Chapter 2: Impact Modelling and a Differentiated Response

SUMMARY

The Global Plan 2018-2022 updates the TB Impact and Estimates (TIME) model of the previous Global Plan to provide realistic scenarios through which the countries need to scale up TB treatment and prevention services annually, in order to reach the TB treatment and prevention targets laid out within the UN Political Declaration on the Fight Against TB. These modeling results are presented with reference to countries disaggregated into groups based on income status, Global Fund eligibility, Global Plan country settings and WHO region. The model is also applied to show scale-up scenarios for the BRICS countries. Countries should also prioritize different packages of TB investments based on specific country settings. The Global Plan presents investment packages tailored to nine different country settings.

PRIORITY ACTIONS

- Epidemiological modelling shows that achieving the UN High Level Meeting (UNHLM) on TB prevention and treatment targets will enable the world to get on the track to end TB by 2030 and achieve the End TB Strategy milestone of 2020 by the year 2021. All countries should therefore plan to achieve their share of the global UNHLM targets. Country level indicative UNHLM targets are available on the Stop TB Partnership website http://www.stoptb.org/resources/countrytargets/
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- The Global Plan calls countries to action to meet the UNHLM targets by 2022, or sooner, saving at least 1.5 million lives. To ensure scale-up and maximize impact, countries should invest in packages of interventions that are tailored to the needs of different settings as laid out in the Global Plan.
- Country governments should see the Global Plan's investment packages as a starting point for developing detailed national strategic plans for ending TB. Those national plans should be multisectoral and include measures for strengthening the private sector's role in ending TB in country settings where significant numbers of person seek care from private providers.

Modelling the UNHLM targets

The Global Plan 2016-2020 had modelled the impact of achieving the 90-(90)-90 targets as part of an accelerated global response to the TB epidemic. However, actual progress in the global TB response did not keep pace with the Global Plan. As a result, the world was not on course to achieve the 2020 milestone of the End TB Strategy. Recognizing this slow progress and the need for high level political commitment, a United Nation High Level Meeting (UNHLM) on TB was held in 2018. The UNHLM set ambitious prevention and treatment targets to be achieved by 2022 in order to catch up and get on track to reach the End TB Strategy milestones. (See Introduction for a breakdown of key UNHLM targets). The Global Plan 2018 to 2022 is modelled to determine the epidemiological impact of achieving the UNHLM targets.

Epidemiological model

The 'TB Impact Model and Estimates' (TIME) model (add ref for the model) was used to model the Global Plan 2018-2022. The model predicted the impact of scaling up to the TB prevention and treatment targets of the UNHLM. The country-specific models were calibrated to WHO incidence and mortality estimates data in 29 countries. These countries represent a range of contexts and represent 80% of the global TB burden. The estimated impact of the Global Plan 2018-2022 in these countries was then applied to WHO epidemiological trends for an additional 142 countries[1], by assigning to each country a TIME modelled country in the same context or group.

Treatment targets

Several modelling decisions were made in order to model the UNHLM targets using the TIME model. To achieve the UNHLM treatment target of 40 million by 2022, the screening rate was increased in TIME, linearly[2] from the base year (2018) values to a value that achieves 40 million cumulative treated by 2022. The same final screening rate is applied to all countries, which results, together with other country-specific variations means that there will be a corresponding mix of impacts[3] at country level. The relative distribution of pediatric TB among all TB, resulted in the 3.5 million pediatric TB treatment target. The MDR-TB target of 1.5 million on treatment by 2022 was achieved by overall increasing the drug-sensitivity testing coverage from 2017 levels among notified cases to 100% of the MDR burden.

Preventative therapy targets

The Global Plan 2018-2022 has a greater focus on TB preventive therapy (TPT) targets than those set in the Global Plan 2016-2022. All house-hold (HH) contacts of all bacteriologically positive notified TB cases and a proportion (15%) of bacteriologically negative TB cases were considered eligible for contact investigation and TPT. Estimates for the distribution of active and latent adults and children in HHs of index cases were based on Fox ERJ 2013[4]. Country level household size estimates as well as the percentage of HH below 5 years of age were based on either DHS surveys where available or on global averages. Based on current WHO guidelines it was assumed that a TB infection test will be done in a proportion of adult HH contacts and not in child contacts and nor in PLHIV.
All PLHIV newly started on ART will receive TPT. In addition, 15% of those already on ART care in 2018 will receive TPT which tapers to 0% of those on ART care by 2022, assuming that by then all ART cohorts would have been appropriately covered with TPT. The result of these assumptions is a need to provide preventive therapy to over 30 million people between 2018 and 2022. Year wise targets for TB, MDR-TB and pediatric TB treatment as well as for TPT are available at http://www.stoptb.org/resources/countrytargets/

[1] The 142 countries comprise a GP result set determined by the intersection of the GTB country-level data and the UNAIDS country-level Spectrum AIM/EPP files. Spectrum AIM/EPP is the software used by UNAIDS to produce country-level estimates of HIV burden and resource needs.
[2] All scale-up patterns where linear in the GP analysis, unlike the s-shaped patterns used in the analysis of the GP 2016-2020.
[3] The mix of screening rates would guarantee a mix of impacts, but there are many other model-based factors also contributing to a mix of impact factors.
[4] Fox et all, Contact investigation for tuberculosis: a systematic review and meta-analysis, Eur Respir J 2013; 41: 140–156

Other targets

Other elements of the Global Plan 2018-2022, such as the 90% treatment success targets, were specified directly as input in TIME. Treatment success was specified separately for non-MDR and MDR-TB, and separately for HIV-negative and HIV-positive not on ART or on ART. Most of the significant programme elements implied by "100% linkage to appropriate care" were directly implemented in TIME: 100% of notified TB/HIV cases not receiving ART were linked to ART care.

Results of modelling

Modelling done for the Global Plan shows that achieving the UNHLM prevention and treatment scale up targets will result in getting back on track to end TB, with the 2020 milestone of incidence and mortality achieved a year later in 2021 (see Fig 3 and 4). It will lead to X million fewer people developing TB and X lives saved during the period 2018-2022.

UNHLM targets by WHO region, income status and country group

Table 1 shows the projections of numbers of people who will receive treatment for TB, childhood TB (0-14 yrs), MDR-TB and TB preventive therapy.

110 Table 2.1.a: Projection of numbers of people on treatment by Income Status, Global Fund
111 eligibility, Global Plan country settings, WHO regions and BRICS membership

	2018	2019	2020	2021	2022	Total
Total TB notification						
GLOBAL TOTAL						
Total (Global, including OECD countries	7,175,700	8,487,300	8,772,100	8,353,500	7,794,200	**40,582,800**
Total (Global, excluding OECD countries)	7,031,700	8,343,900	8,637,200	8,228,100	7,678,100	**39,919,000**
BY INCOME STATUS						
Low income	1,420,900	1,627,200	1,916,300	1,867,000	1,741,800	**8,573,200**
Lower middle income	4,038,600	5,051,500	5,095,000	4,830,200	4,505,600	**23,520,900**
Upper middle income	1,490,300	1,589,200	1,553,000	1,459,800	1,359,800	**7,452,100**
High income	225,900	219,400	207,800	196,500	187,000	**1,036,600**
Global Fund ELIGIBLE COUNTRIES, BY INCOME STATUS						
Low income	1,420,900	1,627,200	1,916,300	1,867,000	1,741,800	**8,573,200**
Lower middle income	4,038,600	5,051,500	5,095,000	4,830,200	4,505,600	**23,520,900**
Upper middle income	513,600	549,200	570,600	539,000	500,600	**2,673,000**
Total	5,973,100	7,228,000	7,582,000	7,236,200	6,748,000	**34,767,300**
GLOBAL PLAN COUNTRY SETTING						
High MDR burden, Centralized Care	220,100	214,600	206,500	198,500	193,200	**1,032,900**
High TB/HIV, SADC	542,000	604,200	689,900	665,000	616,300	**3,117,400**
High TB/HIV, non-SADC	522,200	644,000	844,100	855,000	796,400	**3,661,700**
Moderate Burden, COE	392,100	458,100	553,300	535,500	500,500	**2,439,500**
High Burden, Private Sector	1,997,600	2,451,900	2,540,900	2,413,900	2,253,700	**11,658,000**
Moderate Burden, Middle Income	439,900	474,100	466,400	439,500	410,200	**2,230,100**
India	2,111,300	2,636,700	2,525,800	2,360,700	2,198,900	**11,833,400**
China	791,700	845,300	793,200	743,000	693,300	**3,866,500**
Low Burden, High Income	158,700	158,400	152,000	142,300	131,700	**743,100**
WHO REGION						
EMR	556,400	643,400	689,600	650,300	607,100	**3,146,800**
AFR	1,344,800	1,575,500	1,943,800	1,919,200	1,785,900	**8,569,200**
AMR	250,600	267,200	263,300	248,100	231,600	**1,260,800**
EUR	277,300	271,700	260,000	248,400	239,600	**1,297,000**
WPR	1,510,900	1,607,000	1,569,800	1,478,400	1,379,500	**7,545,600**
SEA	3,235,600	4,122,500	4,045,500	3,809,000	3,550,500	**18,763,100**
BRICS (BRA,CHN,IND,RUS,ZAF)						
Total	3,318,100	3,907,900	3,733,700	3,489,100	3,252,800	**17,701,600**

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113 Table 2.1.b: Projection of numbers of people on treatment by Income Status, Global Fund
114 eligibility, Global Plan country settings, WHO regions and BRICS membership

	2018	2019	2020	2021	2022	Total
MDR notifications						
GLOBAL TOTAL						
Total (Global, including OECD countries	130,400	144,100	243,700	448,300	479,800	**1,446,300**
Total (Global, excluding OECD countries)	128,600	142,300	241,200	444,400	476,000	**1,432,500**
BY INCOME STATUS						
Low income	11,400	13,700	30,500	66,100	74,100	**195,800**
Lower middle income	67,800	75,700	130,900	247,400	267,400	**789,200**
Upper middle income	27,900	31,400	53,500	95,000	99,400	**307,200**
High income	23,300	23,400	28,800	39,800	38,900	**154,200**
GFATM ELIGIBLE COUNTRIES, BY INCOME STATUS						
Low income	11,400	13,700	30,500	66,100	74,100	**195,800**
Lower middle income	67,800	75,700	130,900	247,400	267,400	**789,200**
Upper middle income	19,800	20,900	25,400	32,300	32,200	**130,600**
Total	99,000	110,200	186,800	345,800	373,600	**1,115,400**
GLOBAL PLAN COUNTRY SETTING						
High MDR burden, Centralized Care	41,100	41,500	50,000	67,000	65,600	**265,200**
High TB/HIV, SADC	12,800	14,100	19,700	28,900	30,100	**105,600**
High TB/HIV, non-SADC	4,100	6,200	16,100	36,500	41,600	**104,500**
Moderate Burden, COE	2,600	3,300	8,500	19,600	22,400	**56,400**
High Burden, Private Sector	19,500	22,800	47,500	100,000	111,300	**301,100**
Moderate Burden, Middle Income	6,000	6,500	10,300	18,100	18,400	**59,300**
India	36,200	39,400	63,600	115,400	123,000	**377,600**
China	6,100	8,300	24,700	56,900	61,500	**157,500**
Low Burden, High Income	2,100	2,200	3,300	5,700	5,900	**19,200**
WHO REGION						
EMR	4,300	5,500	14,600	34,100	39,000	**97,500**
AFR	18,400	22,200	40,600	76,300	84,100	**241,600**
AMR	3,900	4,100	6,000	9,900	9,900	**33,800**
EUR	41,900	42,300	51,000	68,400	67,000	**270,600**
WPR	16,000	19,200	43,800	93,600	100,700	**273,300**
SEA	45,900	50,800	87,500	165,900	179,100	**529,200**
BRICS (BRA,CHN,IND,RUS,ZAF)						
Total	74,500	80,700	127,700	222,100	232,400	**737,400**

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116 Table 2.1.c: Projection of numbers of people on treatment by Income Status, Global Fund
117 eligibility, Global Plan country settings, WHO regions and BRICS membership

	2018	2019	2020	2021	2022	Total
Preventive Therapy						
GLOBAL TOTAL						
Total (Global, including OECD countries	2,977,700	4,970,100	7,545,800	9,263,100	10,145,600	**34,902,300**
Total (Global, excluding OECD countries)	2,860,000	4,970,100	7,545,700	9,263,000	10,145,500	**34,784,300**
BY INCOME STATUS						
Low income	994,000	1,401,700	2,018,300	2,425,500	2,551,100	**9,390,600**
Lower middle income	1,028,300	2,145,300	3,585,400	4,558,000	5,186,900	**16,503,900**
Upper middle income	740,400	1,089,300	1,496,000	1,715,000	1,777,900	**6,818,600**
High income	215,000	333,800	446,200	564,700	629,700	**2,189,400**
GFATM ELIGIBLE COUNTRIES, BY INCOME STATUS						
Low income	994,000	1,401,700	2,018,300	2,425,500	2,551,100	**9,390,600**
Lower middle income	1,028,300	2,145,300	3,585,400	4,558,000	5,186,900	**16,503,900**
Upper middle income	554,600	734,900	939,000	989,300	953,600	**4,171,400**
Total	2,576,900	4,281,900	6,542,600	7,972,700	8,691,600	**30,065,700**
GLOBAL PLAN COUNTRY SETTING						
High MDR burden, Centralized Care	150,600	249,600	360,800	472,900	562,100	**1,796,000**
High TB/HIV, SADC	1,004,300	1,239,900	1,473,200	1,576,500	1,458,000	**6,751,900**
High TB/HIV, non-SADC	635,400	932,400	1,350,100	1,496,000	1,548,300	**5,962,200**
Moderate Burden, COE	141,900	274,300	507,900	636,700	726,900	**2,287,700**
High Burden, Private Sector	319,600	762,600	1,416,400	1,896,100	2,219,500	**6,614,200**
Moderate Burden, Middle Income	131,200	232,900	357,500	446,600	493,500	**1,661,700**
India	374,100	884,200	1,492,600	1,965,500	2,277,700	**6,994,100**
China	108,000	229,900	379,200	505,700	591,300	**1,814,100**
Low Burden, High Income	112,600	164,100	208,200	267,000	268,300	**1,020,200**
WHO REGION						
EMR	103,300	249,400	478,200	638,100	752,400	**2,221,400**
AFR	1,755,600	2,394,100	3,239,400	3,588,700	3,594,200	**14,572,000**
AMR	158,400	239,700	321,000	392,700	401,700	**1,513,500**
EUR	189,100	306,500	432,900	567,800	659,400	**2,155,700**
WPR	215,400	453,800	778,000	1,038,700	1,209,800	**3,695,700**
SEA	555,800	1,326,500	2,296,300	3,037,000	3,528,200	**10,743,800**
BRICS (BRA,CHN,IND,RUS,ZAF)						
Total	1,036,900	1,864,000	2,821,000	3,474,500	3,879,600	**13,076,000**

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Global Impact of implementing the Global Plan 2018-2022 and achieving the UNHLM targets

Figure 2.1 Impact on incidence of TB

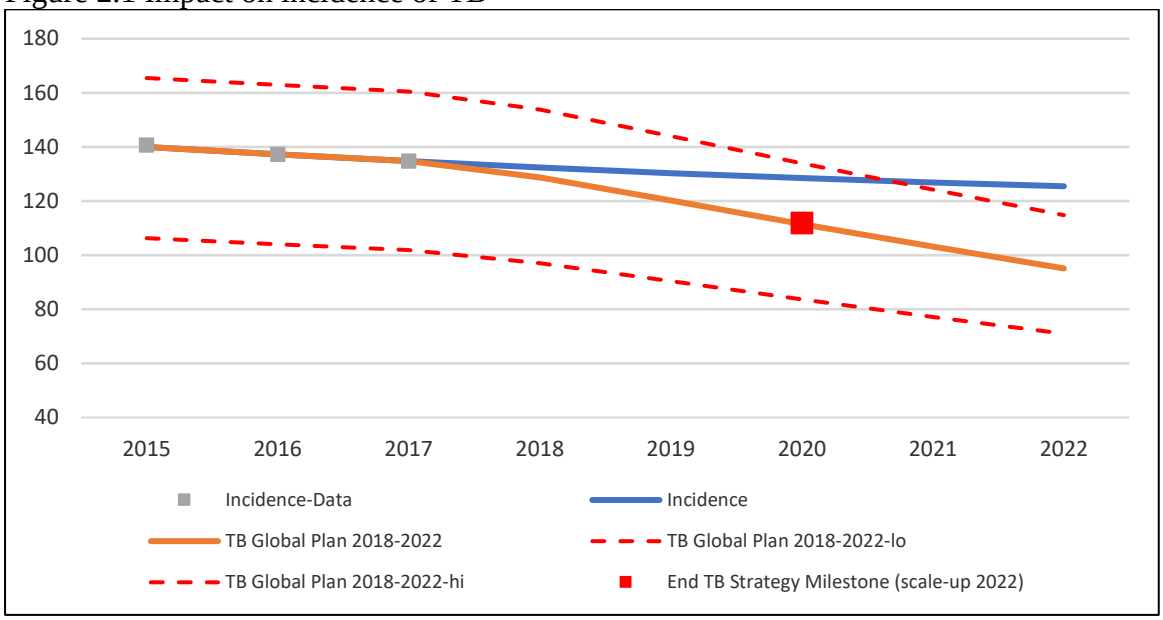
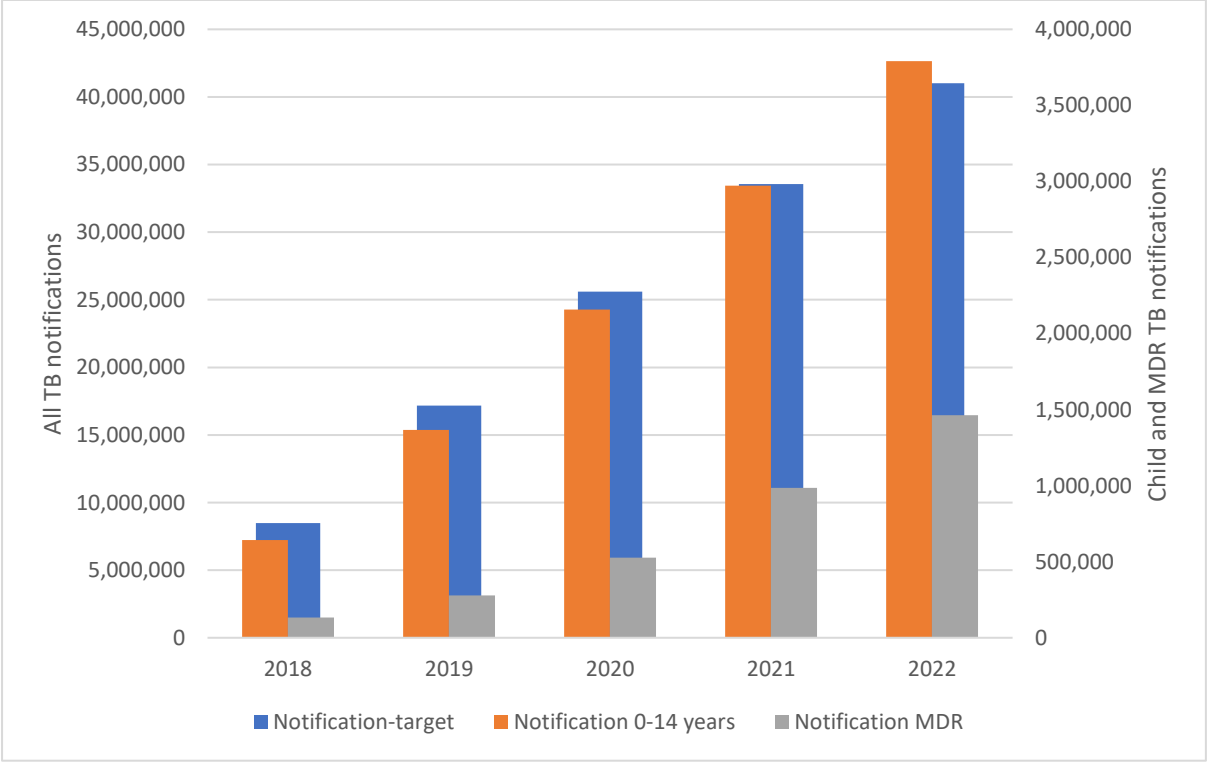
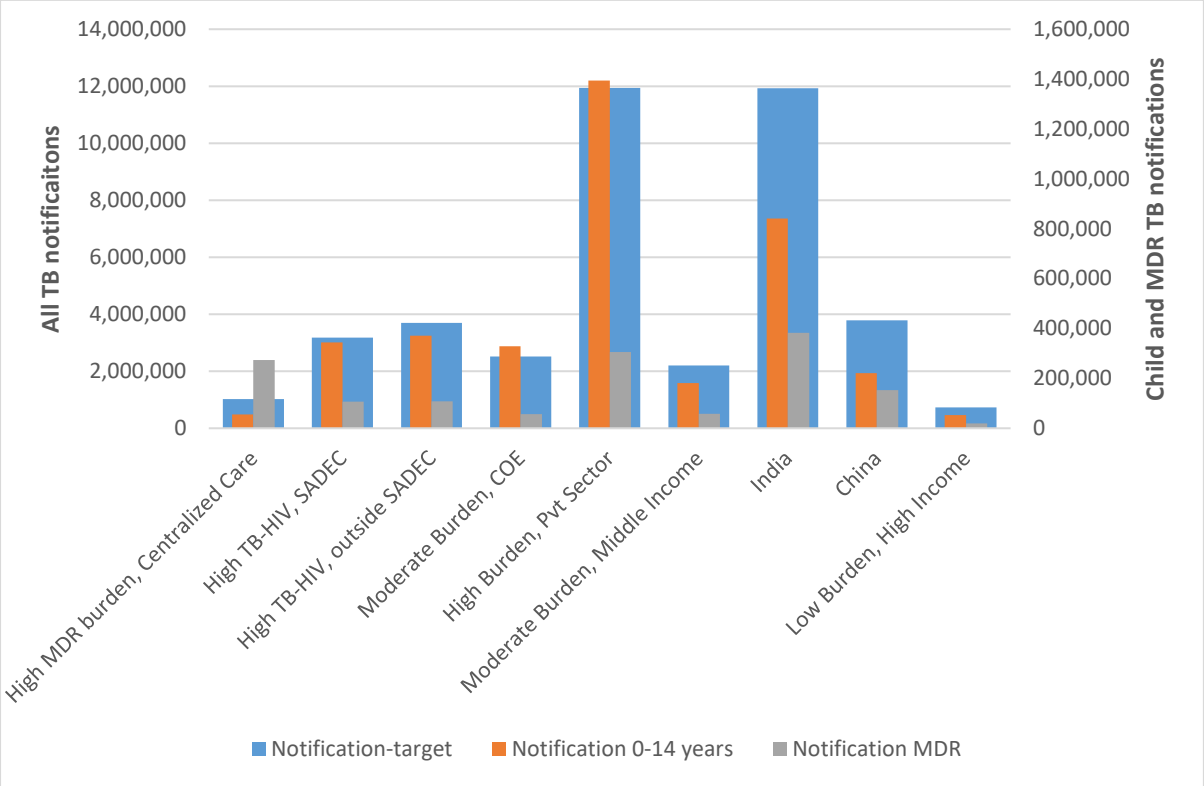


Figure 2.2: Cumulative UNHLM TB targets by year



128 Figure 2.3: Cumulative UNHLM TB targets by country group



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131 Figure 2.4: Impact on incidence of reaching UNHLM TB treatment targets

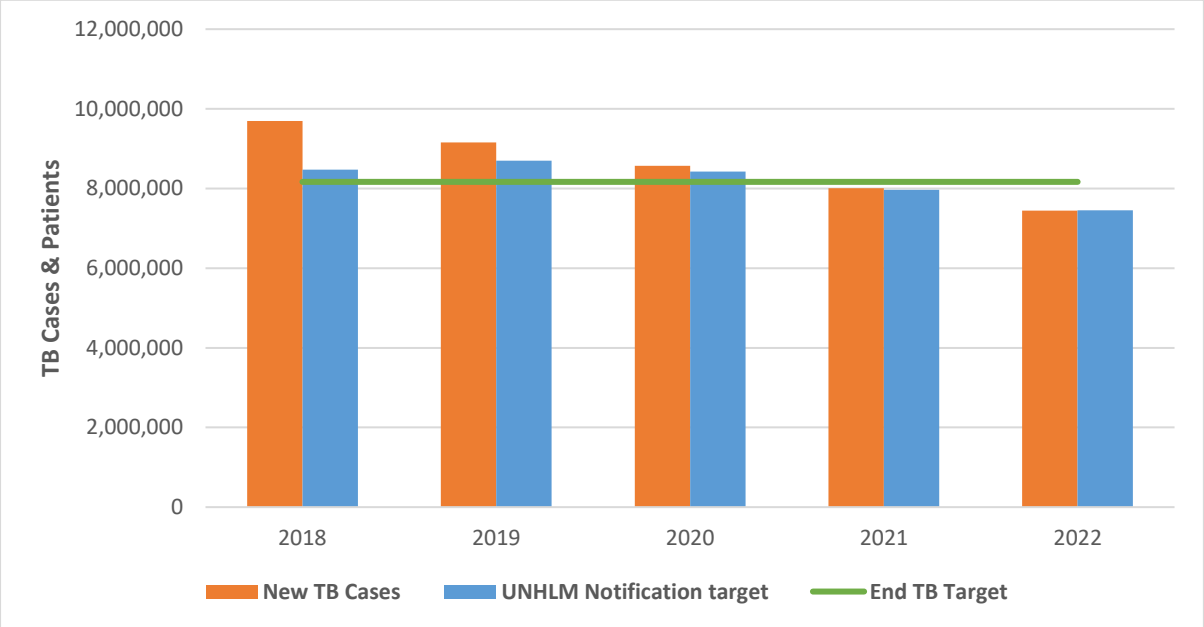

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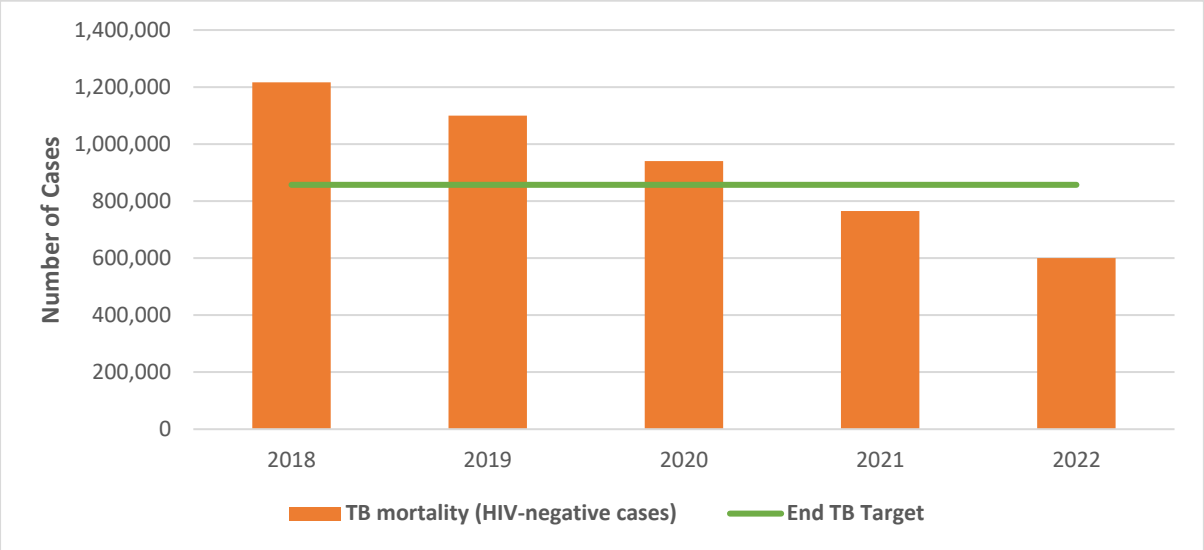
Figure 2.5: Impact on TB mortality (in HIV-negative individuals) of reaching UNHLM targets



Limitations of the modelling

The modelling exercise is largely based on a desk-review approach. While all available data from WHO data sources are utilized, there are naturally country-specific details not explicitly accounted for and contextual information not explicitly utilized. Therefore, the results should be regarded as indicative and the method should serve as a basis for developing more detailed country plans.

While the impact modelling used for the Global Plan shows the epidemiological impact of achieving the UNHLM targets and improving TB case detection and treatment outcomes, it does not model the impact of specific approaches for doing so. Furthermore, the modelling methodology is focused on the impact during the Global Plan period and is calibrated to projections of TB trends that are based on WHO estimates. The method therefore is better suited to making the relatively short-term projections for the period of the Global Plan (2018-2022) than longer term projections.

SETTING 1:
Eastern European and Central Asian settings that have a high proportion of drug-resistant TB

How can countries in Setting 1 achieve the targets?

While the TB incidence and notifications in these countries have declined substantially over the past decade, the proportion of drug-resistant TB is very high, including resistance to second-line drugs. Traditionally, most people with TB are hospitalized; long duration of hospital stays and insufficient infection control in hospitals create conditions for the further spread and amplification of drug resistance. This TB care delivery model is expensive and does not provide for the best treatment outcomes. Special key populations, such as seasonal labor migrants and prisoners, face the most significant barriers in accessing services, including preventive treatment.

Strengthening the performance of health systems with regard to TB will foster people- and people-centred TB services and will improve TB outcomes. Countries in this setting should secure universal coverage with modern rapid diagnostics at all levels, new drugs and treatment regimens for DR-TB; intensify treatment monitoring including comorbidities, drug safety monitoring, management of adverse events and appropriate adherence support. TB prevention needs to be scaled up, including preventive therapy in adult contacts and in persons in contact with person with DR-TB. Systemic measures should promote effective and efficient resource allocation and provider payment mechanisms, address special needs of key population groups, and upgrade TB information systems.

Proposed Investment Package:

- Rolling out rapid molecular diagnostics as initial test for people with TB and drug-resistant (DR)-TB at all levels of care
- Increasing coverage and improving quality of rapid culture and DST investigations at referral laboratories
- Ensuring universal access to quality treatment of DR-TB, with special emphasis on children and adolescents
- Ensuring appropriate treatment support for treatment adherence, including the use of digital tools
- Strengthening monitoring of people with TB on treatment, management of comorbidities, adverse events and pharmacovigilance
- Upgrading and enhancing TB information systems
- Ensuring effective TB infection control at all levels of TB care
- Enabling effective and efficient health financing and allocation mechanisms and person-centred TB care delivery systems
- Addressing special needs of key population groups, with special emphasis on prisoners and migrants
- Scaling up coverage and improving quality of contact investigations, testing for LTBI and preventive treatment, with special focus on adult household and other close contacts and preventive treatment for persons in contact with people with DR-TB.

Setting 2:

Southern and central African settings where HIV and mining are key drivers of the epidemic

How can countries in Setting 2 achieve the targets?

The TB epidemic in these countries is fuelled by the HIV epidemic, with 50–80% of people with TB also living with HIV. Rapid scale up of HIV prevention and care has happened in the last several years, which is one of the reasons TB has declined more quickly in this country setting than TB has declined globally. The mining industry in this country setting, however, poses significant challenges. Mining-related silicosis is a risk factor for TB, and labour migration across international borders complicates the provision of proper TB treatment and care. There is already strong political commitment at the highest level of the Southern African Development Community (SADC) countries to address mining-related TB. A regional project on TB and mining has been implementing in the last few years. These should be seen as initial steps toward a much more robust effort to protect mine workers from TB while providing quality TB and support for individuals and mining communities affected by TB.

Proposed Investment Package:

- Rapid scaling up of molecular diagnostics as initial test for TB and drug-resistant (DR)-TB.
- Strengthening culture and DST at referral laboratories with laboratory quality assurance, and specimen transportation.
- Improving management of HIV-associated TB and other comorbidities
- Rollout of active TB case finding for PLHIV and contacts of people with TB.
- Providing LTBI testing and preventive treatment, for PLHIV, child and adult contacts of people with TB.
- Addressing special needs of key populations (prisoners, mobile populations, miners and others)
- Further strengthening information systems and making them web-based live systems to improve TB data and programming
- Increasing access to treatment of DR-TB in adults, children and adolescents
- Strengthening community-based interventions and civil society involvement including treatment support: incentives and enablers
- Improving treatment monitoring, management of adverse events and pharmacovigilance / aDSM
- Investing in human resources development for TB care
- Removing human rights and gender related barriers to accessing TB services

Setting 3:

African settings with moderate to high HIV where mining is not a significant issue

How can countries in Setting 3 achieve the targets?

While similar to Setting 2, HIV fuels the TB epidemic in these countries, and mining activities have a comparatively smaller impact on the TB situation.

<u>Proposed</u> Investment Package:

- Rollout of molecular diagnostics as initial test for TB and drug-resistant (DR) -TB and strengthening including specimen transportation.
- Scaling up active TB case finding as well as contact investigations.
- Increasing access to treatment of drug-susceptible and DR-TB in adults, children and adolescents, improving treatment monitoring, management of adverse events and pharmacovigilance / aDSM.
- Providing LTBI testing and preventive treatment for adult household and other close contacts of people with TB, including children and PLHIV.
- Improving TB/HIV case finding and diagnosis with management of HIV-associated TB and other comorbidities.
- Further strengthening community-based interventions and civil society involvement and removing human rights and gender related barriers to accessing TB services
- Strengthening information systems to improve TB data and programming and making it electronic and web based.
- Accelerating engagement of private providers to close the gaps in TB care.
- Strengthening culture and DST at referral laboratories with laboratory quality assurance.
- Addressing special needs of key populations (prisoners, mobile populations and others), including treatment support: incentives and enablers.
- Strengthening procurement and supply management (PSM) systems.

Setting 4:

Settings with severely under-resourced health systems or country settings with challenging operating environments (COE)

How can countries in Setting 4 achieve the targets?

These countries face ongoing conflicts that have severely weakened the health care system, displaced populations and pose significant security-related barriers to the provision of TB care. While it may not be feasible to expect rapid scale up in these countries over the next few years, it is possible to make an impact and create a foundation for sustained scale-up with targeted actions and innovative solution.

Proposed Investment Package:

- Further strengthening specimen transportation with innovative technology and approach
- Addressing special needs and improving active TB case finding in key populations such as prisoners, internally displaced populations and refugees
- Increasing access to treatment of drug-susceptible and drug-resistant (DR) TB in adults, children and adolescents
- Improving community-based interventions and civil society involvement, including for treatment support: incentives and enablers
- Removing human rights and gender related barriers to accessing TB services
- Rollout of molecular diagnostics for TB and DR-TB
- Improving TB information systems with innovative technology and approach
- Establishing delivery model for preventive treatment in adult household and other close contacts of people with TB.
- Further strengthening information, communication and social mobilization.

Setting 5:

Settings with a high to moderate burden of TB with a large proportion in private sector care

How can countries in Setting 5 achieve the targets?

These are primarily high TB-burden countries in Asia where people with TB tend to be largely seen by private providers. These countries also have public hospitals that in some situations are not linked to the national TB programme or notification system. As a result, many people seeking care are diagnosed and treated in the private health care system with varying quality of care and with essentially no treatment support systems and public health actions. Most people seeking care in the private sector experience substantial out-of-pocket expenses.

Innovative models of engagement with the private sector are required and greater progress can be made by establishing business models that improve private health-sector care, develop user-friendly systems for universal TB notification, and create and strengthen partnerships to provide support to people with TB, including the reduction of out-of-pocket expenses.

Proposed Investment Package:

- Focusing private health care providers' engagement to ensure effective care for all people with TB
- Strengthening active TB case finding as well as contact investigations
- Rolling out molecular diagnostics as initial test for TB and drug-resistant (DR)-TB, including system strengthening for specimen transportation.
- Improving culture and DST at referral laboratories and laboratory quality assurance
- Scaling up treatment of DR-TB cases including children and adolescents
- Strengthening information systems for TB including digital solutions for online notification.
- Ensuring treatment adherence and financial / social support to people with TB.
- Providing LTBI testing and preventive treatment in adult household and other close contacts of people with TB.
- High-level advocacy, strategic planning with innovative health financing solutions and engaging all stakeholders
- Strengthening human resource for TB care with innovative strategies and tools
- Promoting community-based interventions and civil society involvement for improved TB care including activities for community mobilization, alleviation of stigma and discrimination.

Setting 6:

Middle-income country settings with a moderate TB-burden

How can countries in Setting 6 achieve the targets?

These predominantly Asian and Latin American countries have moderate levels of TB and have resources to address most of the investment needs for scale-up. Although these countries have social support schemes focused on poor and marginalized groups, these key populations continue to face barriers to health care access, which can lead to delayed diagnosis and result in catastrophic expenses for individuals and families.

Proposed Investment Package

- Further strengthening TB diagnostics with rapid rollout of molecular diagnostics as initial test for TB and drug-resistant (DR)-TB, culture and DST at referral laboratories with laboratory quality assurance.
- Strengthening active TB case finding including contact investigations and providing preventive treatment in child adult contacts of people with TB, PLHIV and other at-risk groups.
- Addressing special needs of key populations (prisoners, mobile populations, miners and others).
- Further strengthening treatment of DR-TB cases in adults and children
- Enhancing TB information systems.
- Promoting community-based interventions, civil society involvement and High-level advocacy.
- Engaging all stakeholders including private sector.

Setting 7**: India setting**

How can India achieve the targets?

As India is home to one in four people living with TB and has the largest national TB programme in the world, the country must be considered as its own setting. To a great extent, the progress made in India will determine global progress.

The private sector is usually the first point of contact for people seeking health care. However, people with TB also frequently go back and forth between the public and the private sectors. Accordingly, India needs to further invest in public health infrastructure and improve and sustain the quality of TB services that are provided across both the public and private sectors.

Several ground-breaking innovations and research studies conducted in India have shaped the global response to TB. However, given its strong economic growth, the country should consider investing more resources in its public health sector.

TB's impact varies within the country, severely and disproportionately impacting the urban poor and certain population groups, such as indigenous/tribal peoples. This variation demands a differentiated approach across states, urban and rural hot spots, and key populations. There is very high level of political commitment in India. Prime Minister Narendra Modi has issued an official call to end TB in the country by 2025, five years ahead of the global target. This political will needs to translate into sustained rapid scale up of comprehensive services to end TB.

Proposed Investment Package:

- Further scale up of engagement with private health care providers to ensure quality care for all people with TB.
- Rollout of molecular diagnostics as initial test for TB and drug-resistant (DR)-TB, culture and DST at referral laboratories and laboratory quality assurance.
- Scaling up active TB case finding as well as contact investigations.
- Further strengthening and maintenance of digital real-time TB information systems for efficient TB surveillance system.
- Strengthening the provision of treatment of DR-TB cases in adults, children and adolescents.
- Providing LTBI testing and preventive treatment in adult household contacts of TB, including children and other high-risk groups.
- Strengthening human resource for TB care through innovative strategic approaches including purchase of services and Public Private Partnership models
- Increasing access to treatment of drug-susceptible TB in adults, children and adolescents
- Expanding and maintaining treatment support systems: incentives and enablers, including for financial, nutritional support and for digital treatment adherence technologies.
- Investing in research and innovation for new tools, vaccine, diagnostics, drugs and regimen

Setting 8**: China setting**

How can China achieve the targets?

As a high TB-burden country with the domestic resources and capacity to address the TB epidemic, China must also be considered separately. Nearly all TB funding in China comes from domestic sources. The country has conducted several prevalence surveys that demonstrate declining levels of TB. This decline has been mainly attributed to high levels of case detection and treatment success, as well as rapid socioeconomic development. Linking hospitals to the public health system via electronic notification systems, coupled with good governance, has massively increased the proportion of TB that is notified.

In short, while China appears to have high levels of health coverage, diagnosis and quality care is sometimes out of reach for the poor and other marginalized populations due to user fees and other costs for accessing care. Treatment coverage of drug-resistant TB is also low.

Proposed Investment Package:

- Rapid rollout of molecular diagnostics as initial test for TB and drug-resistant (DR)-TB.
- Scale up of diagnosis (DST) and treatment of DR-TB cases in adults, children and adolescents
- Improving “early case detection” of TB with active case finding in selected risk groups including elderly and strengthening contact investigation.
- Establishing LTBI testing and preventive treatment in adult and child household contacts of people with TB and other high risk groups including elderly.
- Addressing special needs of key populations including active case finding and treatment support (prisoners, mobile populations, and others).
- Ensuring treatment support: including digital treatment adherence technologies.
- Investing in TB research and innovation including new tools for diagnosis, treatment and prevention.
- Addressing financial loss incurred by poor people with TB through necessary financial support strategies

Setting 9:

Low-burden settings and country settings on the verge of eliminating TB

How can countries in Setting 9 achieve the targets?

These are low-burden, high-income countries that have already reached or are close to reaching an incidence of 10 per 100 000 population – the goal of ending TB. These countries should target elimination, i.e. to get down the incidence to 1 per million population. In these countries, TB is concentrated among the most vulnerable populations, such as migrants, the poor and other marginalized groups. The unit cost of managing TB in these countries is high, but they have the capacity to adequately fund TB care. These countries have the capacity to fund and contribute toward TB research work.

<u>Proposed</u> Investment Package:

- Providing active TB case finding for the most vulnerable populations such as migrants as well as contact investigations.
- Providing LTBI testing and preventive treatment for contacts of people with TB in household and other settings, migrants and other at-risk groups.
- Addressing special needs of key populations (migrants, the poor and other marginalized groups)
- High-level advocacy, strategic planning and engaging all stakeholders
- Investing in TB research and innovation including new tools for diagnosis, treatment and prevention.