productive lives.

Ms. Chea Ru, a 55-year-old woman with five children, is someone who has experienced the benefits of TB screening services in the community. Ms. Ru had been coughing, suffering from fever and night sweats, and losing weight, the classic symptoms of TB, but she had spent over a year seeking help from traditional healers and private clinics. Despite spending all her money, she had received incorrect diagnoses and treatment, and her health continued to decline.

On a Buddhist holy day in August 2015, Chea Ru prepared some food to offer the monks at the Serei Angneal Pagoda. While she was there, she heard that health workers from nearby health center had come to screen anyone who had TB symptoms. She decided to go to the screening and to her shock but also her relief, she was diagnosed as having TB, she finally had an explanation for her symptoms and a correct diagnosis.

A few days later, she was started on anti-TB treatment. Fast-forward two years and she is now cured and able to live her life again. She said: "I feel very happy because I received the right treatment and for free, and now I am cured. My worries of sickness and my family going hungry have disappeared. The health workers were very supportive and provided such good care to me throughout my treatment, I am so grateful."

Since being cured, Ms. Ru has become a peer educator and has shared her own experiences with her neighbors and other people in her village. She informs them about TB symptoms, diagnosis, and the treatment services available. In her own small way, she is doing her bit to fight back against TB and to make sure no one else suffers as she did.


“I feel very happy because I received the right treatment and for free, and now I am cured. My worries of sickness and my family going hungry have disappeared.”

Trends Per Thematic Area

GeneXpert Coverage

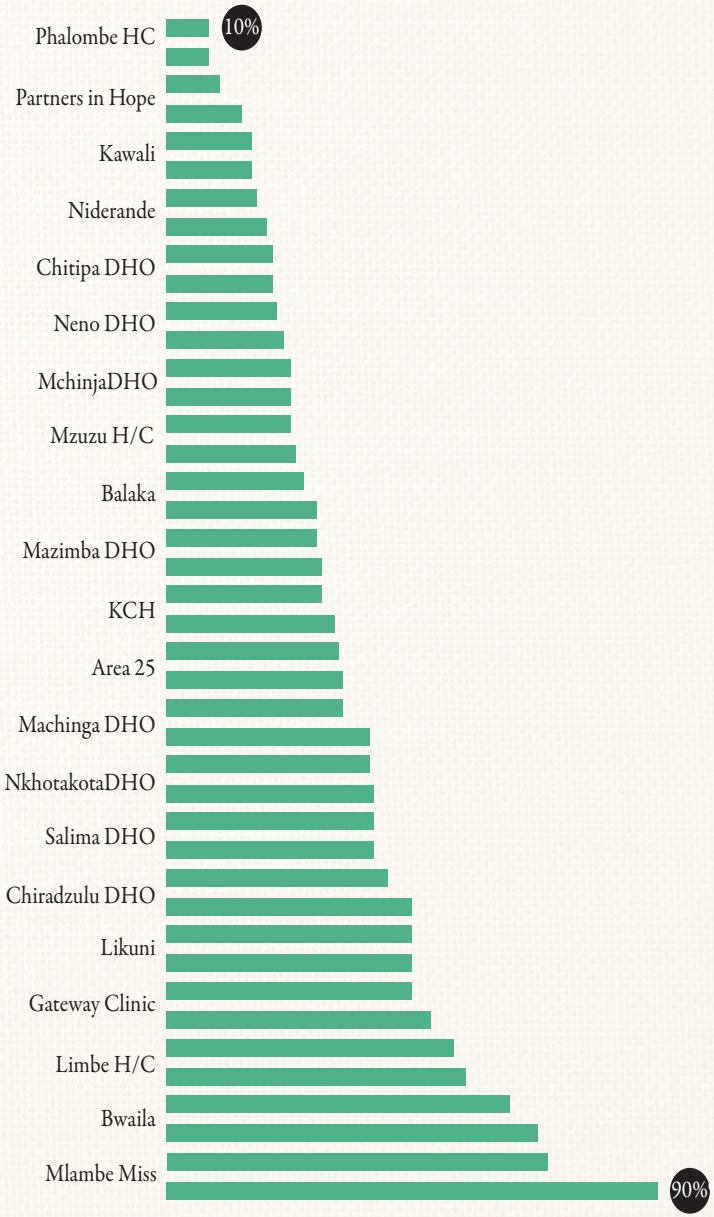
Since its availability in 2010, piloting and scale-up of Xpert MTB/Rif was supported by TB CARE I and all Challenge TB supported countries are now using the test. The number of platforms in Challenge TB countries increased from 992 in 2015 to 2,569 in 2017, and the number of tests performed increased from 415,364 in 2015 to 608,568 in the first half of 2017. Indonesia and India showed the largest scale-up and the highest number of platforms (India from 0 in 2015 to 628 in 2017, Indonesia from 62 in 2015 to 450 in 2017).

Botswana, Mozambique, Namibia, Indonesia, and Nigeria have adopted the GeneXpert as the primary test for the bacteriological diagnosis of TB in all presumptive TB and MDR-TB patients, while other countries use the test primarily for specific groups at risk for TB and/or RR-/MDR-TB.

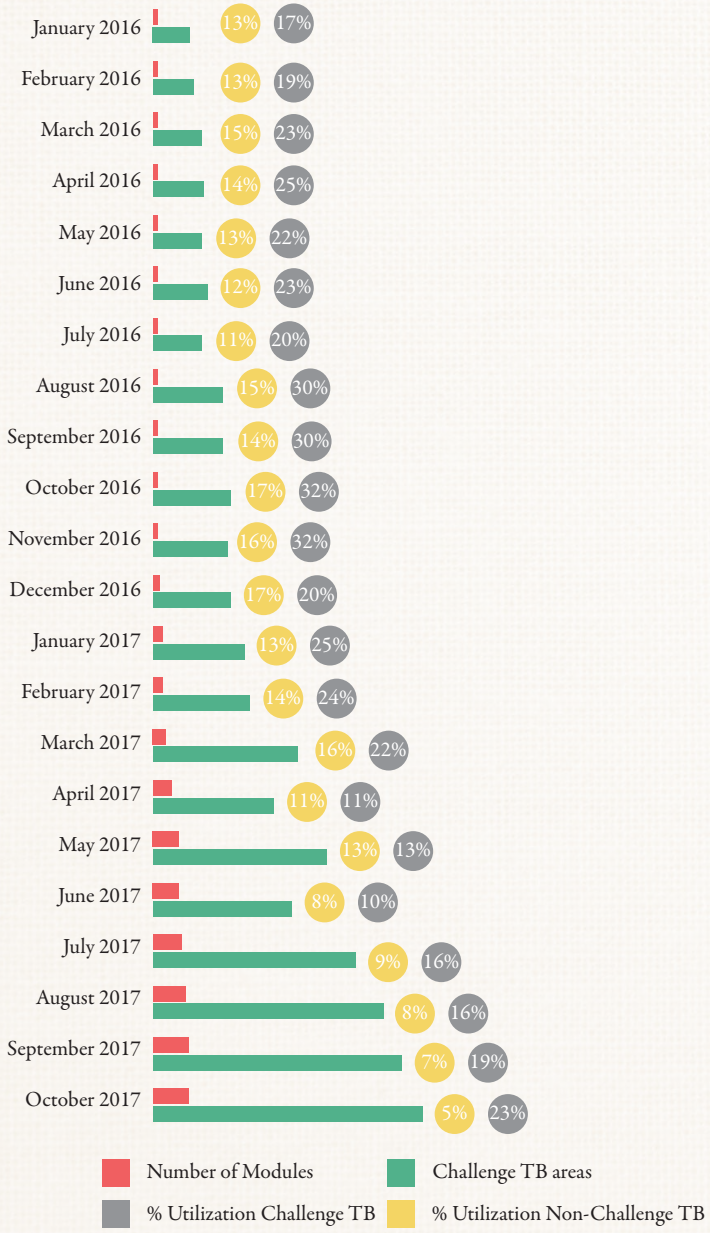
The scale-up is co-funded by Global Fund grants and domestic resources, with Challenge TB staff provides technical assistance to its effective and efficient utilization by provision of training, quantification, development of lab sample transportation systems, and diagnostic connectivity. As a result the proportion of new and previously treated patients tested with GeneXpert MTB/RIF has expanded (see examples from Malawi and trend utilizations from Nigeria and Indonesia).

In order to monitor the efficient use of the GeneXpert platform at country level, from under the conditions of transition to being a universal available first test for TB bacteriological diagnosis, countries monitor the utilization of all the available modules. These rates can be low due to a lack of demand for the test, a lack of sputum sample transportation systems, problems with supplies or a lack of maintenance resulting in dysfunctional modules. A connection to a well-functioning diagnostic connectivity system facilitates this monitoring at any moment in time, resulting in rapid remedial action where utilization is suboptimal.

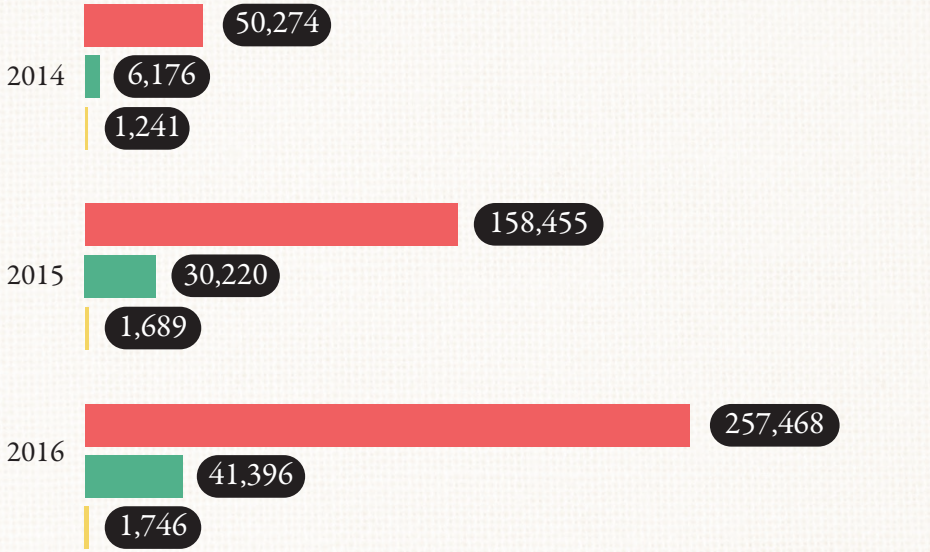
GeneXpert Utilization in Malawi

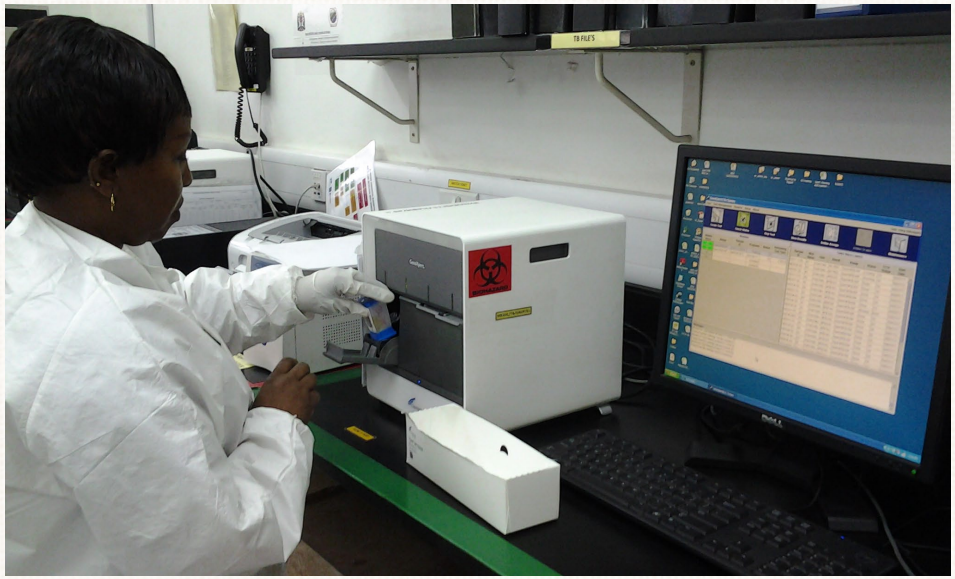


Trend in the Utilization of GeneXpert in Indonesia



Trend in the utilization of GeneXpert in Nigeria





Trends Per Thematic Area

Improved Performance on RR-/MDR-TB Testing

With Challenge TB support the rapid scale-up of Xpert testing (from 163,675 tests done in 2014 to 548,063 tests in 2016) in 14 high DR-TB burden countries resulted in increased drug-susceptibility testing (DST) coverage among new patients, from 6% in 2014 to 17% in 2017, and among previously treated patients from 35% in 2014 to 61% by September 2017.

Examples from several countries that successfully increased testing coverage:

With TA from Challenge TB **Indonesia,** access to GeneXpert MTB/Rif testing nationwide expanded from 82 sites (28 in Challenge TB areas) in 2016 to 432 sites (233 in Challenge TB areas) by September 2017. Challenge TB supported areas were prioritized by the NTP, increasing the GeneXpert population cover from one machine per million to nearly one machine per 125,000 population in 2017. In the non-Challenge TB supported areas GeneXpert coverage increased from one machine per 4 million to one machine per 1 million population. Challenge TB supported the establishment of national/regional GeneXpert coordination teams, training, and support the quantification of cartridges. In Year 3 the number of GeneXpert tests increased from 3,427 to 12,189 per month. The scale-up and the introduction of the "GeneXpert for all" algorithm in GeneXpert sites continued to contribute to both the diagnosis of TB and the increased diagnosis of rifampicin resistant TB (RR-TB). The number of notified RR-TB patients increased from 2,720 in 2016 to 3,256 by September 2017 (preliminary data).

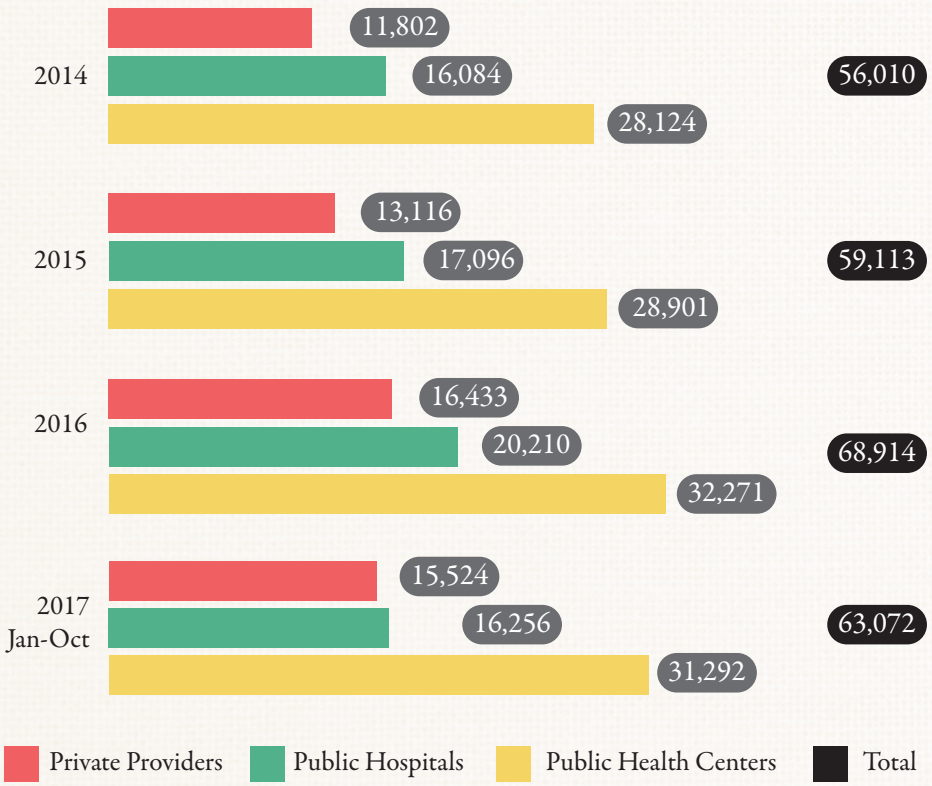
Nigeria scaled-up the provision of GeneXpert services with an additional 20 sites in Challenge TB supported areas, and instituted and supported a sputum transport network for GeneXpert testing. There are currently 128 GeneXpert machines located in the 184 Challenge TB supported areas. Between October 2015 and June 2017 a total of 262,631 presumptive TB cases received GeneXpert tests of which 47,942 (18%) were diagnosed with TB and 2,708 (1%) with RR-TB. For an initiative called "Wellness on Wheels" (WoW), two trucks were procured and equipped with digital X-ray equipment and GeneXpert machines, these are now being used for ACF by systematically screening high-risk populations.

In **Ethiopia** the project assisted the national reference laboratory efforts to improving EQA coverage, facilitating sputum sample transportation, and enhancing first- and second-line DST. Challenge TB contributed to the national rollout of GeneXpert from 97 machines in 2015 to 167 in 2017. With the expansion of GeneXpert, the proportion of DS-TB cases diagnosed by GeneXpert out of the total TB cases notified increased from 6% to 18%.

In Challenge TB covered areas in **Kyrgyzstan,** 80% of new patients are tested for resistance versus 75% nationally. This is due to the introduction of a revised diagnostic algorithm and ongoing regular clinical mentoring and monitoring provided by Challenge TB and the USAID-funded bilateral Defeat TB project. Support for a specimen transportation system and the development of diagnostic connectivity have resulted in increased levels of Xpert testing in Challenge TB sites compared to national level.

Challenge TB **Tajikistan** focused on optimizing the diagnostic algorithm to improve the quality of diagnosis for TB and DR-TB, reducing the turnaround time and the time to diagnosis, improving the use of rapid diagnosis methods, and introducing WHO recommended patient triage principles. The project trained 33 TB specialists and 181 health providers from primary healthcare facilities on the updated diagnosis algorithm. This resulted in an increase in the number of notified RR-TB cases from 748 in 2016 to 871 in 2017 (includes projected data for the Oct-Dec quarter).

RR-/MDR-TB Testing Coverage for New Patients in High MDR-TB Burden Countries



(WHO, 2017)

Trends Per Thematic Area

GeneXpert diagnostic connectivity networks

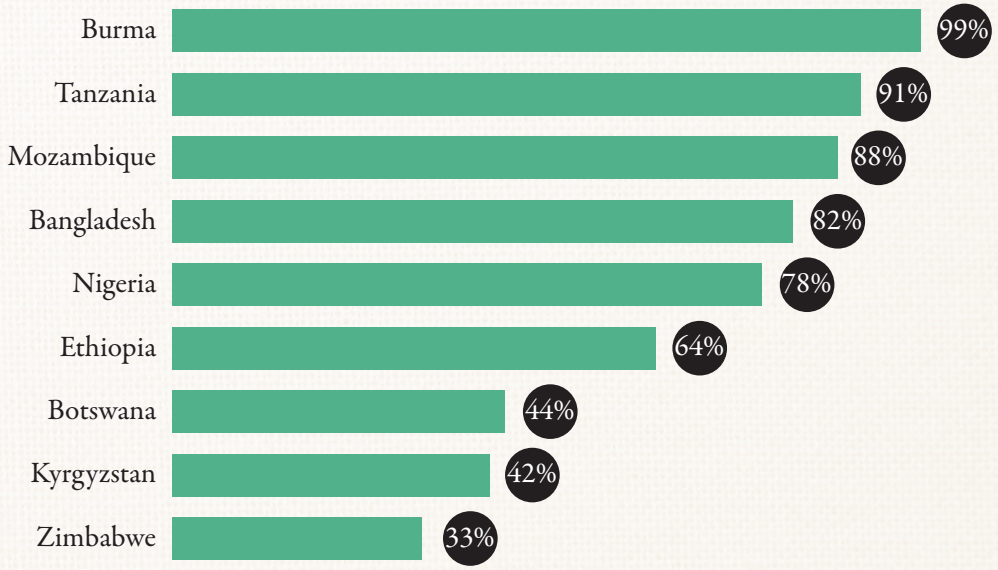
TB diagnostic connectivity systems facilitate the automatic transmission and utilization of diagnostic data for a variety of users and can contribute to the optimization of diagnostic and clinical services. Their adoption and use are also monitored as core indicators for laboratory strengthening under the WHO End TB Strategy (Indicator 4: 100% of rapid test sites to transmit results electronically to clinicians and to an information management system by 2020). At the end of January 2017, a Challenge TB project on Diagnostic Connectivity (funded by the management budget) was launched and it is contributing to global, as well as country coordination level activities. The aim of the project is to provide TA to guide the selection, implementation, and utilization of data connectivity systems ensuring that efforts are in line with global policy.

In Year 3, an increasing number of countries scaled-up their GeneXpert network and their TB diagnostic connectivity. By June 2017, the total number of countries that reported the implementation of data connectivity system increased to nine (Bangladesh, Botswana, Burma, Ethiopia, Kyrgyzstan, Mozambique, Nigeria, Tanzania, and Zimbabwe). Since June 2017, 719 (73%) of the reported 984 GeneXpert devices in these countries were connected to a data connectivity system. Across all countries, 724 out of 2,464 GeneXpert devices (29%) are reported to be connected to a data connectivity system. The total number of GeneXpert machines includes 845 GeneXpert machines in India and Indonesia where the implementation of diagnostic connectivity is still underway. A pilot on data connectivity with nine GeneXpert services has started in Indonesia. This explains the drop in the coverage of data connectivity solutions across all countries.

Training and data-analysis sessions were conducted in Tanzania, Botswana, and Bangladesh to strengthen the programmatic management of diagnostic connectivity data systems. A Challenge TB sub-award package was developed including a generic RFA, budget template, and step-by-step instructions to guide countries in a rational selection of appropriate diagnostic connectivity solutions.

A total of 719 out of 984 (73%) GeneXpert machines were connected to data connectivity systems, with the highest proportions reported for Burma (99%) and Tanzania (91%).

GeneXpert Machines Connected to a Data Connectivity System



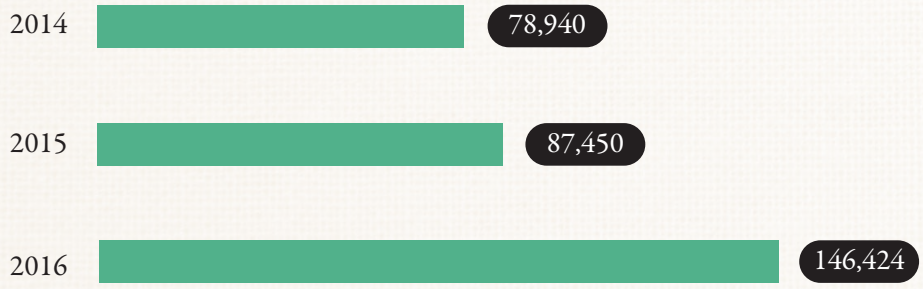
(CTB, 2017)

Strengthening Specimen Transport Systems

Challenge TB continues to strengthen specimen transport systems to enhance access to and utilization of GeneXpert testing. While in 2014, Challenge TB supported sputum transfer systems in only five countries, this figure increased to eight in 2015, and ten in 2016. This has resulted in a nearly 85% increase in the number of specimens transported in Challenge TB areas between 2014 and 2016. The biggest increases can be found in DR Congo, India (since 2014), and Nigeria (since 2015).

As data on specimen transport are often not available/reported at the national level, and geographical coverage vary by country, a comparison between Challenge TB and the national-level is difficult across all countries. Improvements in sputum transport are also linked to increased GeneXpert/SL-LPA testing coverage in Challenge TB targeted areas compared with national figures (e.g., Tajikistan - 66% GeneXpert testing coverage among previously treated patients in Challenge TB areas vs. 57% nationwide; and 51% SL-LPA testing coverage among notified RR-TB patients in Challenge TB areas vs. 26% nationwide in 2017).

Number of Specimens Transported for TB diagnostic Services in Challenge TB Areas Through Project Support



2014: 5 countries; 2015: 8 countries; 2016: 10 countries

Nigeria recognized that suboptimal case notification for DR-TB was largely due to inadequate specimen transportation to Xpert sites. At the end of Year 3, a "hub & spoke" model of specimen transport in Challenge TB LGAs not covered by 'Riders for Health', was developed and implemented to support sample transport mechanisms. This model began with more than 6,000 specimens in 2016 and increased to more than 33,000 by September 2017.

Tajikistan established sample collection and transportation systems in Challenge TB pilot sites to ensure the timely delivery and quality testing of samples, and the prevention of diagnosis delays. Samples are collected from Primary Health Care (PHC) facilities and transported to the district/city TB centers and then to the National Public Health Laboratory (NPHL) for Xpert and SL-LPA testing. The project trained 160 sputum collectors as well as 29 TB and PHC managers in SOPs on sputum collection and transportation. All samples collected from Dushanbe and Rudaki pilots were delivered to NPHL for Xpert testing and in the course of the year the system gradually scaled-up to the new five Challenge TB sites. In Year 3, a total of 4,997 samples were tested among which 1,615 (32%) were diagnosed with TB.

Bedaquiline - The Wonder Drug

When Anara got infected with TB in 2015, she was no longer able to breastfeed her five-month-old child and she was forced to leave him with her parents in the mountain village of Kemin, Kyrgyzstan. At just 21, Anara saw her life change dramatically in just a few days, and she quickly sank into what then seemed to be an incurable disease.

Despite being treated, her health kept on getting worse, until she developed extensively drug resistant TB or XDR-TB. Despite the painful injections and the more than 20 pills she had to take each and every day, TB literally consumed her body leaving a large cavity in her lungs.

Anara is only now beginning to feel better, so what happened?

She was enrolled on an individual treatment regimen at the end of January 2017 and that has made all the difference.

In Kyrgyzstan, the Challenge TB project is supporting the introduction of new treatments for multi and extensively drug-resistant TB, one of which includes the new TB drug Bedaquiline.

After staying in hospital for four months whilst she started on the new regimen, Anara was discharged and she was finally able to get back home, where she could once again be a mother to her child. "Bedaquiline worked like a miracle," said Anara, "As soon as I heard about Bedaquiline I wanted to give it a try, it was really my last hope."

The village nurse brings her pills up to her house every day around noon. She should pick them up herself, but as she lives high up on a hill and several kilometers away from the health facility, the walk is still too difficult for her.

Anara still has more than one year of treatment ahead of her, but she has already started to live much more of a normal life. For the first time in two years, She can run around the house with her son and hold him while he sleeps. She has also started to gain some much need weight, and finally has some color back in her cheeks.

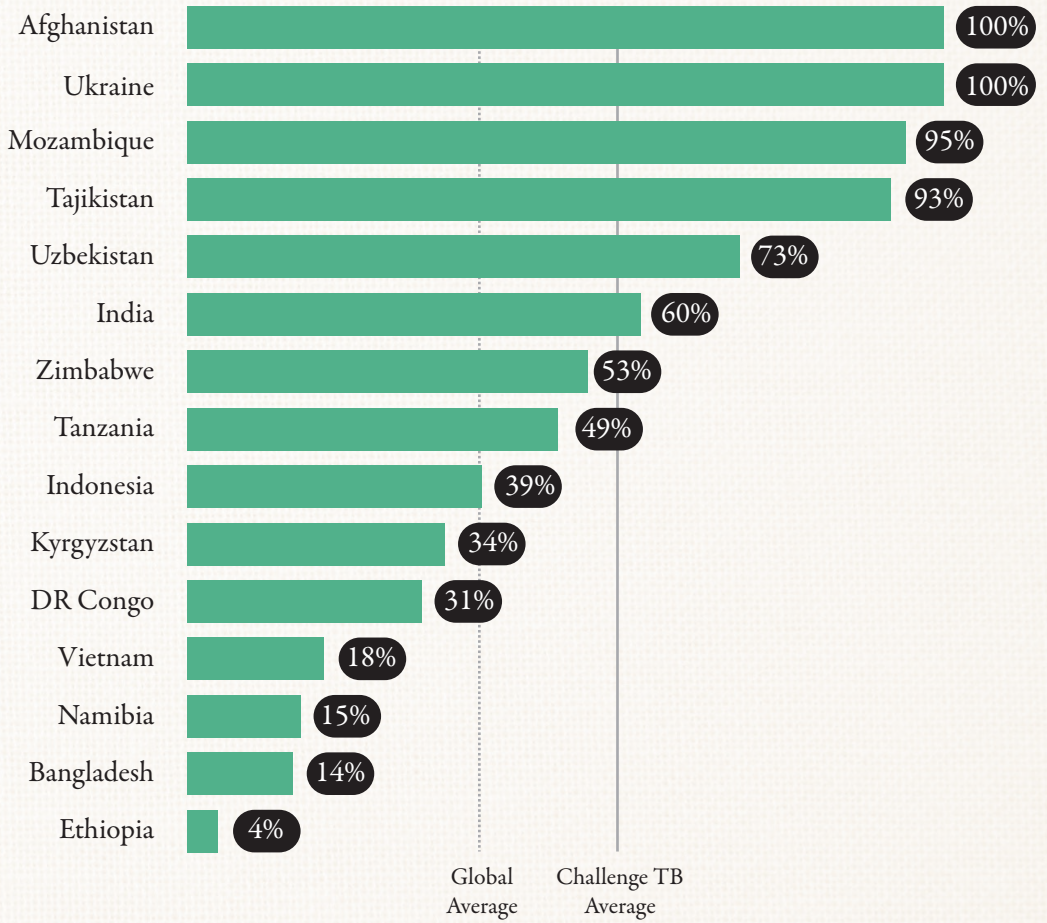
"I wouldn't wish this disease on anyone" she says, reflecting on how bad it effect it has had on her. When she was asked what advice she had for fellow TB patients, Anara answered with only one word: "Bedaquiline."


“As soon as I heard about it I wanted to try Bedaquiline, it was really my last hope.”

Expanding capacity for second-line drug sensitivity testing

In 2016 the proportion of DR-TB patients tested for SLD susceptibility in Challenge TB countries was 57% (WHO), compared to the global average of 39%. Based on WHO guidance and with Challenge TB support, countries are increasingly using second-line drug sensitivity testing (SL-LPA) as the method of choice. For most patients this test has the potential to provide a more rapid result than conventional SL-DST, which is particularly important for early triaging of MDR-TB patients for the STR or individualized treatment regimens using the new TB drugs. At the end of Year 3, 14 countries had in-country SL-LPA testing and Challenge TB is providing TA to operationalize the test for rapid patient triage, building capacity, and also assisting in the development of systems for sample transportation to SL-LPA laboratories. The project is also supporting the development of the necessary quality-assured conventional DST capacity for further diagnosis and treatment follow-up.

The Proportion of Laboratory-Confirmed RR-/MDR-TB Cases Tested for Susceptibility to Second-Line Drugs in Challenge TB Countries



(WHO, 2017)

Botswana has prioritized the implementation of advanced diagnostic algorithms (including SL Hain and conventional DST) with 252 Phenotypic and 98 Genotypic SL-LPAs conducted. The NTRL algorithm was reviewed and aligned with the revised algorithm including SL-LPA; an important step for introduction of ND&R and for the management of DR-TB cases. Since 2016, SL-LPA is performed for all notified GeneXpert RR-TB cases.

In Zambia, LPA was procured and installed at University Teaching Hospital TB laboratory bringing the number of facilities using LPA in the public sector to three. This will be further supported through a backup power system for the LPA at UTH and TDRC.

In Ukraine LPA was installed and set up in the Lvivska BSL3 laboratory, with on-the-job training for staff conducted on the LPA method, algorithm of work, working conditions, and the prevention of contamination, with particular emphasis on the review and interpretation of results.

With Challenge TB support, the 5-year National Strategic Plan for TB laboratories in Uzbekistan was completed with technical support from the SNRL. The plan focuses on the role of the laboratory in detecting TB in high-risk and vulnerable populations such as children, prisoners and people living with HIV (PLHIV), and includes milestones related to lab network development, equipment procurement, a maintenance plan and lab HR plan. In Year 3, Challenge TB procured lab equipment for rapid diagnosis and conducted trainings on DST for new drugs and use of rapid TB detection molecular tests with the NRL and Challenge TB pilot laboratories. As a result of these activities, relevant lab SOPs on DST are now updated, and the NRL has the capacity to perform DST for new drugs.

Laboratory Quality Management System Implementation

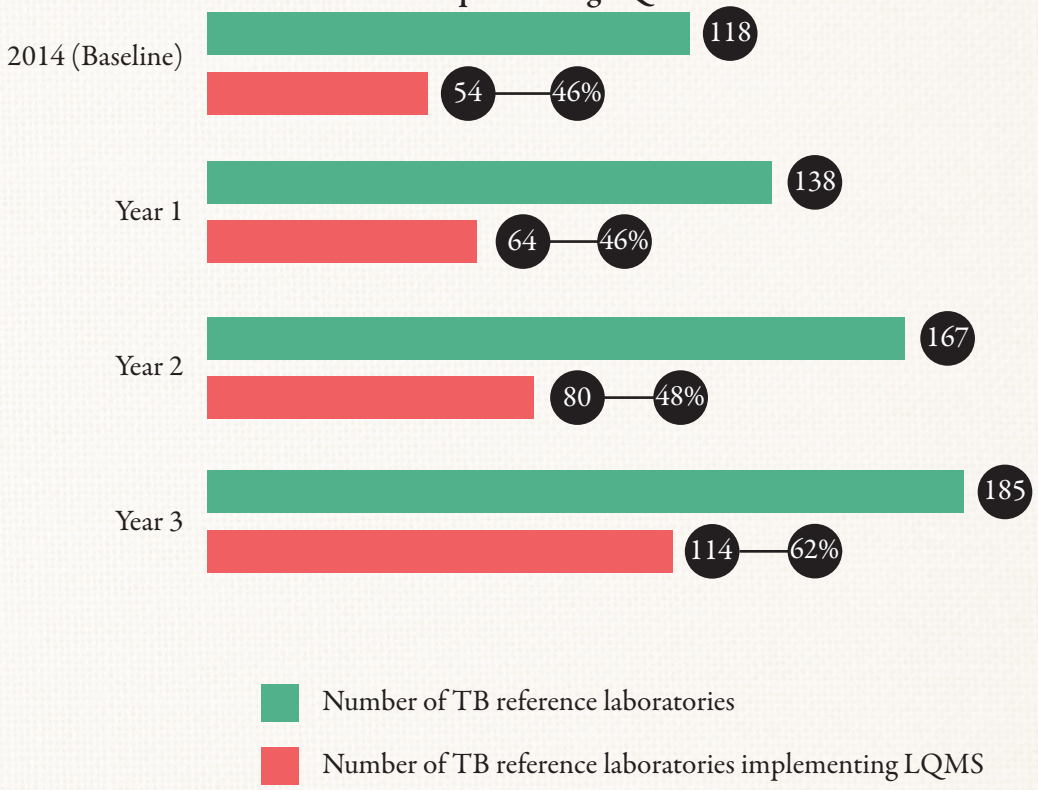
The number of laboratories which perform Culture and Drug Susceptibility Testing (C/DST) and are implementing LQMS has more than doubled from Year 1, with 14 countries reporting 100% coverage.

Challenge TB Country highlights on LQMS capacity building:

Burma initiated a LQMS at the end of Year 2, at the NTP, NTRL and Upper Myanmar TB Center (UMTBC). In Year 3, a Challenge TB supported laboratory specialist provided technical assistance to the NTRL and UMTBC in follow-up activities including the update and review of existing SOPs, establishing new SOPs, manuals and preparation, and rolling-out LQMS guidelines. In total, 37 SOP templates were prepared, with 14 currently under review.

Indonesia trained the three new and three existing NRLs and four national LQMS mentors on LQMS. This training was then followed-up and reinforced by a laboratory assessment and planning of lab development to achieve LQMS standards, in all three newly planned NRL's. In Year 4 Challenge TB will continue to provide technical assistance to these NRLs (which ensure the quality of the laboratories in the Challenge TB provinces), support finalization of LQMS SOPs and the further develop the Quality Laboratory Network expansion plan.

TB Reference Laboratories Performing C/DST in Challenge TB Countries Implementing LQMS



(CTB, 2017)

GLI Standards

Between Years 1 and 3, the cumulative number of GLI standards met by Challenge TB countries has increased. In Year 3, Zimbabwe was able to meet all 11 standards followed by Burma, Ethiopia, and Ukraine meeting 10 of the 11 standards.

Challenge TB has shown steady progress in increasing the number of GLI standards met in each country. In 2014, eleven countries were not able to meet even one standard and the average was only two standards out of eleven. In 2016, two countries (India and Vietnam) did not report any of standards being met, while nine countries were able to meet eight or more standards out of eleven thus bringing the average to six standards met.

Malawi NRL achieved GLI standard 5 in Year 3; improving performance in the EQA program by conducting blind rechecking at zonal and district levels throughout the country. This improvement is significant as relates not only to a large increase in EQA coverage but also performance. To date, EQA coverage is >90% as compared to 24% in Year 2 (The GLI recommends a coverage of >75%). Additionally, the performance of the laboratories in blind rechecking of sputum smear positive slides has improved with the majority of facilities assessed at >90% agreement with the external reader (WHO recommends >85%); again, a significant change from the Year 2 score of 80% for the majority of facilities.

Tanzania reports that enrollment of laboratories in TB microscopy EQA is at 83% (345/414) in supported regions, with eight additional laboratories in Year 3. In 2016, the performance of EQA was 78% in supported regions compared to 48% in the whole country. This countrywide improvement is due to continuous supportive supervision and mentoring on microscopy EQA.

Number of GLI Standards Met by Each Challenge TB Country

	2014	2015	2016
Zimbabwe	8-10	8-10	8-10
Burma	0-4	5-7	8-10
Ethiopia	0-4	8-10	8-10
Ukraine	5-7	8-10	8-10
Kyrgyzstan	0-4	0-4	8-10
DR Congo	5-7	5-7	8-10
Indonesia	0-4	5-7	8-10
Malawi	0-4	5-7	8-10
Mozambique	0-4	0-4	8-10
Nigeria	0-4	5-7	5-7
Botswana	5-7	5-7	5-7
Uzbekistan	0-4	0-4	5-7
Afghanistan	0-4	0-4	5-7
Bangladesh	0-4	5-7	5-7
Namibia	0-4	0-4	5-7
South Sudan	0-4	5-7	5-7
Tajikistan	0-4	0-4	5-7
Tanzania	0-4	0-4	0-4
Zambia	0-4	0-4	0-4
Cambodia	0-4	0-4	0-4
India	0-4	0-4	0-4
Vietnam	0-4	0-4	0-4

8-10 GLI Standards Met 5-7 GLI Standards Met 0-4 GLI Standards Met

Strengthening patient-centered care and treatment

Case Notification – Improved access to high-quality TB, MDR-TB, and TB/HIV Services

In 2016, a total of 3,313,677 patients (all forms) were notified across Challenge TB countries, although Challenge TB made a limited contribution to case notification in India given its population size. The largest increases came from Bangladesh and Indonesia.

In Bangladesh, the project implements case notification activities through active case finding (ACF) focused on key populations, and in 2016 Challenge TB areas contributed 11% of the patients notified.

In Indonesia the increase is related to the scale-up and introduction of the "Xpert for all" algorithm. Challenge TB areas contributed 19% of the total patients notified across the country in 2016.

Based on country/community-specific evidence, Challenge TB has prioritized key populations for intensifying case-finding, both in health facilities and beyond, and with a particular focus on results based on each country's unique cascade of care. Though data are incomplete, Challenge TB key populations and approaches reported for 17 countries in 2016 include children, miners, the urban poor, and patients identified in prisons as well as approaches such as ACF, contact investigation (CI) and community referral, which together contributed 3% of all the patients notified in Challenge TB countries.

Increased Case Notification Among Children

The percentage of childhood TB notification in 22 Challenge TB countries has been steady; 8% in 2014 and 2015 and 9% in 2016. However, a closer look at the 2016 data reveals that in eight countries the share of childhood TB notifications is equal to or above the global estimated incidence of 10%; and in 12 countries the share of childhood TB notifications is above or equal to the global actual notification of 7%. The data below also show big differences among countries.

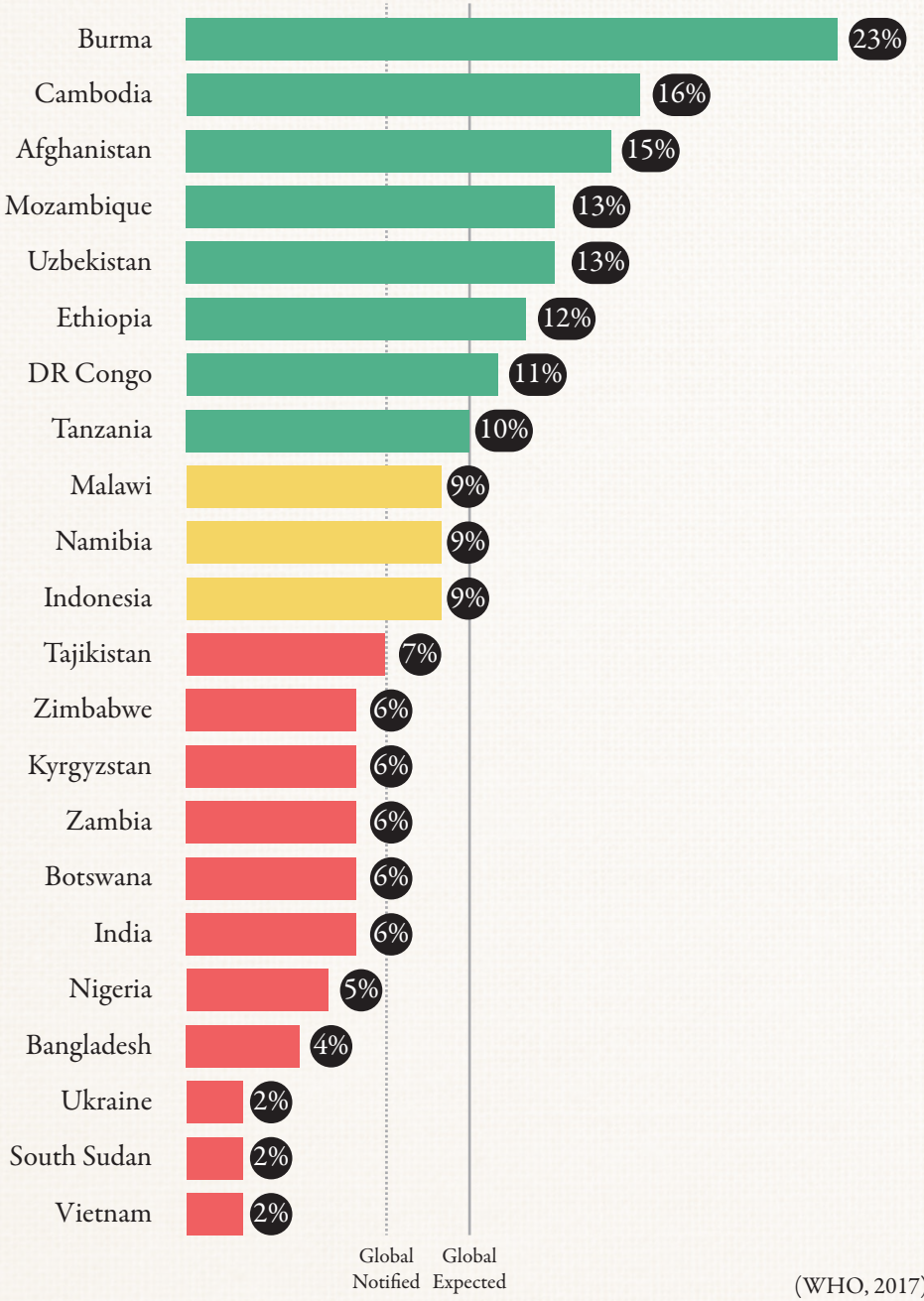
While Ukraine, South Sudan, and Vietnam are at 2%, in Burma, 23% of all patients notified are children. Part of this high percentage is explained by over-diagnosis through chest X-ray, for which Challenge TB has provided short-term technical assistance to correct this poor clinical practice. The Vietnam NTP has developed action plans, including strengthening TB diagnostic and treatment algorithms, rolling-out ACF, strengthen monitoring and local technical assistance, and setting targets per province.

Burma's national data show a very high percentage of children diagnosed with TB. Technical assistance from Challenge TB identified that to a large extent this is based on over diagnosis of pulmonary TB from chest X-rays. Challenge TB provides TA both on improving both on clinical practice for pediatric TB diagnosis and on chest X-ray interpretation.

In Cambodia in addition to CI, Challenge TB focused on capacity building in pediatric TB screening, and on diagnosis among ill children by HCWs in health facilities. This resulted in a high proportion of children 0-14 being diagnosed with TB.

In Afghanistan over 50% of the population is between 0-14 years. Challenge

TB Notification Among Children as a Percentage of All New Cases

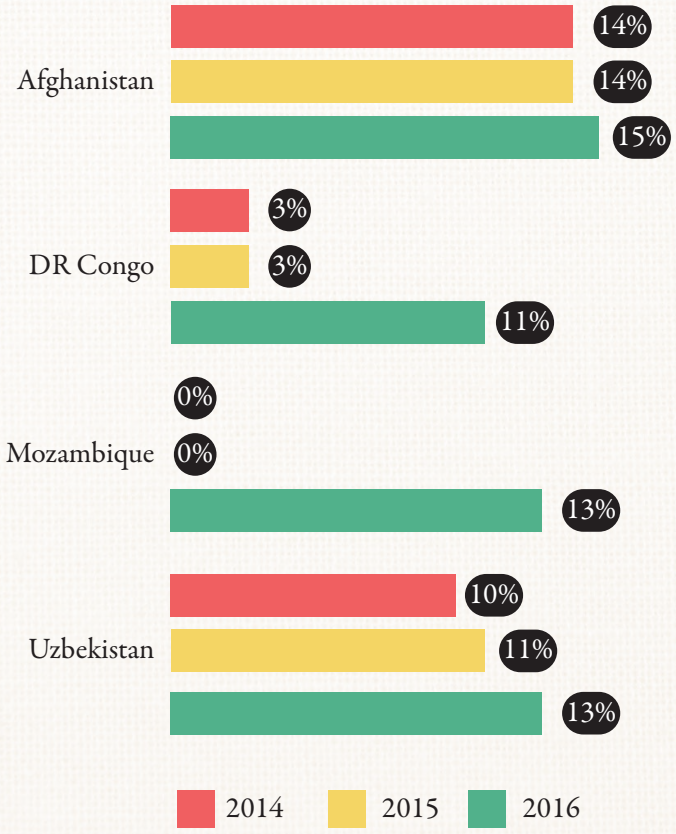


(WHO, 2017)

TB strengthened pediatric TB diagnostic capacity by training HCWs and installing five digital chest X-ray machines in five large cities. In Year 3, Challenge TB focused on the management of TB in children in five cities and identified 2,532 TB cases (all forms) in children aged 0-14 years, 16% of the total number of TB cases notified in these places.

In **Mozambique,** the project supports countrywide efforts to increase the diagnosis of TB among children 0-14, through capacity building, mentored field visits, and supervision in the four provinces where the project is active.

Trend in the Proportion of Childhood TB Among All Forms Notified



(WHO, 2017)

In 2016, 22 Challenge TB countries reported a total of 65,519 RR-/MDR-TB patients of whom 58,322 (89%) were started on second-line treatment, which is roughly 19% of the estimated total of 302,000 RR-TB cases among notified patients with pulmonary TB. A rough comparison of the cohorts of RR-/MDR-TB patients diagnosed and initiated on treatment shows a gap of only 8% in 2015 compared to 11% in 2016.

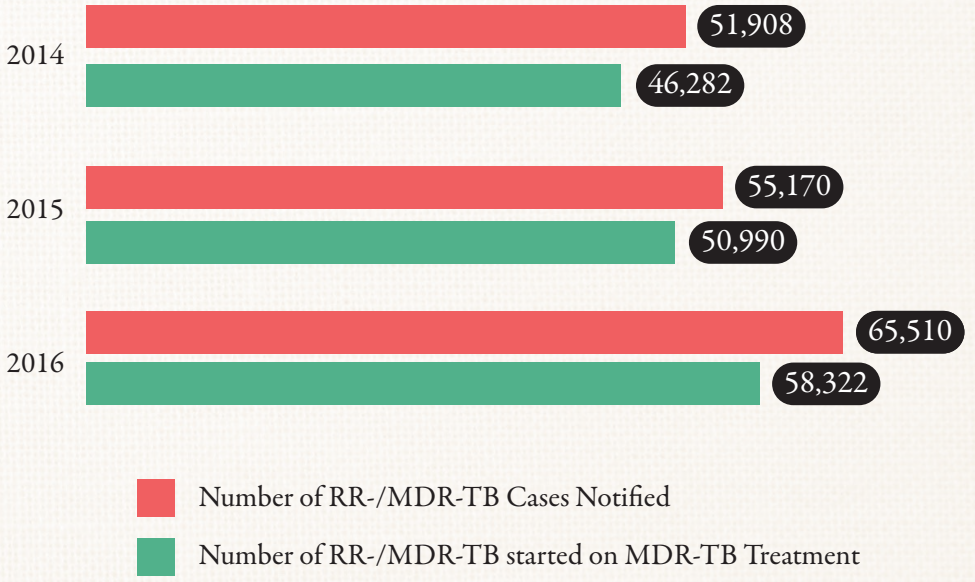
According to the available 2017 NTP data collected through Challenge TB, an estimated 46,647 patients were so far diagnosed with confirmed RR-TB and MDR-TB, and a total of 44,327 (roughly 95%) patients initiated treatment for unconfirmed and confirmed MDR-TB between January-September 2017. It is important to note that the full data are not available for a number of countries including Ethiopia, India, Uzbekistan, and Vietnam. When extrapolated out for the whole of 2017, the levels of RR-/MDR-TB diagnosis (~62,500) and second-line treatment initiation (~60,000) will surpass the 2016 totals.

Ethiopia supported the decentralization of treatment initiation centers, GeneXpert expansion, and TB culture/DST services, which have significantly contributed to increased DR-TB case finding - Challenge TB supported regions contributed 97% (694) of the 715 DR-TB cases notified nationally (compared with 700 DR-TB cases notified in 2016 nationally).

Uzbekistan supported the development of a TB "Distance Learning" module for primary health care workers, to ensure up-to-date knowledge and improve early case detection and management of TB and DR-TB patients.

Challenge TB in **India** is managing a separate project in Year 3: "*Drug Resistant Tuberculosis Control in the Private Sector in Mumbai*". The primary objective is to ensure early diagnosis and linking of people with DR-TB to the public sector for treatment initiation and further management. Private sector DR-TB patients diagnosed with cartridge-based nucleic acid amplification testing (CB-NAAT) are first offered pre-treatment evaluation, culture and second-line DST to fast track the linking processes to DR-TB center for treatment initiation in the public sector. Next, treatment coordinators accompany the DR-TB patients throughout the linkage processes and ensure patient-centered support. Since March 2017, the project engaged with a local NGO - MJK to support implementation activities in seven wards of Mumbai. Three-hundred and twenty-eight DR-TB patients were diagnosed between March-September 2017; of these, 294 patients (80%) were linked to a DR-TB center for treatment initiation, 11 patients died, 18 patients migrated and 5 patients continued their treatment in the private sector. Furthermore, 201 DR-TB patients received nutritional support and 55 patients were linked to social schemes for support. This unique patient support system has boosted the trust and confidence in the public-sector DR-TB care and ensured more private sector patients are linked and complete their treatment.

RR-/MDR-TB Cases Notified and Put On Treatment in All Challenge TB Countries



(WHO, 2017)

Globally, the 129,689 patients starting second-line MDR-TB treatment in 2016 represented 22% of the 600,000 estimated MDR/RR-TB incident cases in 2016 (WHO 2017)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Expanding New Drugs and Regimens

Expanding the programmatic use of New Drugs and Regimens; Bedaquiline (BDQ), Delamanid (DLM), and the Shorter Treatment Regimen (STR)

In Year 2 Challenge TB developed a programmatic approach to the nationwide introduction of new drugs and regimens, complementary to and building on the work by other partners, which were more focused on the development of study or project sites for the use of new drugs.

This programmatic approach ensures that in all 22 Challenge TB countries the policy framework, trained human resources, diagnostic capacity, drugs and budgets are being put in place for nationwide access for all eligible patients. In addition Challenge TB supported the development and implementation of active pharmacovigilance systems and the management of adverse events (aDSM), necessary for the safe use of the new and repurposed medicines.

As a result, there has been steady progress in the adoption and expansion of ND&R in Challenge TB countries: 21 Challenge TB countries are now enrolling patients on either ND&R and/or the STR, with preparations underway in Zambia to introduce BDQ-containing regimens and in Burma, Cambodia, Ethiopia, Tanzania, Zambia, and Zimbabwe to introduce the STR in Year 4. The combined introduction of the STR and the individualized new drug containing regimens means that full implementation of the triage approach is now within reach in 17 of the 22 Challenge TB countries and four others are expected to follow in the coming year.

By the end of Year 3, 16 Challenge TB countries had introduced individualized treatment regimens with BDQ and one with DLM; 982 patients started on this treatment, bringing the cumulative total enrolment during Challenge TB to 1520. This represents an increase of 91 % in the number of patients initiated in one year. The number of sites offering BDQ also increased, with the treatment currently available in 56 sites.

With aDSM systems under development in all countries, in 2017 already 7 countries reported adverse events: Bangladesh, DR Congo, India, Indonesia, Kyrgyzstan, Burma, and Tajikistan together reported 191 Severe Adverse Events (SAEs) among patients on BDQ containing regimens. Out of these, 39 patients died (5% of the 2017 treatment cohort in these countries); the assessment of the causality of the reported deaths is still pending, so no statement can be made on the association between BDQ and the SAE's nor the deaths.

While working on the early recognition of adverse events and the prevention of death among these patients, the interpretation should take into account that historic treatment success rates among patients with (pre-) XDR-TB who did not have access to the new and repurposed drugs, was less than 50%. The majority of patients currently receiving BDQ belong in this category, whilst a minority receive these drugs because they cannot tolerate the drugs in the conventional second line regimen (or the STR).

The tables give an overview of BDQ introduction in 22 Challenge TB countries and the reported SAE's; as the India data are overwhelming, the tables below show the data from India separately.

	2014	2015	2016	2017
Number of BDQ Treatment Initiation Sites in 16 Challenge TB countries (excluding India)	2	10	16	32
- in India	-	-	6	24
Number of patients started on BDQ 16 Challenge TB countries (excluding India)	2	26	287	509
- in India	-	-	225	473

	2014	2015	2016	2017
Total number of patients starting BDQ in 6 Challenge TB countries excluding India	-	20	176	292
- in India	-	-	225	473
Number of reported BDQ SAEs in 6 Challenge TB countries excluding India	-	9	61	57 (25%)
- in India	-	-	61	134 (28%)
Number of reported BDQ SAEs which led to a death in 6 Challenge TB countries excluding India	-	1	7	14 (5%)
- in India	-	-	5	25 (5%)

The introduction of Delamanid (DLM) also expanded in 2017, with seven Challenge TB countries introducing individualized treatment regimens with DLM, 88 patients starting on this treatment in 9 DLM treatment initiation sites during Jan-Sep 2017. Only one SAE was reported in Burma in 2016 among patients treated with DLM. The remaining countries will work on the introduction of DLM during Year 4.

	2014	2015	2016	2017
Number of DLM Treatment Initiation Sites	0	0	4	9
Number of patients started on DLM	0	0	16	88
Number of reported DLM SAEs	0	0	1	0
Number of reported DLM SAEs which led to a death	0	0	0	0

In addition to Bangladesh, DR Congo, Uzbekistan, and Vietnam, from Jan-Sep 2017, seven more CTB countries introduced the STR. As a result 918 patients started STR treatment in a total of 333 treatment initiation sites in different stages of decentralization, varying from 1 (6 countries) to 243 (DR Congo) sites per country and the average number of patients varying per site from 1 (Nigeria, just starting up) to 192 (Bangladesh – experienced using the STR). In the coming months six more countries will implement the STR.

	2014	2015	2016	2017
Number of STR Treatment Initiation Sites	36	36	132	333
Number of patients started on STR	220	217	655	918

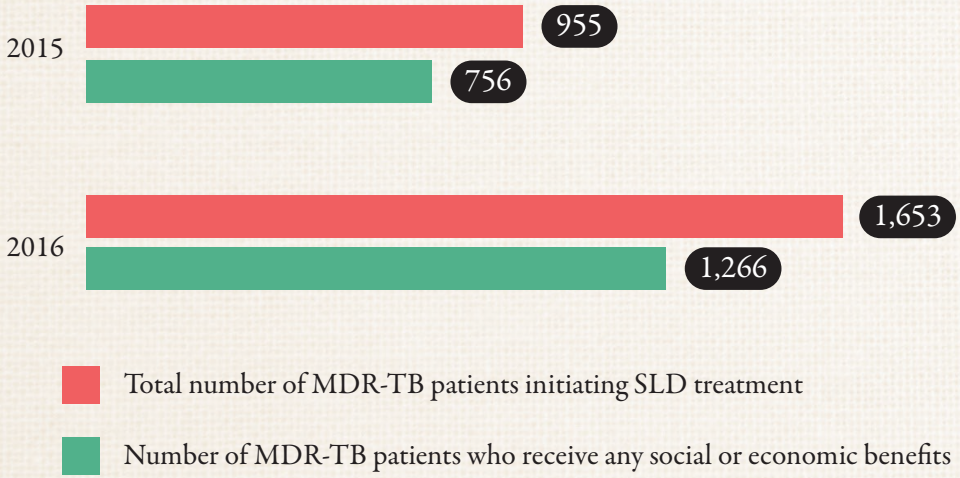
In addition to country projects, Challenge TB is implementing an overarching global BDQ coordination project. The achievements of this project in Year 3 were:

- Development of an Implementation Planning Tool for The Introduction of New Drugs & Regimens (ND&R)
- Generic programmatic and clinical guide for the introduction of ND&R
- Creation of an Excel-based tool for estimation of DR-TB patients eligible for the STR and individualized treatment regimens containing BDQ or Delamanid (DLM)
- Development of a "Guidance on requirements for QTc measurement in ECG monitoring when introducing ND&R"
- Development of guidance document on "Audiometry in the Management of DR-TB"
- Development of a generic training package for ND&R. The package consists of training modules on diagnosis, treatment, supply chain and monitoring
- BDQ Dosage Charts: This is a job aid for nurses and also visual information for patients
- Streamlining of ND&R data collection through the Challenge TB M&E framework

More MDR-TB Patients Receiving Social or Economic Support

Both the number Challenge TB countries and MDR-TB patients receiving social and economic support during second-line treatment initiation have increased, which may have contributed to improved MDR-TB treatment success rates as documented above. For example, in Nigeria, the number of MDR-TB patients receiving social or economic benefits during the first month of SLD treatment increased from 311 in 2015 to 1,716 in 2017; this was accompanied by a nationwide increase in the MDR-TB treatment success rate, from 62% in the 2012 cohort to 72% in the 2014 cohort.

Number and Percentage of MDR-TB Patients Who Receive Social or Economic Support

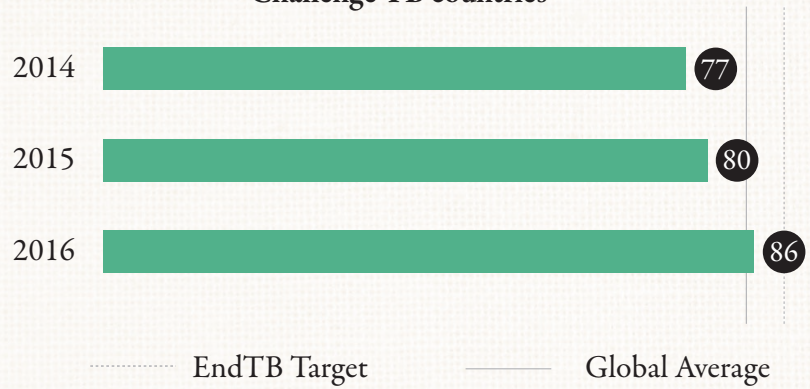


2015 – 2 countries (Bangladesh, Cambodia) reported complete data; 2016 – 6 countries (Bangladesh, Cambodia, DR Congo, Indonesia, Malawi, and Tanzania) reported complete data.

Expanding ART Coverage

The coverage of ART for notified TB patients co-infected with HIV reached 86% in all Challenge TB countries in 2016, up from 77% in 2014 and compared to 85% globally.

Percentage of notified HIV-positive TB patients on ART in Challenge TB countries



(WHO, 2017)

ART coverage is above the global average of 85% in 11 Challenge TB countries. Among those, Cambodia, India, and Malawi are above 97%, while Indonesia is below 50%. Compared with the 12 high burden TB/HIV Challenge TB countries, Indonesia has a low ART coverage among TB patients. The country has a low prevalence concentrated HIV epidemic, with significant levels of stigma surrounding the disease. Challenge TB Indonesia continues to work with the NAP, provincial and district health services to expand HIV testing capacity to TB treatment sites to ensure provide initiated HIV testing and counseling (PITC) for all diagnosed TB patients, followed by initiation on ART if found positive. Challenge TB subcontracted the National HIV Counselors Association to train TB staff in Challenge TB supported districts to offer PITC to all TB patients, an approach that was immediately taken up by the NTP in other areas. In addition, Challenge TB collaborates with the global LINKAGES and PSM projects to develop demonstration sites for joint HIV/TB service delivery.

Preventing transmission and disease progression

Targeted screening for active TB

Expanding Active Case Finding (ACF)

In 16 countries (Bangladesh, Botswana, Burma, DR Congo, Ethiopia, India, Nigeria, Indonesia, Kyrgyzstan, Malawi, Mozambique, Namibia, South Sudan, Tanzania, Ukraine, and Vietnam) Challenge TB implements a range of active case-finding (ACF) interventions among key populations. In Year 3, in Mozambique and South Sudan 13% and in Tanzania 2% of cases in Challenge TB project sites were reported through ACF. In Mozambique, CB DOTS activists/volunteers at HFs in Challenge TB supported areas contribute to case-finding by referring people with presumed TB, and the organization of "cough days" and CI. They follow-up patients diagnosed from the HFs, actively search for patients lost to follow-up, and support monthly data compilation.

Improving Case Detection in Prisons

Challenge TB works in 12 countries (Afghanistan, Bangladesh, Cambodia, DR Congo, Ethiopia, Malawi, Mozambique, Nigeria, Ukraine, Uzbekistan, Vietnam, and Zimbabwe) to improve case detection and the quality of treatment in prisons. In Year 3, of the six countries that reported data, nearly 1,000 TB cases were diagnosed in prisons with Challenge TB support which represents 1% of cases notified across these Challenge TB covered areas.

In Cambodia Challenge TB successfully screened all inmates upon arrival at targeted prison facilities. Support also included conducting routine case finding using a standardized checklist for symptoms in all new inmates and TB symptomatic prisoners. The trend in case notification rates among prisoners increased by 13% from 1,542 in 2015 to 1,743 per 100,000 in 2016.

Intensifying Case Finding Through Hospital Engagement

Challenge TB in Cambodia worked with the NTP to engage government hospitals to increase screening, diagnosis and referrals in five referral hospitals with a high volume of out-patient visits. TB symptom screening was introduced in all departments within the hospitals including out-patient and in-patient departments, as well as pediatric and diabetes clinics. In Year 3, 162,675 patients visited an out-patient or in-patient department in these five hospitals. Among those, 12,686 (8%) of patients had TB signs or symptoms and were referred for screening to TB units within the hospitals, of which 3,136 (25%) were diagnosed with TB and initiated on treatment. In Year 3, the TB case notification in the five hospitals increased by 8% compared to the previous year.

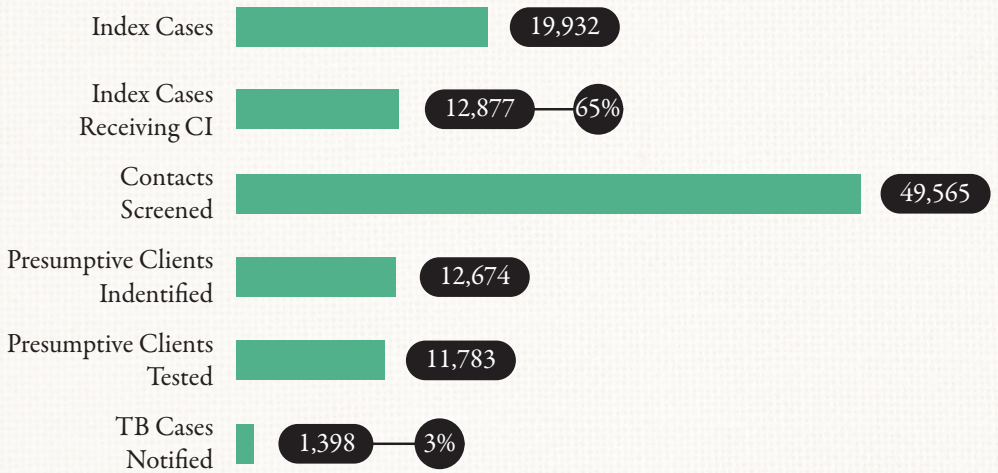
Scaling-up Contact Investigation

Challenge TB worked in 14 countries to introduce or scale-up contact investigation (CI): Afghanistan, Bangladesh, Burma, Cambodia, DR Congo, Ethiopia, Indonesia, Malawi, Mozambique, Namibia, Nigeria, Tanzania, Ukraine, and Zimbabwe. Currently, nine countries can report on cases notified through CI which resulted in nearly 12,000 TB patients in 2016 and is on track to exceed this number in 2017.

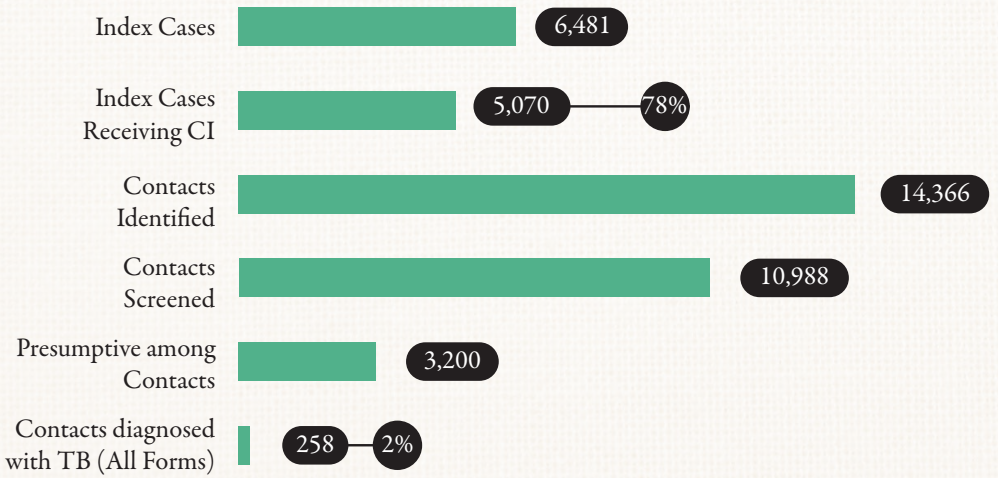
In Indonesia the project facilitated the development of SOPs and tools for CI to be piloted in two districts in Year 3. As per the current practice from the CSO's implementing GFATM and the USAID-funded CEPAT project in Surakarta, 10-15 close contacts were investigated per index patient (average 11), while in Jember the investigation also included neighboring households, which resulted in an average of 34 "household contacts" examined per index patient. The yield was carefully monitored and based on Challenge TB Indonesia's preliminary analysis of these results, the proportion of TB patients diagnosed among contacts is low (0.1% among all contacts in both districts,

and 0.2% among household contacts in Jember) suggesting that a better selection/definition of close contacts is needed. In Year 4, protocols will be adjusted to better focus CI on actual close contacts. In addition, the project and the NTP will consider modifications and improvements to the CI process and diagnostic algorithm to increase the sensitivity and therefore the yield of CI.

Example of CI country cascade - Nigeria



Example of CI country cascade - Malawi



Finding more cases through ICF among PLHIV

Vietnam is increasing case-finding in high-risk groups by focusing on PLHIV, clients attending methadone maintenance clinics (MMT), and populations in underserved geographic areas with an elevated risk for both infections. The preliminary results showed high case notification rates in these risk groups, with 2,358 TB cases (all forms) and 2,161 bacteriological confirmed cases per 100,000 MMT attendances in just one district. In HIV out-patient clinics 1,346 cases (all forms) and 1,154 TB cases (bacteriological confirmed) per 100,000 PLHIV were detected.

Improving Infection Control (IC) efforts

Seven Challenge TB countries reported on the numbers of HCWs with TB disease. Between 2014-2017, the number of HCWs diagnosed with TB both at the national level and in Challenge TB areas is still increasing, reflecting the improved efforts in these countries. There is still considerable under-reporting and notification on TB among HCWs both globally and in Challenge TB countries, largely due to associated stigma. As documented by TB-PROOF in South Africa, the implementation of appropriate TB-IC remains a big challenge.

Country Highlights:

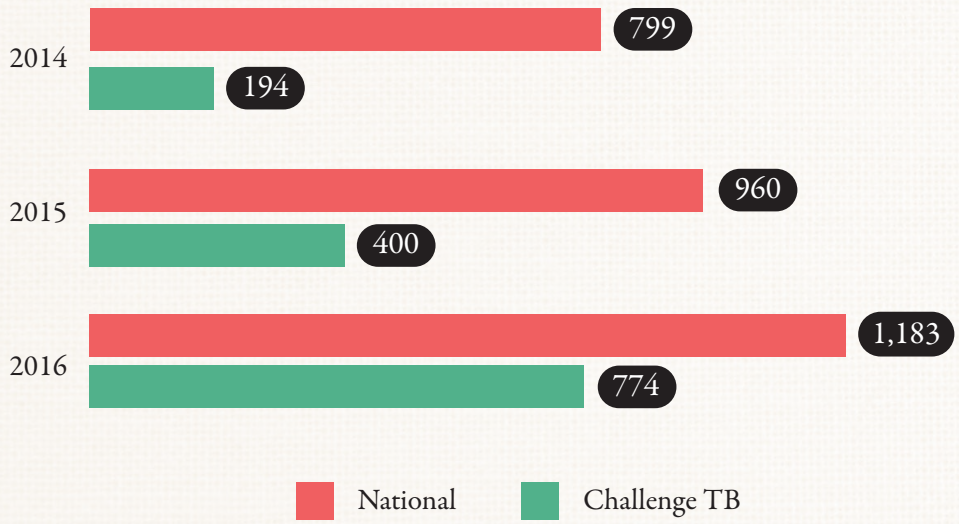
Indonesia developed a self-assessment tool for PMDT sites which includes IC. The tool has been used in ten PMDT sites and will be expanded to PMDT sites nationwide.

Namibia supported health facilities in Challenge TB geographic areas to adhere to TB-IC standards and guidelines, in order to prevent the transmission of TB in high HIV burden sites. A total of 276 out of the 300 (92%) HCWs at Engela hospital were screened for TB using a standard tool including chest X-ray, symptoms screening, and GeneXpert.

Tanzania provided TA to health facilities in Challenge TB regions to develop, update and implement TB-IC plans in 67% (742/1,106) of health facilities.

In collaboration with the NTP, the national policy on systematic TB screening among HCWs was updated. TB screening among HCWs continued in all regions and included Zanzibar for the first time. Out of 15,321 HCWs screened, 651 were presumptive patients and 42 had confirmed TB (7% of presumptive patients).

Number of Healthcare Workers Diagnosed with TB



NTP data reported by 11 Challenge TB countries (Cambodia, Kyrgyzstan, Malawi, Mozambique, Namibia, Nigeria, Tajikistan, Tanzania, Ukraine, Vietnam, and Zimbabwe)

Life Goes On...

My name is Elizabeth, I'm a single mother of two wonderful girls. I live in the city of Kadoma in central Zimbabwe. I make my living from a small street-side stall and from sex work.

My story begins with a fever, I thought it was something minor, but when it did not go away, I went to the hospital. The nurse said she thought I had TB and collected my sputum for testing, but the results were negative. The staff were still certain I had TB, so I took an X-ray and this confirmed their diagnosis, I did have TB. I was shocked, it had never crossed my mind that I could have the disease.

I lost my aunt to TB and I did not want to die, but the nurses assured me TB was curable as long as I adhered to my treatment. I started treatment on the day I received my results and I was referred to the Rimuka Poly Clinic, which is an integrated TB-HIV care site supported by the Challenge TB project. When I registered there, I was offered an HIV test which I accepted. To my horror, the result was positive.

It is not easy to take so many tablets every day but I knew I had to do it. During the third week of TB treatment, I started anti-retroviral therapy as well, which meant even more pills. But the effect was dramatic, soon I was strong enough to go back to my stall.

I was very lucky as my immediate family was very supportive. Some relatives did not want to be near me, but the support system I had around me was far stronger than the negativity I experienced. I successfully completed my TB treatment after six months, and now I am cured.

Since my diagnosis, I joined the Pan African Positive Women's Coalition organization where I volunteer as a District Coordinator working with HIV positive women and girls. I conduct health education sessions at the clinic, in churches and at various events in the community. I also offer psychosocial support to people recently diagnosed with TB and HIV.

What I have learned is that if you get TB, it is not a death sentence. Follow your treatment as prescribed because TB can be cured. If you test positive for HIV, embrace it, adhere to your medication, life goes on.

Ever since I tested positive for HIV, my outlook on life has changed. Now I always use protection, if clients don't want to, I turn them down, life is far more important than money.


“TB is not a death sentence.
Follow your treatment as prescribed
because TB can be cured”

Managing latent TB infection

Putting more children on preventive treatment

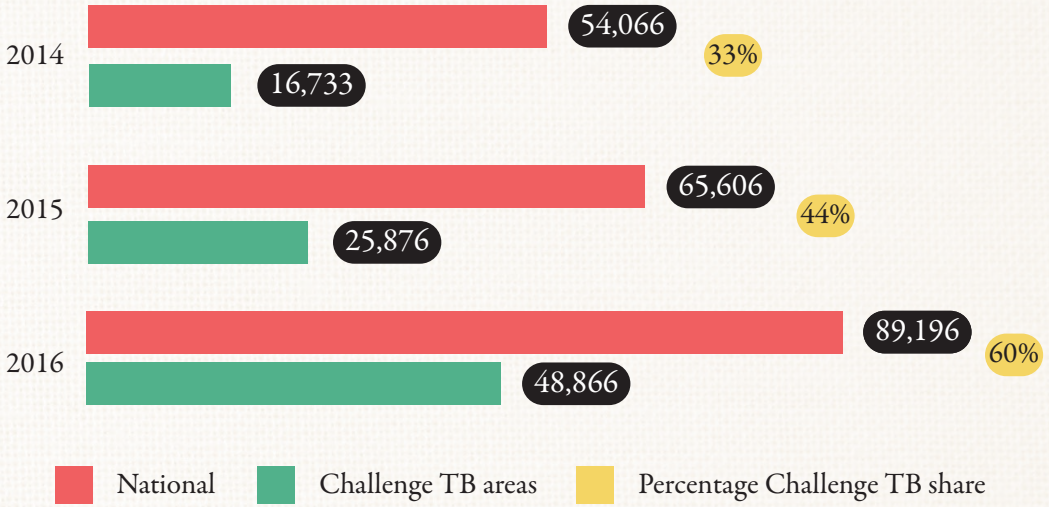
According to the WHO 2017 report, in 2016, there were an estimated 1.3 million children under the age of 5 who were household contacts of bacteriologically confirmed pulmonary TB cases and who were eligible for isoniazid preventive treatment (IPT), yet only 13% of those estimated were put on treatment.

In 2014, while only 9 Challenge TB countries were reporting the provision of IPT for 54,066 children these figures have grown to 14 Challenge TB countries in 2015 with 65,606, and 15 Challenge TB countries in 2016 with 89,196 children put on IPT. Challenge TB's share of these national figures has grown from 33% in 2014 to 44% in 2015 and 60% in 2016.

Below are examples from several Challenge TB country projects that are successfully increasing childhood TB notification as well as introducing or expanding IPT for children:

Bangladesh incorporated an active screening system into the pediatric outpatient departments of selected tertiary health facilities, and also developed an electronic tool for Childhood TB screening. As a result, 309 pediatric TB cases were detected, and an additional 279 childhood TB cases were identified and put on treatment through Challenge TB sub-awardees. Challenge TB trained 130 physicians on new guidelines with a special emphasis on diagnostic algorithms and new formulation childhood TB treatment. A facility based mentoring program was established, where the medical officers connected with the child TB expert/consultant through phone apps for consultations on managing complex cases. Challenge TB is working on harmonizing a country-wide implementation strategy for IPT. Through Challenge TB sub-awardees, from March-September 2017, a total of 520 (97%) children (<5) started on IPT.

Number of Children Under the Age of 5 years Who Initiated IPT



DR Congo started intensified case-finding in nutrition clinics/rehabilitation centers in two provinces. In Sankuru, 1,538 malnourished children were screened for TB in five months, 338 (22%) possible TB cases were identified but no TB cases were found. In South Kivu, 4,869 malnourished children were identified, 2,673 (55%) were screened, and 245 TB cases (9%) were diagnosed with TB. Guidelines on the use of IPT in eligible children and PLHIV were disseminated.

Indonesia supported the revision and dissemination of national guidelines on the management of Childhood TB. The new guidelines emphasize the use of GeneXpert for bacteriological confirmation among children with presumptive TB, as part of a diagnostic algorithm for facilities without access to chest X-ray or tuberculin skin test, as well as the screening and management of child contacts of DS- and DR-TB patients. Six Challenge TB supported provinces contributed 1,014 out of 1,942 (52%) of the IPT provision among

child contacts. The Childhood TB module was integrated into the newly updated national TB training modules for health care providers and Challenge TB facilitated the introduction of GeneXpert testing on stool samples to the National Childhood TB Technical Working Group. The technical working group agreed to adopt the study and continue with pilot implementation in several childhood TB referral sites in Year 4.

Malawi trained 336 nurses and clinicians on CI and childhood TB, resulting in an increase in the number of notified patients (aged 0-14) from 9% (1,234/13,781) in 2016 to 12% (820/7019) in 2017 (through June). The proportion of TB cases diagnosed and notified through CI increased from 1% (106/13,512) in 2016 to 3% (106/3,363) in 2017 during the April-June quarter.

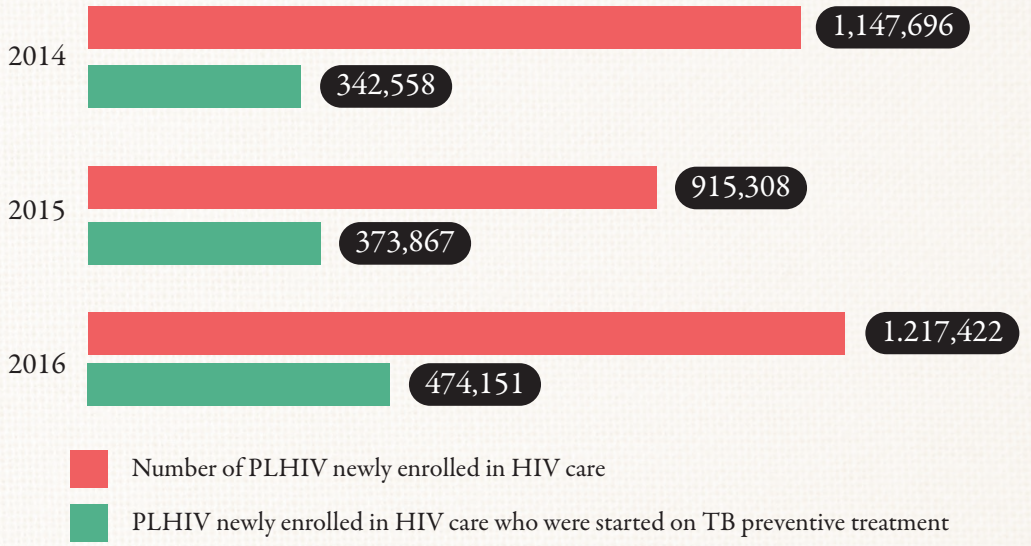
Nigeria improved child TB case notification through a pediatrician-led task shifting approach aimed at linking high-burden pediatric service delivery points to childhood TB diagnostic services including GeneXpert testing. This resulted in the notification of 2,801 children amounting to a 2% increase in child TB case notification from the previous year. Challenge TB also supported the review and adaptation of the *National Pediatric Formulations Desk Guide* for HCWs for diagnosing and treating childhood TB.

Tanzania trained 209 HCWs, and supported mentoring and supportive supervision on IPT for children (<5). Challenge TB supported sites screened 84,076 children (<5) and notified 3,053 TB cases. This year 2,195 children were also put on IPT.

In 2016 Challenge TB countries provided TB preventive treatment to 39% of patients newly enrolled in HIV care, compared to 30% in 2014.
The provision of TB preventive treatment to those newly enrolled in HIV care reached 940,269 people in 2016, which is 42% of the total of 2,263,682 PLHIV newly enrolled in HIV care in the same year (WHO 2017). From the 13 Challenge TB countries on the WHO high-burden list for TB/HIV, the highest proportions of PLHIV newly enrolled in HIV care who were started on TB preventive treatment in 2016 were reported in Zimbabwe (73%), Ethiopia (52%), Mozambique (52%), and Malawi (50%).

Challenge TB is also implementing a core funded project which is a randomized, pragmatic, and open-label trial. The project has two objectives: (1) To compare treatment completion of a single round of 3HP to 6H; and (2) To compare effectiveness of a single round of 3HP to two annual rounds of 3HP. This multi-country study is taking place in South Africa, Mozambique and Ethiopia with the Aurum Institute as the main research institute.
The results of the trial are meant to generate evidence to guide a WHO recommendation for the use of 3HP in high-incidence settings. For the trial, a total sample size of 4,000 participants (400 in the 6H arm: 1800 in the 3HP arm: 1800 in the pulsed 3HP arm) was estimated to be adequate to meet the primary objective on the comparison of TB incidence in the 3HP versus the pulsed 3HP arm, with a superiority design assuming 80% power, effectiveness (i.e. reduction of cumulative TB incidence) of 40%, two years of follow up and 10% loss to follow-up. In Year 3, eight sites (South Africa 5; Ethiopia 2; Mozambique 1) initiated and have enrolled 3,036 participants so far. All 4,000 participants will be enrolled before the end of November 2017. There are ongoing regular site monitoring visits and no findings have warranted recommending a temporary pause. In Year 4 and 5, participants in the p3HP arm will be offered another round of 3HP, the 12-month follow-up will be finalized for participants in the 6H arm, and all 3HP/p3HP participants will continue to be followed-up for active TB for 24 months during Year 4 and 5.

PLHIV Newly Enrolled in HIV Care Who Were Started on TB Preventive Treatment



2014 – data reported by 13 Challenge TB countries;
2015 – data reported by 14 Challenge TB countries;
2016 – data reported by 16 countries

(WHO, 2017)

Strengthening TB service delivery platforms

Increasing political commitment and leadership

One of the main pillars of a sustainable approach toward disease control is a strong political commitment from leadership of each country. This factor has been emphasized both in Sustainable Development Goals (SDG) (2016-2030) and in End TB strategy. In India and Afghanistan, between Year 2 and Year 3 private sector cost share cumulatively increased more than three-fold.

Indonesia successfully piloted the methodology for District Action Plans for decentralized funding of the NSP 2016-2020, assisting in the development of costed District Action Plans (DAP) in the 16 Challenge TB supported districts. By the end of Year 3, four were already legalized, and the others will be by the end of 2017. In the context of the decentralized government in Indonesia, these DAPs are necessary for mobilization of sustainable funding for TB control programming at district level and are used as a reference for annual intersectoral budget allocations for TB program activities. The result of the DAPs is monitored at the level of the president through 12 minimum service standards (SMP) for district health development, among which one on TB. In support of the target setting for this very important indicator (and for the NSP), Challenge TB also assisted in the development and consequent deployment of the district level modeling tool to estimate the incidence of TB, in collaboration with the NTP (GF funding) and the London School of Hygiene and Tropical Medicine.

In Nigeria the project supported the development of costed TB plans for 12 priority states. This was followed up by an advocacy meeting organized and conducted by the USAID mission director with heads of ministries of health and state parliamentarians to ensure funding on TB activities at the state level.

In India, the TB Caucus, a network of elected representatives committed to END TB in India, was launched in March. Twenty-six members of the Indian parliament became active members of the Caucus and agreed to advocate for increased resources for TB, raise awareness among their constituencies, and fight stigma against TB patients and their families by addressing it in their public gatherings.

- Declaration of the members states of the UN to call for a High-Level Meeting on TB in 2018
- G20 – inclusion of TB language in the Health Minister and Head of State Declarations
- Pushing key governments to maintain/increase TB funding: UK, US, Australia
- Supporting the Global TB Caucus to build a powerful network of parliamentarians to support TB
- Fostering a collaborative process on the preparation of the High-Level Meeting on TB.

The UNSE attended the TB STAG and the NTP Summit at WHO in Geneva, the Wilton Park event organized by the UK Government, the UN General Assembly in New York, and carried out a high-level delegation to India.

One of the areas of partnership is voluntary collaboration between different actors from public, private and civil society by bringing together their core competencies in TB control. In Year 3, five Vietnam, Zambia, Mozambique, Nigeria and Tajikistan are at the final step of making Stop TB Partnerships, meaning that they meet regularly and produce critical deliverables. Afghanistan, DR Congo, Indonesia, and Namibia are working on a detailed charter/plan. This means that 41% of Challenge TB countries have been working on building a national Stop TB partnership.

In **Tanzania,** Challenge TB continued working with the NTLP to establish a functional Stop TB partnership that will focus on resource mobilization and advocacy for TB care and prevention. In Year 3, Challenge TB supported the NTLP in conducting a one-day meeting to review and finalize the terms of reference for the Stop TB partnership, identify potential partners, and review the checklist for the applicants and framework for partnership agreements. In September 2017, the MOH Community Development, Gender, Elderly and Children (MOHDGEC) signed a letter of intent which will be shared with identified stakeholders before calling them for a meeting to discuss and sign the agreements before the partnership becomes operational.

In **Ukraine,** a national Stop TB partnership with adequate organizational structure and a secretariat was established to serve as a platform, including civil society, to work together on improved advocacy and mobilization of support for the TB control program, to engage in high-level advocacy, and to gather support from all stakeholders to further improve TB control activities and consolidate efforts to end the TB epidemic by 2030. The Stop TB Partnership in Geneva was involved in the development process. A launch event for Stop TB Partnership Ukraine will be conducted in the first quarter of Year 4.

In **India,** Challenge TB implemented a specific intervention named "Call to Action for a TB-Free India". Under the stewardship of Ministry of Health and Family Welfare, Challenge TB successfully engaged a wide range of stakeholders in the TB-Free India campaign including celebrities, parliamentarians, companies and industries, media, representatives of the private health sector, research and academia, and affected communities. Specific activities included:

- Gas Authority India Limited implements an awareness, screening, diagnosis and nutritional support campaign for TB patients in Pata (where GAIL has a petrochemical plant) and the surrounding areas of Auraiya district.
- The launch of three new TB-Free Haryana vans (five in total) equipped with digital X-ray machines: out of 3,434 people tested over 11 months, 1,117 (33%) had X-rays suggestive of TB and were referred to the public sector for evaluation.

Status of National Stop TB Partnerships in Challenge TB Countries

Country	2014	2015	2016	2017
Vietnam	●	●	●	●
Zambia	●	●	●	●
Mozambique	●	●	●	●
Nigeria	●	●	●	●
Tajikistan	●	●	●	●
Afghanistan	●	●	●	●
Namibia	●	●	●	●
Indonesia	●	●	●	●
DR Congo	●	●	●	●
Bangladesh, Botswana, Cambodia, Ethiopia, India, Kyrgyzstan, Malawi, South Sudan, Tanzania, Ukraine, Uzbekistan, Zimbabwe	●	●	●	●

● National Stop TB Partnership established & fully functional
● National Stop TB Partnership development is ongoing
● No National Stop TB Partnership established

Global Fund

In Year 3, Challenge TB was also operating a Global Fund Hub at the PMU to support Challenge TB countries with preparations for the 2018-2020 funding cycle. In October 2016, the Global Fund announced a total of USD 10.9 billion available to eligible countries. Among the 22 countries, a total of USD 1,084 billion was allocated for TB activities. In addition, eight Challenge TB countries are also eligible for catalytic matching funds for a total of USD 81 million.

In Year 3, the Hub played an active role to support coordination of TA and other activities related to development of funding requests for 19 Challenge TB countries that submitted funding requests in March and May 2017. To date, a total of 53 planned STTA visits were planned and 50 completed. Of the 53 planned STTAs, four are meant for grant making with two still to be completed in October 2017. Botswana will be the last Challenge TB country to submit a funding request in February 2018. Eighteen funding requests were approved by the Technical Review Panel for grant making. Many of these 18 countries are well underway in the grant making process with several reporting expected grant signing to take place in October or November 2017. Unfortunately, Nigeria's TB/HIV funding request was not approved and will need to be revised for re-submission in 2018. To ensure there is no major funding gap, Nigeria was asked to submit an extension request for a period of 18 months.

The Jackson Twins

The Challenge TB project in Tanzania is using community-based organizations to help find more of the thousands of missing TB cases, and to help patients cope with long and difficult treatment. One of the organizations 'Upendo na Matumaini' (UMATU) is based in Arusha region, and from July to September 2017, they contributed 34% of the TB cases notified in the district.

In March 2017, staff from UMATU were going door-to-door educating people about TB. They visited the home of Mary who lives in Maliasili in the region of Arusha. They asked her if she knew about the symptoms of TB and when she said she didn't, they told her all about the disease and how it is spread and prevented.

Jackson and Joyce aged 2, had been suffering from both fever and coughs and Mary's mother had suffered the same symptoms before she passed away just one month before. It suddenly dawned on her that all three had TB, and she asked the team to help.

When the team examined the twins, it was immediately obvious that not only were they malnourished but that they had the classic symptoms of TB. They were both so weak they could not even stand, let alone walk. Mary had already taken the twins to Karatu district health facility twice before, but both times they had been diagnosed with pneumonia, and the treatment had not helped.

They accompanied the family to Karatu health facility, where the district TB coordinator diagnosed them with TB. They were immediately started on a 6-month treatment regimen, and given nutritional support to boost their weight and strength.

After six months of treatment, they were declared cured. Their general health had improved tremendously, Jackson had gained 4 kg and Joyce 3 kg. Two months after that, they not only look healthy, they are also back on their feet.

Bringing education and active case-finding to the community is an important way to find the people with TB who have been missed by the health system. The more people who know about the disease, and the more people who are looking, the sooner we can find, treat, and cure people with TB, meaning there are fewer opportunities for the disease to spread.


Le Cabinet
D'UN DÉTECTIVE
Capot
Pipe
Traces
Trench

Since 2015, total funding (both USG and non-USG) for local partners has considerably increased. This funding does not include the GF.

Year	Non-USG Funds	USG Funds	Total Funds	% Covered by Non-USG Funds
2015	3.2	0.3	3.5	93
2016	103.0	16.8	119.8	86
2017	325.4	122.0	447.4	73
Total	**431.6**	**139.1**	**570.7**	**76**

In Year 3, Challenge TB allocated 17% of its total approved budget in sub-awards. Compared to Year 2 there is a 41% increase in the committed amount of budget.

Out of $18.1 million Challenge TB sub-awards, 75% has been committed to 109 sub-awardees across 22 countries. The remaining $4.6 million (25%) has been either cancelled, reprogrammed, or was over-budgeted in the initial workplans.

Item	Planned	Committed	Reprogrammed/Carried-over to Year 4
Budget	$18.1m	$13.5m	$4.6m
Number	146	109	37

Out of $13.5 million committed sub-awards, excluding the KNCV sub-agreement with the coalition partners, 56% was invested in patient-centered care and treatment largely in India, Burma, Bangladesh and Mozambique, 20% in comprehensive high-quality diagnosis mainly in India and Tanzania and 15% in enabling environment mostly in Bangladesh and Indonesia.

Local-regional		International	
USD amount	Number	USD amount	Number
$10.6m	98	$2.9m	11

In total, 79% ($10.6 million) went to local sub-awardees.

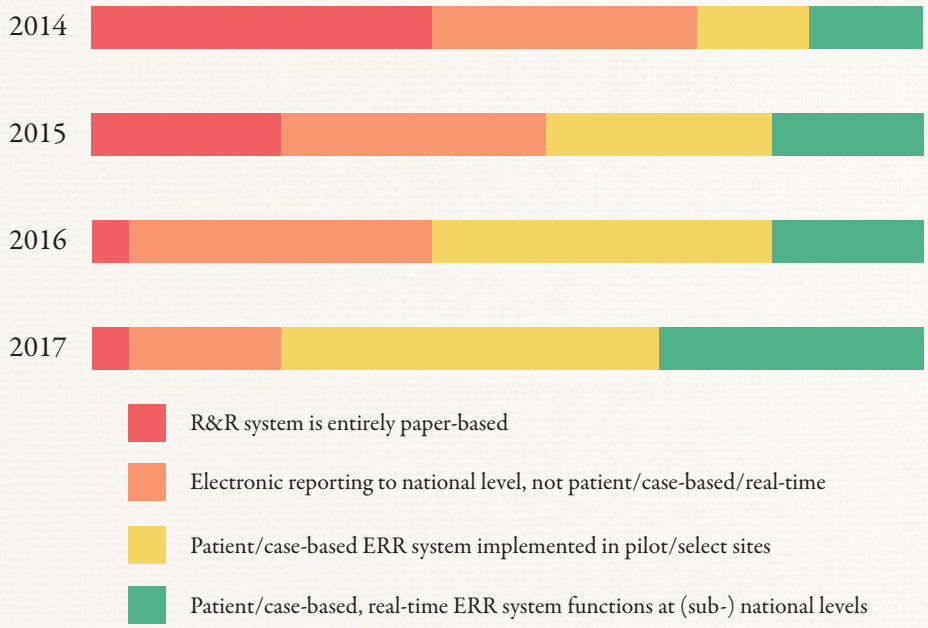
List of Main Sub-awardees for the 3 Areas with the Highest Investment

Challenge TB Sub-Objective	Name of Sub-awardees
Patient-centered care and treatment	**Afghanistan:** AADA, BARAN, BDN, CAF, OHPM, ORCD, Solidarity for Afghan Families (SAF), Move Welfare Organization (MWO) Bangladesh: Bangladesh Diabetic Association (BADAS), International Centre for Diarrheal Disease Research, Bangladesh (icddr,b), Health, Education and Economic Development (HEED), Nari Maitree, Damien foundation, BRAC **Burma:** Myanmar Health Assistant Association (MHAA), Pyi Gyi Khin (PGK), World Vision Inc. **Cambodia:** Cambodian Health Committee (CHC), 14 In-Kind Grants **DR Congo:** Ambassadeurs de Lutte contre la Tuberculose (ALTB), Ligue Nationale Antituberculeuse et Antilépreuse du Congo (LNAC), Club des Amis Damien (CAD), Femme Plus **India:** Maharashtra Jana Vikas (MJK), Alert India, Edelman-PR Agency, Mudra On-line, Edelman-PR Agency, Alert India **Indonesia:** Pejuang Tangguh (PETA), Perkumpulan Pantang Menyerah TB-RO (PANTER TB RO), Institute of Community Development and Empowerment (ICDp), KDP TB-HIV Care 'Aisyiyah Kota Medan, Aisyiyah Wilayah Jawa Barat, Perhimpunan Konselor VCT HIV AIDS Indonesia (PKVHI), Pejuang Sehat Bermanfaat (PESAT), Yayasan TERJANG (Terus Berjuang) West Java **Mozambique:** Ajuda Desenvolvimento de Povo a Povo (ADDP), Associacao Mocambicano para o Desenvolvimento da Familia (AMODEFA), ComuSanas, Damien Foundation, Direcao Provincial de Saude (DPS), OLIPA-ODES **Ukraine:** Initiative of Life, Light of Hope, Vykhid, National Committee of Ukrainian Red Cross, 100 Percent Life. Kyiv Region-Odesa, All-Ukrainian Network of People Living with HIV/AIDS of Lviv City-Lviv, Self Help Club "Life Plus" -Kyiv Oblast **Namibia:** Namibia Red Cross Society, Project Hope
Comprehensive high-quality diagnosis	**Bangladesh:** Interactive Health Solutions (IHS) **India:** FIND **Mozambique/Malawi/Tanzania/Ukraine/Botswana:** SystemOne
Enabling Environment	**Bangladesh:** International Centre for Diarrheal Disease Research, Bangladesh (icddr,b) **Burma:** Population Services International (PSI) **Indonesia:** PERPARI, PATTIRO, Lembaga Kesehatan Nahdlatul Ulama (LKNU), IDI Cabang Tulungagung, IDI Cabang Kota Bandung (IDI Branch Bandung City), IDI Wilayah Sumatera Utara, STIKES PKU Muhammadiyah **Tanzania:** NELICO, WALIPO, TOKIUKKI, Mtawasa, Umatu, Myapid, Cardno Emerging Markets

Electronic Recording and Reporting Systems

Seven Challenge TB countries have a functioning patient/case-based, real-time electronic recording and reporting systems (ERR) at national and sub-national levels for both TB and MDR-TB.

Status of Reporting Systems in Challenge TB Countries



Since last year, **Botswana and Tajikistan** have moved their pilot patient/case-based ERR system up to the national and sub-national levels for both TB and MDR-TB. **Nigeria** moved their non-patient/case-based ERR to patient/case-based ERR at the national and sub-national levels similar to Botswana and Tajikistan. **Zambia,** the only Challenge TB country having a fully paper-based system, conducted a landscape analysis of the existing TB M&E system to inform the development of an electronic TB register.

Supporting Prevalence Surveys

By the end of September 2017, a TB prevalence survey was ongoing or completed in four countries (Bangladesh, Burma, Namibia, and Vietnam). The prevalence surveys in Namibia and Vietnam are technically supported by Challenge TB, while all are largely funded by the Global Fund.

Namibia started implementing its first national TB prevalence survey during Year 3 and expects to complete field work in February 2018 and the report by June 2018. The survey is being carried out in 68 clusters in the country and is designed to screen 34,000 people aged 15 years and above for TB. Challenge TB technically supported the preparations, pilot, and the field work.

The field work of the second national TB prevalence survey in **Vietnam** – the first was conducted in 2006 – started in the end of September and is planned to be completed by February 2018. The project provided support for the protocol development, data management, field work and SOPs to the NTP. The results of the prevalence survey will be used to inform the TB elimination strategy for Vietnam and document experiences and lessons learned for other countries to benefit from.

Supporting Drug-Resistance Surveys

During Year 3, 12 Challenge TB countries were working on drug-resistance surveys, DR Congo, India and Zimbabwe completed their surveys, and Cambodia, Mozambique and Zambia have surveys planned next year. The implementation of the surveys in DR Congo and Zimbabwe were technically supported by Challenge TB. Surveys are still ongoing in Bangladesh, Ethiopia, Indonesia, Malawi, Tanzania and Tajikistan, of which those in Bangladesh and Ethiopia were technically supported by Challenge TB.

DR Congo started to conduct its first survey in 2015. The results, which were validated in 2017, showed that 2% of new and 17% of previously treated cases had MDR-TB.

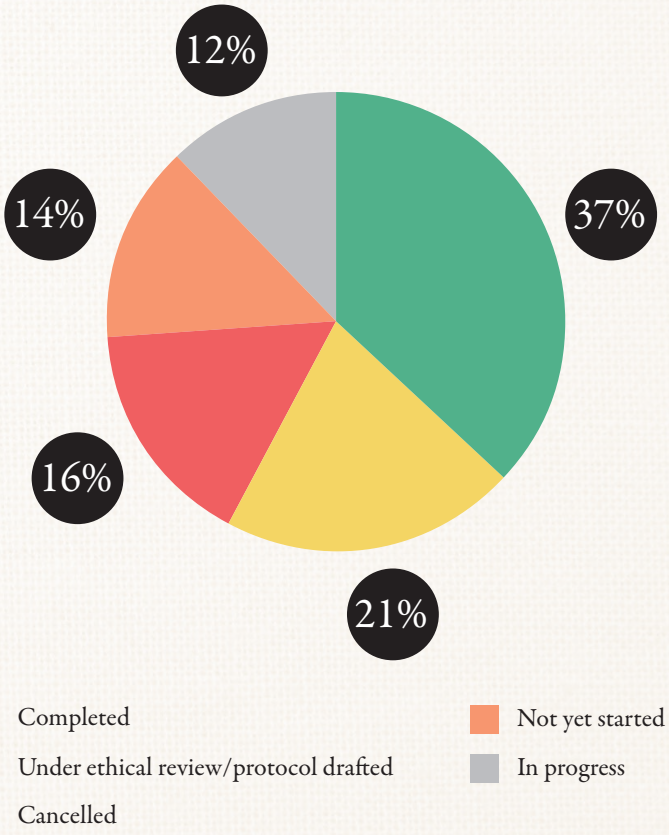
Zimbabwe completed a second survey in 2016. The rate of any rifampicin resistance among new cases more than doubled from 2% in the previous to 4% in this survey. There was no rifampicin mono-resistance reported in the previous survey compared to the current one, where half of the reported RR-TB cases was due to rifampicin mono-resistance. Following the findings, Zimbabwe has just begun implementing a policy on using GeneXpert as an initial test for all presumptive TB patients following updating of national guidelines in November 2016.

While five of the ongoing countries are repeated surveys, the first nationwide survey is currently underway in Indonesia. Preparations for the repeated survey in Cambodia that will start in 2018, were supported through Challenge TB with the provision of training for laboratory technicians at the NTRL.

Supporting Operations Research Studies

To date 11 Challenge TB countries have planned a total of 43 operations research activities and 16 (37%) have been completed with Afghanistan completing 10 operations research studies. The main topics related to effectiveness and efficiency of cases notification as well as case finding particularly among key populations. The results of at least two completed studies (Afghanistan and Zimbabwe) were used to change national level policy or practice nationally, while 14 others from Afghanistan, Ethiopia and South Sudan were shared with international audiences at the Union Conference in Guadalajara, Mexico.

Status of Challenge TB-supported Operations Research Studies



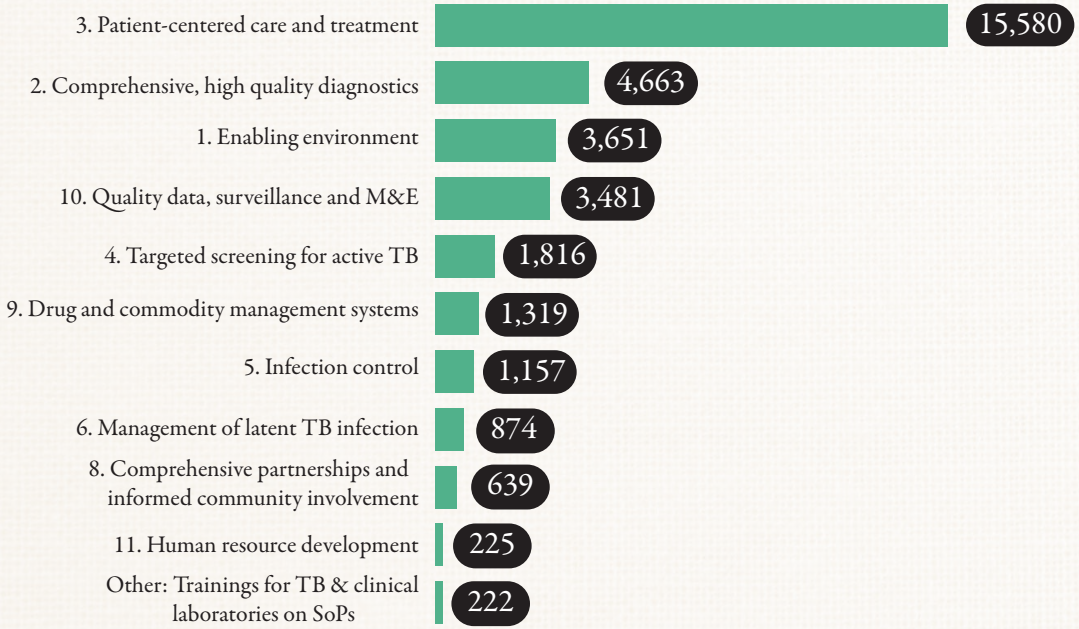
CTB 2017

Training of Healthcare Workers

In Year 3, a total of 33,627 healthcare workers (41% female) were trained through Challenge TB support in all countries, compared to the total of 34,208 (30% female) trained in Year 2.

Of the total number of healthcare workers trained across 11 sub-objective areas, the largest group (46%) was trained on patient-centered care and treatment.

Number of HCWs Trained by Sub-objective Area



CTB 2017

Challenge TB works to strengthen TB platforms by building effective alliances both inside and outside governments (particularly with the private sector), enhancing leadership and management capacity, integrating efficient and sustainable data collection and analysis systems, improving procurement and supply chains , and human resource development through innovative training and capacity building. This extends to linkages with donors such as the GF and alignment with other USAID programs. Through core funds, Challenge TB is also managing two projects described below.

Measuring Catastrophic Costs

The World Health Assembly adopted the WHO End TB Strategy in 2014. One of the three high level indicators to monitor the implementation of the End TB strategy is the percentage of TB-affected families facing catastrophic costs due to TB. A generic protocol and instrument (WHO, 2015, TB CARE II) has been available for field testing since September 2015. This was built on the *Tool to Estimate Patient Costs* (TB CAP), and its recent adaptation for MDR-TB patients (TB CARE I), both led by KNCV.

WHO organized a Challenge TB funded global consultation in April 2017. During the meeting, specific changes to the survey methodology were agreed upon, and advice was provided on the revised structure and content to the draft handbook. The final handbook will be published by December 2017.

Measuring Stigma

The project aims to develop valid, feasible, and efficient methods to measure the level of TB stigma in the community, patient, and health worker populations. Year 3 was a productive and intense year in which many deliverables were finalized.

Among the key activities were:

1. The TB Stigma Measurement Guidance was drafted and underwent review by 32 peer reviewers. A further 40 TB advocates are currently conducting a review that is set to conclude on November 2, 2017.
2. Challenge TB prepared for a TB Stigma meeting at the Union conference on how to strategize and bring more geographically diverse and multi-disciplinary stakeholders to the stigma reduction effort.
3. The IJTLD TB Stigma Supplement was prepared to be launched as a set of 11 open access research articles and three editorials in October during the Union Conference.
4. The MDR-TB scale validation pilot in Ethiopia was approved by USAID and the study protocol was finalized and submitted for ethical review.

Conclusions & Next Steps

In collaboration with partners, Challenge TB is performing much better than the rest of the world on some key performance measures, such as:

- Reducing the estimated absolute number of TB deaths among HIV-positive people more than twice the global rate (11% globally versus 24% in Challenge TB countries).
- Accelerating case notifications at a higher rate than global figures (5% globally versus 9% in Challenge TB countries).
- Increasing the number of PLHIV who are given IPT for treatment of latent TB infection at a much higher rate than global figures (1% globally versus 38% in Challenge TB countries).

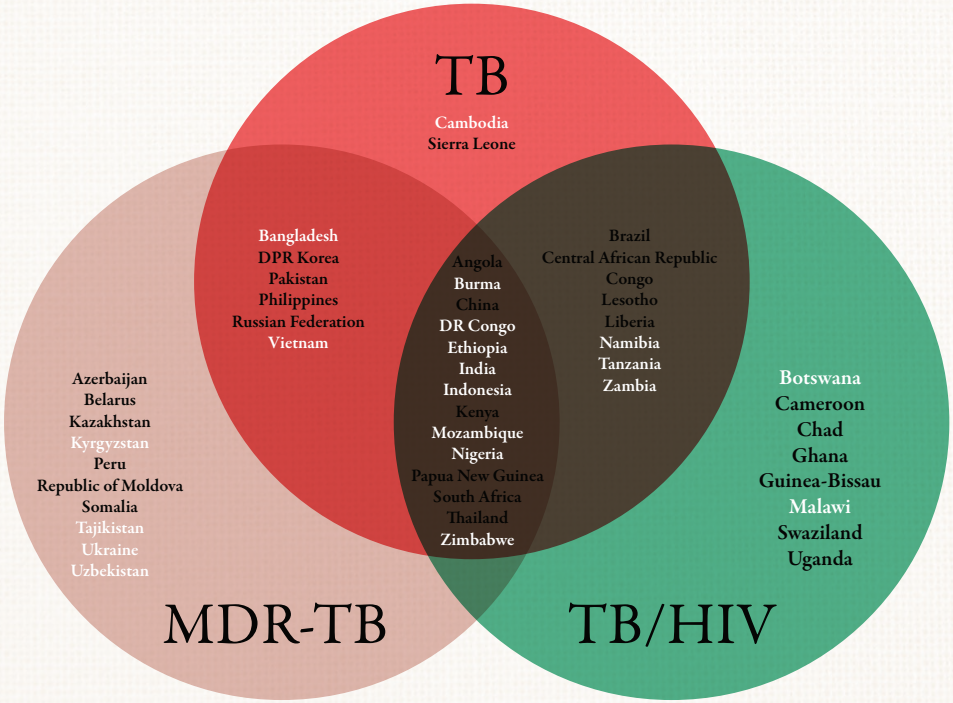
Based on results gathered over the last three years, Challenge TB continues to re-emphasize strategies in the following areas: data driven planning, Finding and Treating the Missing Patients (FTMP), improving GeneXpert utilization and functionality as well as the scale up of STR and ND&R for DR-TB cases. As Challenge TB moves into Year 4, there is an opportunity to further improve upon and accelerate advances in TB prevention, care, and treatment while ensuring and strengthening sustainable health system platforms in support of NTPs that will exist beyond Challenge TB. Sustainability and hand-over of activities are particularly important in the near term for South Sudan, Cambodia, and Bangladesh where Challenge TB will be phased out in Year 4. Over the past year Challenge TB recognizes and is developing solutions for challenges that include:

- Expansion of diagnostic connectivity systems (such as GxAlert) as well as the reporting and use of the system data.
- Evolving country-level mission strategies or policy changes that affect Challenge TB implementation.
- Importance of sub-national data and tailored activities that can reach key populations and localized epidemics.
- Renewed focus on LTBI and preventive treatment particularly in high-risk groups - children, close contacts, and PLHIV.

Annexes

Based on the WHO list of high TB, TB/HIV, or MDR-TB burden countries, 20 Challenge TB countries fall into at least one of the categories. While Afghanistan and South Sudan are not on any of the high burden lists, eight Challenge TB countries (Burma, DR Congo, Ethiopia, India, Indonesia, Mozambique, Nigeria, and Zimbabwe) appear on all three. This illustrates the epidemiological and programmatic complexity of the countries supported by the project.

The three high-burden country lists for TB, TB/HIV, and MDR-TB used by WHO during the period 2016-2020
(Challenge TB countries are in white)

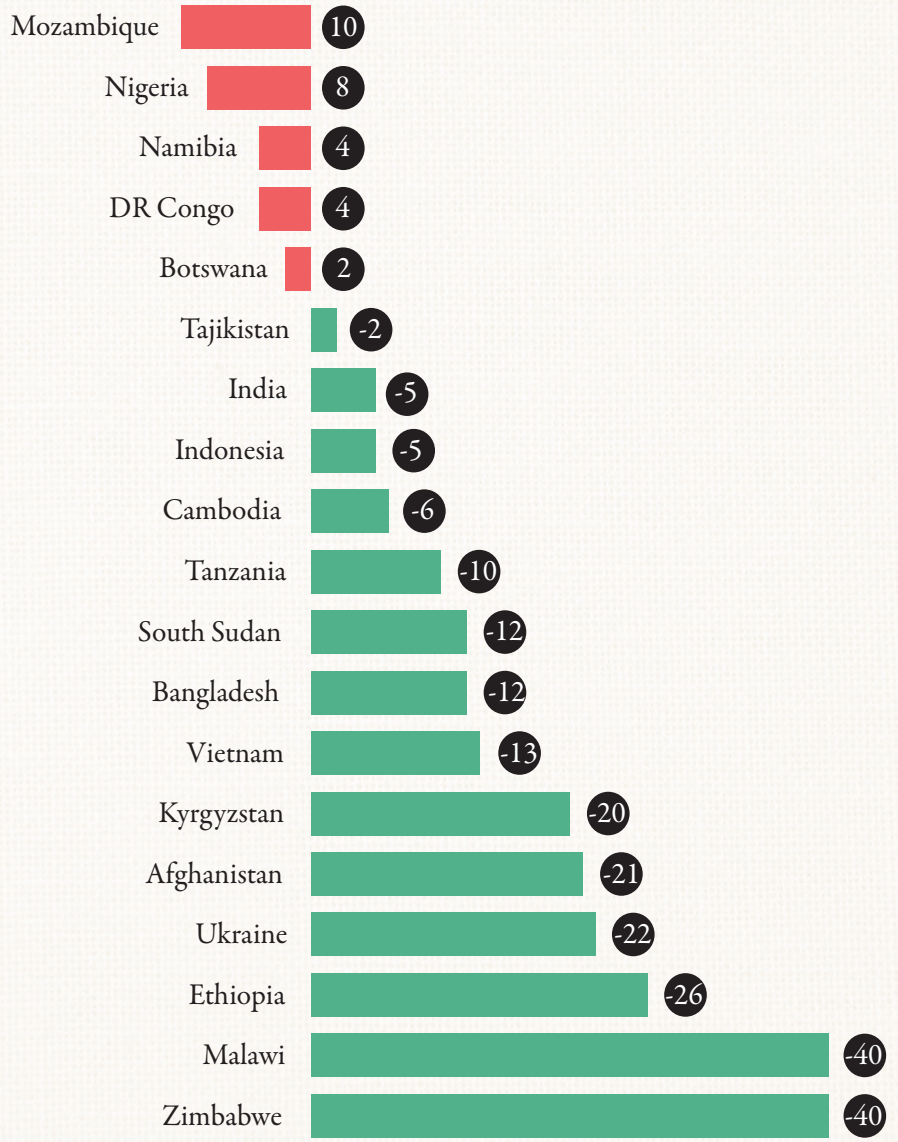


WHO 2017

Reducing Mortality – TB and TB/HIV

Globally, there were an estimated 1.3 million (1.2-1.4 million) deaths from TB among HIV-negative people in 2016 and an additional 0.37 million (0.33-0.43) deaths from TB among HIV-positive people (WHO 2017). The estimated total number of TB deaths among **HIV-negative** people (or HIV unknown) decreased between 2014 and 2016 in 14 Challenge TB countries, with a combined rate of decline across all 22 countries of **5%**. Similarly, the estimated absolute number of TB deaths among **HIV-positive** people decreased in 17 countries, with a combined rate of decline across all 22 countries of **24%**. These are data generated by WHO through modeling (confidence intervals not shown here).

Percentage Change in the Estimated Total Number of TB Deaths in Challenge TB Countries 2014-2016 (excludes HIV+TB)



WHO 2017

0% change for Burma, Uzbekistan and Zambia

The estimated total number of TB deaths among HIV-positive people decreased by 24% in Challenge TB countries (11% globally) between 2014 and 2016. Note that the 4% increase in HIV+TB deaths in High TB/HIV burden non-Challenge TB countries is mainly due to a reported 22% increase in HIV+TB deaths in South Africa.

ESTIMATED NUMBER OF TOTAL TB DEATHS (HIV+TB ONLY)

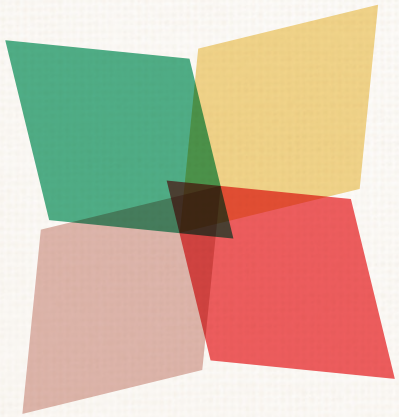
	2014	2015	2016		
Global	417,517	392,378	373,410	▼	11%
Challenge TB	223,476	203,662	170,876	▼	24%
30 High TB/HIV Burden Countries	390,550	366,000	346,550	▼	11%
High TB/HIV Burden CTB Countries (13)	217,400	198,200	166,070	▼	24%
High TB/HIV Burden Non-CTB Countries (17)	173,150	167,800	180,480	▲	4%

The proportion of Challenge TB countries in Africa with a serious HIV epidemic is very high, and the implementation of TB/HIV collaborative activities is well advanced in most of these countries, in particular provider-initiated testing and counseling and the scale-up of ART for HIV infected TB patients. This explains why Challenge TB countries have a high reduction in HIV+TB mortality relative to the rest of the world. In addition, since 2014, 17 Challenge TB countries have achieved reductions in the number of deaths among HIV+TB people ranging from 9%-56%.

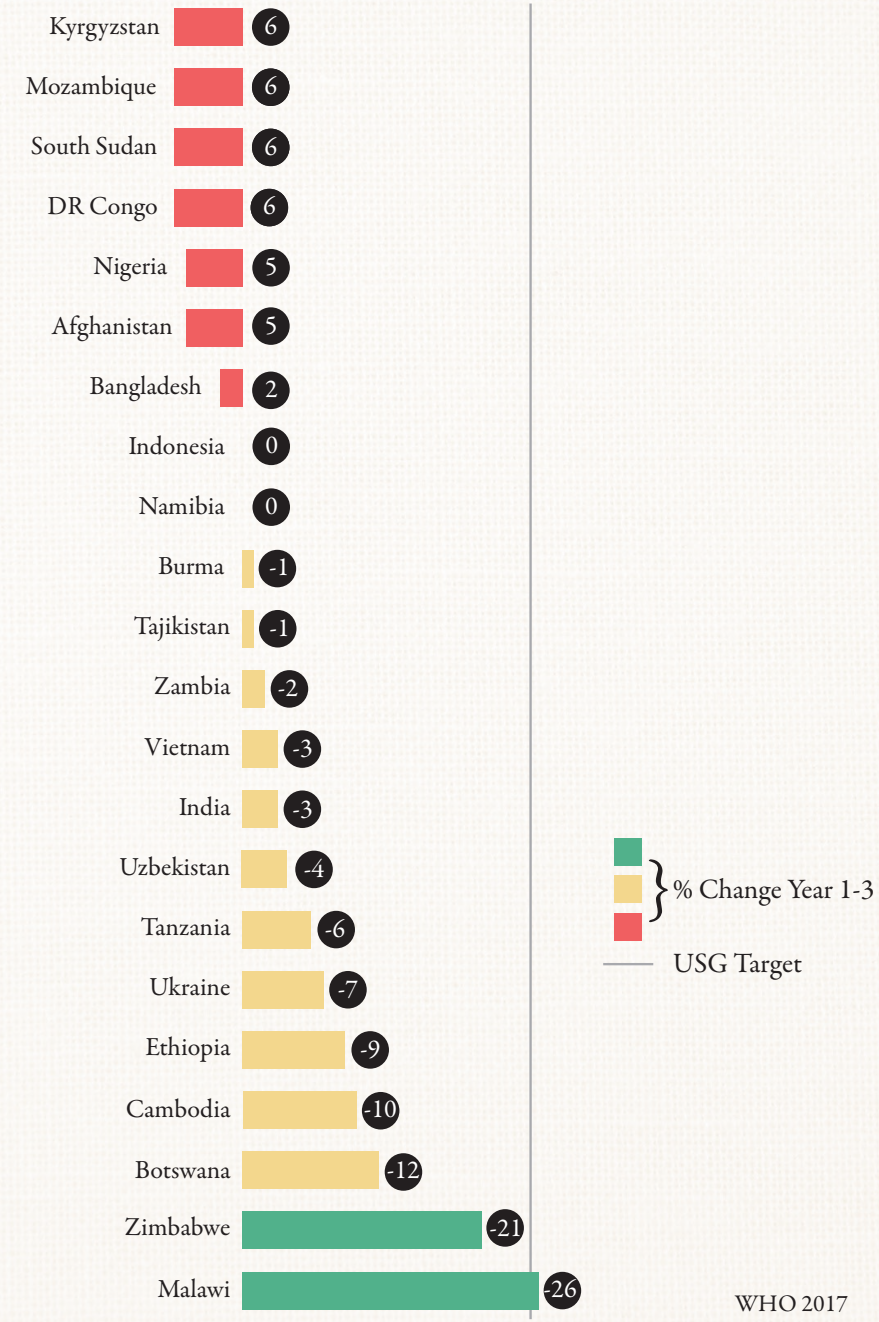
In 2016, there were an estimated 10.4 million (8.8-12.2 million) incident TB patients globally, equivalent to 140 patients (118-164) per 100,000 population; an estimated 10% (8-12%) of the incident TB patients were among HIV-positive people (WHO 2017).

In 2016, the 22 Challenge TB countries accounted for approximately 58% of the estimated number of incident patients (around 50% among HIV-positive people). The incidence rate (HIV+TB patients included) varied widely - ranging from less than 100 per 100,000 population in Uzbekistan, Tajikistan, and Ukraine, to 100-300 in the bulk of Challenge TB countries, around 400 in Namibia and Indonesia and more than 550 in Mozambique.

However, since the start of Challenge TB in 2014, decreases in the estimated incidence rates are evident, with six Challenge TB countries reducing their incidence rate by more than 10% (including Malawi 30% and Zimbabwe 25% less). These are data generated by WHO through modeling and have a wide confidence interval that is not shown here.



Estimated Incidence Change (includes HIV+TB)



The global estimated TB incidence is in constant decline both globally and in Challenge TB countries at 3-4% per year (WHO 2017).

TB INCIDENCE PER 100,000 POPULATION

	2014	2015	2016	
Global	145	142	140	▼ 3%
Challenge TB	246	241	235	▼ 4%
30 High TB Burden TB Countries	200	196	192	▼ 4%
High TB Burden CTB Countries (14)	253	248	242	▼ 4%
High TB Burden Non-CTB Countries (16)	145	143	141	▼ 3%

TB estimated incidence among HIV-positive people also declined from 2014 to 2016 in 17 Challenge TB countries. For many countries, no actual data are available from prevalence surveys, and the direct measurement of incidence is not possible.

Improving Access to Quality Treatment

Challenge TB countries have the highest numbers of undiagnosed (or unreported) TB patients globally, and are increasing case notifications at a much higher rate than the rest of the world. Challenge TB is supporting activities to increase case-finding using various interventions, including contact investigation, active case-finding among PLHIV and other persons attending for care, and screening of key populations; other interventions are improvements of the notification systems and engagement of unlinked-public and private providers.

The number of TB patients (all forms) notified increased by 9% between 2014 and 2016 in Challenge TB countries. Due to the implementation of a national policy of mandatory notification and the creation of a web-based reporting system, India has had an increase of 37% in their notification rate since 2013. This has significantly impacted the increase of notification rates in Challenge TB countries and at the global level.

CASES NOTIFIED (ALL FORMS, NEW, RELAPSE)

	2014	2015	2016	
Global	6,066,927	6,160,000	6,347,925	▲ 5%
Challenge TB	3,047,782	3,140,308	3,313,667	▲ 9%
30 High TB Burden Countries	5,163,852	5,263,514	5,450,297	▲ 6%
High TB Burden CTB Countries (14)	2,923,172	3,014,677	3,182,531	▲ 9%
High TB Burden Non-CTB Countries (16)	2,240,680	2,248,837	2,267,766	▲ 1%

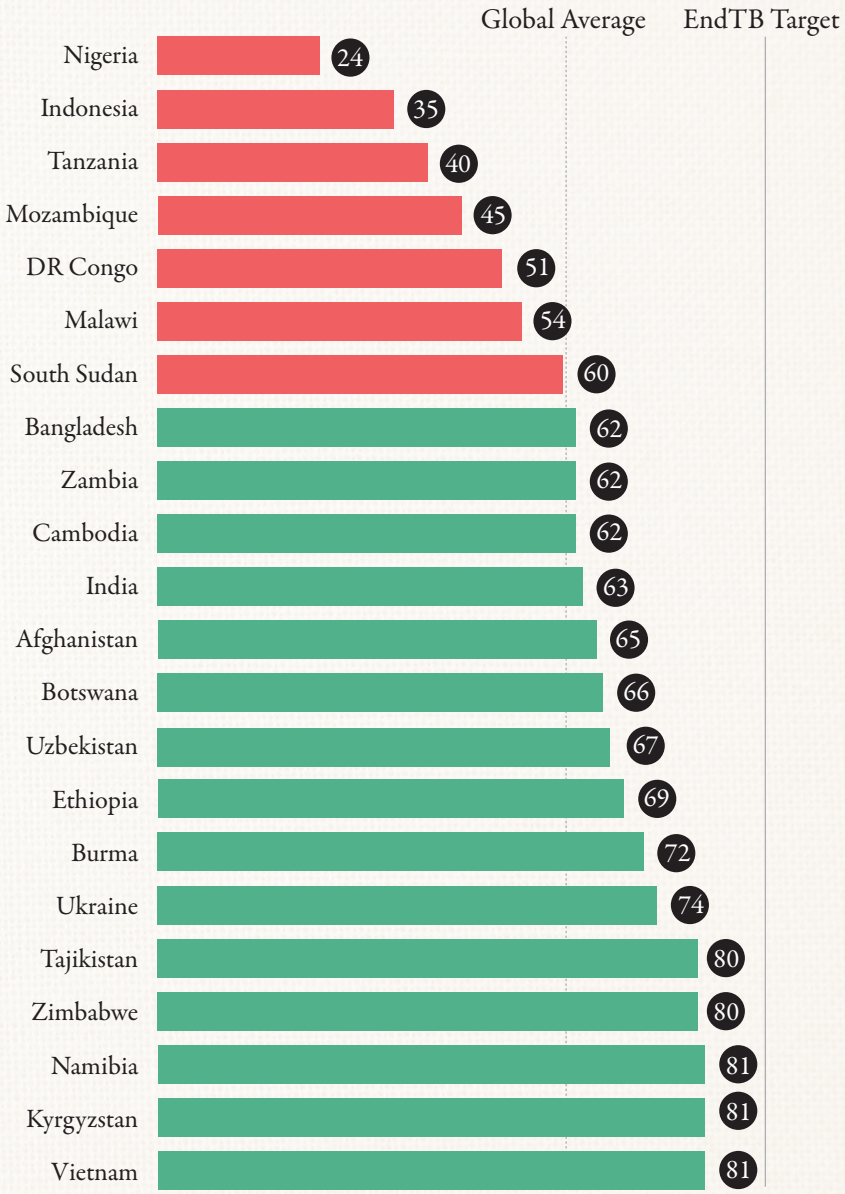
Linked to the increase in case notifications in Challenge TB countries, the number of new and relapse patients being successfully treated is increasing at a higher rate than the rest of world. High TB burden Challenge TB countries presented a 10% increase of number of successfully treated new and relapse TB patients in comparison to a 1% increase in high TB burden non-Challenge countries.

Expanding Treatment Coverage

Fifteen Challenge TB countries are above the global average of 61% for estimated treatment coverage. Significant advances in treatment coverage are evident since the beginning of Challenge TB, with countries such as Vietnam, Kyrgyzstan and Namibia at 81%, followed by Zimbabwe and Tajikistan at 80%.

Challenges in countries with a low treatment coverage include low coverage of the primary health care system, low coverage of basic DOTS, weak sample transportation systems, weak engagement of private sector in TB services and/or case notification and low community engagement. In all low performing countries Challenge TB is successfully prioritizing FTMPs and will provide technical assistance to the implementation of the GF catalytic funding, for which most of these countries are eligible.

Estimated TB Treatment Coverage (all forms) 2016



WHO 2017

TREATMENT SUCCESS RATE (TSR), NEW AND RELAPSE CASES

	2013	2014	2015	
Global	86%	83%	83%	▼ 3%
Challenge TB (incl. India)	88%	81%	79%	▼ 9%
Challenge TB (excl. India)	88%	88%	87%	▼ 1%
30 High-Burden TB Countries	87%	83%	83%	▼ 4%
High-Burden CTB Countries (14)	88%	80%	79%	▼ 9%
High-Burden Non-CTB Countries (16)	87%	87%	89%	▲ 2%

Globally, there is a 3% reduction in treatment success rates (TSRs), and a 1% reduction in Challenge TB countries with the exception of India. The TSR reduction is largely attributable to reduction in two large countries (India and Indonesia) because of improved notifications from the private sector showing an increasing percentage of patients outcome not evaluated. Improving the quality of care is part of the strategic TB service expansion to private sector in Challenge TB countries.

NUMBER OF SUCCESSFULLY TREATED NEW AND RELAPSE TB CASES

	2013	2014	2015	
Global	4,695,926	4,871,746	4,911,509	▲ 5%
Challenge TB (incl. India)	2,249,434	2,438,804	2,465,420	▲ 10%
Challenge TB (excl. India)	1,159,275	1,242,657	1,264,812	▲ 9%
30 High TB Burden Countries	4,026,067	4,230,667	4,255,754	▲ 6%
High TB Burden CTB Countries (14)	2,152,875	2,346,724	2,367,699	▲ 10%
High TB Burden Non-CTB Countries (16)	1,873,192	1,883,943	1,888,055	▲ 1%

Cambodia, Bangladesh, Tanzania, and Vietnam maintained national level TSR above 90% nationwide. Fifteen countries maintained or improved on the 2013 cohort national level TSR, and 215,986 more patients were successfully treated from the 2015 cohort than in the previous two years.

A notable drop in TSR was recorded in India (88% to 72%) due to a large number of patients reported from the private sector with the outcome "not evaluated".

The TSR for 2015 cohorts in Challenge TB supported areas are higher than national level reported in Namibia (95%), Ethiopia (93%), and Tanzania (92%). Globally, the TSR for the 5.9 million new and relapse patients who were treated in the 2015 cohort was 83%.

The national level TSR for previously treated patients combined for 21 Challenge TB countries (data not available for Ethiopia) increased from 68% to 70% between 2013 and 2015 cohorts; Challenge TB area level TSR for previously treated patients combined for selected countries increased from 73% to 76%.

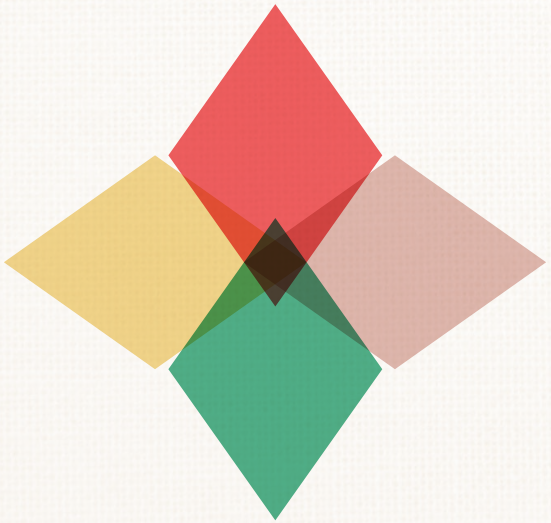
MDR-TB Diagnosis

In Challenge TB countries the number of RR-/MDR-TB patients identified has increased by more than 25%. This is attributed to GeneXpert scale-up and testing, with the proportion of DR-TB patients tested for SLD susceptibility increasing significantly since the beginning of the project. However, the diagnostic gap remains a key challenge. Challenge TB is introducing various innovations to optimize diagnostics network including sample transportation and results feedback through diagnostic connectivity systems. Challenge TB continues to promote and build capacity to accelerate the expansion of DR-TB testing capacity.

MDR/RR-TB CASES IDENTIFIED

	2014	2015	2016	
Global	119,097	132,541	155,686	▲ 31%
Challenge TB	51,908	55,170	65,519	▲ 26%
30 High MDR-TB Burden Countries	108,673	120,585	144,052	▲ 33%
High MDR-TB Burden CTB Countries (14)	50,694	54,148	64,413	▲ 27%
High MDR-TB Burden Non-CTB Countries (16)	57,979	66,437	79,639	▲ 37%

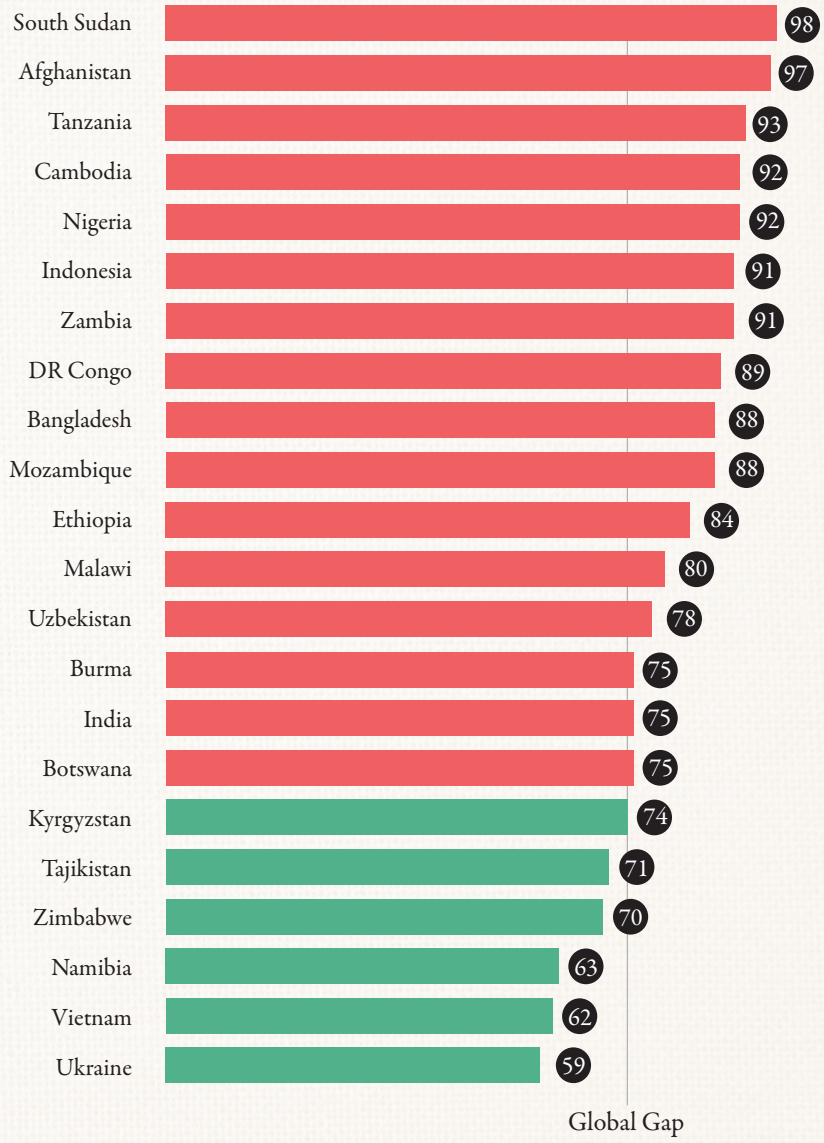
In 2016, in all Challenge TB countries 65,519 (22%) RR-/MDR-TB patients were confirmed by laboratory testing out of an estimated 301,930 incident RR-/MDR-TB patients.



There are big gaps between the estimated incidence and lab-confirmed patients per 100,000 population. According to WHO 2017, the global gap is 74% while the gap in six Challenge TB countries is below the global average.

In 2017, an increasing number of countries scaled-up their GeneXpert network, contributing to increased diagnosis of RR-TB. In addition diagnostic connectivity, connecting GeneXpert machines to a data connectivity system that makes it possible for clinicians and the NTP to receive real-time test results, reducing the diagnostic delays and loss to follow-up.

Gap Between Estimated RR-/MDR-TB Incidence Versus Laboratory Confirmed Cases in Challenge TB Countries



WHO 2017

Analyzing the most recent cohort (2014) of MDR-TB patients, a similar success rate was reported at both the global level and in Challenge TB countries (54% vs. 52%). When compared with the previous cohorts (under TB CARE I), the success rate has improved by 5% from the 2012 to the 2014 cohort.

In an effort to shorten the treatment duration and improve the treatment outcomes, Challenge TB has supported the introduction of the shorter MDR-TB treatment regimen in 10 countries as well as the introduction of BDQ and DLM in 17 and 7 countries respectively. This expansion together with introduction of aDSM (active Drug Safety Monitoring and Management), an increasing number of patients receiving social and economic support during second-line treatment, and better clinical management and follow-up of patients overall, is resulting in a further increase in treatment success.

TREATMENT INITIATED AMONG PATIENTS WITH DRUG-RESISTANT TB

	2014	2015	2016	
Global	110,490	125,629	132,283	▲ 20%
Challenge TB	46,282	50,990	58,322	▲ 26%
30 High MDR-TB Burden Countries	101,199	115,854	121,755	▲ 20%
High MDR-TB Burden CTB Countries (14)	45,477	50,178	57,238	▲ 26%
High MDR-TB Burden Non-CTB Countries (16)	55,722	65,676	64,517	▲ 16%

In 2016, ART coverage in high TB/HIV burden Challenge TB countries was 87% which was above the global average of 84%. ART coverage is above 85% in 11 Challenge TB countries. Among those, Cambodia, India, and Malawi are above 97% coverage.

ART COVERAGE FOR NOTIFIED TB PATIENTS CO-INFECTED WITH TB

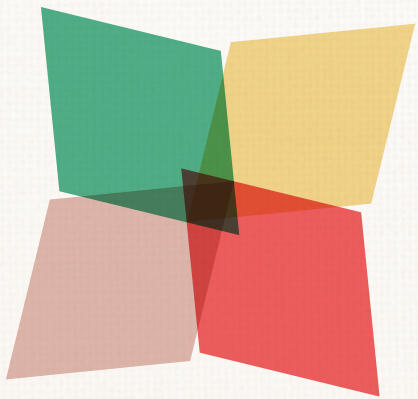
	2014	2015	2016	
Global	74%	78%	84%	▲ 10%
Challenge TB	77%	80%	86%	▲ 9%
30 High TB/HIV Burden Countries	76%	80%	85%	▲ 9%
High TB/HIV Burden CTB Countries (13)	78%	81%	87%	▲ 9%
High TB/HIV Burden Non-CTB Countries (17)	74%	80%	84%	▲ 10%

ART coverage is above the global average of 85% in 11 Challenge TB countries. Among those, Cambodia, India, and Malawi are above 97%, while Indonesia is below 50%. Compared with the 12 high burden TB/HIV Challenge TB countries, Indonesia has a low ART coverage among TB patients. The country has a low prevalence concentrated HIV epidemic, with significant levels of stigma surrounding the disease. Indonesia continues to support expansion of HIV/TB collaborative activities by testing all diagnosed TB patients for HIV, and starting them on ART.

In Challenge TB countries there was also a 38% increase in the number of patients registered as HIV+ receiving IPT between 2014-2016. Among the Challenge TB countries with a high TB/HIV burden, the increase is even higher at 41%.

PEOPLE REGISTERED AS HIV-POSITIVE GIVEN IPT (TREATMENT OF LTBI)

	2014	2015	2016	
Global	932,663	912,689	940,269	▲ 1%
Challenge TB	342,558	373,867	474,151	▲ 38%
30 High TB/HIV Burden TB Countries	875,997	859,279	862,837	▼ 2%
High TB/HIV Burden CTB Countries (13)	322,574	364,391	455,195	▲ 41%
High TB/HIV Burden Non-CTB Countries (17)	553,423	494,888	407,642	▼ 26%



Progress on the Project Management Unit action plan in response to the External Management Review

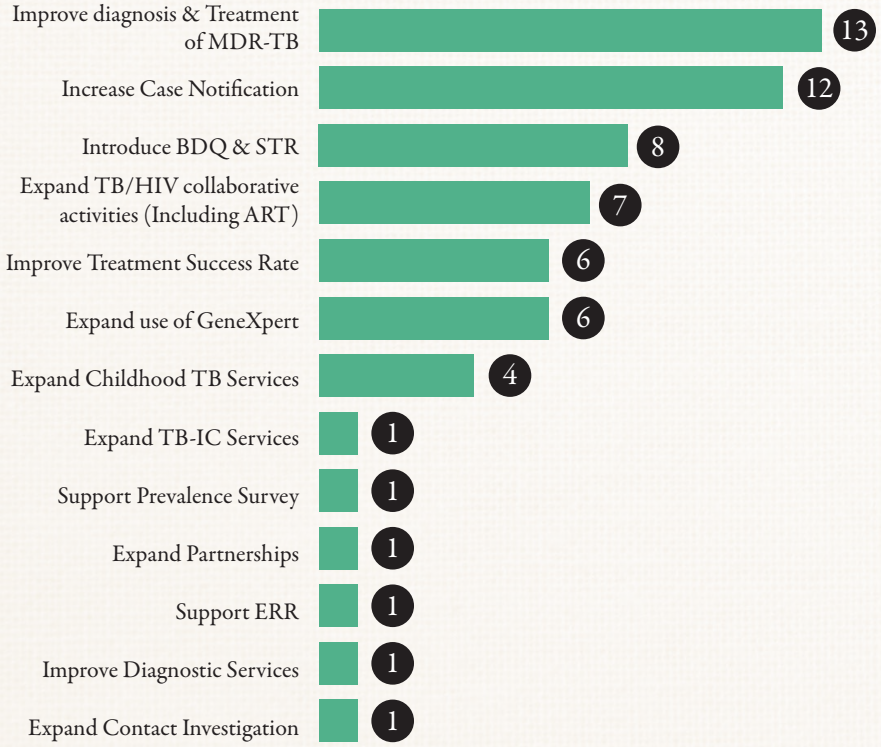
In response to the findings of the Mid-Term Management Review in January 2017 an action plan was developed with a monitoring mechanism, the main actions are listed below:

Planned Action	Results/Progress to Date
Establish a more efficient workplan development process (in close collaboration with USAID).	Increased quality of Year 4 workplans and approval of 90% of the plans within first quarter of Year 4.
Analysis, justification and better use of short-term technical assistance with an emphasis on local capacity building built into Year 4 planning process.	In Year 4 short-term technical assistance is better targeted and specifically includes capacity building for local staff, leading to a 12% reduction of the number of planned short-term technical assistance from 321 in Year 3 to 287 in Year 4.
Increase efforts by coalition partners to support countries to prepare for transition out of the Global Fund, by increasing contributions from domestic resources through strengthening of TB platforms in countries.	Challenge TB used the opportunity of the Global Fund request development processes to advocate for increased local funding, while using GFATM resources as an interim measure for continuation and scale-up of Challenge TB mediated interventions.
Coordinate with other health systems strengthening projects.	Challenge TB worked in close collaboration with other USAID implementing partners in TB, TB/HIV, procurement and rolling-out electronic reporting systems; equally worked with Global Fund as technical partner while complementing activities in other areas.
Develop professional communications and knowledge management plans.	The project has revised and updated the Challenge TB communication section of operations manual, developed a communication plan, and has budget for am additional communication officer. Key countries have communication staff as part of the country team, working in close collaboration with the project management unit.
Continue implementation of improved management tools, including the STTA tracker and dashboards at the PMU.	Active monitoring and management of progress through dashboards at the project management, country and decentralized levels.
Invest in developing leadership skills of local project staff, especially those working with local governments.	The strategy adopted was to embed in many countries Challenge TB project staff in the NTP team structure to ensure capacity building and better transfer of skills (43% of project staff are currently embedded within NTP's).
Provide training/mentoring on leadership, team building, and communications for all staff with team lead roles, and analytic skills for M&E staff at all levels.	Four courses are planned in Year 4 for M&E and technical project staff to build their capacity to analyze, report, and take appropriate action based on routine project data.

Expected Achievements

While the Challenge TB project as a whole is working towards the USG strategic goals, the priorities at the country level are also determined by the local USAID missions, based on local USG priorities, National Strategic Plans to eliminate TB, and the funding landscape, with Challenge TB being complementary to domestic investments, GFATM and other donors.

In Year 2, every Challenge TB country project defined at least one expected key achievement to be reached by the end of the project. In total, there are 62 expected key achievements across all countries. The top three expected key achievements are diagnosis and treatment of MDR-TB, case notification, and the introduction of ND&R, all of which are an accurate reflection of the global Challenge TB strategy. Challenge TB will continue monitoring and regularly reporting progress towards these key expected achievements.



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Rahat (Toddler Cured of TB) and His Brother, Bangladesh - Shehzad Noorani
Chief of Veal Ang Popel HC Being Screened for TB as Part of Contact Investigation, Cambodia - Ngo Menghak
Charity cricket match between celebrities and parliamentarians - India vs. TB, India - The Union
Ilias 4-year-old DR-TB Patient, Kyrgyzstan - Ainur Sooronbaeva
Eyasu who Has TB With His Mother, Ethiopia - Berhan Teklehaimanot
Gift picks up his anti-TB medication, Zimbabwe - Paidamoyo Magaya
Child taking Anti-TB Medicine, Bangladesh - Shehzad Noorani
DR-TB Patient and her doctor, Indonesia - Trishanty Rondonuwu

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