## FINDING THE MISSING TB PATIENTS IN INDONESIA: GOOD PRACTICES 2015 - 2017

A CASE STUDY ON THE ROLE OF THE USAID-FUNDED CHALLENGE TB PROJECT IN INCREASING TB CASE NOTIFICATION IN INDONESIA

### SUMMARY

At the national level, the National TB Program (NTP), supported by Challenge TB (CTB), developed the regulatory framework and policies to improve the engagement of private sector providers in the management of TB. This focused on demanding legislation on mandatory notification, hospital accreditation based on the Indonesia standards of TB care, facilitating policies, methodologies, job aids, training, and encouraging TB notification and the application by all providers of the Indonesian standards of TB care through professional societies, as the backbone of the District Public–Private Mix (DPPM) model. Over 2016 and 2017 implementation of 'Hospital TB linkage' the first element of the DPPM approach, spearheaded by CTB, was the main intervention leading to an increase of 113,000 notified patients in 2017 compared to 2015, a 35 percent increase, facilitated by improvements in the surveillance system and legislation on mandatory notification.







### CONTEXT

TB is the deadliest infectious disease in the world. In 2018, WHO reported 10 million people developed TB disease in 2017, 5.8 million men, 3.2 million women, and 1 million children. TB took 1.6 million lives, including 300,000 in combination with HIV, having a devastating social and economic impact on the affected countries [1]. These deaths are preventable if people have access to diagnosis, treatment, and preventive services.

This case study starts in 2015, when Indonesia was the country with the second highest estimated number of "missing TB patients" in the world, with 32 percent treatment coverage, and 690,000 patients not notified [2].

This catalyzed political commitment expressed by TB case-finding becoming one of the presidential performance indicators for district health and the development of conducive legislation. TB care and prevention became a prominent part of the national level multi-sectoral medium and long term strategic plans.

In a period of two years, Indonesia managed to increase the number of patients notified by 35 percent, from 331,000 to 447,000 (blue bars in Figure 1). Figure 1 also shows that in the 2018 World Health Organization (WHO) TB report adjusted the total estimate of TB incidence for Indonesia in 2017 from one million to 842,000 patients, (from 391 to 319/100,000) using the findings of the Indonesia Inventory Study [1]. With 447,000 patients notified in 2017, the estimated 2017 TB treatment coverage rate is 53 percent; approximately 395,000 patients are still missing from the records (yellow bars 2017 in Figure 1). Since 2001, KNCV has led consecutive USAID-funded TB projects in Indonesia, the latest being Challenge TB in a coalition with WHO, FHI 360, the American Thoracic Society (ATS), and Interactive Research and Development (IRD), since 2015.

This case study describes approaches that contributed to this remarkable increase in case notification and explores the role of the CTB project in accelerating 'finding and treating the missing patients' in Indonesia.



#### FIGURE 1: FINDING THE MISSING PATIENTS IN INDONESIA: TB NOTIFICATION 2014-2017

# SITUATIONAL ANALYSIS – KNOW YOUR EPIDEMIC, SYSTEMS, AND COMMUNITIES.

In 2013, Indonesia conducted a prevalence survey, that identified significantly more patients than expected according to earlier WHO estimates. This led to adjustments to the WHO estimates of incidence from 183/100,000 in 2013 to 399/100,000 in 2014, or 1,020,000 patients developing active TB disease every year. With only 330,000 patients notified in 2015, this meant that in 2013 there were 690,000 TB patients missing from the records (the 2013 blue and yellow bars respectively in Figure 1). The increased estimates were consistent with earlier studies of TB drug sales in Indonesia, which suggested that large volumes of TB treatment were occurring outside of systems captured by the NTP.

In 2016, CTB combined the information from the 2013 prevalence survey (PS) on health-seeking behavior with the 2015 NTP national TB notification data per type of facility. This is illustrated in Table 1, presenting 2016 data as these were more complete.

TABLE 1: ESTIMATION OF THE NUMBER OF "MISSING" TB PATIENTS PER TYPE OF HEALTH FACILITY-BASED ON THE DISTRIBUTION OF PATIENTS WHO ACCESS CARE OVER DIFFERENT FACILITY TYPES FROM THE 2013 PREVALENCE SURVEY APPLIED TO THE 2016 NOTIFICATION DATA

	Type of health facility	Number of patients notified by health facilities in 2016	Patient distribution over health facilities in 2013 PS	Estimated actual number of patients treated in health facilities in 2016 based on 2013 PS patient distribution in health facilities and 2016 notification, assuming full notification at PKM	Estimated number of patients treated but not notified in facilities in 2016* (Total minus notified)
Private	Hospital	30,920	21%	170,491	139,571
	GPs, Clinics	5,318	21%	170,491	165,173
Public	PKM etc.	251,677	31%	251,677	0
	Hospital	72,629	27%	219,203	146,574
Total		360,544		811,862	451,318

Assuming the 2013 prevalence survey patient distribution over different types of facilities is still valid in 2016, and assuming near complete notification at the Puskesmas (PKM) level, a rough estimate was made of the actual number of patients treated per type of health facility as shown in the table above: in total over 800,000 patients were estimated to be accessing treatment. Among those, approximately 450,000 patients were not notified, over 60 percent of whom were accessing care at secondary level facilities (public and private hospitals treating but not notifying ~390,000 patients). With a total incidence of 1,021,000, an estimated ~200,000 patients were not accessing (formal) care at all, or unsuccessfully.

Discussions about the relatively low proportion of clinically diagnosed pulmonary TB (PTB) patients (35% in the period 2013-2015) revealed that the national electronic TB recording system restricted the data entry of pulmonary TB patients who had no results of sputum smear examination (which is the case for many of the clinically diagnosed patients).

This analysis was in line with the findings of a study on private sector sales of TB drugs conducted in 2011 [3], which estimated that in 2011 the number of TB medicines sold in the private sector was enough to treat almost 500,000 TB patients. Given the limited scope of private provider engagement in 2011, and the use of NTP-procured (rather than privately procured) drugs by providers engaging with the NTP, it seemed likely that most of these "estimated" patients treated were in addition to the 321,308 TB patients notified to the NTP in 2011 - WHO Global TB Report 2012). Although it was unclear whether patients using private sector drugs were receiving full courses of treatment, the total number illustrated the importance of engaging providers not currently linked to the NTP.

In combination, these studies suggested that non-notification might represent a much larger proportion of the 'missing patients' in Indonesia than failure to access care, and that over half of the 'missing' patients (~ 390,000 - the patients estimated to be accessing care in public and private hospitals) should be fairly quickly "found" by improving the electronic recording system and by linking public and private hospitals to the NTP notification system.

To find the other portion of the missing patients - estimated 165,000 currently treated by general practitioners (GPs) (Table 1) and 200,000 not (successfully) accessing formal care - improvements were needed in the quality of diagnosis and treatment, especially at primary care level engaging all providers, with community involvement and active approaches to provide access to care to currently unreached populations.

The main underlying reasons for the lack of notification by hospitals and private primary care providers were found to be the absence of clear legislation on mandatory notification of TB, the cumbersome notification procedures, the lack of linkage between notification of TB and health insurance funding of individual TB care (hospitals), the cost to private primary care providers for several TB diagnostic procedures, the limited role of professional societies in guiding their membership on good quality TB care, and the limited role of the PKM in coordinating and mobilizing primary care providers in their catchment area. Furthermore, the problem of how to reach the 'un-reached' was perpetuated by the limited level of community involvement and lack of operationalization of intensified and active case-finding policies for vulnerable and high prevalence populations. Other contributing causes were the lack of resources for program management at the district level and the lack of funding or governance mechanisms for the scale-up of innovations.

#### STRATEGIC APPROACH

Between 2016-2017, the NTP, together with the Challenge TB project and stakeholders, developed the regulatory framework, policies, tools, and organizational arrangements to regulate, facilitate and encourage public and private sector engagement in finding and managing the 'missing' patients. The Indonesian standards of TB care was used as the backbone of the DPPM model (Box 1).

Hospital TB Linkage and intensified case-finding are addressing the undernotification at public and private hospitals. Capacity building and formation of primary care networks led by the sub-district health centers (PKM) is improving notification by GPs and clinics. Laboratories and pharmacies are involved for identification and referral of presumptive and diagnosed TB patients to public or private care providers for further management and notification.

#### BOX 1: THE INDONESIA DISTRICT PPM APPROACH

**The District PPM approach** – Secondary and primary care level interventions, managed through collaboration between DHOs and professional societies:

- 1. Hospital TB Linkage: (re-) introduction of the Indonesian 'Standards of TB Care' (STC) in public and private hospitals with mandatory notification in the TB surveillance system SITT
- 2. Applying unified methodology for sub-district health networks, led by the PKM with GPs, clinics, laboratories, pharmacies and civil society organizations (CSOs) to enhance their role in TB care and notification: diagnostic services, medicine supply, patient support. Deployment of a smart phone tool facilitates notification by GPs and other primary care providers
- 3. Strengthen CSOs' roles in a) Advocacy, public monitoring b) Community awareness raising; c) Collaboration with PKM on contact investigation and screening of the elderly and vulnerable group and community referrals of presumptive TB; d) Social support for patients.

CBO engagement at PKM level is key to community mobilization for accessing the un-detected groups of patients by active case-finding and community referrals. Quality improvement in health facilities will reduce missed opportunities for diagnosis.

These processes were mandated and facilitated by new legislation on mandatory notification and improvements in the electronic surveillance system.

Figure 2 shows which portions of under notification are addressed by the DPPM elements.

## FIGURE 2: ESTIMATED UNDER-NOTIFICATION PER TYPE OF HEALTH PROVIDER AND DPPM INTERVENTION



## FIGURE 3: ADDRESSING UNDER-NOTIFICATION IN INDONESIA: A TIMELINE OF THE STEPS TAKEN



At the national level, the NTP, the medical professional societies, CSOs, CTB, and partners collaborated on:

- Inclusion of mandatory notification in national legislation which was signed end 2016 and launched in January 2017 (as the MoH regulation No.67 Year 2016 on TB control) and the establishment of the presidential district performance indicator on TB case finding enacted in early 2018
- Lifting restrictions on reporting of clinically diagnosed PTB patients in the electronic reporting system, a change implemented in the improved version of the TB Information system (SITT 4.10), launched in September 2017.

The effect of lifting the reporting restrictions was synergistic with the effect of Hospital TB Linkage (below), which, as referral centers, have relatively more clinically diagnosed patients than the primary care facilities (PKM). The combination resulted in an increase in the proportion of clinically diagnosed PTB patients among all PTB patients from approximately 35 percent before 2016 to 46 percent in 2017, as shown in Figure 4.



FIGURE 4: PROPORTION OF TB CASES WITH A CLINICAL DIAGNOSIS OF ALL TB CASES 2013-2017

- Agreeing on the Hospital TB Linkage model, consisting of re-introduction of the *Indonesian Standards of TB Care* (ISTC) in hospitals, formally linking the hospitals to the NTP, based on earlier experience in the USAID-funded TB CARE I project. With examples of sustained implementation continuing in 2016 showing an effect on case notification in the CTB supported districts (see below), agreement on this element of the DPPM approach was agreed early by the stakeholders.
- Incorporating the ISTC standards into the national hospital accreditation guide in order to link facilities' eligibility for health insurance contracts to quality TB management. Although the inclusion of the ISTC standards in the accreditation guide was realized by the end of 2017, creating more awareness and capacity among assessors, satisfactory scoring on these standards, was not yet adopted as a mandatory element of accreditation for insurance contracts.
- The development of a unified methodology for PKM networking with GPs and other primary care providers. This required discussions and agreements with many stakeholders within and outside the ministry of health; while developing the policies, roles and responsibilities and implementation arrangements and awaiting decisions at the national level, elements of the methodology and tools were piloting and tested in CTB-supported (sub)districts (see below).
- The development of tools to improve the quality of case finding and diagnosis. SOPs were developed on contact investigation, TB screening in people living with HIV (PLHIV) through the piloting of joint service delivery models, sputum smear quality assurance and the establishment of sputum sample transportation networks.
- Discussions with the health insurance department and the USAID-funded projects on health financing to promote adjustments to health insurance funding of TB care, to positively influence patient and provider choices towards good quality care. Halfway through 2017, this role was taken over by a USAIDfunded study led by the NTP and Boston Consulting Group identified areas for the development of incentives and removal of disincentives for both health providers and patients. Ongoing discussion among Government of Indonesia entities for 'translation' into health financing policies was facilitated by the USAID-funded Health Financing and Governance project.
- Defining the role of CSOs in the fight against TB, the third element of the DPPM approach: ensuring political commitment and budgets for the DPPM approach, community mobilization, creating demand for TB services among people not yet accessing care, collaborating with PKM on active case-finding, such as contact investigation and the screening of elderly people, improving access, and providing psycho-socio-economic patient support, especially for vulnerable population groups.
- Conducting a study to provide the evidence base for decisions on the best screening methods and diagnostic algorithms for intensified and early TB case finding at Puskesmas level. The study is testing consenting PKM attendees with a set of diagnostic tests and a questionnaire; results are expected in 2019.

At the district level, between 2016-2017 the CTB project created 16 demonstration districts in 5 provinces and Jakarta city with one technical officer and one data officer per district. CTB focused on the first element of the DPPM approach, Hospital TB Linkage, (re-)introducing the Indonesian STC and improving notification at public and private hospitals. Figure 5 shows the number of NTP-linked public and private sector hospitals and the progress in hospital linkage in CTB-supported districts 2016-2017<sup>1</sup>.

<sup>1</sup> While CTB was already implementing hospital linkage in 2015, especially in public hospitals, definition difficulties allowed precise documentation only since the third quarter of 2016.

## FIGURE 5: NUMBER AND PROPORTION OF PUBLIC AND PRIVATE HOSPITALS LINKED TO THE NTP IN CTB SUPPORTED DISTRICTS, 2016-2018 (7 QUARTERS)



In the reported period, the number of NTP-linked public sector hospitals in CTBsupported districts increased from 70 to 95 out of a total of 97; the number of NTP-linked private hospitals increased from 118 to 168 out of a total of 290 in 2017. With the highest impact hospitals targeted first, this resulted in significant increases in notification as illustrated in Figure 6. Between 2015–2017, notification in CTB-supported districts increased by 39 percent, notification by public hospitals by 69 percent, and notification by private hospitals by 75 percent. At the same time, notification at the PKM level also increased by 13 percent.

This was planned and implemented through collaboration with the district health offices (DHO) and Medical Professional Associations.



#### FIGURE 6: THE TREND IN TB NOTIFICATION 2015-2017 IN CTB SUPPORTED DISTRICTS DISAGGREGATED FOR NTP (PKMS AND LUNG CLINICS) FACILITIES, PUBLIC AND PRIVATE HOSPITALS

At the subdistrict level, CTB worked on the quality improvement of the basic TB services by PKMs in preparation of their pivotal role in managing sub-district health networks (mandated by the MoH decree No.75/2014). This focused on updating staff on the latest NTP guidelines, quality assurance for diagnosis (sputum smear), TB screening in PLHIV, and early identification of drug-resistant TB providing access to Xpert testing through sputum transportation networks as per national eligibility criteria.

At the same time, in selected districts, specific elements of the PKM networking methodology and tools were piloted and tested to feed into the further development of the primary care level elements of the DPPM model as follows:

 Engagement of private providers by PKM through training GPs in their subdistrict on the management of TB and the use of the notification app (WIFI-TB), in close collaboration with the Indonesia Medical Association. This showed increased notification by GPs in pilot areas; for instance, in Tulung Agung district, the engagement of GPs and introduction of the mandatory notification app (WIFI-TB) resulted in a doubling of monthly notification to the NTP (Figure 7) compared to the period prior to the PKM GP engagement. Based on evaluation of these early experiences, an improved version of WIFI-TB has been developed with direct linkage to the NTPs electronic reporting system. Roll-out of this PKM GP engagement approach (the second element of the district PPM approach) started in the second quarter of 2018

FIGURE 7 : NUMBER OF TB CASES REPORTED BY GPs THROUGH WIFI-TB IN TULUNG AGUNG 2017



Contact investigation was by PKM with involvement of CSOs (element 3 of the DPPM approach) was piloted in two districts (Jember district and Surakarta city) showing the potential of CSOs to contribute 4 percent and 8 percent, respectively, to total notifications, with Xpert testing identifying higher proportions of TB among presumptive patients than sputum smear examination. In 2017, this resulted in advice being given to the NTP to include into the DPPM approach the scale-up of screening of close TB contacts with the involvement of community volunteers, using Xpert as the primary diagnostic tool. This was included for funding under the Global Fund grant for roll-out in 2018.

• While HIV testing in TB patients is part of the Indonesia STC package and was already under implementation in 2016, joint TB/HIV service delivery models were piloted in a mix of 17 health facilities at different levels in Jakarta, eventually resulting in uptake of this approach for scale-up by the Jakarta health services (2018).

As these pilots were small in scale, they have as yet had no significant impact on overall notification. The scale-up of these approaches, however, can be expected to not only result in higher notification but also in increased and earlier access to care for the 'missing patients' currently not accessing formal TB care.

Although important for community mobilization, the direct impact of CTB supported community awareness-raising activities, like public service announcements and the campaigns engaging tuk-tuks, TB messaging in the public transport system, and video messaging by high school students is difficult to measure, and thus not quantified in this case study.

Extra CTB resources in CTB districts helped to achieve rapid implementation of national interventions, demonstrating the feasibility and effectiveness of these policies.

Between 2015-2017, notification in CTB-supported districts increased from 44,253 to 82,438 (an increase of 86%) compared to 2014, while notification in the other 498 districts increased from 280,286 to 375,831 (34%). The 16 CTB supported districts contributed 29 percent of the total national increase, while containing only 11 percent of the population and an estimated 9 percent of the TB burden (Indonesia district burden estimates).

Important elements of the approach spearheaded by CTB were taken up by other districts, especially intensified hospital linkage during the second half of 2017, this resulted in a surge of notification from areas beyond CTB-supported districts. This was illustrated by the increases in annual notification (Figure 8), in CTB supported districts annual notification increased by 0, 17, and 38 percent in 2015, 2016, and 2017, respectively, compared to notification in the previous year. In the other districts, increases in notification started more slowly but almost caught up, with an increase of 10 percent in 2016 and 33 percent in 2017.

## FIGURE 8: ANNUAL PERCENTAGE CHANGE IN NOTIFICATION IN DISTRICTS WITH AND WITHOUT CTB SUPPORT



## CHALLENGES

Given the complicated nature and far-reaching consequences of changes to health insurance reimbursement policies, specific adjustments to health insurance funding promoting TB care by general practitioners at primary care level are not yet implemented. The lack of such adjustment favors the continuation of unnecessary referrals to hospitals and any delays in addressing that situation will decrease the effect of measures at the sub-district level aimed at a larger role for GPs in TB diagnosis and treatment.

There is a lack of human resources, especially at the district and PKM levels, which may impact the capacity to expand successful NTP approaches piloted by CTB in districts that do not receive additional support. The NTP and CTB approaches of mobilizing professional societies and community organizations may not be sufficient to bridge the human resources gap for TB care. The investment by the Global Fund in district data officers is only temporary and there needs to be longterm increase in staffing to sustain the achievements made.

While national health insurance is increasingly taking up the cost of individual TB patient care, there is a large budget gap for the additional operations costs of TB program. To mobilize local financial resources, the national policy to introduce District Action Planning (DAP) for TB was piloted by CTB in December 2017, and endorsed and promoted by the Ministry of Home Affairs, the Ministry of Health (MoH), the Ministry of Villages, and the National Planning Bureau. The DAPs are expected to impact actual budgets and expenditures starting from the year after the DAPs are legalized at local level, so significant impact on local TB expenditures is expected in 2020 at the earliest.



### CONCLUSIONS

The combined approach of hospital TB linkage (the first element of the DPPM model), accompanied by a revision of the national notification system was effective in achieving immediate gains in TB notification, while new approaches were developed to improve and intensify TB case-finding, and increase access to care and notification at the primary care level.

While policies and instructions were disseminated in all districts nationwide simultaneously, the extra CTB resources at the district level helped to achieve rapid implementation of national intervention policies, resulting in an earlier start of the acceleration of notification in CTB supported districts, and contributed more quickly to the increase in national notification.

CTB-supported districts worked as catalysts, demonstrating the feasibility and effectiveness of national policies and providing practical solutions to make the policies work.

An example is the deployment of data officers in each of the districts, an intervention now included in the Global Fund Grant 2018-2020 for more than 70 priority districts with NTP appealing to other districts to use local resources for this function.

In 2017, the district PPM approach was also included in the approved 2018 Global Fund catalytic funding grant, to scale-up DPPM in 35 additional districts over the period 2018–2020, which is now ongoing.

In 2018, Jakarta city decided to adopt the CTB joint TB/HIV service delivery model for city-wide implementation, using their own budgets.

In discussions with district health officers and PKM leaders it is recognized that the PKM networks of primary care providers are valuable platforms for entire primary care system strengthening, beyond the management of TB.

In conclusion, the CTB project made a valuable contribution to finding the missing patients and health systems strengthening in Indonesia between 2015–2017 and the CTB approach to assist the implementation of national policies at the district level was effective and provided practical models that can be used for implementation with CTB districts.

### **LESSONS LEARNED**

A good situational analysis (knowing your epidemic, systems, and communities) allows for effective prioritization of interventions, in this case implementing interventions for immediate (hospital linkage to NTP and adjustment of the electronic reporting system) and longer term impact (i.e., quality improvement, development of PKM health networks, involvement of CSOs in community case-finding).

The development of regulatory frameworks and NTP-driven policies is essential for developing interventions addressing the more complex problems like mandatory notification, developing the PKM role in strengthening the primary care network

for patient-centered TB diagnosis, treatment, and care, developing the community role and effective patient support, and developing local financial mechanisms to make these work.

This case study illustrates the value of combined national and district level interventions: at the national level focusing on consensus building, policy-making, and surveillance, and at the district level piloting (proof of principle, evidence building) and spearheading the implementation of interventions in demonstration districts.

### **NEXT STEPS**

The comprehensive district PPM approach has been implemented since the first quarter of 2018 in the 16 CTB-supported districts. In late 2017, the Indonesia Inventory Study findings confirmed this is an appropriate approach. For the optimal engagement of GPs in the primary care health networks, national health insurance payment reforms related to TB, which could facilitate more effective provider and patient choices, would ideally be piloted and implemented as soon as possible.

#### BOX 2: THE INDONESIA INVENTORY SURVEY

**The Indonesia inventory study (IVS)**: In early 2018, the results of the Indonesia IVS showed a 41 percent overall underreporting during the first quarter of 2017. This included 65 percent underreporting by hospitals, 15 percent by PKM, and 96 percent of patients from general practitioners and primary care clinics. Under-reporting was more prominent among the clinically diagnosed (55%) than bacteriologically confirmed patients (21%).

Delays in NTP reporting in Indonesia are common, with quarterly reports only being completed 1-2 quarters later. This means actual underreporting is lower than found by the IVS. Nevertheless, the findings indicate the type of facilities where underreporting is most prominent, and support the NTP's choices in 2016 to increase notification.



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PHOTOS/GRAPHICS

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Scale-up and transitioning of support to DPPM to government staff (phasing out the CTB project) is planned in the first half of 2019. Scale-up in another 37 districts has started using GF catalytic and domestic funding over the period 2018-2020, with the Indonesia Pulmonologists Association and Yayasan KNCV Indonesia as the implementing consortium.

Additional funding for implementation and eventual sustainability of the approach will require embedding increased staffing and other costs into district action plans for TB under the guidance of the Ministry of Home Affairs (MoHA) and the National Planning Bureau. The methodology for making district action plans on TB was developed and piloted between 2015-2017 by the NTP and the CTB project in close collaboration with the MoHA and the MoH.

The comprehensive (hospital level, primary care level, and community) approach is designed to manage all uncomplicated TB at the primary care level and hence is expected to contribute to (early) case detection and notification while reducing the number of TB patients reaching the hospital level. Monitoring of the mutual referrals between hospital and primary care level providers is needed: no patient should be left behind. Hospital TB coordinators, case managers, and PKM TB coordinators have crucial roles to play in this respect.

Piloted interventions such as contact investigation, LTBI treatment, and the use of WIFI-TB need to be brought to scale.

The results of the study into the best algorithms for intensified case-finding at the PKM level will need to be used in the redesign of the national policies as soon as significant findings are available.

#### REFERENCES

- 1. World Health Organization. Global Tuberculosis Report 2018. Geneva: World Health Organization. 2018. License: CC BY-NC-SA 3.0 IGO. Available from: http://apps.who.int/ iris/bitstream/handle/10665/274453/9789241565646-eng. pdf?ua=1.
- 2. World Health Organization. Global Tuberculosis Report 2016. Geneva: World Health Organization. 2016. ISBN 978 92 4 156539 4.
- 3. Wells, W.A., et al., Size and usage patterns of private TB drug markets in the high burden countries. PLoS One, 2011. 6(5): p. e18964.

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