Quality of Tuberculosis Services Assessment

in Vietnam

Report

October 2024

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TB DIAH

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Nikki Davis, TB DIAH
Quyen Tu Bui, Hanoi University of Public Health
Clarice Lee, TB DIAH
Elena Herrera, TB DIAH
Ngoc Anh Le Thi, Vietnam National Tuberculosis

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TB DIAH
University of North Carolina at Chapel Hill
123 West Franklin Street, Suite 330
Chapel Hill, NC 27516 USA
TEL: 919-445-6949
www.tbdiah.org
hub@tbdiah.org

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Abbreviations

ACF	active case finding
BPaLM	Bedaquiline, Pretomanid, Linezolid and Moxifloxacin
CDC	Center for Disease Control
CXR	chest X-ray
DR-TB	drug-resistant tuberculosis
DS-TB	drug-susceptible tuberculosis
FDC	fixed dose combination
IGRA	interferon-gamma release assays
IPC	infection prevention and control
IRB	Institutional Review Board
LTBI	latent tuberculosis infection
LTFU	lost to follow-up
Lzd	Linezolid
MDR-TB	multidrug-resistant tuberculosis
MOH	Ministry of Health
MTB	Mycobacterium tuberculosis
NGO	non-governmental organization
PLHA	people living with HIV/AIDS
PPS	probability proportional to size
Pto	Prothionamide
QC/QA	quality control/quality assurance
QTSA	Quality of Tuberculosis Service Assessment
RR-TB	Rifampicin-resistant tuberculosis (RR-TB)
SHI	social health insurance
SLD	second-line drugs
SOP	standard operating procedures
TB	tuberculosis
TST	tuberculin skin test
UNCV	University of North Carolina Vietnam

USAID	United States Agency for International Development
VITIMES	Vietnam TB Information Management Electronic System
VND	Vietnamese Dong
VNTP	Vietnam National Tuberculosis Program
WHO	World Health Organization

Executive Summary

Background

Vietnam is one of the 30 high-tuberculosis (TB) burden countries, with an incidence of 176/100,000 in 2023. It is estimated that each year, around 170,000 people are infected with TB in Vietnam, but less than 60% are diagnosed and treated. Vietnam is also one of the 30 high multidrug-resistant tuberculosis (MDR-TB) burden countries, with estimated MDR-TB and Rifampicin-resistant tuberculosis (RR-TB) rates among new and retreatment TB patients at 4.5% and 15%, respectively and just over one third of the estimated MDR-TB cases enrolled on treatment. In response to the high burden of TB, the Vietnam National Strategic Plan 2023-2026 was developed as the implementation plan of the National Strategy on TB prevention, which outlines objectives, interventions, and planned activities under the responsibility of the National TB Program. With the vision to minimize the impact of TB on public health, economy, and society, the NSP outlines programmatic activities that work to ensure anyone at risk of TB can be detected early and given appropriate treatment without suffering from the catastrophic cost of having TB. These strategies and activities under the NSP provide the foundation for operationalizing the Vietnamese government's ambitious vision of ending TB by 2030.

From July 1, 2022, Vietnam's Government transitioned TB related health services to be included under the social health insurance scheme (SHI). SHI covers a package of TB services that includes first line TB drugs for treatment, TB preventive treatment, smear microscopy, Xpert testing, and chest X-ray (CXR). SHI does not cover second line TB drugs (SLD) for DR-TB treatment, screening and testing provided through active case finding (ACF) in the community setting, and social support to TB patients. As of December 2022, approximately 750 of 850 TB Provincial and District public and private facilities have been certified to provide SHI-reimbursed TB services.

The Vietnam QTSA is a cross-sectional study designed to generate nationally representative estimates of key TB quality of care indicators. The purpose of the QTSA is to assess the quality of TB services provided at the Vietnam National TB Program (VNTP) facilities, identify strengths and weaknesses, and generate nationally representative results that will provide the VNTP and other TB stakeholders with information they can use to develop and implement programs and interventions to monitor and improve the quality of TB services. The specific objectives of the Vietnam QTSA are to assess:

1. The availability and current condition of TB and related services (including screening, diagnosis, treatment, care and follow-up, referral, and laboratory services) at VNTP health facilities
2. The availability and functionality of facility resources and infrastructure to support TB service delivery
3. TB providers' knowledge, skills, and ability to deliver appropriate TB services
4. Patients' awareness of TB disease, and access to and satisfaction with TB services
5. Coverage of the SHI reimbursement scheme for TB services, implementation challenges/barriers faced by facilities, and the impact of the scheme on patients' access to TB services
6. The linkages between TB diagnosis, treatment initiation, and treatment outcomes in VNTP facilities

Methods

The Vietnam QTSA is a cross-sectional survey of selected health facilities that provide TB prevention, diagnosis, and treatment services, drawn from the VNTP's network of public sector facilities. The specific services assessed by the QTSA are screening, diagnosis, treatment, care and follow-up, referral, and laboratory services. The availability and functionality of resources (material and human) to support the delivery of TB services, TB service providers' competencies and skills, the interactions between providers and patients, and patients' overall perception of TB services were evaluated to assess the overall quality of services provided by facilities.

One hundred and eighty (180) facilities were selected using probability proportional to size sampling across three regions (Northern, Central, and Southern) and 16 provinces/municipalities in Vietnam. From these facilities, 376 TB providers who were in charge of or delivered clinical TB and TB-related services, and who are at the facility on the day of data collection were surveyed using convenience sampling. Furthermore, 696 patients (aged 18 years and older) enrolled in TB treatment and present on the day of data collection were also surveyed using convenience sampling.

Data for the Vietnam QTSA was collected from February 28, 2023 - April 18, 2023. The QTSA utilized four tools - Facility Audit, Provider Interview, Patient Interview, and Register Review. The tools used to conduct the Vietnam QTSA are available through this link.

Results

Results for the Vietnam QTSA are presented under three categories of findings- Structural, Process, and Outcome.

Structural Findings

Availability of TB services. TB screening services were available at 94% of the facilities, most of which provide screening for TB by assessing clinical signs and symptoms (97%) and CXR (88%). TB diagnostic services were offered at 92% of facilities. Almost all (97%) of the facilities surveyed prescribed TB treatment or managed people enrolled on TB treatment and 86.2% of these facilities provided DR-TB treatment. Pediatric services for TB were not as widely available as TB services for adults. Among the facilities that reported providing diagnostic services, only about half (55%) reported that they provide TB diagnosis for children under five years old and about three-fourths (78%) of the facilities providing TB treatment reported providing TB treatment to children under the age of five years.

Laboratory infrastructure. Among facilities offering TB diagnosis services, 97% reported having an onsite laboratory capable of conducting some type of TB testing. Among onsite laboratories, the median turnaround time for specimens to be received at the laboratory was one hour, which was consistent across all facility types and locales. Additionally, the median turnaround time for receiving results from the onsite laboratory was two hours, which varied across health facilities and locale. For specimen management and transport, 93% of facilities were knowledgeable about proper procedures for collecting and managing sputum specimens. Most facilities were found to maintain a stock of sputum collection containers (93%) and have laboratory request forms available (81%). Only 16% of facilities reported that they experienced recent stockouts of specimen management supplies.

TB drug availability. Single doses of Ethambutol, fixed dose combinations of isoniazid, rifampicin, and pyrazinamide (3FDC), and the fixed dose combinations (FDCs) of isoniazid and rifampicin (2FDC) were

observed at over three-quarters of the health facilities assessed. Pyrazinamide was found in 68% of facilities, while rifampicin was available at 48% of facilities. Injectable streptomycin was found at one-quarter (26%) of the facilities. For medications related to DR-TB treatment, only half (51%) of facilities providing DR-TB treatment were found to have levofloxacin in stock. About one-third of DR-TB treatment facilities were found to have clofazimine (38%), bedaquiline (37%), linezolid (33%), cycloserine (33%), or prothionamide (27%). Delamanid, para-aminosalicylic acid, moxifloxacin, and amikacin were found at a small proportion of the facilities providing DR-TB treatment.

Infection, Prevention and Control (IPC). Facilities were found to have numerous IPC resources available. Every facility assessed had disinfectant, medical waste receptacles, and running water. Additionally, over 90% of health facilities had gowns, eye protection, gloves, hand washing soap, alcohol-based hand rub, sharps containers, single use disposable syringes, and a patient waiting area with continuous access to fresh air. N-95 respirators were available at 71% of health facilities and supplies for coughing patients such as masks, tissues, etc. were available at 75% of health facilities.

Health insurance reimbursement coverage. Eighty-eight percent of the QTSA health facilities reported that TB services were covered by Vietnam's SHI scheme. These services included CXR (76%), TB diagnostic tests (67%), first-line TB medications (82%), and health check-ups / physician visits (43%). When asked about challenges related to SHI, over half of facilities (56%) reported problems related to the inclusion of some TB services under the SHI, while about one-third (34%) of health workers indicated experiencing challenges with reimbursement for TB services.

Process Findings

TB provider knowledge and practice. Approximately three-quarters of providers reported ever having received training on TB infection control, however they were found to have strong knowledge of preventing TB transmission within the facility. Specifically, 96% and 87% of providers, respectively, knew that doors and windows should be left open whenever a patient who is presumed or confirmed to have TB is in the room and that fans (ventilators) can be used to reduce the transmission of TB. Most providers (90%) reported wearing a mask/respirator when treating presumptive or confirmed TB patients and 82% of providers reported that they always screened all family members of confirmed TB patients for TB symptoms.

In terms of building rapport and communicating with TB patients, the majority of providers reported that they communicated clearly with patients (93.6%), listened carefully to patients (76.3%), and had an open mind about their patients' cultural beliefs (66.5%). Furthermore, over half of providers asked patients about their potential barriers to treatment (e.g., lack of transportation, cost of TB medicines) (64.6%); ability to follow the TB treatment plan (54.8%); and knowledge of TB (56.4%).

Patient-provider interaction. Over half of TB service providers reported that they communicated key information about TB to patients during diagnosis and treatment appointments (e.g., how TB is spread, how to take their medication, the importance of taking medicines regularly and for a full course of treatment, etc.). From the patient perspective, more than 90% reported that their provider clearly explained the details related to their care and treatment, listened to their opinions, discussed their status or progress at each appointment, and gave time and opportunity to ask questions or discuss any concerns.

TB patient barriers to accessing care. When asked about the costs related to seeking care at health

facilities, the majority of patients (96%) stated that they have never been unable to come to the health facility because of the cost. Further, over 70% of patients interviewed reported not needing to pay to see a healthcare provider at the facility. However, some patients reported that they had to pay for diagnostic testing related to TB including CXR, blood tests, and sputum tests.

TB patient satisfaction. In comparing services desired by TB patients and the services they actually received, multiple discrepancies were highlighted. The biggest discrepancies were in free TB medicines; 88% of patients expressed a desire for free medicines but only 28% were actually given free TB medicines. Similarly, there were big differences regarding nutritional support and food baskets, transport assistance, rehabilitative services, and small group TB health education sessions. Despite many patients not receiving all the services they had desired, over 90% of patients reported being either satisfied or very satisfied with the TB care that they had received.

Outcome Findings

TB diagnosis outcomes. A total of 19,526 patients with presumptive TB were included in the register review. Of those, 17,106 (87.6%) had any type of diagnosis evaluation conducted (e.g., smear, culture, Xpert . /RIF, CXR, tuberculin skin test (TST). Ninety-three percent of these patients (n=15,886) had a bacteriological test (smear microscopy, culture, Xpert MTB/RIF, or Xpert Ultra), while 10% were confirmed by clinical diagnosis. It is important to note that the same patient may have received both a bacteriological and clinical diagnosis.

DS-TB treatment outcomes. Twenty-six percent of DS-TB patients were cured and 63% completed treatment, giving a treatment success rate of 89%. Fewer than 1% were recorded as having failed treatment, 3% died during treatment, and 5% were classified as lost-to-follow-up (LTFU). Two percent of the cohort did not have an outcome recorded.

DR-TB treatment outcomes. Fifty-three percent of the patients treated for DR-TB were recorded as cured and 19% completed treatment, giving a DR-TB treatment success rate of 72%. Four percent of patients failed DR-TB treatment, 9% died during treatment, and 12% were classified as LTFU. Three percent of the cohort were not evaluated and did not have an outcome recorded.

TPT outcomes. Nearly all (96%) of the PLHA who were initiated on TPT during the review period were recorded as having completed TPT. Fewer than 1% of PLHIV on TPT developed active TB, died, or had their treatment interrupted due to an adverse event. For children under the age of five years, 86% of those enrolled on TPT completed treatment. Ten percent were recorded as having TPT interrupted due to an adverse event and another 4% were LTFU.

Key Findings and Recommendations

Social health insurance. Among SHI-related findings, challenges related to health facility reimbursement for TB services were documented from multiple health facilities, highlighting a potential barrier to TB service provision under the SHI scheme. It is recommended that the VNTP facilitate the upgrade of health facilities to reach all requirements outlined in the health examination and treatment laws in order provide TB related services under the SHI scheme, ensure that all diagnostic and follow-up tests are endorsed by the Ministry of Health (MOH), and strengthen the practice of using data from the health performance appraisal platform for decision making.

From the patient perspective, almost all patients (95%) reported having a copay or being fully reimbursed for their most recent TB services. However, from the perspective of the health facilities, over half (59.7%) reported encountering some kind of challenge or barrier related to the inclusion of TB services under the SHI scheme. It is recommended that the VNTP continue to support the implementation of Circular 36 and enhance integrated supervision with relevant departments at MOH and Vietnam social services across all levels. Further, the VNTP should lobby for additional funds from both national and international stakeholders to improve health insurance coverage among TB patients as well as coverage for TB medications and co-payment/payment for TB services.

Support services for TB patients. Over one-third of patients reported that family members or healthcare providers served as their primary treatment supporter. Only a small proportion reported receiving treatment support from a community health worker, highlighting a potential gap in maintaining linkages between the health facility and community. It is therefore recommended that the VNTP promote monthly financial support to actors that provided support to outpatient TB cases as well as expand and implement digital applications designed to support those on TB treatment.

Additionally, there were significant gaps between the TB support services desired by TB patients and the services they received. This highlights a clear need for the VNTP to include the patient perspective when determining which TB support services should be prioritized. To respond to these gaps, it is recommended that the VNTP increase community engagement related to TB prevention, detection, and treatment and to strengthen activities such as counselling and peer-to-peer meetings. Additionally, a package of social protection services such as nutrition, travel, and mental health support should be considered for all TB patients.

TB patient experience. Overall, barriers to care appeared low among the TB patients interviewed. Almost all TB patients stated that cost was not a barrier to services and over 70% reported that they did not need to pay to see a provider at their health facility. It is recommended that the VNTP continue building off this positive finding and ensure that best practices which enable low barriers to care are shared and implemented.

The QTSA found that DR-TB patients appeared to have a more positive experience compared to DS-TB patients. This was observed in areas including patient-provider interactions, patient knowledge of risk factors, experienced stigma, costs of treatment, and overall patient satisfaction.

To increase satisfaction of DS-TB patients, enhanced and more frequent trainings for providers to help improve the overall patient experience is recommended. Additionally, the VNTP should consider adding an assessment of TB patient care experience as part of their routine monitoring/supervision visits and also ensure SHI coverage among all DS-TB patients.

Laboratory and results documentation. The most common methods used for TB diagnosis included smear microscopy (98%), CXR (83%), evaluation of clinical signs and symptoms (82%), and Xpert testing (73%). Furthermore, only 28% of facilities with onsite labs had an Xpert machine onsite. Although the expectation is not that every facility be equipped with an Xpert machine, it is recommended to scale up Xpert and other mWRDs and replace smear microscopy with Xpert testing as the primary TB diagnostic tool utilized in Vietnam.

Conclusions

The study showed the VNTP's strengths in terms of the availability of TB diagnosis and treatment services. Positive results were observed in results related to the diagnostic network services, as well as DS-TB patient treatment outcomes. The study identified programmatic gaps including a need for treatment support services and stockouts of some key TB medications. Most interestingly, the QTSA provided an opportunity for the VNTP to document and assess TB service delivery under Vietnam's SHI scheme. This information allows the VNTP to describe current availability of TB services under the scheme, coverage of facility reimbursement, the implementation challenges/barriers faced by facilities, and the impact of the scheme on patients' access to TB services. Overall, these findings provide evidence of the key elements for the VNTP to target in order to improve the availability of high-quality TB care services across Vietnam and optimize patient treatment outcomes.

Introduction

Tuberculosis (TB) is a communicable disease, one of the top 10 causes of morbidity and mortality worldwide. It is currently the leading cause of death due to infectious disease globally. In 2021, an estimated 10.6 million people developed TB and 1.4 million died from it globally. Although Mycobacterium tuberculosis (*M. tb*) can infect anyone anywhere, TB is a disease of poverty, predominantly afflicting the world's poor. Thirty high-burden TB countries account for 87% of those who fall sick with TB each year (WHO, 2022).

TB is a preventable and curable disease. About 86% of people who develop TB can be successfully treated with a four- to six-month drug regimen, and treatment has the additional benefit of curtailing onward transmission of infection. Since 2000, TB treatment has averted more than 67 million deaths (WHO, 2022).

The emergence and rapid spread of multidrug-resistant tuberculosis (MDR-TB) is a growing health security concern that is also contributing to antimicrobial resistance and the reversal of two decades of progress in mitigating the impact of TB. Globally in 2022, there were an estimated 410,000 new cases of MDR-TB/rifampicin-resistant tuberculosis (RR-TB); 3.3% of new TB cases and 17% of previously treated cases had MDR-TB or RR-TB (WHO, 2022).

To address the worldwide TB burden, the WHO's post-2015 End TB Strategy set the following global targets for 2030: (1) 90 percent reduction in the number of deaths due to TB; (2) 80 percent reduction in TB incidence between 2016 and 2030; and (3) zero percent of TB-affected households experiencing catastrophic costs because of TB (WHO, 2015). The United Nations (UN) Sustainable Development Goals also address TB, especially Sustainable Development Goal 3 ("Ensure healthy lives and promote well-being for all at all ages"), which specifies that the TB epidemic should be ended by 2030 (United Nations, 2015). Although these global initiatives and downstream country actions resulted in a decreased TB burden in many countries, the decline in incidence was slower than needed to meet the End TB Strategy targets.

Recognizing that the world as a whole was not on track to reach the 2020 milestones of the strategy, in September 2018, the United Nations High-Level Meeting (UNHLM) on TB set the stage for high-level attention and action on TB. The meeting resulted in the adoption of a Political Declaration on Tuberculosis, through which countries reaffirmed their commitment to end the TB epidemic globally by 2030. The political declaration included four new global targets: treat 40 million people for TB disease in the five-year period 2018–2022; reach at least 30 million people with TB preventive treatment for a latent TB infection in the five-year period 2018–2022; mobilize at least US$13 billion annually for universal access to TB diagnosis, treatment, and care by 2022; and mobilize at least US$2 billion annually for TB research (United Nations, 2018). Unfortunately, initiatives and actions to reach these targets were considerably waylaid by the global COVID-19 pandemic of 2020–2023.

The United States Agency for International Development's (USAID) Global Accelerator to End TB, which was launched at the UNHLM, is an initiative and business model aimed to assist high TB burden countries attain UNHLM targets by accelerating proven anti-TB strategies and helping countries develop programs to achieve an accountable, responsible, and inclusive TB response (United States Agency for International Development, n.d.). USAID also recognized a dearth in the knowledge base for systematic methods to measure and monitor TB quality of care, and a lack of data on the quality of TB services across the high-burden countries. As such, USAID charged the MEASURE Evaluation project, and its successor, the

Tuberculosis Data, Impact Assessment and Communications Hub (TB DIAH) project, to develop standardized tools to assess the quality of TB services and conduct a series of quality of TB services assessments (QTSAs) to establish baselines for the examination and improvement of TB service quality.

This report describes the findings of a 2023 QTSA that was conducted by TB DIAH in Vietnam, in collaboration with the Vietnam National TB Program (VNTP).

Overview of Tuberculosis in Vietnam

Epidemiology of TB in Vietnam

Vietnam is a middle-income country in Southeast Asia. The majority of the country's 98 million people live in the Red River and Mekong River Delta regions. Most ethnic minority groups live in the less densely populated areas of the northern mountain regions and the central highland plateau (General Statistics Office of Vietnam, n.d.).

Vietnam is one of the 30 high-TB burden countries, with an estimated incidence of 176/100,000 in 2023. It is estimated that each year 170,000 people fall ill with TB in Vietnam, but less than 60% receive treatment (United States Agency for International Development, 2023). Vietnam is also part of the 30 MDR-TB high-burden countries. In 2022, the estimated MDR/RR-TB rates among new and previously treated TB patients were 4.5% and 15%, respectively (Table 1). Of an estimated 9,200 incident MDR-TB cases, only 3,577 cases were detected and 3,436 were enrolled in treatment in 2022.

Table 1. TB epidemiology in Vietnam, 2021

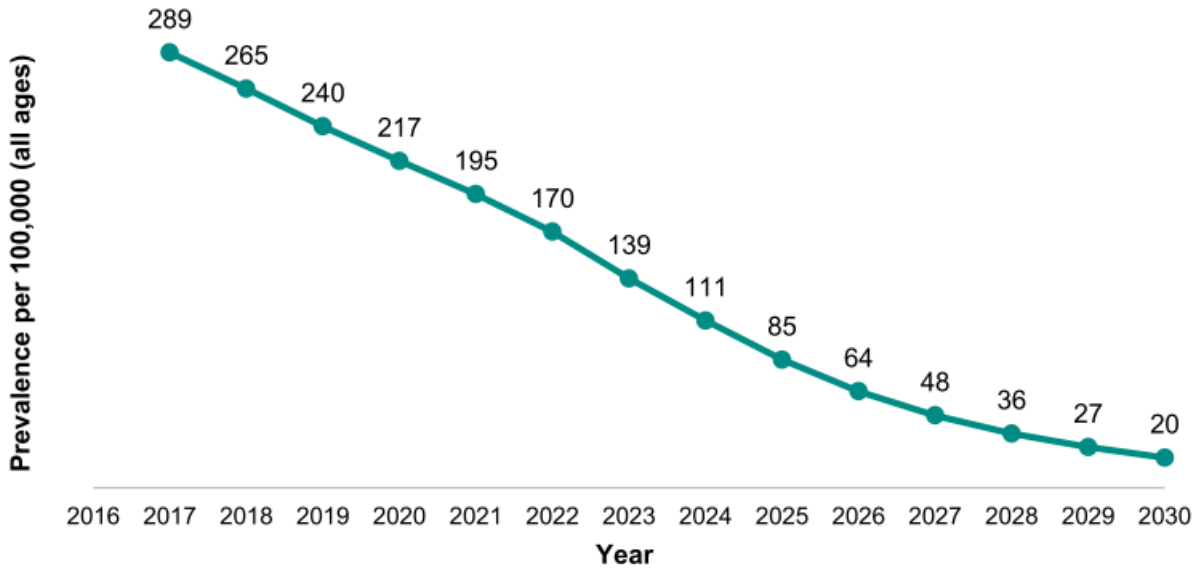
Estimates of TB burden, 2022	Number	Rate per 100,000 pop.
Total TB incidence	172,000 (119,000-247,000)	176 (121-251)
HIV-positive TB incidence	4,300 (2,900-6,100)	4.4 (2.9-6.2)
MDR/RR-TB incidence**	9,200 (5,800-13,000)	9.4 (5.9-13)
HIV-positive TB mortality	2,600 (1,800-3,600)	2.7 (1.8-3.6)
Total cases notified to VNTP	103,804	
Estimated proportion of TB cases with MDR/RR-TB - new cases (%)	4.5 (4.4 – 4.6)	
Estimated proportion of TB cases with MDR/RR-TB - previously treated cases (%)	15 (14 – 16)	
% with known HIV status	86%	
% bacteriologically confirmed	79%	
TB treatment coverage (notified/estimated incidence)	59% (42-86)	
TB case fatality ratio (estimated mortality/estimated incidence)	8% (5-13)	

Despite the decrease in estimated incidence of TB in Vietnam over the last 10 years, TB prevalence remains high at 322/100,000 according to the latest prevalence survey. Men in Vietnam are disproportionally

affected by TB compared to women, with a male to female case notification ratio of 4.0. Case notification in children, in contrast, seems to be disproportionately affected by COVID-19 with declines of more than 75% in case notification in the youngest age group of 0-4 years old from 2021 compared to 2020.

Although there has been encouraging progress over the past decade, the results of the second national prevalence survey (Nguyen et al., 2020) suggest that the TB burden is 1.4 times higher than previously estimated. Further, VNTP estimated that between 2017 and 2025, prevalence must be reduced by 9% per year and subsequently by 15% per year to achieve the country's ambitions of reaching a prevalence of 20 per 100,000 by 2030 (Figure 1).

Figure 1. Estimated TB prevalence rate per 100,000 (all ages), 2017-2030[1]



In 2020, there was a case detection gap of 39% - approximately 61% of the estimated 165,000 incident cases were notified and 55% were successfully treated. The case detection gap is estimated to be highest among males and those age 65 years and older. Among people living with HIV/AIDS (PLHA) the gap was larger as only 49% of the estimated 56,000 incident cases were detected. TPT coverage among PLHA was 49% in 2021. Covid-19 seriously impacted TB services during the last three years, in particular, the first half of 2021. This especially affected the implementation of ACF activities. However, case notifications recovered strongly in 2022.

The two prevalence surveys conducted in Vietnam found that a substantial proportion of cases are asymptomatic - 37% of culture-positive cases reported no symptoms at all, indicating the need for screening to be conducted utilizing sensitive tools such as chest X-ray (CXR) among people not presenting to care or reporting symptoms, in order to detect all cases of TB (Nguyen et al., 2020).

National TB Program's Strategy and Programmatic Response

The Vietnam National Strategic Plan (VNSP) 2021-2026 was developed as the implementing guide for the

[1] TB prevalence projection from TB Impact Model and Estimates (TIME) modeling

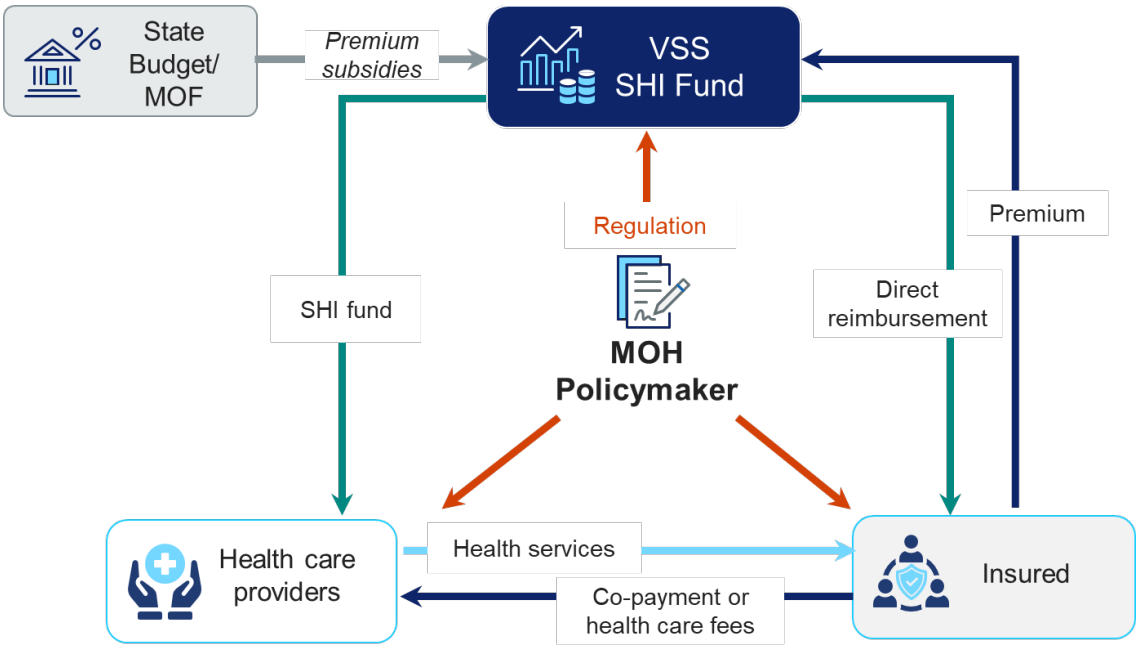
National Strategy on TB prevention to 2020, and outlined the objectives, interventions, and planned activities under the responsibility of the National TB Program for the period 2023-2026. The strategies and activities under the VNSP 2021-2026 provide the foundation for operationalizing the Vietnamese government's ambitious vision of ending TB by 2030. It further serves as the basis for investments in TB care and prevention by the Vietnamese government and provides the framework to which other stakeholders and donors are requested to contribute.

With the vision to minimize the impact of TB on public health, economy, and society, the VNSP 2021-2026 outlines the goal: Gain the objective of Resolution 20 to end TB by 2030, ensure any people at risk of TB are able to be early detected and given appropriate treatment, without any suffering from the catastrophic cost of treatment.

Social Health Insurance and TB in Vietnam

Since 1992, Vietnam has succeeded in implementing progressive Universal Health Coverage (UHC) with social welfare support, with the fundamental principle that every citizen should enjoy the right to a standard and efficient health service. SHI is centrally managed and comprises three sub-schemes: compulsory SHI, voluntary SHI, and SHI for the poor. As of 2022, 92% of the Vietnamese population is covered by SHI (General Statistics Office of Vietnam, n.d.), although the coverage is lower among those with TB, at approximately 85%. The poor, ethnic minorities, children <6 years old, elderly >80 years old, and socially vulnerable groups are fully covered at 100% of the SHI premium by the Vietnam government. Those who are "near poor" and their households are partially subsidized and contribute a 5% co-payment of the expenses. At secondary and tertiary level facilities, SHI reimbursement covers 80% of costs (20% co-payment), while no co-payment is charged at commune health stations.

Figure 2. Architecture of the SHI system in Vietnam[2]



From July 1, 2022, Vietnam's Government included TB services under SHI. Health facilities at Provincial and District levels must meet specific administrative requirements to provide reimbursable TB services under SHI. As of December 2022, approximately 750 of 850 TB Provincial and District public and private facilities have been certified to provide SHI-reimbursed TB services. The VNTP has also transferred the procurement of first line TB drugs to a national bidding scheme. SHI covers a package of TB services that includes the first line TB drugs for treatment, TB preventive treatment, smear microscopy, Xpert testing, and CXR. SHI does not cover second-line TB drugs (SLD), screening or testing at the community level, and social support to TB patients (nutrition, transport, salary compensation etc.) (Government of Vietnam, 2018).

The Government of Vietnam no longer prioritizes diseases in special "national targeted programs", which in the past included TB, HIV, malaria, and leprosy. These "national targeted programs" diseases are now at the same level of priority for all diseases for which services are provided in the health system (Government of Vietnam, 2017). As part of this movement out of the special targeted program, TB diagnosis and treatment services are no longer provided free of charge for non-health insured persons (with some exceptions, such as prisoners) representing more than 15% of people affected by TB (Government of Vietnam, 2018) according to a rough estimate from the MOH. TB care is also not fully covered even for those with SHI due to co-payment requirements. As a result, the VNTP's efforts towards achieving the End TB strategy goals are at risk, due to increased risk for treatment interruption or discontinuation as well as increased transmission due to delayed treatment initiation.

SHI policy and administrative requirements have also created confusion among some facilities in terms of the approval process to provide reimbursable TB services under SHI, particularly at district facilities and the local commune level. Further, there is a general lack of guidance on how to transfer and treat TB

[2] Mid-Term Review: National TB Strategic Plan (2021-2025) Vietnam National Tuberculosis Program.

patients at the commune level since not all communes provide TB services under the SHI scheme. In response to this and the VNTP's advocacy, the Vice Minister of Health issued an official guidance in December 2022 to enable SHI drug dispensing at the commune level, protecting person-centered care. However, very few district facilities synchronize TB drug dispensing with the commune level.

Quality of Tuberculosis Service Assessment

Quality of TB Care

Early and accurate detection and appropriate treatment of people with active TB disease are pivotal strategies employed by NTPs in high-burden TB countries. In addition to expanding access to services, TB programs are implementing efforts to improve the quality of diagnosis, care, and treatment, and recognizing the important role that quality-of-care plays in improving case detection and treatment success rates. An article by Kruk, et al. for the Lancet Global Health Commission on "High Quality Health Systems in the Sustainable Development Goals Era" estimated that 60% of deaths from conditions amenable to healthcare are due to poor quality care, whereas the remaining 40% resulted from the non-use of the health system (Kruk et al., 2018). Such data demonstrate that what happens after patients have accessed the health system, and whether they are provided the services they need in a competent and caring manner, are equally important, if not more important than access to the services (Kruk et al., 2018 and Arsenault et al., 2019).

Improving the standard of TB care ensures that patients receive the care they deserve, and by doing so, encourages more patients to seek services in a timely manner. The *International Standards for Tuberculosis Care* describes a widely accepted level of care that all healthcare providers—public and private—should strive to achieve when treating and managing patients who have TB, are presumed to have TB, or are at an increased risk of developing TB (TB CARE I, 2014). These standards are intended to promote the engagement of all providers in delivering high-quality care to patients of all ages, and to empower patients to evaluate the quality of care they receive from healthcare providers. The standards offer a reference point to assess healthcare provider performance and quality of care and help identify current and expected levels of quality in healthcare delivery. Failure of providers or systems to adhere to the defined standards of diagnosis, care, and treatment of TB compromises the quality of services provided to patients.

The *International Standards for Tuberculosis Care* are useful in guiding service providers to offer high-quality TB services, however, there are almost no tools or guidelines available for NTPs and other TB stakeholders to use to assess and monitor the quality of TB services at a programmatic level. The QTSA was designed to fill this methodological and knowledge gap.

The QTSA is a facility-based survey, like the Demographic and Health Survey and the Service Provision Assessment (The DHS Program - SPA, n.d.) but specifically designed to assess the quality of TB services. QTSA resources include implementation guidelines and a set of standardized tools that employ several data collection methods (i.e. review of facility-based TB registers, interviews with healthcare providers, and patient interviews), to collect information that is used to generate indicators to assess and monitor the quality of TB services provided by the NTP.

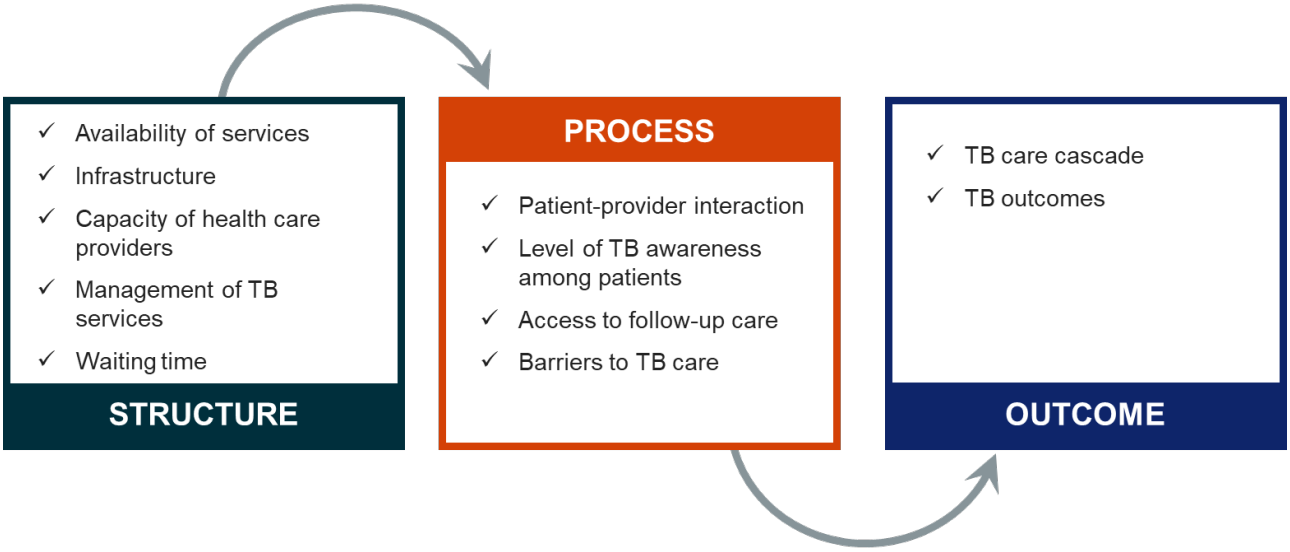
QTSA Framework

There is growing evidence that quality of care is linked to health outcomes, and that targeted improvement in quality of care can enhance the use of TB services and, ultimately, improve TB outcomes over the long-

term. However, according to a systematic review conducted by Cazabon, et al., quality of care in both the public and private sectors falls short of international standards and urgently needs improvement (Cazabon et al., 2017). In this context, a framework and standards that can guide NTPs and other TB stakeholders to systematically measure and improve the quality of TB services is useful and fills an important knowledge gap.

The QTSA TB Quality of Care Framework, presented in Figure 3 and used to guide the QTSA in Vietnam, illustrates a logical pathway that identifies and links the key components of high-quality TB care. The three components are: *structure,* or the resources available at a health facility, or more generally in the healthcare system; *process,* or the interaction between the healthcare system, including providers and patients; and *outcomes,* or the consequences of care (Donabedian, 2005). These components must be present and functioning properly to achieve desired TB outcomes.

Figure 3. TB quality of care framework[3]



This framework can be used to define and measure the key elements in each component, which together can generate information that policymakers and program managers can use to inform their analysis and decision making to improve the quality of TB services. The three components and elements of TB quality of care are described below.

Structure

Structure refers to the foundational elements and the environmental factors that facilitate or hinder the provision of high-quality TB services at the health facility level. This includes the physical infrastructure of the health facility; the availability and organization of specific TB services, as determined by the health facility type and level; the availability of and adherence to national TB standards and guidelines; appropriate human resources to provide services offered; staff training and competencies; the availability of drugs, medical equipment, and other supplies; adequate management and supervision structures and systems; and resources and funding for social support, such as payment schemes, incentives, and

[3] Source: MEASURE Evaluation, adapted from the Quality of Medical Care model by A. Donabedian

transportation reimbursement, to facilitate the delivery and receipt of TB services.

Process

Process refers to the steps and manner in which services and care are provided to patients. It puts a spotlight on the interaction between TB service providers and patients, from both perspectives, during the delivery of services and the caregiving process. In other words, process qualifies "what is done" with "how it is done". Process also refers to provider-focused procedures and events, such as supervision and training, that also affect their competence and behavior and have a downstream effect on patient health outcomes.

Outcome

Outcome refers to the results and effects of care. Outcomes are measured in terms of TB and related health outcomes and patient satisfaction. Depending on data needs, cases diagnosed and notified can be disaggregated by multiple factors, including TB type (new, retreatment), site of disease (pulmonary, extrapulmonary), drug resistance status, HIV status, and sex and age group, to gain a better understanding of the types of patients accessing (and not accessing) TB services. Treatment outcomes, including treatment completion, cure, failure, loss to follow-up, and death while on TB treatment, provide insights on the NTP's ability to provide successful treatment services. Assessing patients' satisfaction or their reaction and responsiveness to the care provided by the healthcare system is a key aspect of assessing quality of care because it provides further insights on their subsequent health and care-seeking behavior.

Study Objectives

The Vietnam QTSA is a cross-sectional study designed to generate nationally representative estimates of key indicators of quality of care. The purpose of the QTSA is to assess the quality of TB services provided at the VNTP facilities and identify strengths and weaknesses in TB service delivery. The assessment generates nationally representative results that provide the VNTP and other TB stakeholders information that can be used to develop and implement programs and interventions that monitor and improve the quality of TB services. This assessment aims to:

- Assess the availability and current condition of TB and related services (including screening, diagnosis, treatment, care and follow-up, referral, and laboratory services) at VNTP health facilities
- Assess the availability and functionality of facility resources and infrastructure to support TB service delivery
- Assess TB providers' knowledge, skills, and ability to deliver appropriate TB services
- Assess patients' awareness of TB disease, and access to and satisfaction with TB services
- Assess coverage of the SHI reimbursement scheme for TB services, implementation challenges/barriers faced by facilities, and the impact of the scheme on patients' access to TB services
- Assess the linkages between TB diagnosis, treatment initiation, and treatment outcomes in VNTP facilities

Methods

Study Design

The Vietnam QTSA is a cross-sectional study conducted in selected health facilities that provide TB prevention, diagnosis, and treatment services, drawn from the VNTP's network of public sector facilities. The study was designed to generate nationally representative estimates of key indicators of TB quality of care. The specific services assessed are screening, diagnosis, treatment, care and follow-up, referral, and laboratory services. The availability and functionality of resources (material and human) to support the delivery of TB services, TB service providers' competencies and skills, the interactions between providers and patients, and patients' overall perception of TB services were evaluated to assess the overall quality of services provided by facilities. Data for the study was collected from health facilities, TB care providers, and people currently enrolled on TB treatment.

Sampling and Study Population

The sample was derived using stratified multistage design. In the first stage, provinces and special level 1 cities were drawn using probability proportional to size (PPS) from the three study regions (see Table 2). Next, using case detection and treatment success data from 2021 obtained from the VNTP, provincial and city level case detection and treatment success rates were calculated.

Table 2. Overview of Vietnam QTSA sample by facility type

Region	Province/ Municipality	No. of facilities	District general hospital	One-function	Two-function	CDC	Lung hospital	Provincial general hospital
Northern Region	Thai Nguyen	**13**	3	3	6	0	1	0
	Bac Ninh	**9**	0	0	8	0	1	0
	Bac Giang	**11**	0	1	9	0	1	0
	Nam Dinh	**10**	1	0	8	0	1	0
	Lao Cai	**11**	0	8	1	1	0	1
	Hanoi	**18**	0	0	17	0	1	0
Central Region	Quang Nam	**13**	0	0	12	0	1	0
	Binh Dinh	**12**	0	0	11	0	1	0
	Quang Binh	**9**	0	8	0	1	0	0
	Da Nang	**8**	0	0	7	0	1	0
Southern Region	Tra Vinh	**10**	0	3	6	0	1	0
	Binh Thuan	**11**	0	0	11	0	1	0
	Dong Nai	**12**	0	3	8	0	1	0
	Kien Giang	**12**	0	0	11	0	1	0
	Binh Duong	**10**	0	0	9	1	0	0
	Can Tho	**11**	3	2	5	0	1	0
Total		**180**	**7**	**28**	**128**	**3**	**13**	**1**

Health Facilities

The provinces and cities were stratified by treatment success rate and simple random sampling was used to allocate the number of health facilities to be sampled in each province and city (i.e., an average of 10 to 12 facilities). Overall, 180 facilities[4] were selected from the 13 provinces and three city municipalities[5] across the Northern, Central, and Southern regions of Vietnam.

TB Service Providers

TB providers were selected using convenience sampling. At least two TB providers in charge of delivering clinical TB and TB-related services and present at the facility on the day of data collection were selected to be surveyed. Provider eligibility and sample size for each type of health facility included in the QTSA study are detailed in Table 3 below.

Table 3. Provider interview eligibility by health facility type

Facility Type	Types of providers eligible	Number of providers sampled at each health facility
Provincial general hospital and Lung Hospital	Doctor in charge of TB clinical services; TB focal person; nurse/ sputum collector; person in charge of infection control	4
District hospital	Doctor or nurse in charge of TB clinical services; TB focal person	2
District preventive center (one-function)	TB focal person; nurse	2
District health center (two-function)	Doctor in charge of TB clinical services; TB focal person;	2
CDC	Doctor in charge of TB clinical services; TB focal person	2

TB Patients

TB patients enrolled in treatment at the time of the survey registered at sampled facilities, who met the inclusion and exclusion criteria described below, were selected using convenience sampling. Specifically, these patients were confirmed DS- or DR-TB patients in the intensive or continuation phase who were visiting the health facility on the day of data collection.

Table 4. Inclusion and exclusion criteria for TB patients engaged in the QTSA

Inclusion Criteria	Exclusion Criteria
• Currently receiving TB treatment (regardless of	• Has received less than two weeks of treatment

[4] The sample size calculation was adjusted to account for a 10% non-response rate that may be encountered due to participation refusals during fieldwork

[5] City municipalities exist at the same level as provinces in Vietnam

whether they are in the intensive or continuation phase and regardless of whether they are receiving treatment for DS-TB) with at least two weeks of treatment and/or deemed not infectious • Age 18 or older • Pulmonary TB patient • DR-TB patients who have been on treatment for at least 4-6 months (shorter regimen) or 8 months (longer regimen) or known culture converted	• Visiting the health facilities for the first time on the day of data collection • Participating in other research/clinical trials • Too weak to participate in interview • Refused to be interviewed • Transferred-in TB cases who have spent less than a month receiving care at the facility

Assessment Tools

Overview

The QTSA is comprised of four standardized survey tools, which have been aligned with global normative TB guidelines (Figure 4).

Figure 4. Overview of QTSA tools

Facility Audit: The Facility Audit was administered to the health facility in-charge, TB focal person, and other service providers engaged in the provision of TB services at the facility to determine the availability and functionality of the facility infrastructure, TB services offered, and equipment and resources available to serve TB patients with quality TB care. One Facility Audit was conducted at each sampled health facility.

Provider Interview: The Provider Interview was administered to service providers actively engaged in the provision of TB services, such as the TB focal person and/or other staff in charge of specific TB-related services, to understand the clinical processes and protocols applied during TB counseling, screening and diagnosis, treatment, and follow-up care. This tool evaluates the technical competence, knowledge, and practices of the service providers in the provision of clinical care and management of TB services. One or more Provider Interview(s) were conducted at each sampled health facility depending on the facility size, typically ranging from one to four interviews.

Patient Interview: The Patient Interview was administered to TB patients receiving diagnosis and treatment services at the facility to collect information about the client's experience as the recipient of care. This tool includes questions to assess the patient's perspective of the quality of TB-related services offered by the facility. One or more Patient Interview(s) were conducted at each sampled health facility depending on the facility size and patient load, typically ranging from one to five interviews.

Register Review: The Register Review involves the review and extraction of relevant TB data from the appropriate registers (e.g., laboratory registers, TB treatment registers, DR-TB treatment register, TB contact register) for a specific period of time to assess the services provided to TB patients and TB-related outcomes. One Register Review was conducted at each sampled health facility

Data Collection and Management

Data collection for the Vietnam QTSA was conducted by UNCV with support from VNTP. UNCV was responsible for recruitment and training of data collectors as well as development of electronic data collection tools and the management of data collection, including quality assurance procedures.

Tool Customization

Prior to survey implementation, the QTSA tools were reviewed and adapted to the Vietnam context by the QTSA Technical Working Group, comprised of representatives from the VNTP, TB DIAH, University of North Carolina Vietnam (UNCV) and USAID/Vietnam. In addition to contextualizing standard questions from the QTSA tools to reflect the context in Vietnam, additional modules related to Vietnam's SHI and TB services were added to both the Facility Audit and Patient Interview tools. The purpose of these modules was to describe the influence of SHI on TB services at the health facility and the perceived impact or changes that occurred following the rollout of the SHI from the TB patient perspective.

Pretesting

The pretest was conducted in both provincial and district-level health facilities in Hanoi in November 2022. These facilities included *Hai Phong Lung Hospital*, *Ba Dinh district health center*, *Son Tay district health center,* and *Quoc Oai district health center*. In each facility, the pre-testing team spent one full day pretesting the four QTSA tools.

Training

Training for the QTSA was conducted in Hanoi from February 8 - 16, 2023. It included 10 team leaders and 36 data collectors from across Vietnam. All team leaders and data collectors were trained by TB DIAH, the TB and Research Specialist, UNCV staff, and VNTP to field each of the four QTSA survey tools. Training included mock testing of the surveys at 10 health facilities in Hai Duong and Thai Binh provinces.

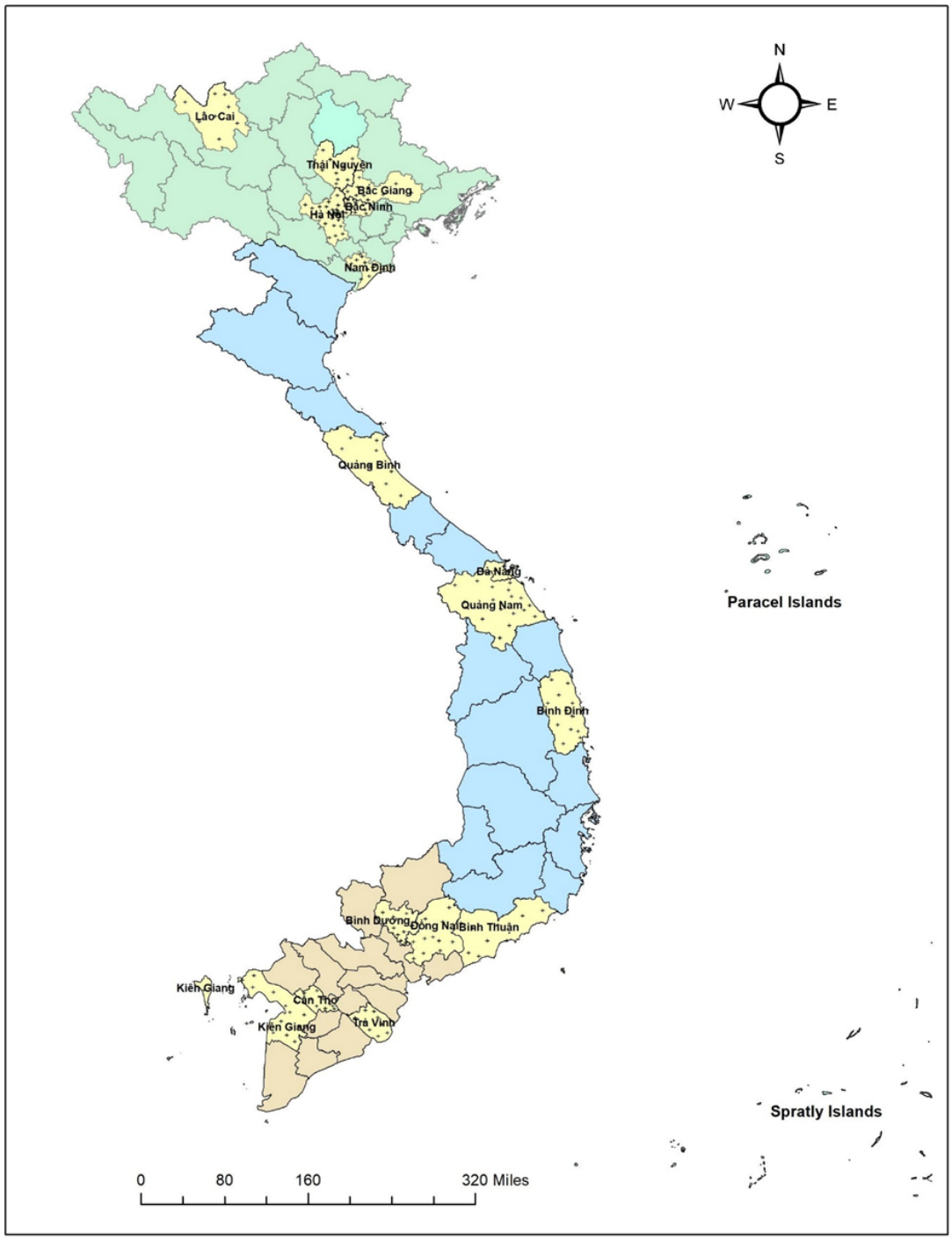
Data Collection

Data was collected by nine data collection teams from February 28, 2023 - April 18, 2023, and covered 180 health facilities across 16 provinces in Vietnam (see Figure 5 for an overview of health facility locations). In instances where sampled facilities could not be surveyed, identified backup facilities were swapped out to ensure the minimum number of health facilities surveyed was reached.

QTSA tools were programmed into the SurveyCTO platform to enable electronic data capture in order to

facilitate more efficient and accurate data collection for the field teams. Additionally, VNTP supported UNCV teams during data collection. VNTP supervised data collection and provided technical clarification for data collection teams as well as administrative logistical support when needed.

Figure 5. Map of selected provinces and health facilities surveyed for the Vietnam QTSA



Quality Control Measures

Data quality control happened at multiple levels. First, the use of electronic data collection allowed for real-time data management through the use of data limits, skip logic, and required responses for the data collection tools. Team leads served as a layer of quality assurance by reviewing all the tools for accuracy and completeness before data was uploaded to the server. Additionally, UNCV and VNTP provided onsite supervision at about 20% of the sampled facilities and continued online support from the central level for the duration of the data collection period.

After data was submitted to the server it was reviewed daily by the UNCV data management team. Identified data irregularities were notified to the data collection teams to correct. In addition to reviewing incoming data, UNCV also conducted backchecks on about 15% of the Facility Audit and Health Provider Interview surveys that were submitted. Relevant respondents were contacted by phone and pre-selected questions on each of the two tools were asked to verify the data that were submitted. All correct and discordant information were then summarized in Quality Control forms which were sent to the data collection teams for review. The teams were then required to either confirm that the data were correct or explain if they saw a need to revise any information. If necessary, TB focal points were also contacted to weigh in and resolve any inconsistencies before finalizing the response.

Data Analysis

Analysis of the Vietnam QTSA data was linked to the key indicators for each of the domains in the QTSA conceptual framework (i.e., structure, process, outcomes) as well as the objectives for the study. Survey data was cleaned and validated by UNCV and then analyzed using STATA software by the TB DIAH team. Frequencies and crosstabs of preliminary results were shared with VNTP for validation. From these discussions the analysis was refined and finalized prior to the compilation of results.

Ethical Review

The study was reviewed and approved by JSI's Institutional Review Board (IRB) committee. Further approval was received by Hanoi University of Public Health on October 11, 2022.

Results

This section presents the Vietnam QTSA findings, which are organized according to the QTSA conceptual framework and the data needs prioritized by the VNTP. After a brief description of the characteristics of the health facilities, TB service providers, and patients sampled, the findings on the structural, process, and outcome indicators are presented. Additional data are provided in the link in Appendix C, which is a supplemental document to this report.

Sample Characteristics

Facility Characteristics

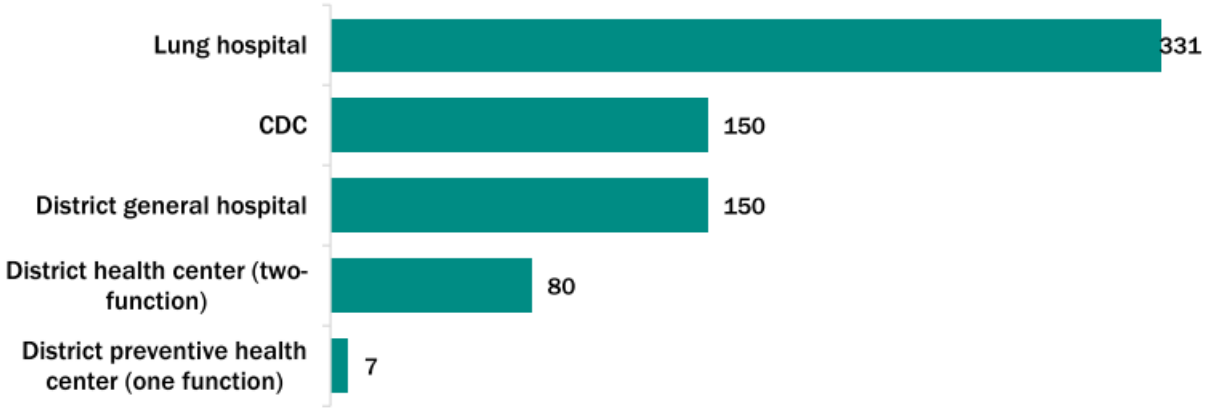
One hundred eighty health facilities providing TB services were included in the assessment. More than two-thirds (70.6%) of the health facilities assessed were two-function district health centers followed by one-function district health centers (15.6%) and lung hospitals (7.2%). Additionally, district general hospitals comprised 4.4% of the sample, (Centers for Disease Control) CDCs comprised 1.7% of the sample, and provincial general hospitals ("other" category) comprised only 0.6% of the health facilities assessed (Table 5). More than half of the health facilities (56.7%) were located in rural areas, 35.6% were located in urban areas and 7.8% were located in peri-urban settings (See Table 1.1.2c in Appendix C).

Table 5. Facility type, by locale

	Facility Location						Total	
	Urban		Peri-urban		Rural			
Type of Facility	No.	%	No.	%	No.	%	No.	%
District general hospital	2	3.1	1	7.1	5	4.9	8	4.4
District preventive health center (one-function)	9	14.1	1	7.1	18	17.6	28	15.6
District health center (two-function)	38	59.4	12	85.7	77	75.5	127	70.6
CDC	3	4.7	0	0	0	0	3	1.7
Lung hospital	11	17.2	0	0	2	2	13	7.2
Other, (Provincial General Hospital)	1	1.6	0	0	0	0	1	0.6
Total	**64**	**100**	**14**	**100**	**102**	**100**	**180**	**100**

Just over two-thirds (67.8%) of the health facilities assessed provide both inpatient and outpatient TB services and the remaining one-third (32.2%) reported that they offer only outpatient TB services (Table 1.1.2a in Appendix C). Monthly caseloads for the health facilities assessed are detailed in Figure 6 below. As expected, the median monthly caseload, defined as individuals enrolled on TB treatment, was highest at lung hospitals, followed by CDCs, district general hospitals, two-function district health centers, and one-function district health centers.

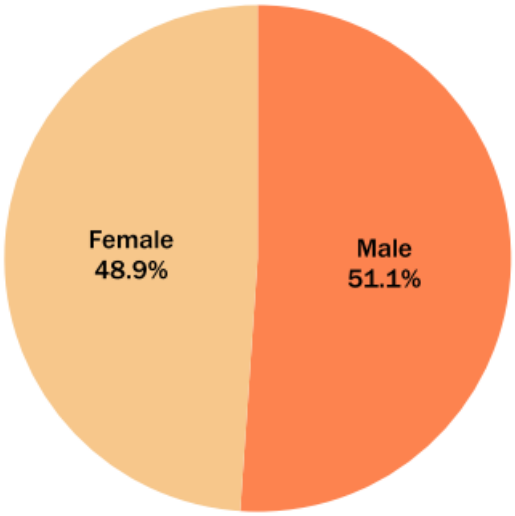
Figure 6. Monthly median TB caseloads among sampled facilities by facility type (n=180)



TB Service Provider Characteristics

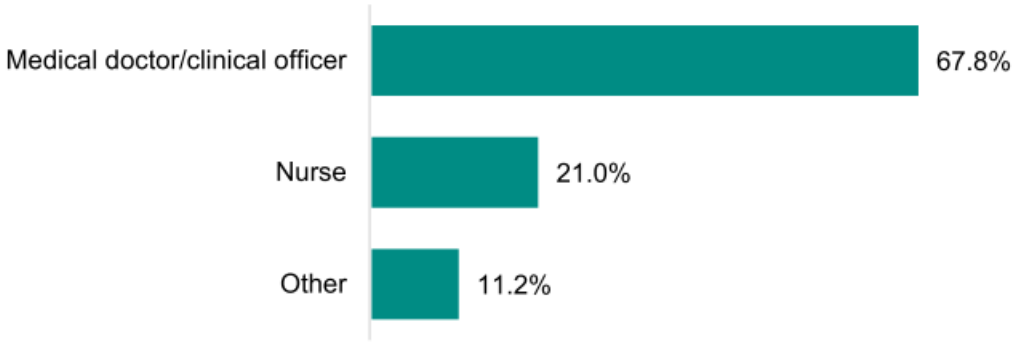
A total of 376 healthcare providers were interviewed for the assessment. Among those, 51% were male and 49% were female (Figure 7).

Figure 7. Provider sex (n=376)



The majority (68%) of providers worked as a medical doctor or clinical officer, and 21% worked as a nurse (Figure 8). When asked about the number of patients, inclusive of TB and non-TB patients, per week that they personally see or care for in the facility, nearly half (44.1%) reported seeing between one and 50 patients per week and 21% said they see between 51 and 100 patients (Appendix C, Table 1.2a).

Figure 8. TB healthcare provider occupation (n=376)



TB Patient Characteristics

Six hundred and ninety-six (696) patients were included in the study. Nearly all (92.1%) eligible patients reported having DS-TB, while 7.9% reported having DR-TB. A little less than 70% (69.5%) of all patients stated that they were in the continuation phase of treatment and 23.9% were in the intensive phase; 6.6% did not know what treatment phase they were in (Table 6). The characteristics of the patients interviewed are detailed in Table 6.

Figure 9. TB patients, by self-reported TB diagnosis (n=696)

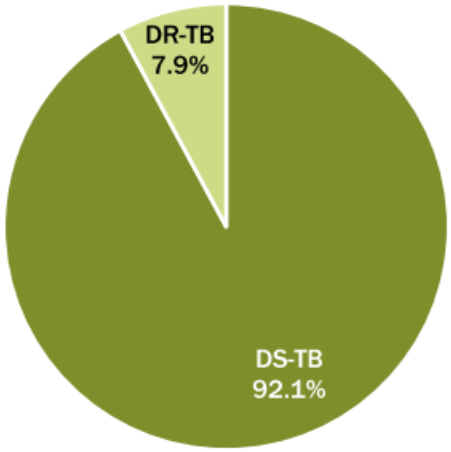


Table 6. Characteristics of patients interviewed, by type of TB (n=696)

Patient Characteristics by Type of TB	DS-TB		DR-TB		Total	
	No.	%	No.	%	No.	%
Sex of patient						
Male	478	74.6	48	87.3	526	75.6
Female	163	25.4	7	12.7	170	24.4
Patient age group						
<24	38	6	0	0	38	5.4
25-34	69	11	10	17.1	79	11.2
35-44	106	16.6	15	25.8	121	17.2
45-54	146	22.8	16	27.5	162	23.2
55+	280	43.9	17	29.1	297	42.5
The highest level of education completed						
Under primary	97	15.1	10	18.2	107	15.4
Primary education	151	23.6	15	27.3	166	23.9
Lower secondary education	205	32	19	34.5	224	32.2
Upper secondary education	119	18.6	7	12.7	126	18.1
Postsecondary education	67	10.5	4	7.3	71	10.2
No response	2	0.3	0	0	2	0.3
Living area						
Urban	215	33.5	24	43.6	239	34.3
Rural	426	66.5	31	56.4	457	65.7
Employment status						
Employed full time	258	40.2	18	32.7	276	39.7
Employed part time	78	12.2	7	12.7	85	12.2
Self employed	38	5.9	4	7.3	42	6
Unemployed	74	11.5	11	20	85	12.2
Housewife	70	10.9	8	14.5	78	11.2
Retired	103	16.1	4	7.3	107	15.4
Student	7	1.1	0	0	7	1
No response	13	2	3	5.5	16	2.3
Type of transportation used to get to this facility						
Bicycle	20	3.1	3	5.5	23	3.3
Bus	12	1.9	0	0	12	1.7
Car	15	2.3	2	3.6	17	2.4
Motorcycle (personal)	576	89.9	49	89.1	625	89.8
Taxi	3	0.5	0	0	3	0.4
Walking	11	1.7	0	0	11	1.6
Other (specify)	4	0.6	1	1.8	5	0.7
Total	**641**	**100**	**55**	**100**	**696**	**100**

Around two-thirds of all patients interviewed (75.6%) were male, and less than half (42.5%) of all patients were older than 55 years. About 65% (65.7%) of all patients live in rural areas. When asked about the highest level of education completed, 32.2% completed a lower secondary education, 23.9% completed primary education, and 18.1% completed upper secondary education. More than half of the patients were employed full-time or part-time. The majority of patients (89.8%) most often used a personal motorcycle to get to the facility, while only three patients used a taxi.

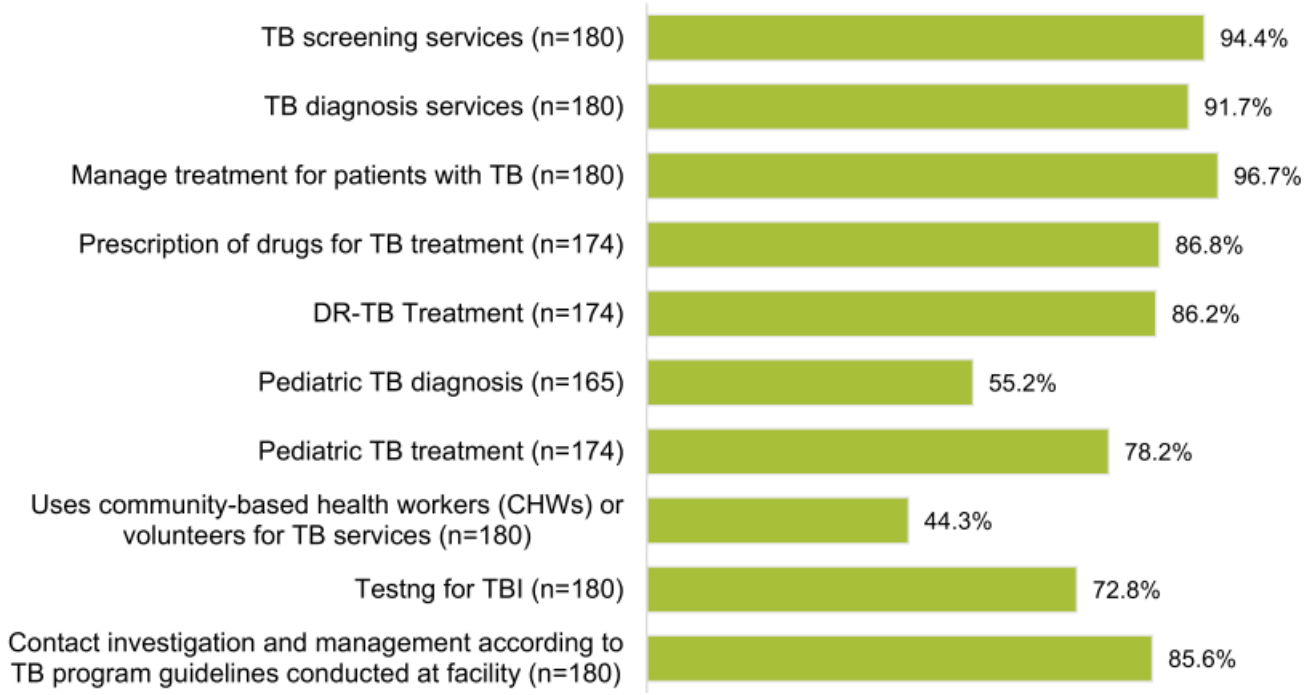
Structural Findings

To assess the structural components of TB quality of care, this section presents results related to the factors that affect the context or enabling of an environment in which TB care is provided to patients. This includes the physical facility, equipment, human resources, and organizational characteristics, such as staff training and supervision. In this study, structure was measured by the availability of services, infrastructure, capacity of TB providers, and management of TB services.

Availability of TB Services

Facilities were asked to report whether they provided various TB services over the past year. Responses differed by facility type and, in some cases, locale. Almost all of the facilities assessed provide TB screening (94.4%), TB diagnosis (91.7%), or TB treatment (96.7%) services. More than three-quarters (78.2%) of health facilities provide TB treatment for children (under the age of five years) and just over half of facilities (55.2%) reported providing diagnosis services for children (Figure 10).

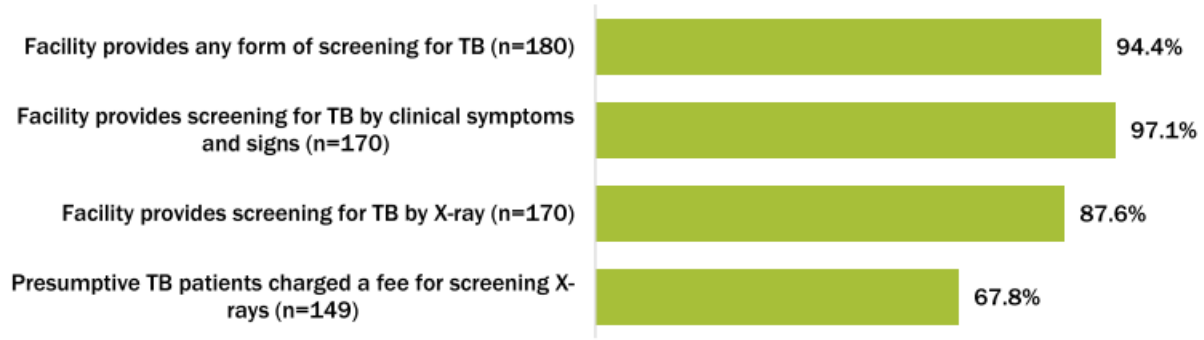
Figure 10. Overview of TB service availability at QTSA facilities



Screening Services

Ninety-four-point-four percent (94.4%) of health facilities reported providing any form of TB screening. Among those health facilities, almost all (97.1%) reported that they provide screening based on checking for clinical signs and symptoms of TB, while 87.6% of health facilities reported that they offered CXR services (Figure 11).

Figure 11. TB screening services reported by QTSA health facilities

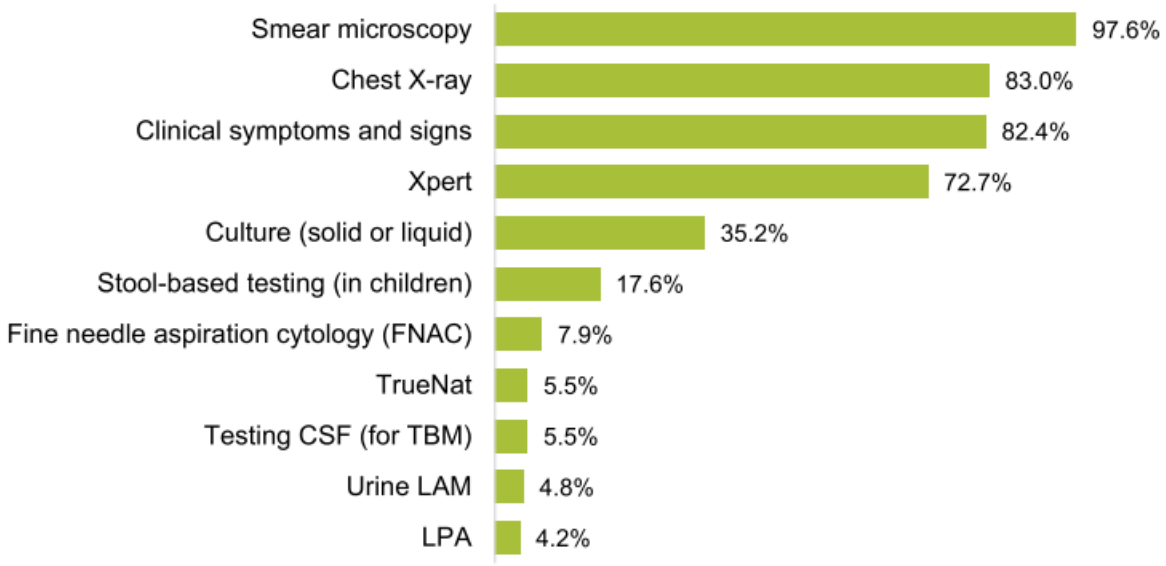


Diagnostic Services

Diagnostic services were offered in the majority of health facilities surveyed (91.7%). The provision of diagnostic services was consistent across urban, rural, and peri-urban facilities, however when looking at health facility type, one-function district health centers are less likely to provide TB diagnosis (53.6%) compared to other health facility types (Table 2.1.2a in Appendix C).

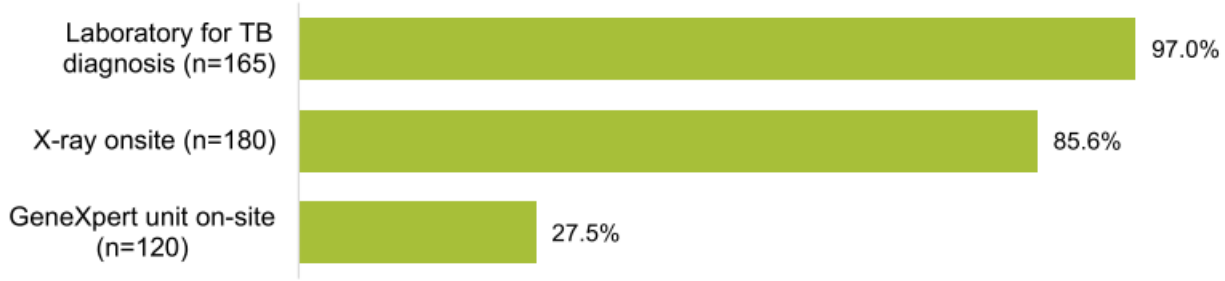
Facilities that reported providing TB diagnostic services were asked about the types of diagnostic testing used at their health facility. The most common methods used for TB diagnosis included smear microscopy (97.6%), CXR (83.0%), evaluation of clinical signs and symptoms (82.4%), and Xpert (72.7%). Only a small portion of health facilities reported providing TB diagnostic testing through the use of fine needle aspiration cytology (FNAC), TrueNat, LPA, evaluation of cerebrospinal fluid (CSF), or LAM urine test (Figure 12).

Figure 12. Diagnostic methods for TB



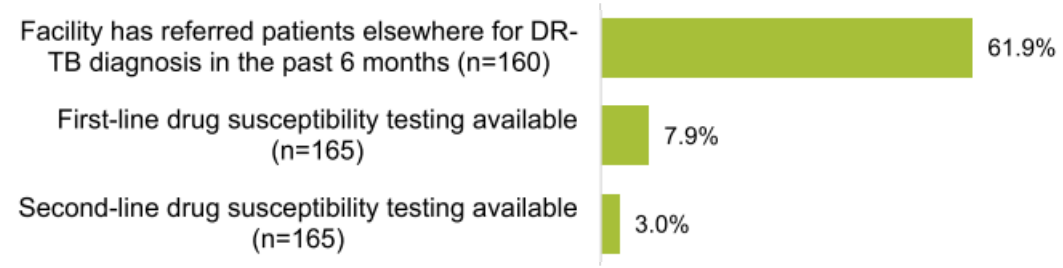
Most health facilities (85.6%) reported that X-rays were available onsite. Of the health facilities that reported providing TB diagnostic services, 97.0% reported having an onsite laboratory. Of those with an onsite laboratory, just over a quarter (27.5%) reported that Xpert was available onsite (Figure 13).

Figure 13. Availability of onsite TB diagnostic methods at QTSA health facilities



Finally, another important component to TB diagnosis is the provision of drug susceptibility testing (DST) which is reliant on the specimen transport system given that DST can only be performed at provincial level laboratories. Very few facilities reported conducting DST, with only 7.9% of facilities reporting that first-line DST was available and 3.0% of facilities reporting that second-line DST was available. Over half (61.9%) of the facilities reported that they had referred patients elsewhere for DR-TB diagnosis within the past six months (Figure 14).

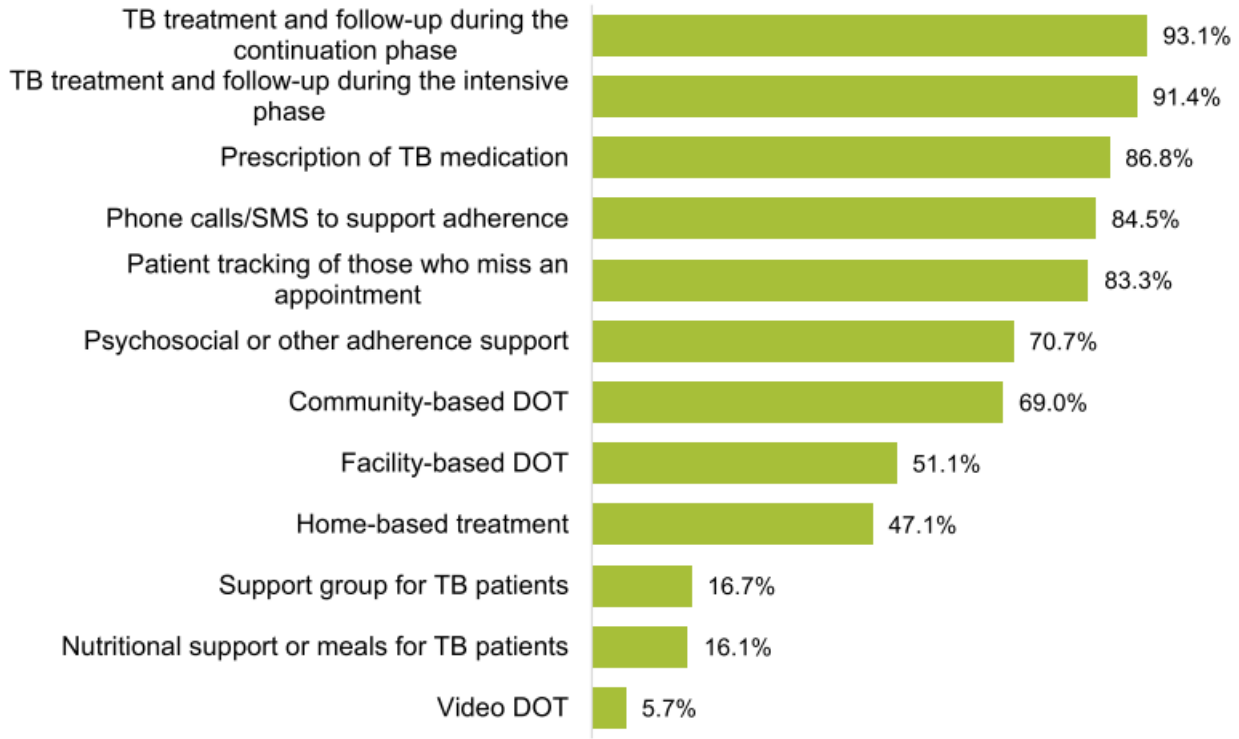
Figure 14. Drug susceptibility testing performed by QTSA health facilities



Treatment Services

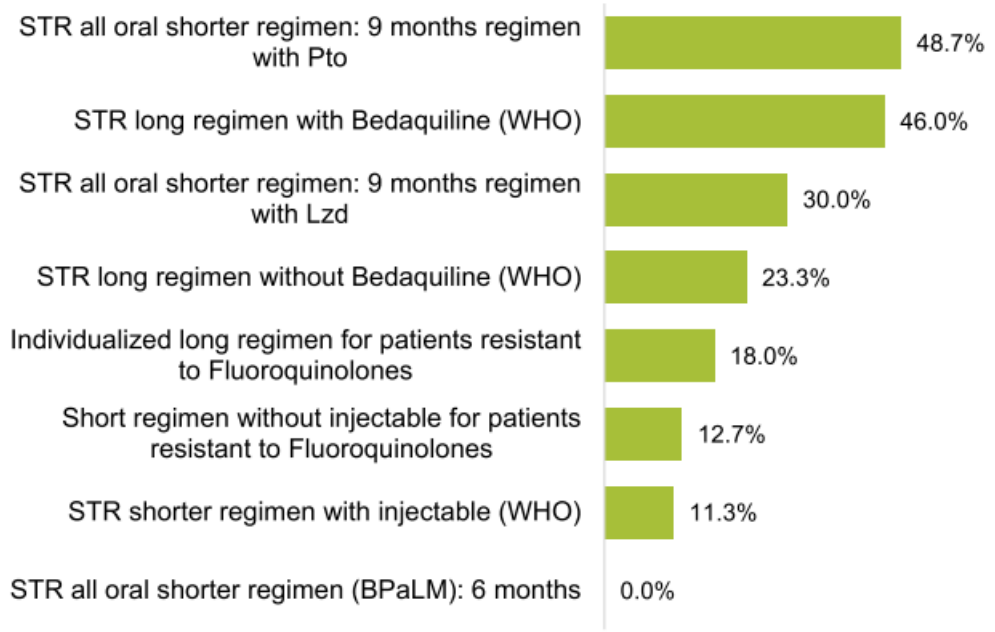
Almost all (96.7%) of the health facilities prescribed TB medications or managed people enrolled on TB treatment and 86.2% of these health facilities provided DR-TB treatment. Over three-quarters of the health facilities offering treatment services reported providing prescription of TB medication (86.8%), follow up during the intensive (91.4%) and continuation (93.1%) phases of treatment, reminder calls or SMS to support adherence (84.5%), patient tracking for missed appointments (83.3%), or psychosocial or adherence support (70.7%) for those on TB treatment. Community based DOT was offered by 69.0% of the facilities and facility-based DOT was offered by just over half (51.1%) of facilities providing TB treatment. Additionally, home-based treatment was offered by 47.1% of treatment facilities. Finally, only a small proportion of facilities offered support groups, nutritional support / meals, or video DOT to people enrolled in TB treatment (Figure 15).

Figure 15. TB treatment and support services among health facilities providing TB treatment and/or management services (n=174)



Facilities that reported providing DR-TB treatment were asked to indicate regimens available at their health facility. About half of facilities providing DR-TB treatment provide the standard 9-month all oral shorter regimen with Prothionamide (Pto) available (48.7%) and the standard WHO long regimen for RR/MDR TB with Bedaquiline available (46.0%). Less than one-third of these facilities reported having the standard all oral 9-month regimen with Linezolid (Lzd) (30.0%) or the standard long regimen without Bedaquiline (23.3%). Eighteen percent (18%) of these facilities reported that they have individualized long regimens for DR-TB available and only a small proportion indicated that short regimens without injectables (12.7%) or standard shorter regimens with injectables (11.3%) were available at their facility. BPaLM was not available at any sites (Figure 16).

Figure 16. DR-TB treatment regimens available at health facilities offering DR-TB treatment (n=150)

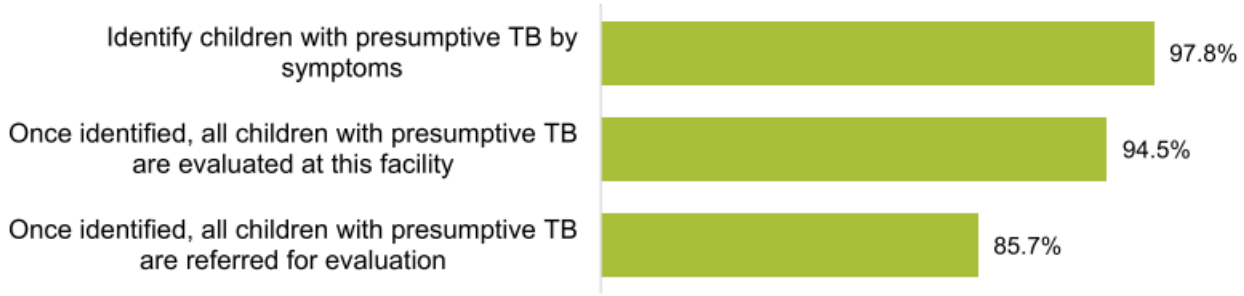


Pediatric TB Services

Pediatric TB services were not as widely available as TB services for adults. Among the facilities that reported providing diagnostic services, about half (55.2%) reported that they provided diagnostic services for children under the age of five years and about three-fourths (78.2%) of the facilities providing TB treatment services reported providing TB treatment services to less than five years old (Figure 17). These services were more likely to be found at district health centers, CDCs, and lung hospitals.

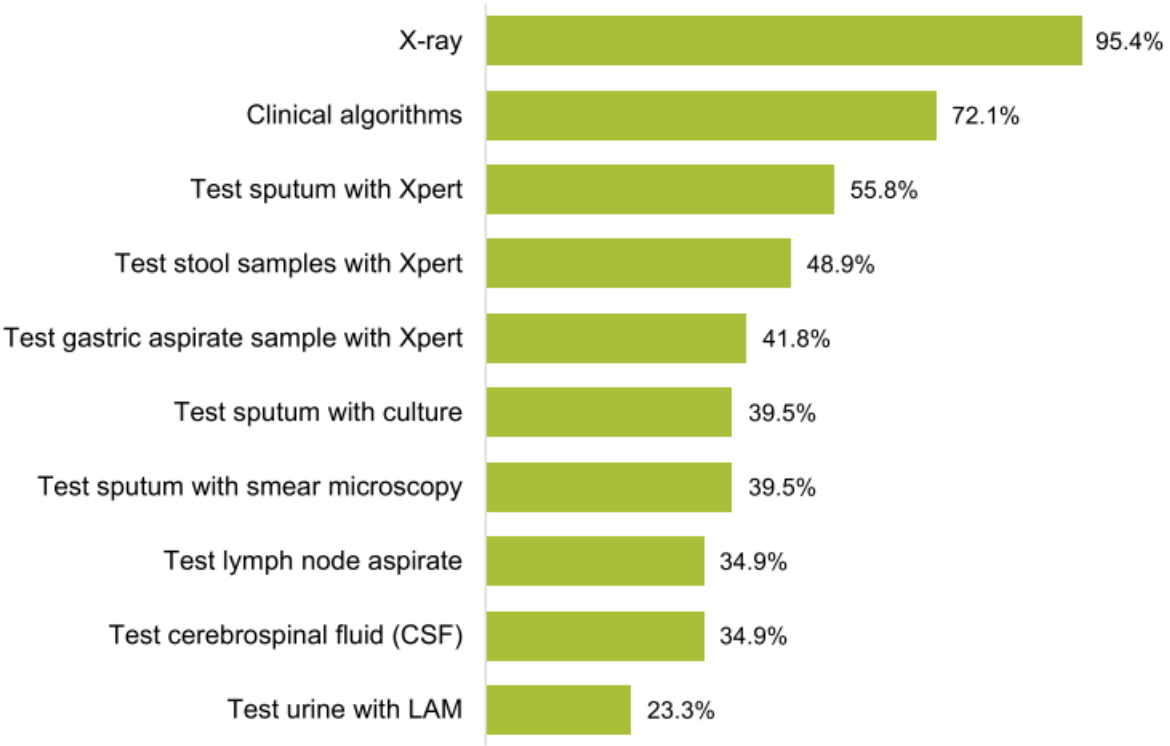
For those facilities providing TB diagnosis services for children, almost all reported that they identify children with presumptive TB based on clinical signs and symptoms (97.8%). Once identified as a presumptive pediatric TB case, children were then further evaluated for TB at 94.5% of facilities and 85.7% of facilities reported that children were referred to another location for additional services (Figure 17). In many cases, children were both evaluated at the original facility where they screened positive for TB and were also referred to an additional facility for further evaluation and diagnosis.

Figure 17. Identification and management of children with presumptive TB (n=91)



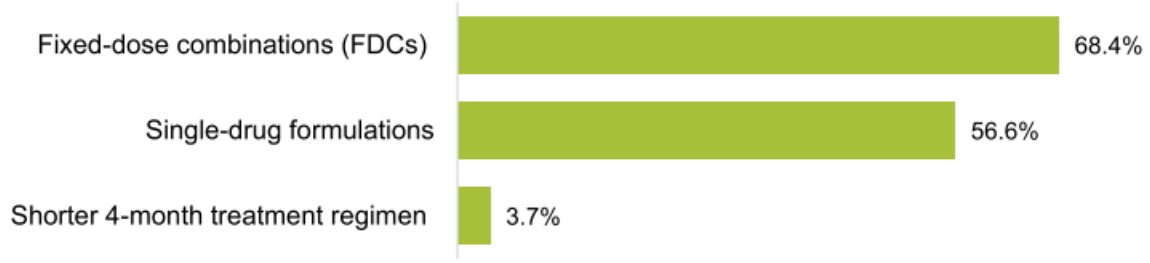
Health facilities reported multiple methods used to diagnose children identified as having presumptive TB. The majority of health facilities reported using X-ray for diagnosis (95.4%), sputum induction to get samples for TB testing (81.4%), and clinical algorithms for diagnosing TB in children (72.1%). For Xpert testing, 55.8% of facilities reported testing sputum, 48.9% reported testing stool samples, and 41.8% reported testing gastric aspirate samples (Figure 18).

Figure 18. Testing methods used by heath facilities for children identified as presumptive TB cases (n=86)



Health facilities that reported providing TB treatment services to children were asked about the regimens that they used. In some cases, multiple treatment formulations were used at a single health facility. Well over half (68.4%) of these facilities indicated that they use FDCs for treatment of children and 56.6% reported that they use loose or single-drug formulations for pediatric TB treatment (Figure 19).

Figure 19. Pediatric TB treatment regimens in use (n=136)



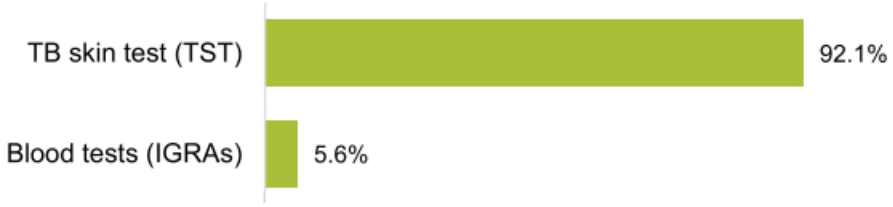
Tuberculosis Infection Testing

Facilities were asked if they provided services related to tuberculosis infection (TBI). More than two-thirds of health facilities reported that they identify those at risk for TBI (72.8%) and 70% of facilities reported that they provide TBI testing. However, just over half (63.3%) of these facilities reported that they were able to provide any form of treatment for TBI.

Figure 20. Tuberculosis infection services offered by QTSA health facilities (n=180)

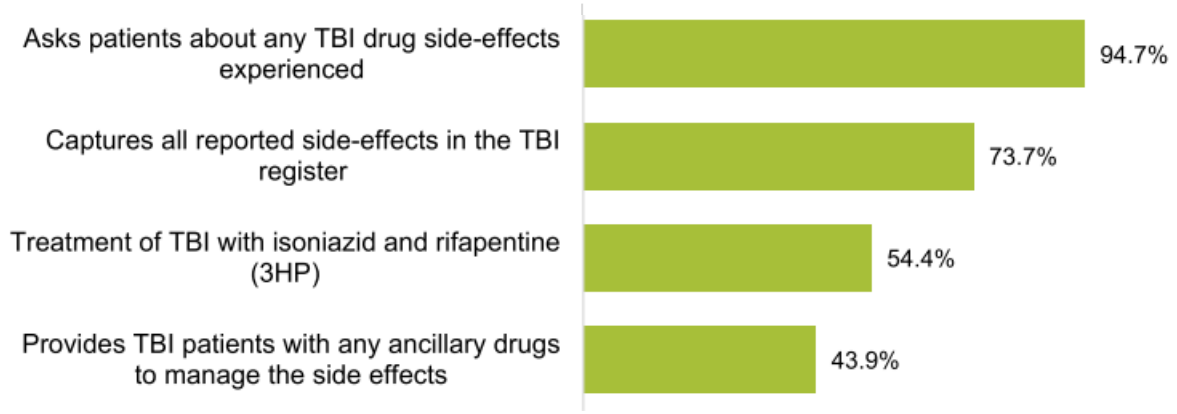
Of the health facilities that provide TBI testing, the majority (92.1%) reported providing diagnosis of TBI through TST while only 5.6% reported using interferon-gamma release assays (IGRA) to test for TBI (Figure 21).

Figure 21. Availability of TBI testing (n=126)



Almost all health facilities providing TPT for those with TBI (94.7%) reported that they follow up with individuals initiated on TPT to ask about any side effects experienced and 73.7% capture all reported side effects in the TBI register. Just over half of facilities providing TPT (54.4%) provide isoniazid and rifapentine (3HP) and 43.9% reported that they provide ancillary medications to manage side effects to people enrolled in TPT (Figure 22).

Figure 22. TPT-related practices provided by facilities (n=114)



Contact Investigation Services

Contact investigation (CI) and management services were offered by 85.6% of the health facilities surveyed (Table 2.1.6a in Appendix C). Among these facilities 96.8% reported that they provide CI services for adult contacts and 92.2% reported providing CI services for child contacts. Most facilities (90.9%) provided CI services to both adult and child contacts (Figure 23).

Figure 23. Groups receiving CI services from health facilities offering CI and CI management services (n=154)

Laboratory Infrastructure

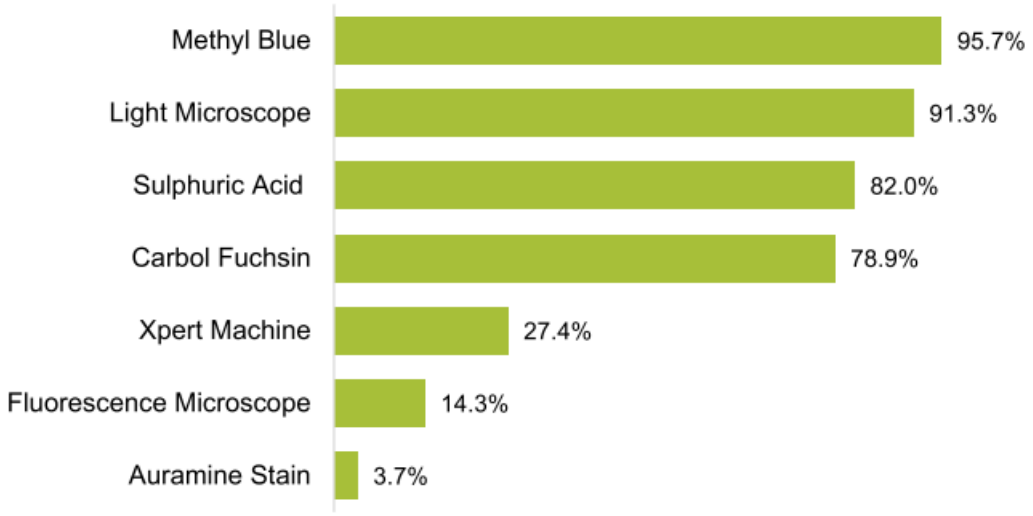
Among health facilities offering TB diagnosis services, 97.0% reported having an onsite laboratory capable of conducting some type of TB testing.

Availability of Equipment for Facilities with Onsite Labs

Onsite laboratories were assessed to see if laboratory equipment related to TB testing was available and functional on the day of the assessment. As previously reported, only 27.4% of these facilities were equipped with a Xpert machine onsite (Figure 13). The majority of facilities had relevant materials for staining sputum samples including methyl blue (95.7%), sulfuric acid (82.0%), and carbol fucshin (78.9%). However, only 3.7% of laboratories had auramine stain available. Additionally, functional light microscopes were observed at 91.3% of onsite laboratories and functional fluorescence microscopes were

observed at 14.3% of the onsite laboratories assessed (Figure 24).

Figure 24. TB-related laboratory equipment that was functional and available at onsite laboratories (n=161)



Turnaround Times

To better understand how quickly TB specimens are processed, facilities were asked about the turnaround times for specimens to arrive at the laboratory after pick up from the satellite site and for test results to be received by the provider. For onsite laboratories, the median turnaround time for specimens to be received at the laboratory was one hour, which was consistent across all facility types and locales (Table 2.2.1b in Appendix C). Additionally, the median turnaround time for receiving results from the onsite laboratory was two hours. However, unlike turnaround times for receiving specimens, the time to receive results varied across facilities and locales (Table 7).

Table 7. Turnaround times reported by facilities with onsite laboratories by facility locale

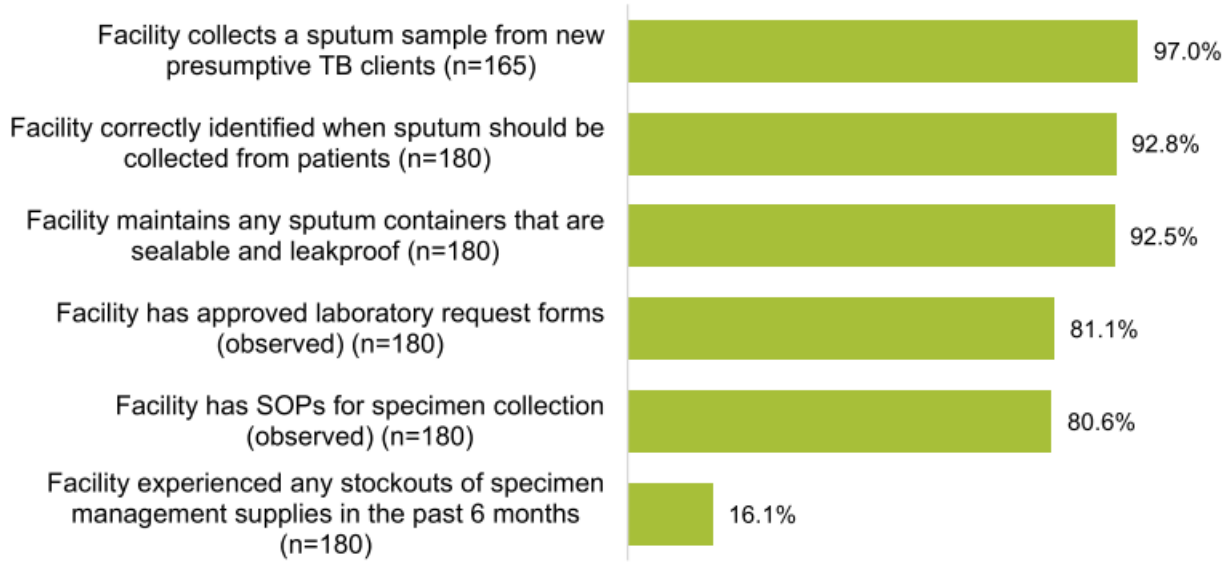
		Facility Location			Total
		Urban	Peri-urban	Rural	
Turnaround time for specimens to arrive at onsite laboratory (hours)	Median	1.0 hours	1.5 hours	1.0 hours	1.0 hours
	Range	[1 - 48 hours]	[1 - 30]	[1 - 48 hours]	[1 - 48 hours]
	Total Facilities	52	10	76	138
Turnaround time for test results to be received by provider from the onsite laboratory (hours)	Median	2.0 hours	5.0 hours	2.0 hours	2.0 hours
	Range	[1 - 48 hours]	[1 - 24]	[1 - 24]	[1 - 48 hours]
	Total Facilities	57	10	85	152

In looking at the small number of health facilities that utilized offsite laboratories, the median turnaround time for receiving specimens for testing was one day. The median turnaround time for test results from offsite laboratories to be sent back to health care providers was also one day (Table 2.2.2b in Appendix C).

Specimen Management and Transport

Facilities were asked about process and infrastructure related to specimen management. Ninety-two-point-five percent (92.5%) were found to maintain a stock of sputum collection containers, and 81.1% were found to have the approved laboratory request forms available. Additionally, only 16.1% of facilities reported that they experienced stockouts of specimen management supplies within the past six months. The majority (92.8%) of health facilities surveyed were able to correctly identify when sputum samples should be collected from presumptive TB cases and 80.6% of facilities were found to have standard operating procedure (SOPs) for specimen collection on hand at the health facility. Finally, among health facilities providing TB diagnosis services, 97.0% reported that they collected sputum samples from newly presumptive TB clients (Figure 25).

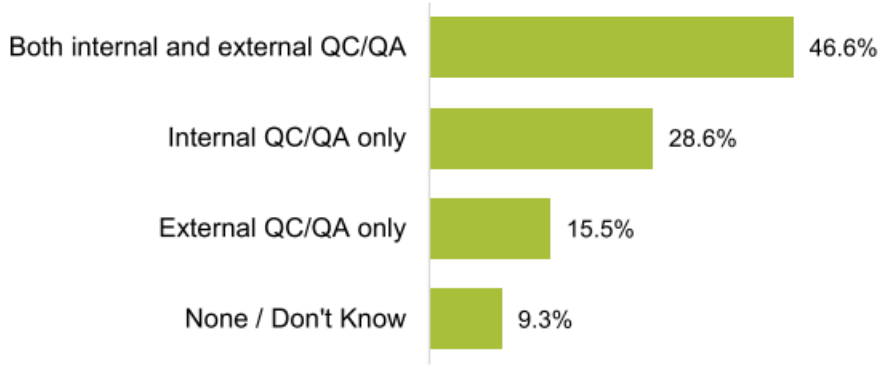
Figure 25. Reported specimen management procedures and infrastructure at QTSA health facilities



Quality Assurance

Onsite laboratories were further assessed to understand the procedures and infrastructure related to quality assurance. Almost half (46.6%) reported using both internal and external quality control and quality assurance (QC/QA) across all laboratory tests conducted at each facility. About one-quarter (28.6%) of onsite laboratories reported using only internal QC/QA processes and 15.5% reported only using external QC/QA processes (Figure 26).

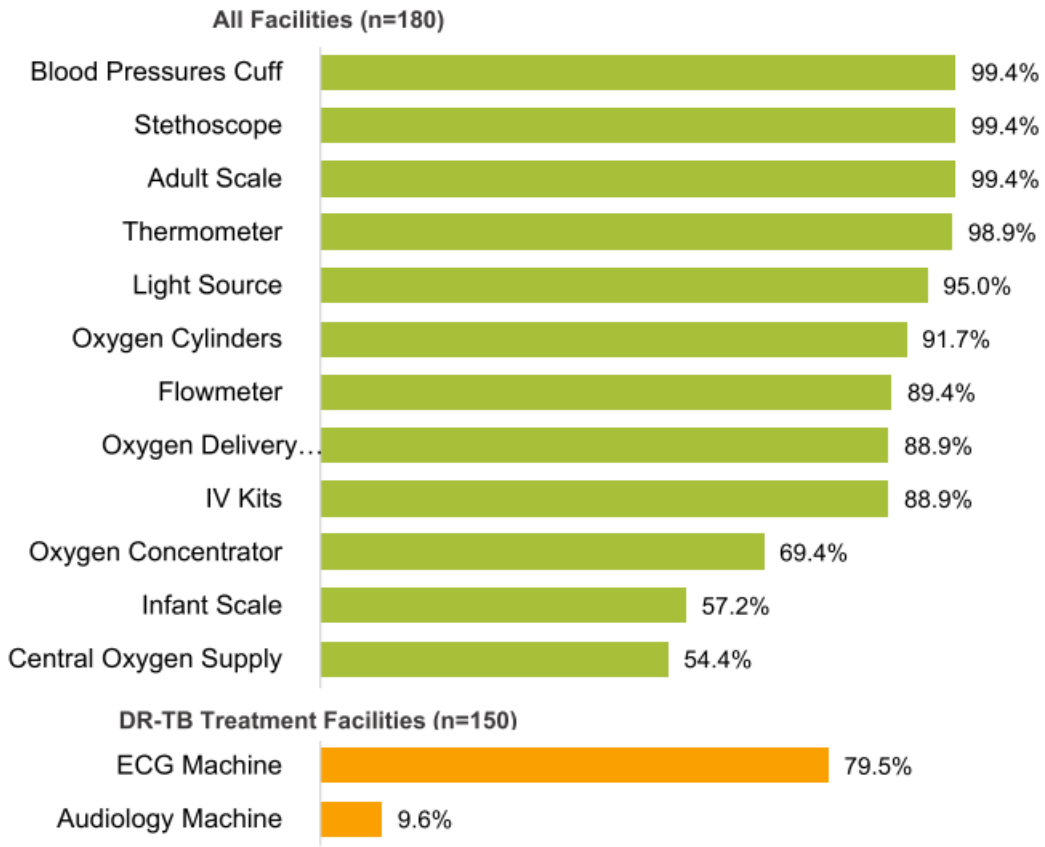
Figure 26. Quality control and quality assurance used by onsite laboratories (n=161)



Medical Equipment Availability

All QTSA health facilities were assessed on the availability of functional medical equipment needed to provide basic care and care needed for individuals with TB. Over 80% of facilities were found to have the following functional equipment available for use: blood pressure cuff, stethoscope, adult weighing scale, thermometer, light sources, oxygen cylinders, flowmeter, oxygen delivery apparatus, or IV kits. Sixty-nine-point-four percent (69.4%) of facilities had functional oxygen concentrators available on the day of the assessment and just over half were found to have a functional infant scale (57.2%) or central oxygen supply (54.4%). Additionally, the availability of equipment needed for management of DR-TB was assessed at health facilities providing DR-TB treatment. Among these facilities, 79.5% had functional electrocardiogram equipment available and only 9.6% had a functional audiology machine available on the day of the assessment (Figure 27).

Figure 27. Availability of functioning TB care equipment at QTSA heath facilities



Availability of TB Medications

A reliable supply of TB drugs is essential for providing appropriate and timely care to TB patients. Facilities providing treatment services for DS-TB were assessed on the availability of drugs used for DS-TB treatment. Each drug of interest was marked as one of the following: drug observed with at least one valid (unexpired) container available, drug observed but no valid containers present, drug stocked but distributed, no stock of the drug observed, or drug never stocked. For the purposes of this section, the percentage of observed and valid drugs will be reported.

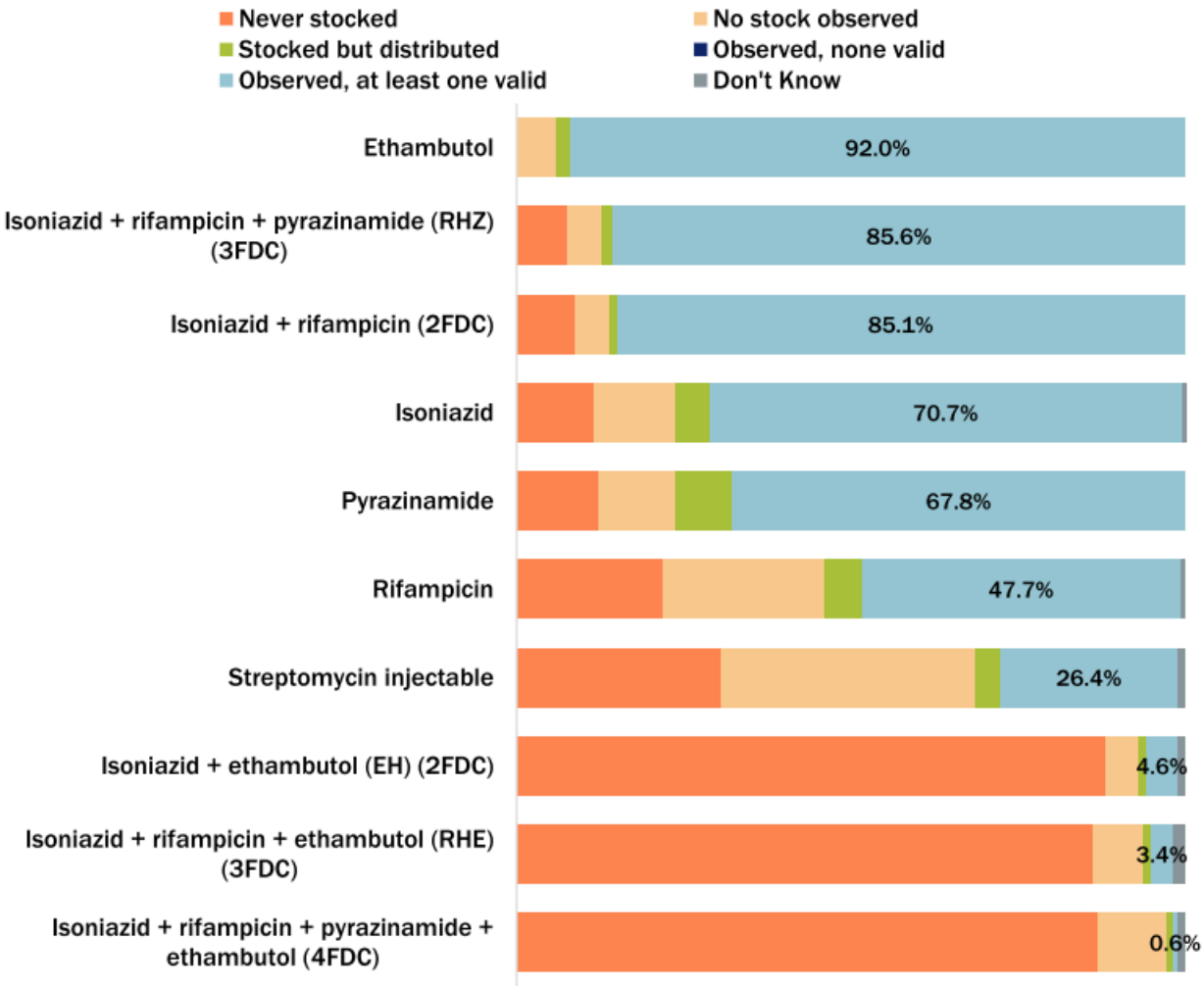
Availability of DS-TB Drugs

Figure 28 below provides a breakdown of the findings for each DS-TB drug.

Single doses of Ethambutol, fixed dose combinations of isoniazid, rifampicin, and pyrazinamide (3FDC), and the FDCs of isoniazid and rifampicin (2FDC) were observed at over three-quarters of the health facilities assessed. Pyrazinamide was found in 68% of facilities, while rifampicin was available at 48% of facilities. Injectable streptomycin was found at one-quarter (26%) of the facilities. For medications related to DR-TB treatment, only half (51%) of facilities providing DR-TB treatment were found to have levofloxacin in stock. About one-third of DR-TB treatment facilities were found to have clofazimine (38%), bedaquiline

(37%), linezolid (33%), cycloserine (33%), or prothionamide (27%). Delamanid, para-aminosalicylic acid, moxifloxacin, and amikacin were found at a small proportion of the facilities providing DR-TB treatment. Additional details about DS-TB drugs can be found in Table 2.3.3a in Appendix C.

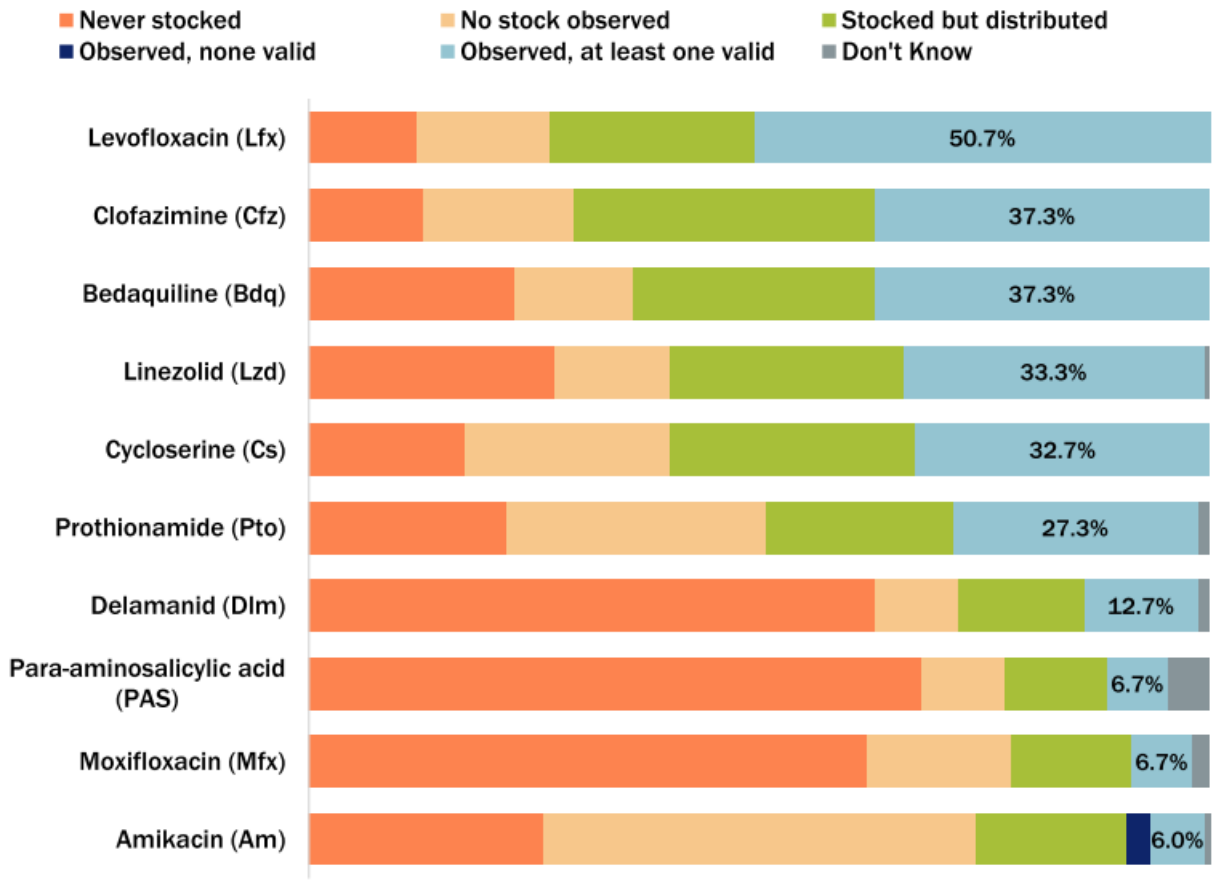
Figure 28. Availability of DS-TB drugs at facilities offering DS-TB treatment services (n=174)



Availability of DR-TB Drugs

Figure 29 provides details about the availability of DR-TB drugs at health facilities offering DR-TB treatment services. Only half (51%) of facilities providing DR-TB treatment were found to have levofloxacin in stock. About one-third of DR-TB treatment facilities were found to have clofazimine (38%), bedaquiline (37%), linezolid (33%), cycloserine (33%), or prothionamide (27%). Delamanid, para-aminosalicylic acid, moxifloxacin, and amikacin were found at a small proportion of the facilities providing DR-TB treatment.

Figure 29. Availability of DR-TB drugs at facilities offering DR-TB treatment services (n=150)



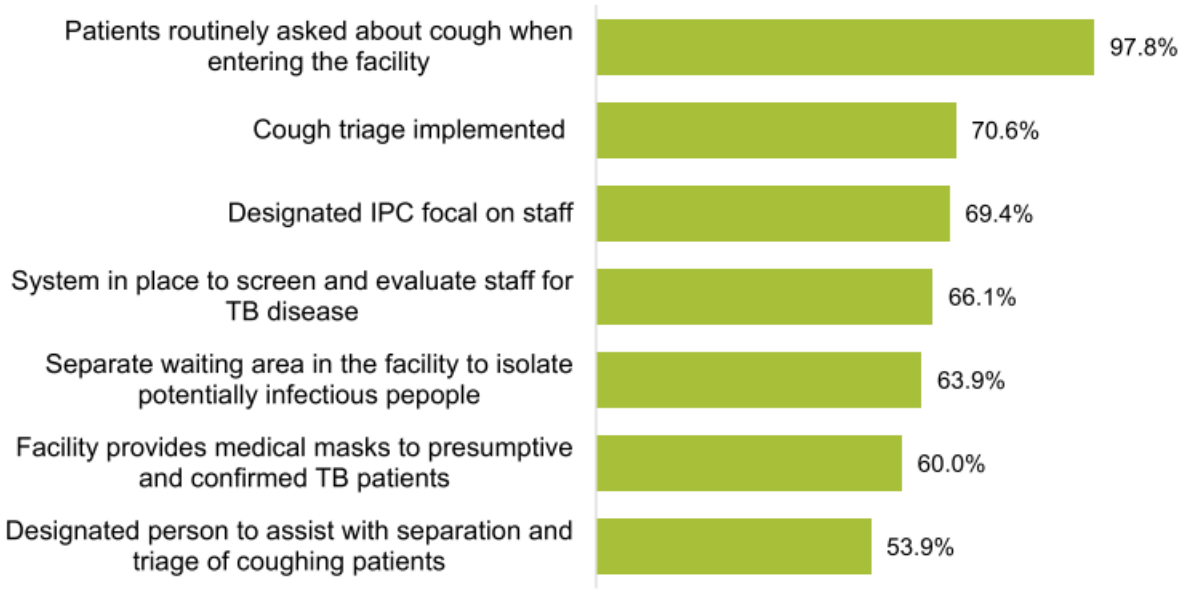
Infection Preventions and Control (IPC)

Various components of IPC were assessed at each health facility to determine if both IPC resources were available and if IPC practices were in place.

IPC Practices

Health facilities were assessed for a variety of IPC practices. Almost all (97.8%) of the health facilities assessed reported that patients were routinely screened for cough when entering the health facility, 70.6% of facilities were found to have cough triage procedures in place, and 63.9% of facilities had a separate waiting area for coughing patients. Additionally, 60.0% of health facilities provided face masks to presumptive and confirmed TB cases and 66.1% of facilities were found to have a process for screening and evaluating staff for TB (Figure 30).

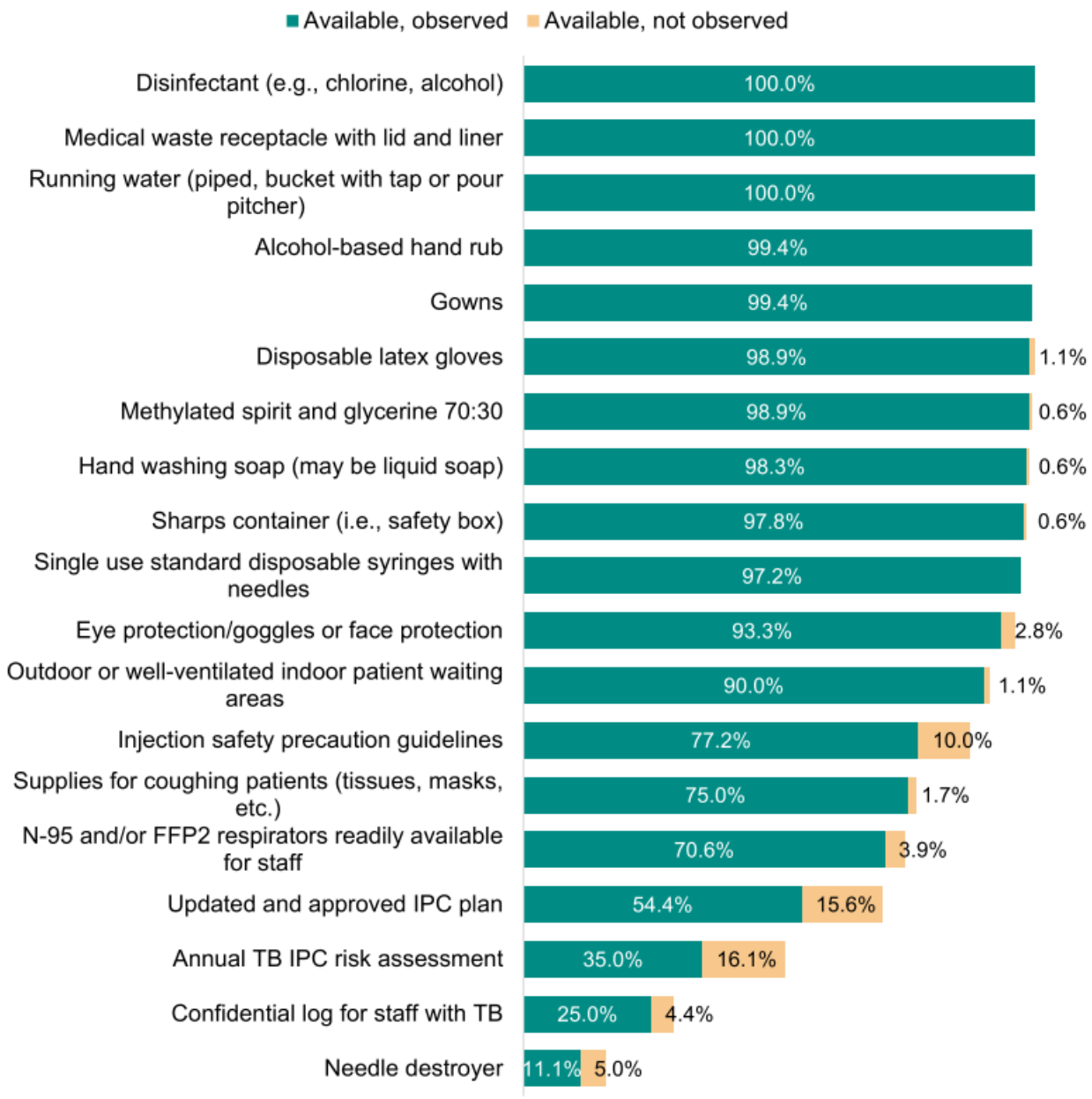
Figure 30. Overview of IPC policies and procedures (n=180)



Infection Prevention and Control (IPC)

Health facilities were found to have numerous resources available to support IPC activities. Every facility was found to have disinfectant, medical waste receptacles, and running water. Additionally, over 90% of health facilities were found to have gowns, eye protection, gloves, hand washing soap, alcohol-based hand rub, sharps containers, single use disposable syringes, and a patient waiting area with continuous access to fresh air. N-95 respirators were available at 70.6% of health facilities and supplies for coughing patients such as masks, tissues, etc. were available at 75.0% of health facilities (Figure 31).

Figure 31. IPC resources and infrastructure (n=180)



Health Insurance Reimbursement Coverage

Service Coverage by Health Insurance Scheme

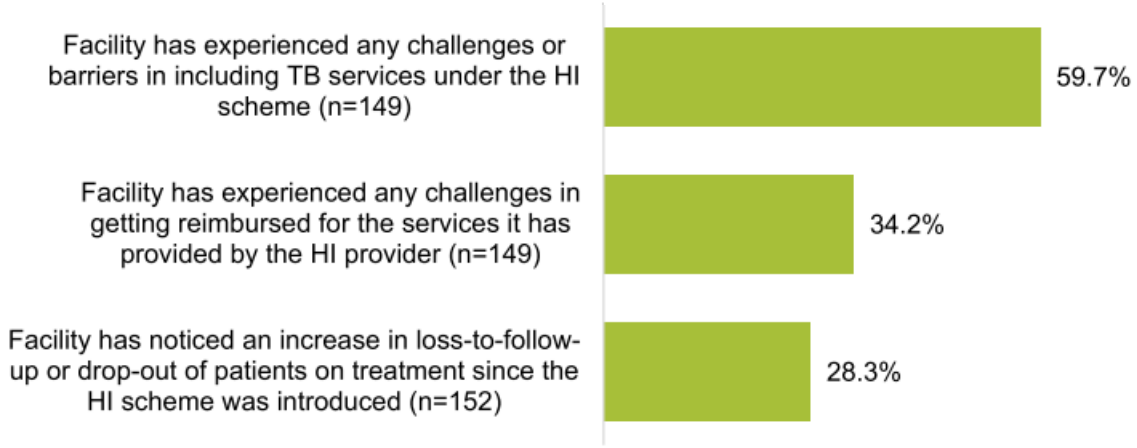
Eighty-eight-point-four percent (88.4%) of facilities reported that TB services were covered by Vietnam's SHI scheme. Such services included X-rays (75.6%), TB diagnostic tests (66.7%), first-line TB medications (82.2%), and health check-ups / physician visits (42.8%) (Figure 32).

Figure 32. Coverage of TB services by Vietnam's national health insurance scheme (n=149)

Challenges of Health Insurance Scheme Experienced by Health Facilities

The health insurance scheme was implemented within 6 to 9 months prior to the day of the assessment, so facilities were able to identify various challenges experienced as they implemented the SHI scheme almost in "real time." For example, over half (59.7%) reported experiencing some kind of challenge or barrier related to the inclusion of TB services under the SHI scheme. Additionally, about one-third (34.2%) of health facilities reported that they had challenges being reimbursed by the SHI scheme for services provided related to TB. Further, 28.3% of health facilities reported noticing an increase in loss-to-follow-up of TB patients since the SHI scheme was introduced (Figure 33).

Figure 33. Challenges reported by health facilities related to the implementation of Vietnam's SHI scheme.



Process Results

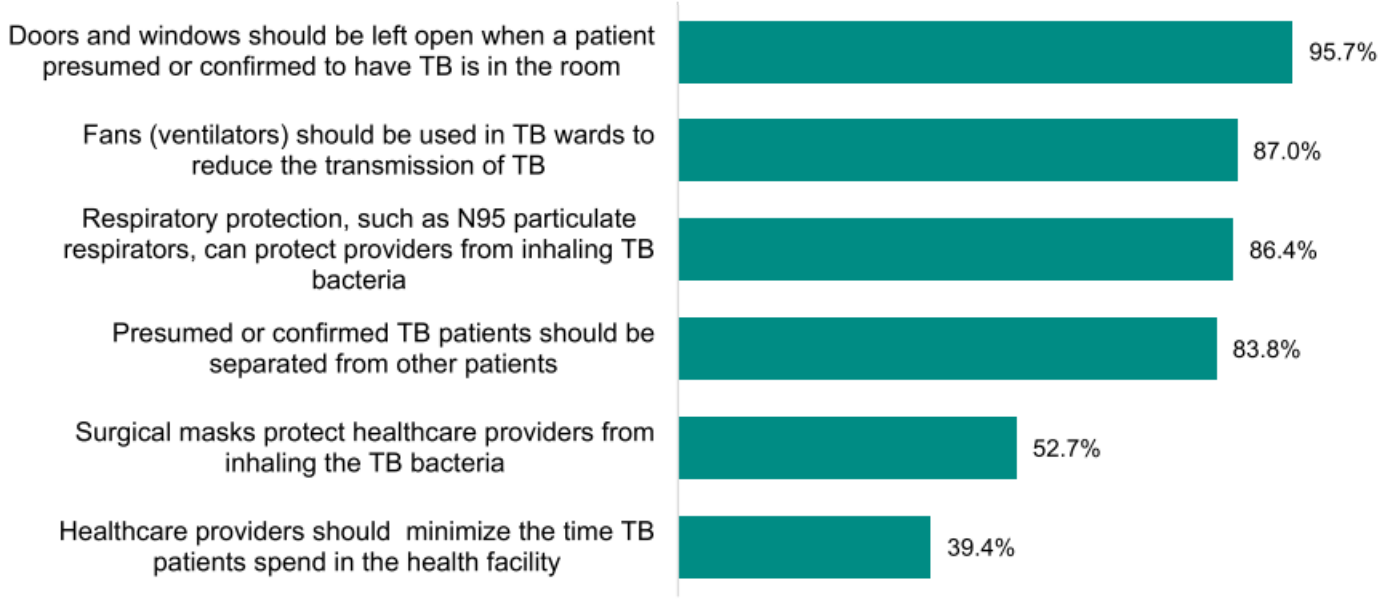
TB Provider Knowledge and Practice

Providers' knowledge and practices were assessed through the Provider Interviewer, which was administered to individual TB providers at each of the sample facilities.

Provider Knowledge

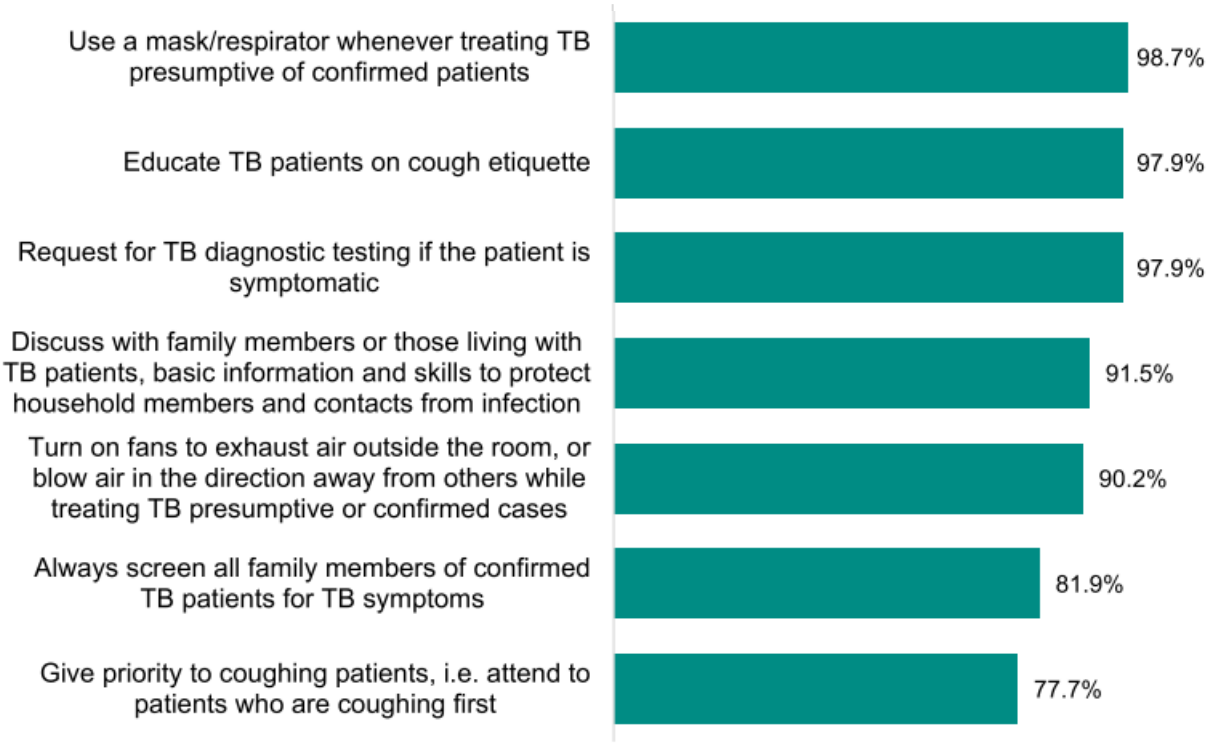
Providers were assessed on their TB IPC knowledge using targeted questions (Figure 34 and Table 3.2a in Appendix C). Approximately three-quarters of providers reported ever having received training on TB infection control. Overall, providers had strong knowledge of preventing TB transmission within the facility, with five out of the six questions answered correctly by at least three quarters of respondents. Only around half of the respondents (52.7%) knew that surgical masks can protect them from inhaling TB bacteria and even fewer (39.4%) knew that they should minimize the amount of time TB patients spend in the health facility. However, 96% and 87% of providers, respectively, knew that doors and windows should be left open whenever a patient who is presumed or confirmed to have TB is in the room and that fans (ventilators) can be used to reduce the transmission of TB.

Figure 34. Provider knowledge of TB care procedures (n=376)



In addition to being evaluated on their TB IPC knowledge, providers were assessed on the practices they engage in when they are with a presumed or confirmed TB patient or working in the TB wards (Figure 35 and Table 3.2a in Appendix C). Most providers (at least 90%) indicated that they use a mask or respirator when treating presumptive or confirmed TB patients; educated TB patients on cough etiquette; requested for TB diagnostic testing for symptomatic patients; discussed with family members basic information and skills to protect household members and contacts from infection; and turned-on fans to exhaust air outside the room or blow air away from others while treating presumptive or confirmed TB cases. Eighty-two percent (82%) and 78% of providers, respectively, always screened all family members of confirmed TB patients for TB symptoms and gave priority to coughing patients (i.e., attended to patients who are coughing first).

Figure 35. Provider-reported IPC practices when caring for presumptive or confirmed TB patients (n=376)



Provider-Reported Practices

Providers were asked to report what they did to establish a good rapport with their patients (Figure 36). Their spontaneous responses were recorded against a prepopulated list of potential response options. The majority of providers reported that they communicated clearly with patients (93.6%), listened carefully to patients (76.3%), and had an open mind about their patients' cultural beliefs (66.5%). Just over half of providers reported that they treated patients with dignity and respect (58.8%) and recognized and addressed the patients' fears about the illness (54.5%). A lower proportion of providers reported that they were consistent in what is done and told to the patient; were flexible in meeting the patient's needs; and suggested behavior changes respectfully.

Figure 36. Percentage of providers who spontaneously reported using the following practices to build rapport with their patients (n=376)

Providers were also surveyed on the questions they asked their patients during the initial assessment to determine the patients' understanding of TB (Appendix C, Table 3.1.2a). About three quarters (78.5%) of providers reported that they asked patients about their previous medical/psychosocial history. Over half of providers asked patients about their potential barriers to treatment (e.g., lack of transportation, cost of TB medicines) (64.6%); ability to follow the TB treatment plan (54.8%); and knowledge of TB (56.4%). Fewer than half of providers asked patients about their attitudes or beliefs towards TB (41%) and their resources (e.g., family, other social support, finances) (43.9%).

Patient-Provider Interactions

Both TB service providers and TB patients were asked about their interactions while receiving TB services, which helps to create a holistic view of the interactions occurring while TB services are being provided.

Information Provided to TB Patients from the Provider Perspective

Providers were asked about the information they provided to their patients during diagnosis and treatment visits (Figure 37 and Appendix C, Table 3.3.2b). At least 50% of providers communicated to patients:

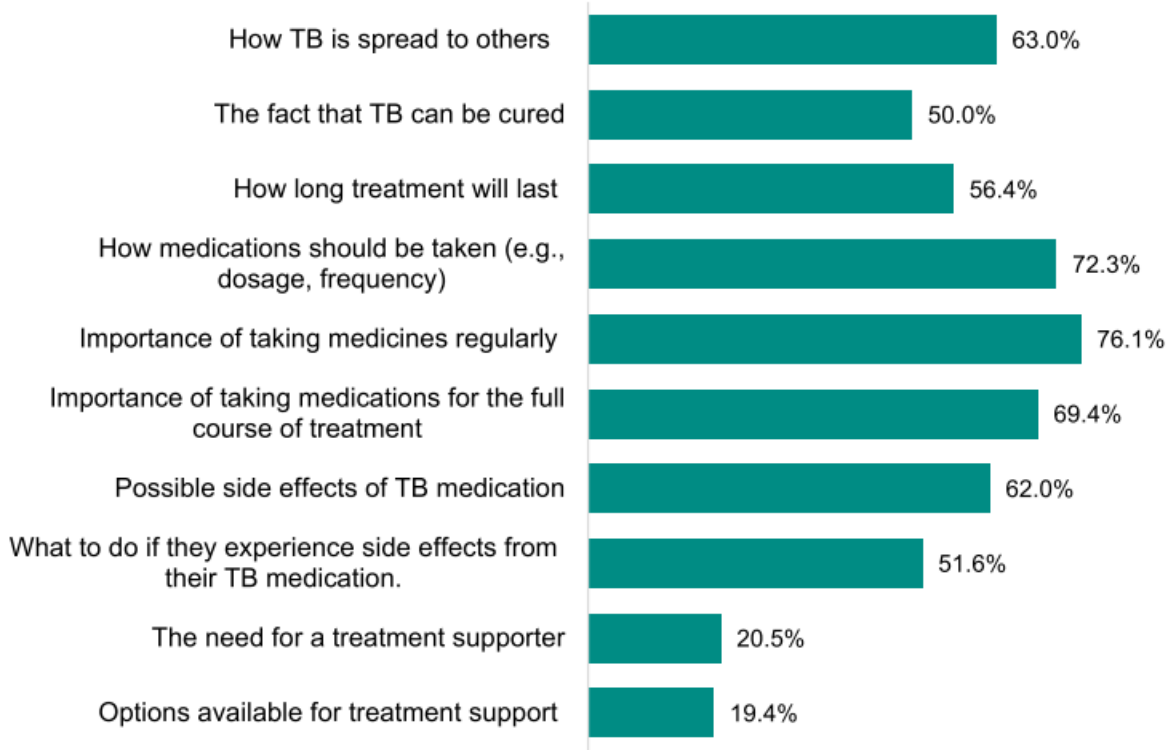
- How TB is spread to others
- The importance of taking medicines regularly
- How medications should be taken (e.g., dosage, frequency)
- The importance of taking medications for the full course of treatment
- Possible side effects of TB medication
- That TB can be cured
- How long treatment will last

- What to do if they experience side effects from their TB medication

Fewer than a quarter of providers reported communicating to TB patients about:

- The need for a treatment supporter
- The options available for treatment support (e.g., DOT)

Figure 37. Percentage of providers that reported communicating key information to their TB patients (n=376)



Results disaggregated by the way each piece of information was communicated to patients (verbally, in writing, or both) are included in Appendix C, Table 3.3.2a.

Information Provided to TB Patients from the Patient Perspective

Patients were asked about their interactions with healthcare providers during facility visits. More than 90% of the patients stated that the provider explained details related to their care in a way that they could understand, listened to their opinions and ideas on the best way to follow the treatment, discussed their status or progress with them at every scheduled appointment, gave them a chance to ask questions about anything that concerned them, had enough time to discuss their health needs, and listened carefully. About 80% of patients (81.6%) reported that providers told them how TB can affect their everyday life and 81.3% stated that they thought they had enough privacy during the examination. Slightly less than 90% said the provider addressed their worries about their disease seriously (88.4%) and explained how to cope with their problems (89.2%). Only 17.1% stated that they were worried that other patients could hear their conversation with the provider (Table 8).

Table 8. Patient-reported interactions with healthcare providers (n=696)

	DS-TB		DR-TB		Total	
	No.	%	No.	%	No.	%
TB patient prompt: I would like to ask you about your face-to-face meetings with healthcare providers at this facility.						
Healthcare providers usually explained things in a way you can understand	606	94.5	52	94.5	658	94.5
Healthcare providers listened to your opinion and ideas on the best way to follow your treatment	605	94.4	53	96.4	658	94.5
Healthcare providers listened carefully to you	605	94.4	53	96.4	658	94.5
Healthcare providers gave you a chance to ask questions about anything that concerns you	584	91.1	52	94.5	636	91.4
Had enough time to discuss your health needs with the healthcare providers	587	91.6	49	89.1	636	91.4
Healthcare providers discussed your status or progress with you at every scheduled appointment	579	90.3	51	92.7	630	90.5
Healthcare providers explained how to cope with your problems	571	89.1	50	90.9	621	89.2
Healthcare providers addressed your worries about your disease seriously when you visited the facility	564	88	51	92.7	615	88.4
Healthcare providers told you how this disease can affect your everyday life	518	80.8	50	90.9	568	81.6
Worried that other patients can hear your conversation with your healthcare providers	112	17.5	7	12.7	119	17.1

Patients were also asked about the information that providers shared with them. They were first asked unprompted without any answer options given to them, and then prompted with answer options that they initially did not provide. More than 90% of the patients (prompted and unprompted) noted that they had received information on cough hygiene, that TB could be cured, how long the treatment would last, the importance of taking medicines regularly, importance of taking medicines through the end of treatment, and when to come back for the next visit. More than 80% of patients stated that they were given information on TB transmission (81.6%), side effects of TB medicine (82.5%), and the need for sputum tests during treatment (84.3%). Slightly less than 80% of patients were told what to do if they had side effects from the medicine (77%) and danger signs of TB (73%). Although a high percentage of patients reported receiving verbal information by providers, less than half of patients (46.4%) said that they had received materials on TB from the health facility (Appendix C, Table 3.3.3a).

Treatment Supporters

Patients were asked during their interview to describe who supervises their treatment. Patients most commonly reported family members to be their treatment supporter (37.8%), followed by health workers at the facility (34.9%), and 23.7% reported others. The majority of the “other” responses stated they didn’t have anyone supervising their treatment. Around 20% of patients stated a health worker at a different facility or facility level supervised their treatment (Table 9).

Table 9. Treatment supporters for patients (n=696)

	DS-TB		DR-TB		Total	
	No.	%	No.	%	No.	%
Primary treatment supporter						
Health worker at this facility	229	35.7	14	25.5	243	34.9
Community-based workers or volunteers	21	3.3	4	7.3	25	3.6
Family	243	37.9	20	36.4	263	37.8
Other (specify)	148	23.1	17	30.9	165	23.7
Total	**641**	**100**	**55**	**100**	**696**	**100**

Patient Knowledge of TB

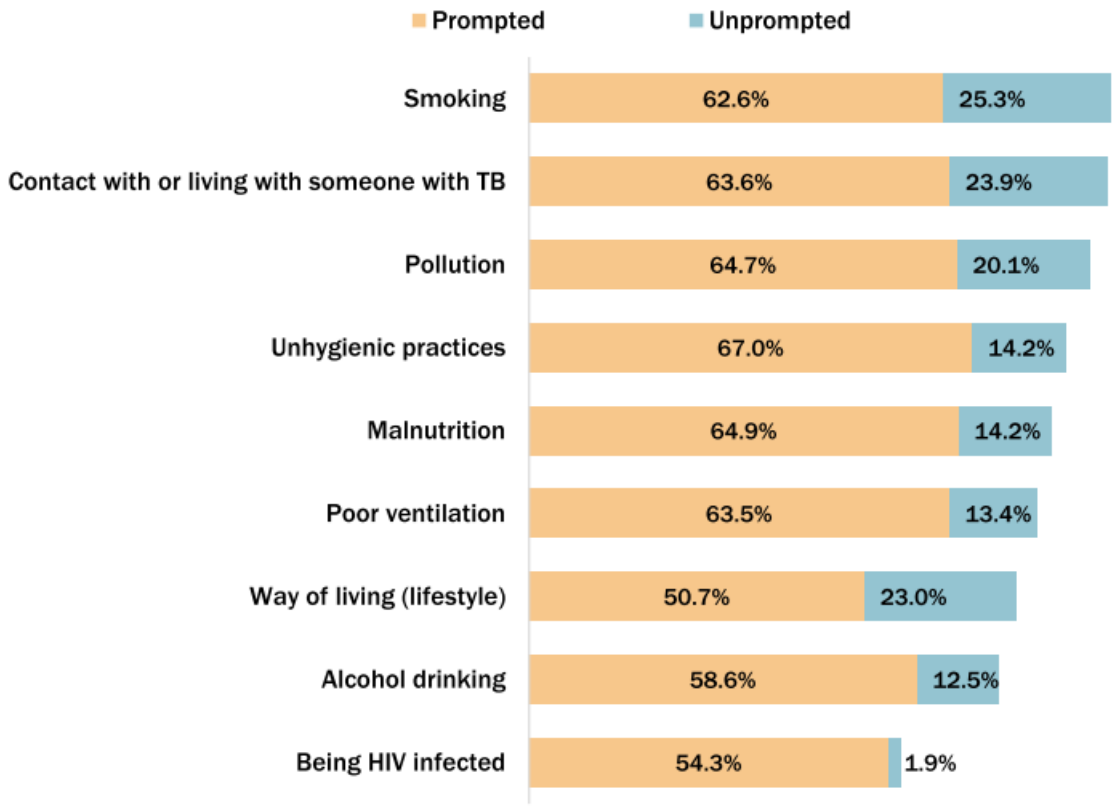
Patients' knowledge of TB was assessed through a series of questions asking patients to list TB risk factors, TB symptoms, modes of transmission, and drug side effects. Patients were first asked to give their answers unprompted and then were prompted with any remaining answers that they did not initially mention. Responses were further disaggregated by the type of TB diagnosis (DS-TB vs. DR-TB).

Cause, Modes of Transmission, and Risk Factors

Risk Factors

Overall, patients had a good understanding of TB risk factors. More than 80% correctly identified pollution, unhygienic practices, and contact or living with someone who had TB as risk factors for the disease. Between 55 and 79% of the patients correctly stated unhygienic practices, malnutrition, poor ventilation, lifestyle, alcohol drinking, or being HIV infected as risk factors for TB (Figure 38). There was minimal variation in the responses from patients with DR-TB compared with patients with DS-TB (Appendix C, Table 3.4.1b). The only significant variation was that DR-TB patients identified poor ventilation and pollution as risk factors unprompted more than DS-TB patients.

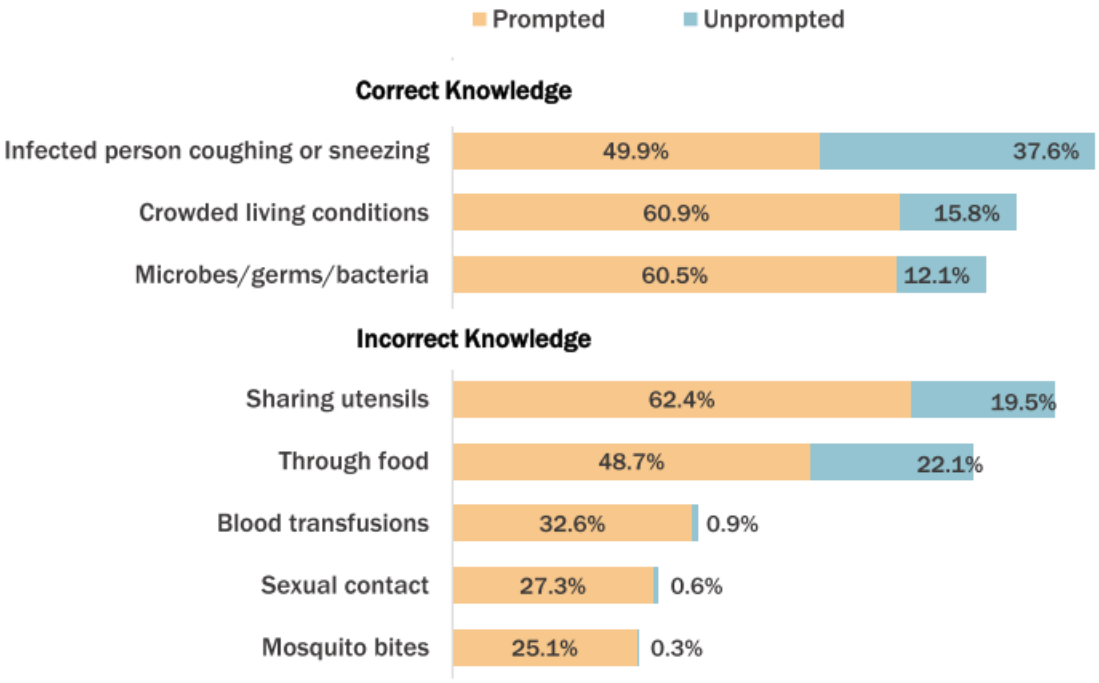
Figure 38. Percent of patients correctly identifying risk factors associated with TB (n=696)



Transmission

The majority of patients correctly identified modes of transmission, with more than three-quarters reporting that it can be transmitted via cough or sneeze and over 72% correctly identifying that TB is transmitted by microbes/germs/bacteria. However, despite being able to correctly identify modes of transmission, more than 60% of the patients incorrectly indicated that TB can be transmitted through food or sharing utensils. A smaller proportion incorrectly identified blood transfusions (33.5%), mosquito bites (25.4%), or sexual contact (27.9%) as modes of TB transmission (Figure 39).

Figure 39. Patient correct and incorrect knowledge on modes of TB transmission (n=696)



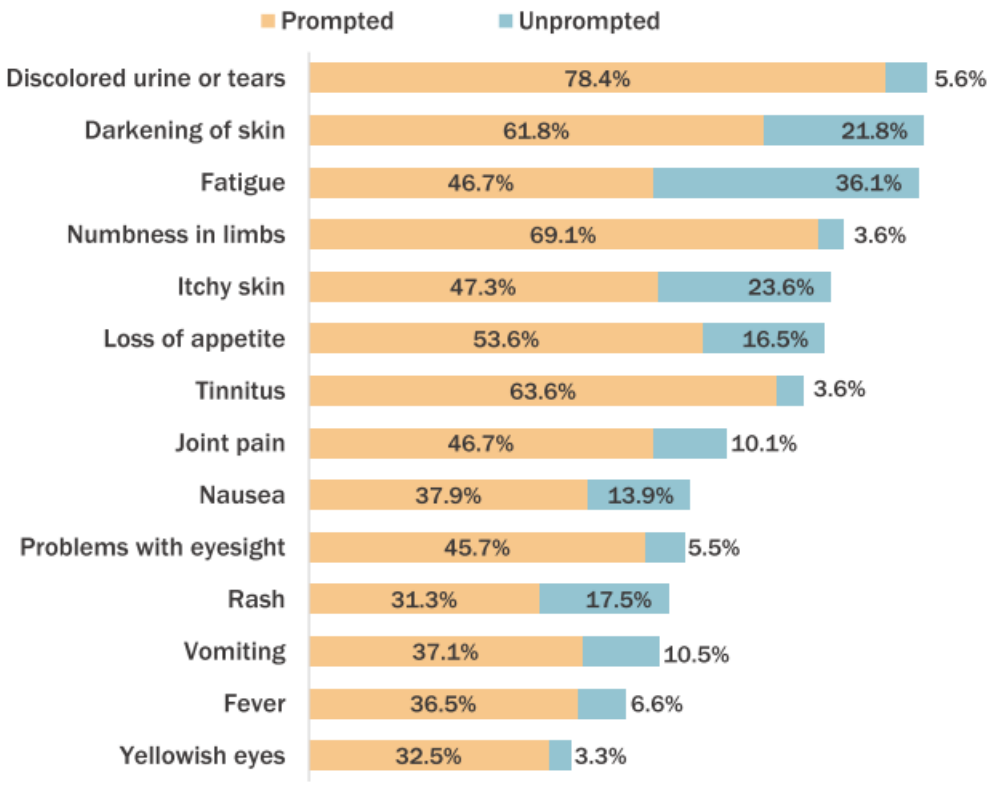
TB Symptoms

Results showed that patients had an overall high level of knowledge about TB symptoms. More than 55% of patients correctly identified all TB symptoms included in the assessment tool. At least 80% of patients reported chronic cough for more than three weeks, coughing up mucus or phlegm, unexplained weight loss, and tiredness or fatigue as symptoms. However, there were some variations when results were further disaggregated by whether the answer was prompted or unprompted. When unprompted, fewer than 15% of patients reported blood-streaked mucus or sputum and night sweats as symptoms of TB (Appendix C, Table 3.4.2a).

Side Effects of TB Drugs

When asked about possible side effects from TB drugs, patients generally gave multiple responses. More than 80% of patients reported discolored urine or tears, fatigue, and darkening of skin as side effects from TB drugs. Around half of all patients identified nausea, vomiting, rash, and problems with eyesight as possible side effects (Figure 40). Although there were no significant differences in responses between DS-TB and DR-TB patients, DR-TB patients identified more side effects overall (Appendix C, Table 3.4.3a).

Figure 40. Patient knowledge on side effects of TB drugs



Stigma

Understanding patients' perceived stigma and discrimination about TB is an important aspect of assessing the quality of care that patients receive. In the interview, patients were asked a series of questions about how they were treated by others at the health facility on a Likert scale, with one being "strongly disagree" and five being "strongly agree". More than 95% of patients "agreed" or "strongly agreed" with all statements asked about their care (felt welcome at the health facility, healthcare providers treated them with respect, providers were friendly, providers treated them the same way when they are treated for other illnesses, providers don't turn their face away when speaking to them, people in the facility didn't show discriminatory attitudes, and did not feel distressed, intimated, or offended when interacting with providers) (Appendix C, Table 3.5a). Comparing DS-TB and DR-TB patients, no significant differences were found in how patients felt that they were treated at the health facility (Appendix C, Table 3.5a).

Barriers to Accessing Care

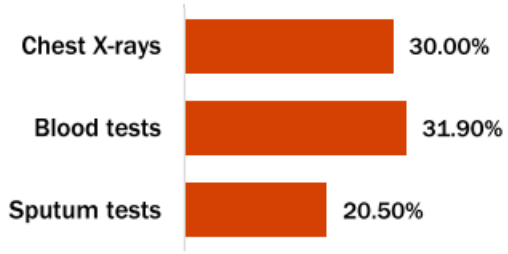
Understanding the barriers to accessing care was another important aspect of the patient interviews. Patients were asked about the affordability of the services. When asked about the costs related to seeking care at health facilities, the majority of patients (96.4%) stated that they have never been unable to come to the health facility because of cost. Moreover, over 70% of patients (71.4%) reported not having to pay to see a healthcare provider at the facility (Table 10).

Table 10. Costs of care for TB disease (n=696)

	DS-TB		DR-TB		Total	
	No.	%	No.	%	No.	%
Have you ever been unable to come to the health facility because of the cost?						
No	617	96.3	54	98.2	671	96.4
Yes	22	3.4	1	1.8	23	3.3
No response	2	0.3	0	0	2	0.3
Total	**641**	**100**	**55**	**100**	**696**	**100**
Do you have to pay to see a healthcare provider at this facility?						
No	450	70.2	47	85.5	497	71.4
Yes	189	29.5	8	14.5	197	28.3
No response	2	0.3	0	0	2	0.3
Total	**641**	**100**	**55**	**100**	**696**	**100**

Patients were also asked whether they had received certain diagnostic tests related to their TB care from the health facility and whether they had to pay for them. Most patients reported receiving multiple diagnostic tests. Sputum tests were received by most patients (70%), while around half of patients reported receiving a blood test (55.3%) and CXRs (49.3%). Thirty-eight percent (38%) of the patients reported receiving X-rays, 63% reported receiving a blood test, and 56% reported receiving a sputum test (Appendix C, Table 3.6b). Figure 40 shows the percentage of patients who reported paying for the tests among those who reported receiving the services. Those who received blood tests were most likely to pay for the tests (31.9%) (Figure 41).

Figure 41. TB patients that paid for a test, among those receiving each diagnostic test (n=696)

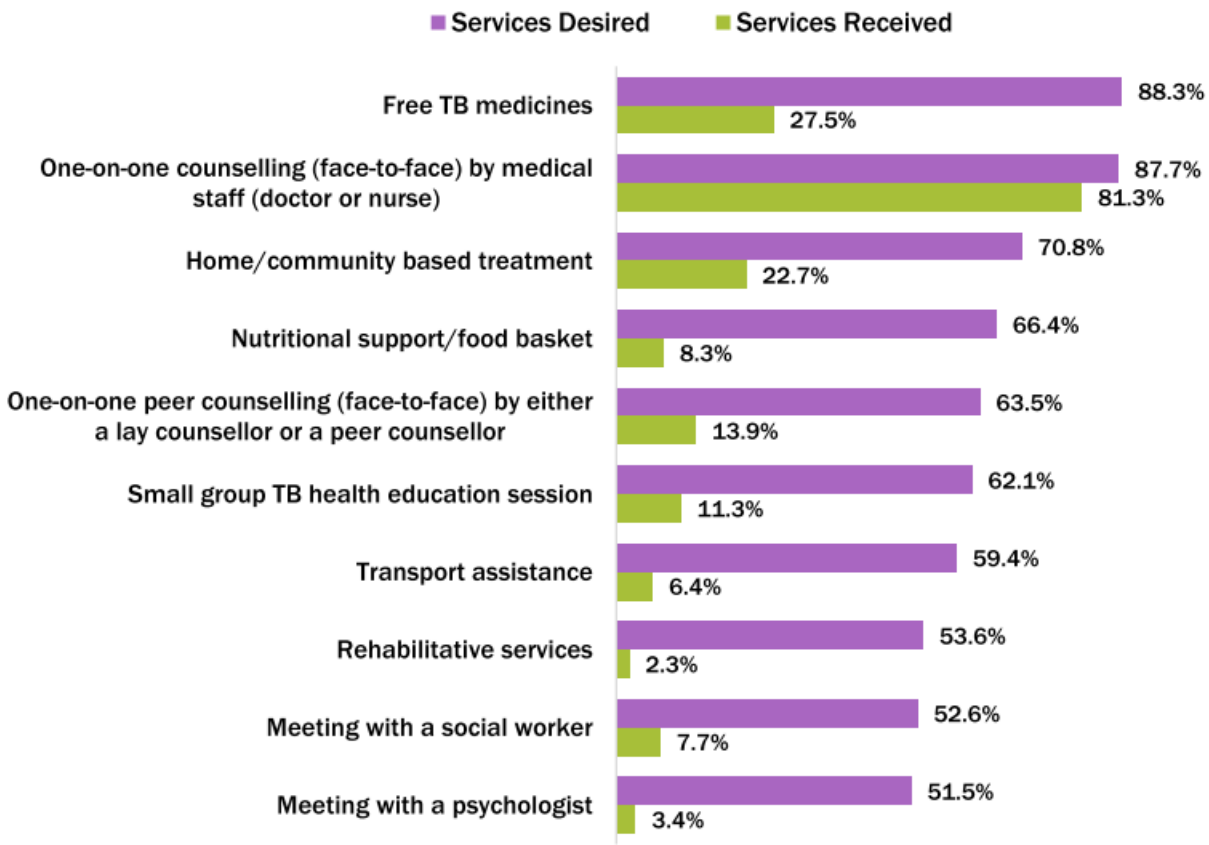


Patient Satisfaction with TB Services

Patient Perspective of TB Services Offered by Health Facilities

Patients were asked to indicate the TB services they desired versus the services they actually received during their treatment. Almost all patients who wanted one-on-one counseling (face-to-face) with medical staff received it. However, there were wide discrepancies between all other services patients desired and those they actually received. The biggest discrepancies were in availability of free TB medicines; 88.4% of patients expressed a desire but only 27.6% were actually given free TB medicines. Similarly, there were big differences regarding nutritional support and food baskets, transport assistance, rehabilitative services, and small group TB health education sessions (Figure 42).

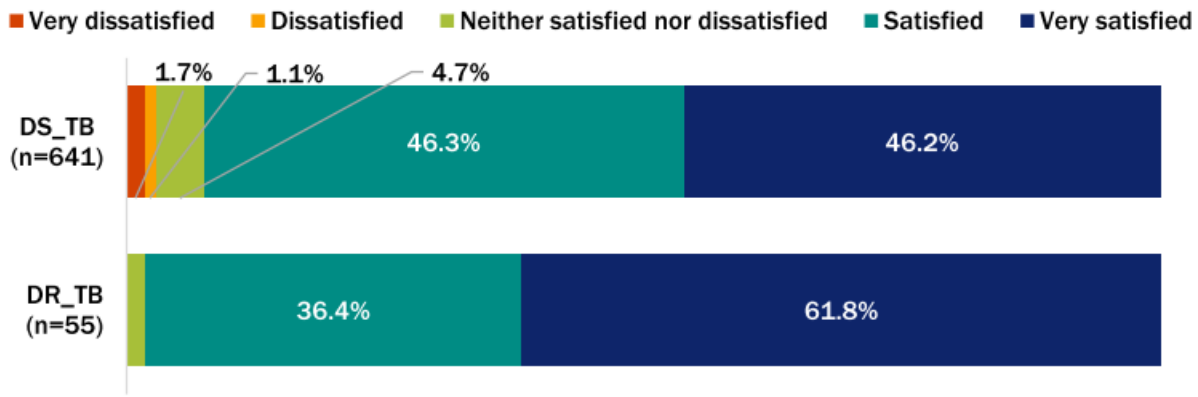
Figure 42. Comparison of services desired vs. received by TB patients (n=696)



General Satisfaction

Patients were also asked about their overall satisfaction with the treatment services they had received using a Likert scale, with one being “very dissatisfied” to five being “very satisfied”. Despite many patients not receiving all the services they had desired, over 90% of patients reported being either satisfied or very satisfied with the TB care that they had received. More DR-TB patients indicated that they were very satisfied (61.8% vs. 46.2%) and no DR-TB patients reported being dissatisfied, whereas 2.8% of DS-TB patients indicated that they were dissatisfied (Figure 43).

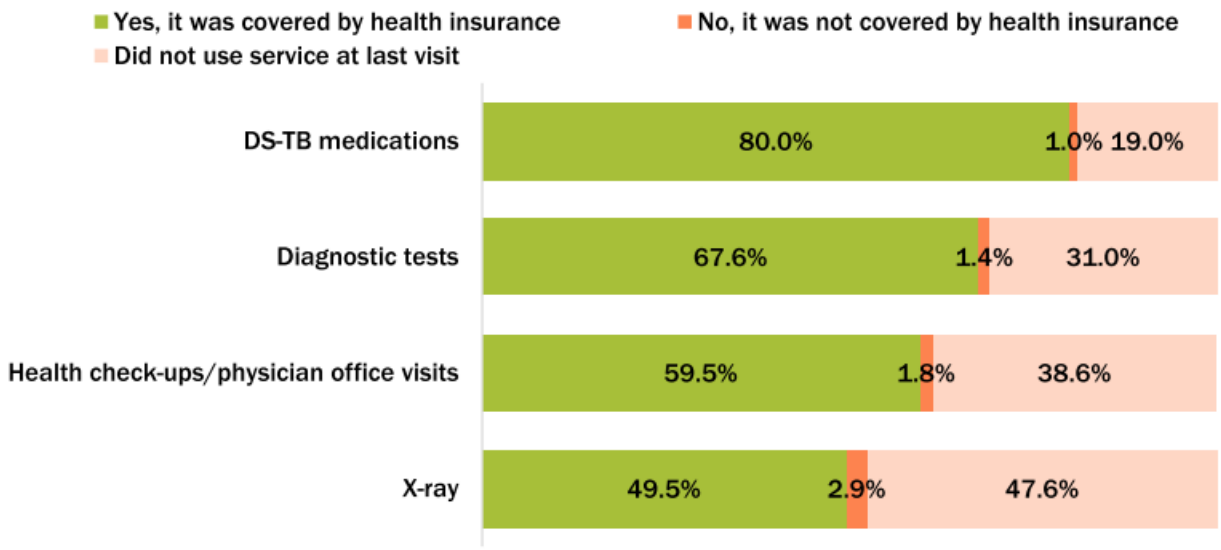
Figure 43. Overall patient satisfaction with TB care received at facility, by patient type (n=696)



Health Insurance Coverage

During the patient interviews, patients were asked about their health insurance coverage, services covered by insurance, and how they paid for their care. Almost all patients (98.1%) were insured, with 61.2% of patients being insured through voluntary SHI. Similarly, over 90% (95.4%) either co-paid for the TB services they received during their most recent visit or were reimbursed fully by health insurance (Appendix C, Table 2.8.1c). When asked about whether different TB services were covered by health insurance, almost all services received were reported to be covered by health insurance. X-ray services were the least covered as reported by 2.9% of patients (Figure 44).

Figure 44. TB services received during last visit and health insurance coverage (n=696)



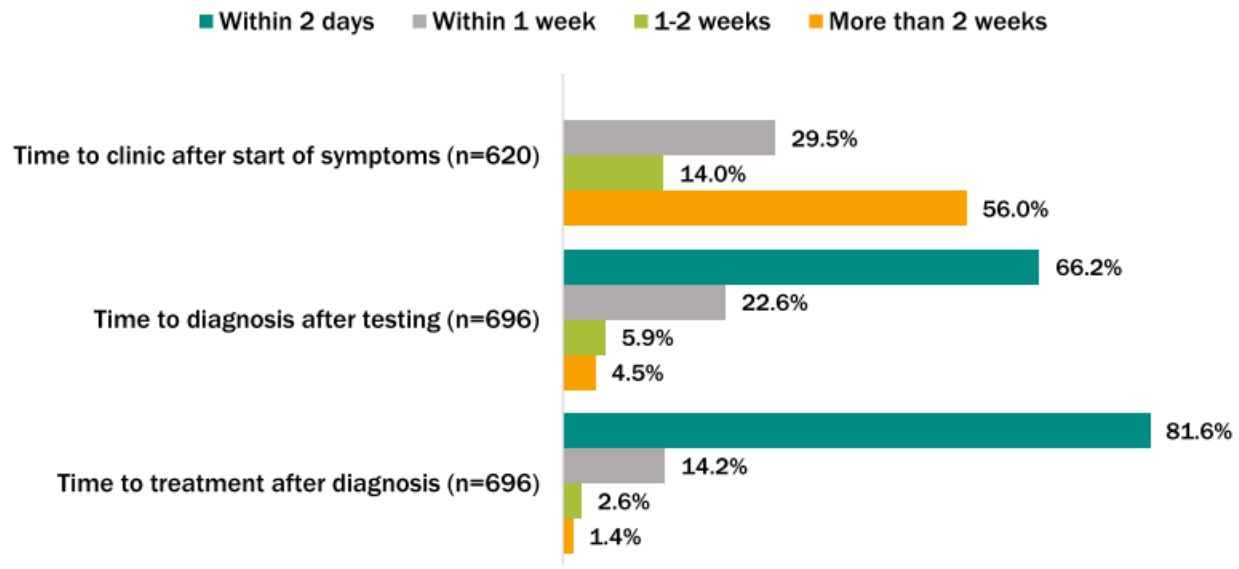
Outcome Results

The following section presents findings on the TB cascade of care and TB outcome indicators. Data collected through the patient interviews and register reviews provided information on TB prevention and treatment outcomes.

Timing of Care Seeking, Diagnosis, and Treatment Initiation

Patients were asked about the timing between each major step on the pathway to TB diagnosis and treatment (Figure 45). Half of the patients reported waiting more than two weeks after the onset of symptoms to go to the health facility for an assessment. Approximately one quarter of patients (26.3%) sought care within one week of experiencing symptoms and 12.5% waited between one and two weeks. Results disaggregated by type of TB are included in Appendix C, Table 4.1a.

Figure 45. Timing between key steps of TB diagnosis and treatment initiation



TB Diagnosis Outcomes

Diagnosis outcomes were calculated using paper-based facility registers that had data recorded for the period between July 1, 2021, and June 30, 2022, to construct the cascade of care between presumptive TB and clinical diagnosis. The number and proportion of the types of diagnosis tests recorded for patients were assessed to determine diagnosis outcomes. A total of 19,526 patients with presumptive TB were included in the register review. Of those, 17,106 (87.6%) had any type of diagnosis evaluation conducted (e.g., smear, culture, Xpert MTB/RIF, chest X-ray, TST). Ninety-three percent (93%) of these patients (n=15,886) had a bacteriological confirmation test (smear microscopy, culture, or Xpert MTB/RIF or Xpert Ultra Test), while 10% were confirmed by clinical diagnosis. It is important to note that the same patient may have received both a bacteriological and clinical diagnosis.

Nearly a quarter (71.4%, n=11,355) of the patients who received a bacteriological confirmation test had results recorded, and 11% of these patients (n=1,272) had a positive bacteriological test result.

Smear Microscopy

Of the 14,473 patients who received a smear microscopy test, 78% (n=11,271) had test results recorded in the register, 8% of which (n=958) were positive.

Xpert

For the 1,958 patients who received an Xpert test, 54% (n=1,055) had results recorded in the register, 43% (n=454) were positive.

TB Treatment Outcomes

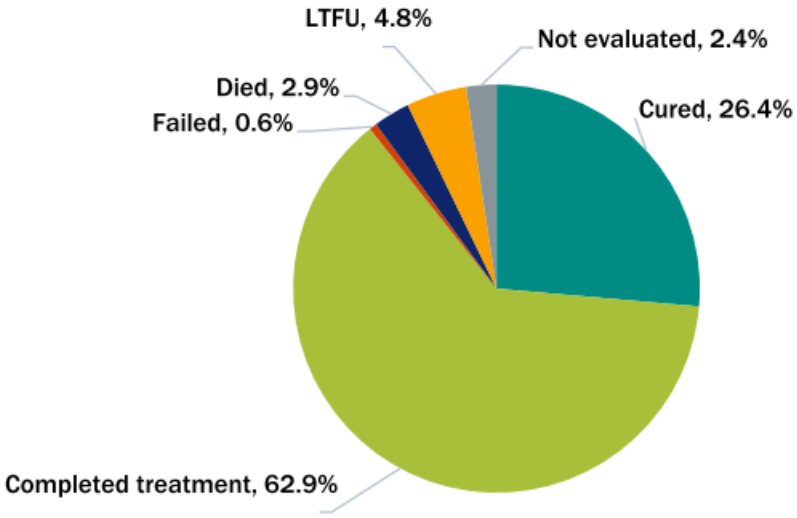
TB treatment outcomes were calculated using the DS-TB and DR-TB treatment registers. DS-TB outcomes were evaluated for patients who started treatment between July 1, 2021, and June 30, 2022. For DR-TB,

outcomes were evaluated for patients who started treatment between July 1, 2019, and June 30, 2021.

DS-TB Outcomes

As shown in Figure 46, 26% of DS-TB patients were cured and 63% completed treatment, giving a treatment success rate of 89%. Fewer than 1% were recorded as having failed treatment, 3% died during treatment, and 5% were classified as lost-to-follow-up (LTFU). Two percent (2%) of the cohort did not have an outcome recorded.

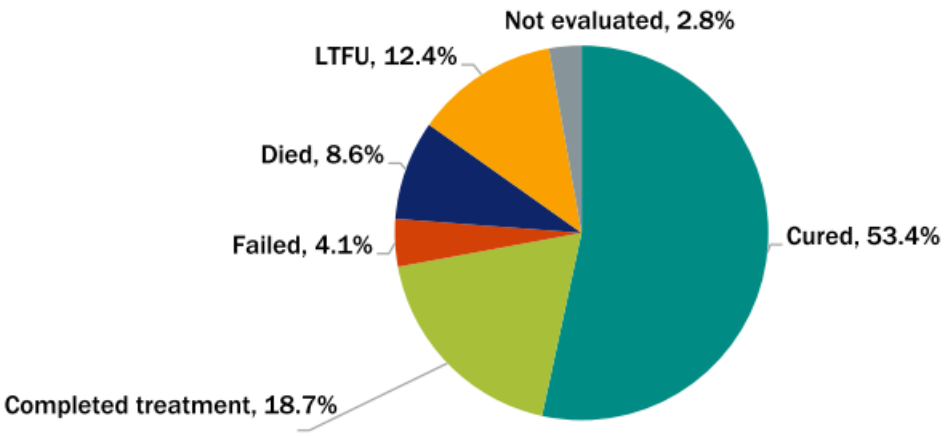
Figure 46. Treatment outcomes for DS-TB patients (n=12,458)



DR-TB Outcomes

Fifty-three percent (53%) of the patients treated for DR-TB were recorded as cured and 19% completed treatment, giving a treatment success rate of 72% (Figure 47). Four percent (4%) of patients failed DR-TB treatment, 9% died during treatment, and 12% were classified as LTFU. Three percent (3%) of the cohort were not evaluated and did not have an outcome recorded.

Figure 47. Treatment outcomes for DR-TB patients (n=1,994)



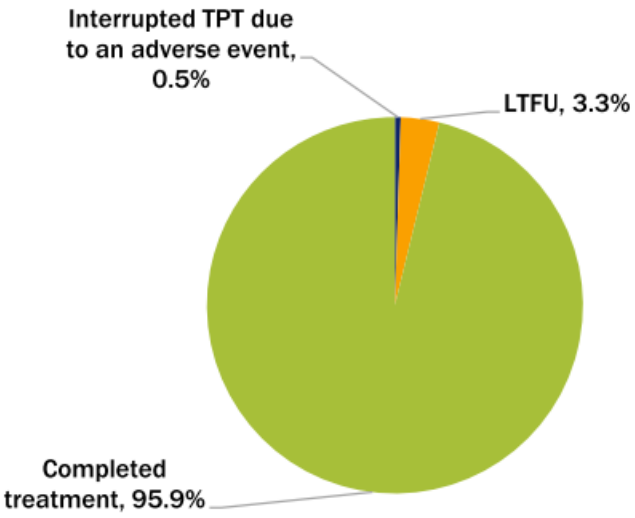
TPT Outcomes

Outcomes for TPT were assessed for child contacts under the age of five and people living with HIV/AIDS (PLHA) using the TBI contact register and the HIV treatment register. Data for all child contacts and PLHA who started treatment between July 1, 2021, and June 30, 2022, and had an outcome recorded were reviewed and included in the calculation.

People Living with HIV/AIDS

Nearly all (96%) of the PLHA who were initiated on TPT during the review period were recorded as having completed TPT (Figure 48). Fewer than 1% of patients developed active TB, died, or had their treatment interrupted due to an adverse event. Approximately 3% of patients were LTFU.

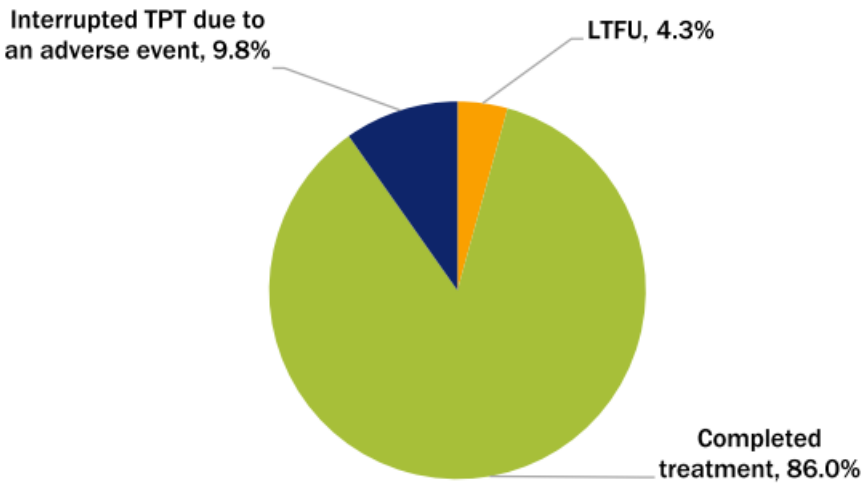
Figure 48. TPT outcomes for PLHA (n=3,346)



Child Contacts under Five Years of Age

The majority (86%) of the child contacts under five years of age initiated on TPT during the review period completed TPT (Figure 49). Ten percent (10%) were recorded as having TPT interrupted due to an adverse event and another 4% were LTFU. No patients died or developed active TB.

Figure 49. TPT outcomes for child contacts (n=235)



Challenges and Limitations

The health facilities sampled for the QTSA were limited to public health facilities providing TB services and therefore may not be fully representative of all TB care within the country, given the significant presence of private sector providers in Vietnam. Further, facility types were taken into account with the understanding that specific TB services were offered at each health facility level, however variation in TB services was observed over the course of data collection. For instance, although one-function health centers typically provide only preventive services, some of them had outpatient clinics providing health examinations and prescriptions for TB medication to TB patients without health insurance. Further, in Dong Nai province, two one-function health centers even provided treatment services, including drug distribution, to all TB patients under the SHI scheme.

Another challenge encountered during the QTSA was the limited availability of data in TB registers during data collection. Both incomplete recording of testing results and clinical outcomes were observed in multiple facilities across the sampling frame. Outcome analysis was adjusted to eliminate record reviews with missing documentation; however, this could make outcome results less representative.

Lastly, the potential for desirability bias in the patient interviews should be considered given that the interviews were conducted at the health facility. TB patients reported high levels of satisfaction and low levels of stigma from facilities and service providers, which could be somewhat influenced by the fact that they were interviewed at the facility. Further studies using qualitative methods are recommended to delve deeper into the issues of stigma, discrimination, and satisfaction.

Key Findings and Recommendations

Results from the QTSA highlight services and infrastructure that are operating well and opportunities for programmatic focus and improvement. This section presents key prioritized findings along with recommendations for policy and programmatic consideration directed at the VNTP and other TB stakeholders in Vietnam.

Social Health Insurance

The QTSA offered an opportunity to collect information on the roll out of SHI for TB services from both the health facility and TB patient perspective. Additional analysis beyond the scope of the QTSA can be pursued to better understand the changes that occurred following the SHI rollout. This includes issues such as problems reported by facilities with reimbursements for services or the fact that facility staff felt that LFTU increased after SHI was introduced.

Key Finding	Resulting Recommendations
Over half (59.7%) of facilities reported some kind of challenge or barrier related to the inclusion of TB services under the SHI scheme.	• Continuously support the implementation of the Circular 36 • Enhance integrated supervision with relevant departments at MOH and VSS at all levels
Challenges related to health facility reimbursement for TB services were documented from multiple health facilities highlighting a potentially major bottle neck in TB service provision under the SHI scheme.	• Promote the implementation of a legal document that supports VNTP's current referral system • Strengthen the use of data from the health performance appraisal platform for decision making • Upgrade health facilities to reach all requirements outlined in the health examination and treatment law in order to provide TB related services under the health insurance scheme • Ensure all diagnostic and follow-up tests are endorsed by MOH
Ninety-five percent (95%) of patients stated that they either had a co-payment or were fully reimbursed for their most recent TB services. Only a small percentage reported that they had to pay for specific services like TB medications, diagnostic tests, office visits, or x-rays.	• Continue to support the high degree of SHI coverage for TB patients by lobbying for additional funds from both national and international stakeholders to improve the universal health insurance coverage among TB patients as well as TB

	medications, co-payment/payment for TB services or services that occur during the waiting time until premiums take effect • Prioritize preparation for shifting second line medications to the health insurance scheme

Support Services for TB Patients

Results from the QTSA look at multiple dimensions of support provided to TB patients while they are enrolled in TB treatment.

Key Finding	Resulting Recommendations
In terms of treatment support, most (37.8%) reported that family members served as their treatment supporter and a similar proportion reported that they were being followed up by a healthcare provider at the facility. Interestingly, almost one-quarter of TB patients interviewed reported that they did not have any kind of TB treatment supporter. Only a small proportion received treatment support from a community health worker (CHWs) which may be related to the fact that less than half of facilities reported using CHWs/volunteers to provide TB support services.	• Expand the implementation of digital applications to support TB treatment • Promote monthly financial support for those who provide supports for outpatient TB cases
Comparing TB support services that patients desired versus received, there was a clear disparity between almost all of the desired services discussed. The only exception was in the case of one-on-one counseling by medical staff with 87.7% of TB patients desiring the service and 81.3% receiving counseling.	• Promote funding and implementation of a package of social protection including travel, nutrition, and psychological support for TB patients • Ensure universal SHI coverage among TB patients • Strengthen TB communication activities including counseling, peer meetings, and community engagement at all levels

TB Patient Experience

The experience of TB patients was measured in multiple ways by the QTSA.

Key Finding	Resulting Recommendations
DR-TB patients appear to have more positive experiences compared to DS-TB patients. This is observed in areas	• Enhanced and more frequent trainings for providers to help improve their

including patient-provider interactions, patient knowledge of risk factors, experienced stigma, costs of treatment, and overall patient satisfaction. This could be due to the fact that DR-TB patients have longer-term care, higher frequency of interactions with the health system, and more intensive care provided to them as part of TB diagnosis and treatment.	interactions with TB patients and the overall patient experience • Consider adding an assessment of TB patient care experience to routine monitoring/supervision visits • Ensure the SHI coverage among DS-TB patients • Implementation of stigma reduction activities
Results related to the timing of diagnosis and treatment initiation demonstrate a relatively quick turnaround time between TB patients being tested and informed of their diagnosis. Over 60% of patients interviewed reported receiving their TB diagnosis within 2 days of being tested, but almost a quarter only received their diagnosis within a week of being tested. Initiation of TB treatment had better results related to the turnaround time with over 80% of patients initiating TB treatment within two days of diagnosis and 14% initiating treatment within a week of TB diagnosis. There is clearly still room for improvement in timing, especially between the testing and diagnosis steps of the cascade.	• Continue with current practices for testing, transport, and notification given the overall positive results • Conduct additional analysis to drill down specifics of instances where longer turnaround times were reported and use results to bolster any gaps or bottlenecks in the processes • Communicate results through additional means such as mobile phone or email
Overall, barriers to care appeared low for the TB patients interviewed. Almost all TB patients stated that they were never hindered in accessing TB services because of costs and over 70% reported that they did not need to pay to see a provider at their health facility.	• Continue building off this positive finding and ensure that the best practices which enable low barriers to care are shared and implemented

Laboratory and Results Documentation

The QTSA investigated multiple domains of laboratory availability, structure, and functionality which is key to providing high quality TB diagnosis and treatment care.

Key Finding	Resulting Recommendations
TB diagnosis services were offered by over 90% of the QTSA facilities surveyed and almost all (97%) of these facilities reported having a laboratory capable of providing TB diagnosis onsite. The most common methods used for TB diagnosis included smear microscopy (97.6%), chest X-ray (83.0%), evaluation of clinical signs and symptoms (82.4%),	• Replace microscopy with Xpert as the primary diagnostic tool utilized in Vietnam • Scale up of Xpert and other mWRDs across the country

and Xpert (72.7%). Interestingly, despite almost three-quarters of health facilities utilizing Xpert testing, only 27.5% of facilities that utilized Xpert testing and had onsite labs, had an Xpert machine onsite.	
Turnaround times for both on- and off-site laboratories showed good results with onsite labs, on average, transporting specimens to the laboratory within one hour and providers receiving results within 2 hours. On average, off-site laboratories received samples within one day of collection and providers received results from the off-site laboratory within a day as well. Peri-urban facilities appeared to have longer turnaround times for both specimen transport (on average 1.5 hours) and providers receiving test results (on average 5 hours), compared to urban and rural facilities with onsite laboratories.	• Map current and future sites to ensure coverage of diagnostic testing • Optimize diagnostic network to reach testing demand while maximizing access to services
Test results and treatment outcomes were often missing from facility and laboratory registers. Many health facilities did not have completed registers which impacted the team's ability to confidently calculate testing coverage. As an example, for the 1,958 patients who received an Xpert test, only 54% had results recorded in the register. This could be due to providers only recording positive tests, but having full documentation available is critical for VNTP to properly monitor and assess TB services and outcomes.	• Additional training/sensitization to services providers on TB registers recording procedures • Employ a digital system to manage the e-information system on national TB laboratory testing activities

Conclusion

The Vietnam QTSA results highlight strengths and weakness in the quality of TB services across the county. The study showed strengths in terms of the availability of TB diagnosis and TB treatment services. There were also positive findings related to the laboratory network and services, as well as DS-TB patient treatment success rate. The study further identified programmatic gaps including a need for supportive services for patients during TB treatment and the availability of some key TB medications at health facilities. Most interestingly, the Vietnam QTSA provided an opportunity for the VNTP to document and evaluate the delivery of TB services under Vietnam's SHI, which was fully rolled out nationwide six months prior to data collection. SHI-related information allows the VNTP to assess availability of TB services under the scheme, coverage of facility reimbursement, the implementation challenges/barriers faced by facilities, and the impact of the scheme on patients' access to TB services. Overall, these findings provide evidence of the key elements that the VNTP may focus on to improve the availability of high-quality TB care services across Vietnam and optimize patient treatment outcomes.

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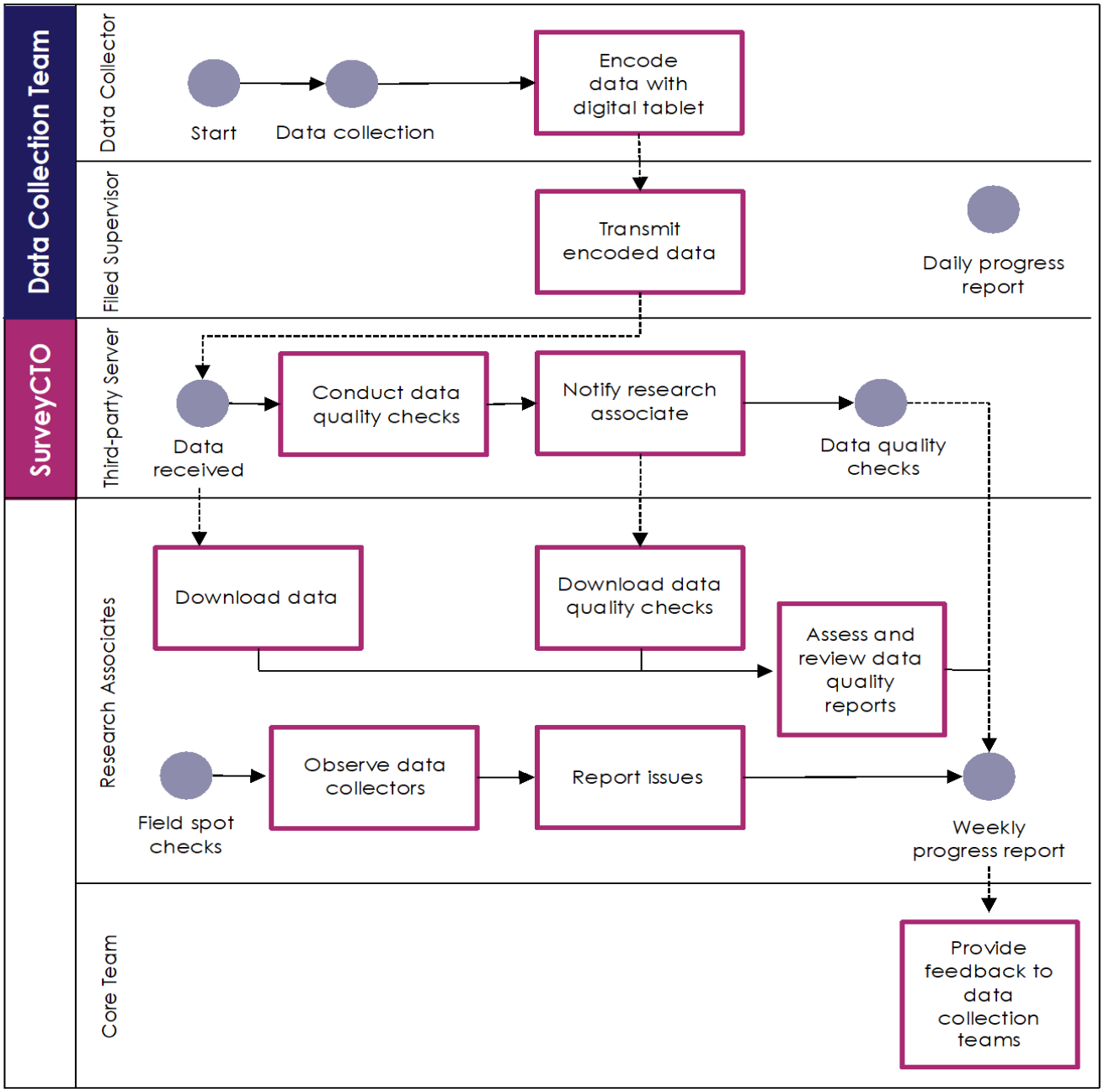
Appendix A. Data Management

Data quality was ensured through the following mechanisms: in the tools, daily progress reports, field spot checks, weekly progress reports (WPRs), and data quality checks (Figure A1).

Figure A1. Data management flowchart



SurveyCTO allowed for real-time data management as the tools were being administered at the facility level. Data quality was assured by data limits, skip logic, and required responses in the tools. The data collectors were not allowed to enter anything lower or higher than the set limit. If there were any

exceptions to the limits, they were reported to the data management team so that the data set could be changed, and when appropriate, the tool could be adjusted. Skip instructions were important to determine the right questions to ask the respondents. For example, if a service was not available at a facility, questions pertaining to that service were automatically skipped by SurveyCTO. The mechanism for required responses meant that SurveyCTO would not allow the data collectors to move on to the next question until a response was entered.

Data quality was ensured at the level of the field supervisors through the daily progress reports, which were submitted per facility visited. They were used to track the progress, challenges, and best practices of the data collection teams. Each member of the data collection team was assigned to a specific tool. Once a tool was completed, the field supervisor checked for data quality and completion. When they were satisfied, field supervisors transmitted the data to the server. Then they reported the number of tools completed on the day of their visit and the status of the interviews (e.g., completed interviews, patient refusals, and ineligible patients). This was also a way for the data collectors to report any schedule changes that were necessary. Schedule changes varied, but most of the time they were attributable to the lack of patients, facility refusals, and difficult weather conditions.

The data management team conducted spot checks during the data collection period. One spot check was done per data collection team. Each spot check lasted three to five days, depending on the need and travel time. During the spot checks, the implementation of protocols and the administration of the tools were assessed. The data management team had a checklist to assess the implementation of protocols and observed the data collectors individually as they administered the tools. The spot checks were also a means through which the data management team could understand the contexts in the regions, provinces, and cities that made their processes unique or similar in comparison with other areas. Feedback sessions with the data collection teams were done after each spot check to provide comments and recommendations about the data collection. These sessions were vital to relay the issues and comments observed by the data management team. The data collectors were also able to give comments and pose questions that they had about the protocols and tools. The data collection teams that needed more training to improve data quality were prioritized.

The WPR was the mechanism for updating TB DIAH and the UNC Vietnam team on the progress of data collection. It contained the number of interviews completed, a summary of the challenges encountered in the field, best practices and lessons from the data collection teams, action points for the data collectors, and data quality checks per tool. An important section of the WPR was the challenges encountered in the field. This allowed TB DIAH to make necessary changes to the tool(s), and to clarify the protocols for certain questions to ensure clean data. Such changes included adjusting the data limits and skip logic.

Data quality checks were also featured in the WPR. The data quality checks were coded in SurveyCTO to report high frequencies of “No Response” or “Don’t Know” responses and outliers. SurveyCTO produced daily warnings about the data quality. To investigate these warnings, a data management team member contacted the data collectors and documented the source of the issue. Some issues were due to the contexts of the health facilities, data collector entry errors, or values that exceeded limits. When necessary, changes were made to a tool, such as increasing the limits. The data quality checks were compiled weekly and reported in the WPR. Data in the SurveyCTO server were further cleaned for any inconsistencies.

Appendix B. TB Outcome Definitions

TB Outcome Definitions

- ***Cured:*** A patient with bacteriologically confirmed TB at the beginning of treatment and who was smear- or culture-negative in the last month of treatment and on at least one previous occasion in the continuation phase.
- ***Treatment completed***: A patient who completes treatment without evidence of failure but with no record to show that sputum smear or culture results in the last month of treatment and on at least one previous occasion were negative, either because tests were not done or because results are unavailable. This group includes:
    - A bacteriologically confirmed patient who has completed treatment but without direct sputum smear microscopy follow-up in the last month of treatment and on at least one previous occasion.
    - A clinically diagnosed patient who has completed treatment.
- ***Treatment failed****:* A patient whose sputum smear or culture is positive at five months or later during treatment OR A clinically diagnosed patient (child or extrapulmonary TB) for whom sputum examination cannot be done and who does not show clinical improvement anytime during treatment.
- ***Died****:* A patient who dies for any reason during the course of treatment.
- ***Lost to follow-up****:* A patient whose treatment was interrupted for two consecutive months or more.
- ***Outcome not recorded****:* A patient for whom no treatment outcome is assigned in the register. This includes cases transferred to another DOTS facility and whose treatment outcome is unknown.

Appendix C. Supplemental Report Data

For Appendix C references, detailed tables may be found using the following link: https://www.tbdiah.org/wp-content/uploads/2024/12/Vietnam-QTSA-Detailed-Results-Tables_TL-24-113-TB_508c.pdf

TB DIAH
University of North Carolina at Chapel Hill
123 West Franklin Street, Suite 330
Chapel Hill, NC 27516 USA
TEL: 919-445-6949 | FAX: 919-445-9353
www.tbdiah.org
hub@tbdiah.org

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