



**Assessment of TB and TB/HIV Services in the
Cross-Border Health Integrated Partnership
Project (CB-HIPP) Sites in the East African
Region: Burundi, Kenya, Tanzania, and Uganda**

BASELINE SURVEY ASSESSMENT RESULTS

2019



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ABBREVIATIONS

AIDS	acquired immune deficiency syndrome
AMREF	African Medical and Research Foundation
ART	antiretroviral therapy
C/DHMT	county/district health management team
CB-HIPP	Cross-Border Health Integrated Partnership Project
CBHU	Cross-Border Health Unit
CHV	community health volunteer
DOT	directly observed treatment
DR TB	drug-resistant tuberculosis
DS	DOT supporter
EA	East Africa
EAC	East Africa Community
HCW	health care worker
HIV	immunodeficiency virus
IDI	in-depth interview
IPT	isoniazid preventive therapy
KII	key informant interview
MOH	Ministry of Health
NIMR	National Institute for Medical Research
ODK	Open Data Kit
PHSC	Protection of Human Subjects Committee
TASO	The AIDS Support Organization
TB	tuberculosis
USAID	U.S. Agency for International Development
WHO	World Health Organization



EXECUTIVE SUMMARY

This report presents the results of an assessment of the tuberculosis (TB)/HIV programming and services that was conducted by the Cross-Border Health Integrated Partnership Project (CB-HIPP) in collaboration with the East Africa Community (EAC) partner states of Burundi, Kenya, Tanzania, and Uganda at 12 cross-border sites (seven land-border sites, and five wet-border sites) from September through December 2018. The assessment was intended to generate data to improve upon the existing management of TB and TB/HIV services for mobile and cross-border populations in East Africa (EA) border areas.

Methods

The study employed a mixed-methods approach that combined quantitative and qualitative data collection methods. The target populations for the assessment were members of county/district health management teams (C/DHMTs), health facility in-charges/managers, health care workers, community health volunteers, and TB/HIV patients (Table E1). The objectives of the assessment were to:

- Determine the capacity and profile of TB and TB/HIV service providers at the EA border areas
- Identify barriers and opportunities related to the TB and TB/HIV cascade of care for the general population and specific mobile key and vulnerable populations
- Describe relationships/linkages between TB and TB/HIV service providers and referral systems across borders

Table E1. Summary of study populations by site

Population	Total Sampled	
	Land Borders	Wet Borders
Health facility in-charges	71	77
Health care workers	166	201
Community health volunteers	45	40
TB/HIV patients	722	746

Key Findings and Recommendations

1. All health care workers (HCWs) who provide TB/HIV services need to be sufficiently trained and updated on the policy guidelines for the management of TB.

Most of the HCWs (over 90 percent) interviewed across the various cross-border assessment sites reported that they had received at least the basic or refresher training for TB/HIV services. However, some training gaps were identified in a few sites. In Burundi, for example, 10/20 of the HCWs interviewed indicated that they lacked training in drug-resistant TB treatment. In Tanzania, 33 percent of those who provided isoniazid preventive therapy (IPT) had not received any training in this area.

Although most health facility in-charges acknowledged the existence of policy guidelines for the management of TB/HIV, a few indicated that they were not aware of them or had not come across this documentation. It is recommended to ensure that all HCWs who provide TB/HIV services be sufficiently instructed in the guidelines and that copies of the guidelines be made available to the health facilities for reference, as needed.

Most of the policy guidelines the HCWs referred to were national guidelines for the respective East African countries where the assessment was conducted. The lack of a policy framework for



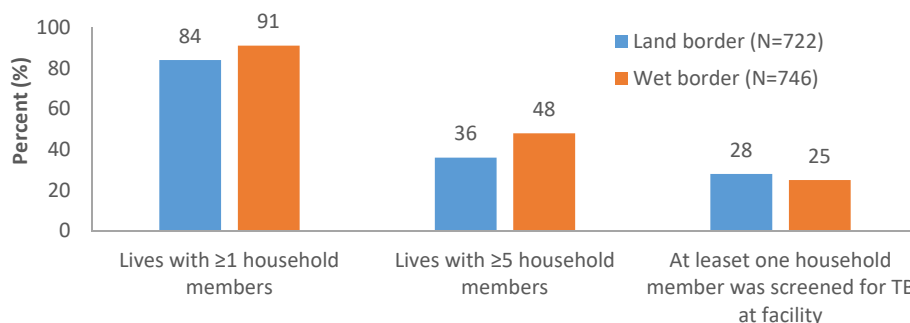
cross-border service provision, particularly related to referral and follow-up of patients, negatively affects the TB/HIV management of mobile and cross-border populations. The majority of the members of the C/DHMTs and the health facility in-charges interviewed expressed concern that this was a policy gap that needed to be addressed to ensure better cross-border service delivery.

It is, therefore, important that partner states review the guidelines to incorporate a section on how TB and TB/HIV clients at cross-border sites may be appropriately managed. In addition, capacity building is needed among TB and TB/HIV service providers in the cross-border sites to provide services more effectively to the cross-border populations.

2. Enhanced screening is needed for all members of TB patients' households, as well as for other contacts of those who are mobile.

The assessment found that over 80 percent of the TB/HIV patients who were interviewed were living with other household members, and more than one-third of these patients (36 percent at land cross-border sites, 48 percent at wet cross-border sites) lived in large households that had five or more household members. From the interviews with the TB/HIV patients, nearly one-quarter (28 percent at land sites, 25 percent at wet sites) reported that at least one of their household contacts had been screened for TB at a health facility (Figure E1).

Figure E1. Household contacts of TB/HIV patients and screening for TB



Among the TB/HIV patients who were interviewed, about one-third of the respondents reported that they had traveled to another county/district within the last three months (36 percent at land sites, 28 percent at wet sites). Another 18 percent and 12 percent of those who were interviewed at the land and wet cross-border sites, respectively, had traveled to neighboring countries at least once within the last three months.

The relatively large household sizes and the mobility of these TB/HIV patients present a favorable environment for TB transmission within cross-border communities. The risk of widespread transmission may be higher among mobile patients, who interact not only with household members of their usual place of residence but also people in other locations, particularly in congested environments such as fishing landing beaches and socialization venues. The findings from this assessment highlight a relatively low level of screening for TB among the household contacts.

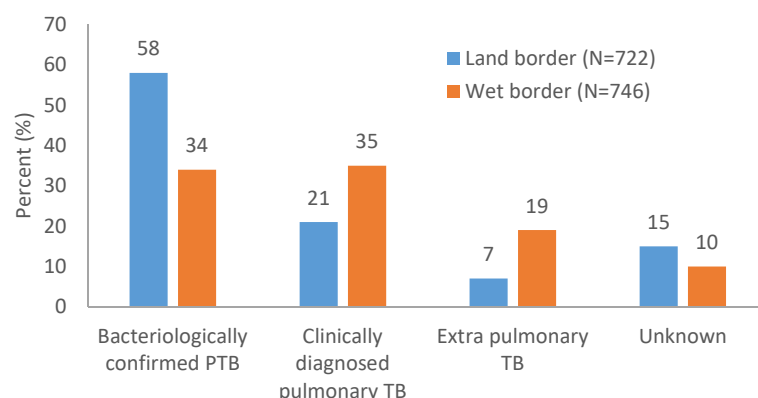
3. Nearly one-third of the patients were clinically diagnosed with TB. This may warrant additional efforts to screen the patients using laboratory confirmatory methods.

Of the TB/HIV patients who were interviewed, nearly one-third (21 percent at land sites, 35 percent at wet sites) were clinically diagnosed to have TB (Figure E2). Specifically, the Kasensero/Kagera site (44 percent) and Muhuru Bay/Kirongwe site (31 percent) were among the sites with the highest percentage of patients who were clinically diagnosed with TB. This highlights the need for additional efforts, particularly at the wet cross-border sites, where cases with clinical diagnoses were relatively high, to ensure that patients are tested using laboratory



confirmatory methods, and thus, to minimise potential misclassification of patients and initiate the necessary treatment for those who need it.

Figure E2. Type of TB patient was diagnosed as having



4. Based on the finding of a high occurrence of TB and HIV co-infection among these populations, we recommend strengthening the integration of TB/HIV service provision to ensure that patients are promptly linked to services. A one-stop service delivery point is highly recommended.

Among the TB/HIV patients who were interviewed, more than one-third (30 percent at the land sites, 39 percent at the wet sites) were also infected with HIV. Of the land cross-border sites, Katuna (42 percent) had the highest percentage of those who were co-infected with TB. On the other hand, Mbita-Mfangano/Namayingo (59 percent) and Kasensero/Kagera (48 percent) were among the sites with the highest percentage of patients who were co-infected with TB and HIV at the wet cross-border sites. The substantially high levels of co-infections of TB and HIV and the likelihood for negative treatment outcomes among those who are co-infected highlight the need to ensure integration of TB and HIV services, thereby ensuring that patients are promptly linked to the required services.

5. Stigma toward TB patients exists in the community and could potentially have the negative consequence of further delays in seeking and completing treatment. Based on the findings of this assessment, the EAC partner states should scale up and sustain efforts for education and sensitization of communities about TB to demystify myths around TB infection and TB disease.

For both the land and wet cross-border sites, 13 percent (11 percent men, 18 percent women) of the TB/HIV patients who were interviewed reported that they were shameful or embarrassed of having been diagnosed with TB disease. Among these patients, nearly one-quarter (21 percent of those at land sites, 25 percent at wet sites) believed that most people in the community would reject a person with TB. The community health volunteers (CHVs) expressed similar beliefs. Among the CHVs who were interviewed, 29 percent at the land sites and 23 at the wet sites said that there was stigma toward TB patients in the community.

As the findings from IDIs with the health care workers suggest, stigma toward TB patients exists in the community and is one of the reasons why patients seek services across the border at health facilities where they are not known. However, some mobile and cross-border population reported fear of real or perceived stigma at health facilities in a country not their own. This leaves the patients in a dilemma, since they may avoid going for screening and/or treatment.

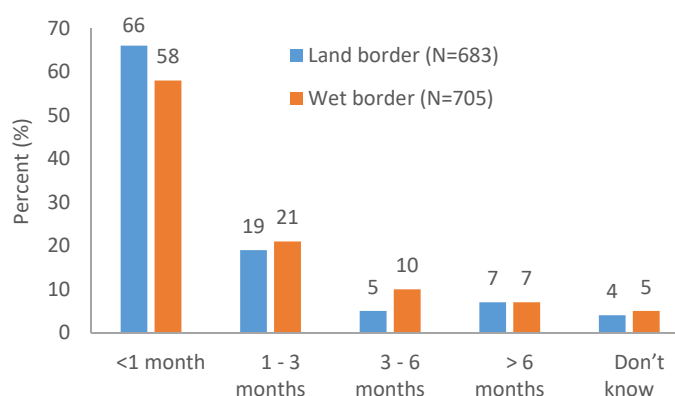
6. Mobile and cross-border populations need timely access to TB and TB/HIV services, including early initiation. A key to the control of TB transmission is making health services friendly and easily accessible, irrespective of where one is.



The data from the interviews with TB/HIV patients suggest high levels of self-medication and delays in seeking health care. This trend is reflected across all the cross-border sites included in the assessment. The majority of the respondents said that they first went to a public health facility when they fell ill with TB (82 percent at land sites, 81 percent at wet sites). However, some respondents reported that they first consulted a drug seller or pharmacy (6 percent at land sites, 5 percent at wet sites).

Although the majority of the respondents said that they first sought health care at a health facility (either public or private), a substantial percentage of the TB/HIV patients delayed seeking health care. As per the interviews with the TB/HIV patients, 66 percent and 58 percent of the TB/HIV patients at the land and wet cross-border sites, respectively, were able to seek care within one month of the onset of TB-related symptoms. This implies that more than one-third of the patients sought health care more than one month after the onset of the TB-related symptoms (Figure E3).

Figure E3. Duration from the onset of TB symptoms to the first contact with a provider



The mobility of the TB/HIV patients, as defined by those who reported travel to another county/district or country within the three months preceding the study, was associated with reported self-medication and is, thus, an important factor in health care seeking. Among the patients interviewed at the land cross-border sites, a higher proportion of patients who reported mobility said they had purchased drugs from drug shops compared to those who did not report mobility (11 percent vs. 6 percent). A similar trend was observed at the wet cross-border sites, where 7 percent of the mobile patients said they purchased drugs across the counter compared to 5 percent of those who were not mobile.

Delayed health care seeking has the potential to facilitate transmission of TB in the community as patients go about their routine activities oblivious to their infectiousness. Early diagnosis and initiation to TB and TB/HIV treatment is, thus, key to control of the transmission of TB in the community.

7. Proper mechanisms for cross-border referral and tracking of patients who seek health care in neighboring countries need to be established.

Nearly one-third of the HCWs who were interviewed reported that they had referred patients to health facilities across the border in another country (44 percent among HCWs at land sites, 23 percent at wet sites). When asked how they typically track their referred patients, about half (50 percent at land sites, 49 percent at wet sites) reported that they actively call the facility to confirm if the referral was completed.

Based on the IDIs with HCWs, tracking and follow-up of TB/HIV patients who seek services across the border was a challenge for the mobile and cross-border populations. The lack of proper referral and tracking systems and their implementation may have negative consequences, as it may result in patients delaying access to TB/HIV services or potentially dropping out from

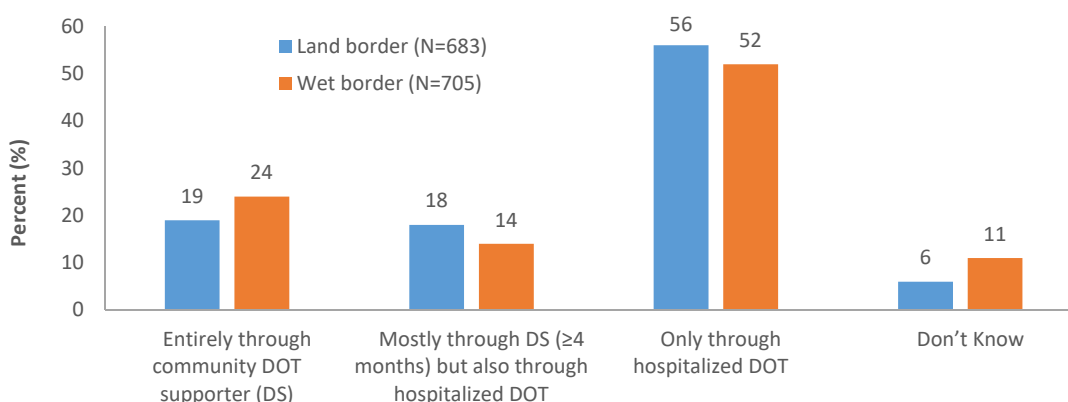


treatment. As such, there is a need for countries to review their TB/HIV protocols and guidelines to include cross-border referral and tracking mechanisms.

8. Community health volunteers play an important role in the referral, follow-up, and linking of TB/HIV patients to the required services. Therefore, continued efforts are needed to ensure proper training of CHVs and to motivate them in the provision of services.

Of the TB/HIV patients who were interviewed, 14 percent and 17 percent of those at the land and wet cross-border sites, respectively, reported that they had been visited by a CHV before they went to the health facility for TB treatment. CHVs also played an important role in facilitating treatment for TB. Slightly more than half of the TB/HIV patients (56 percent at land sites, 52 percent at wet sites) reported that they get their directly observed treatment (DOT) exclusively through the health facility, while about 20 percent (19 percent at land sites, 24 percent at wet sites) were getting treatment exclusively through the community directly observed treatment, short course (DOTS) (Figure E4). Ensuring that CHVs are properly trained and updated on the policy guidelines for the provision of TB services is important to facilitate early identification of suspected cases in the community, referral of suspected cases for diagnosis, and follow-up of those who are on treatment.

Figure E4. Type of directly observed therapy of the TB/HIV patients at land and wet cross-border sites



Conclusions

The factors affecting the management of TB and TB/HIV services for mobile and cross-border populations in EA border areas are similar. However, harmonize policies are needed for the provision of cross-border services, particularly regarding referral and follow-up of patients, while ensuring that the existing national policy guideless are implemented. In addition, health-care-seeking behavior among patients remains an issue to be addressed, as does strengthening the existing community health systems.



1 INTRODUCTION

Tuberculosis (TB) remains one of the world's main health challenges. Globally, it is estimated that there were 9–11 million cases of TB in 2017, 58 percent of which were among men, 32 percent among women, and 10 percent among children (World Health Organization [WHO], 2018a). TB is one of the top 10 leading causes of death globally. In 2017, 1.2–1.4 million deaths were estimated among HIV-uninfected people and an additional 266,000–335,000 deaths among HIV-infected people (WHO, 2018a). Sub-Saharan Africa bears a disproportionate burden of TB and HIV. In SSA, HIV is the leading cause of death, and TB is among the top 10 causes of death for most countries (Global Burden of Disease, 2013). Three East Africa Community (EAC) countries, Kenya, Tanzania and Uganda, are among the 30 countries with the world's highest burden of TB/HIV (WHO, 2018). Kenya also ranks among the 14 countries with the highest burden of TB, TB/HIV, and multi-drug-resistant TB (WHO, 2018a), thus contends with a triple burden.

Approximately one-third of new TB cases are missed by health systems, especially among populations that are most vulnerable to TB, such as people living with HIV, migrants, dwellers of informal settlements, individuals with poor nutritional status, and individuals with low access to health care services. Tuberculosis is particularly difficult to address in mobile and vulnerable populations because of inadequate identification of TB cases, poor access to TB services, and the lack of harmonized health systems and treatment regimens across borders (WHO, 2018a). Migrant and mobile populations are also at higher risk of HIV infection, which increases the likelihood of TB infection and disease (WHO, 2017). Regular movement across borders provides a route for transmission of TB and HIV infections to families and communities in these areas.

A study conducted in Cameroon showed that cross-border migration was a risk factor for multi-drug-resistant TB treatment, while mobility and migration influenced the proper diagnosis and treatment of TB across the US-Mexico border region. These findings highlight the need to strengthen capacity across borders for optimal detection, treatment, and follow-up of TB patients. However, there is a paucity of data on TB/HIV programming in SSA, particularly among mobile communities in cross-border settings. In the WHO European Region, national TB programs came together and developed the Wolfheze consensus statement which describes a minimum package that aims to break down the key barriers to diagnosis and treatment and data exchange for migrants and other cross-border travelers with TB in that region (Dara, et al, 2012). Currently, there is no such agreement in any of the politico-economic blocks in SSA, hindering efforts to address TB across borders.

In order to achieve the targets set by WHO in its “End TB Strategy” (i.e., a 90 percent reduction in TB deaths and an 80 percent reduction of new TB cases per year by 2030, compared to 2015), TB prevention and treatment services need to be provided within the context of universal health coverage where everyone—irrespective of their socioeconomic status—receives the health services they need. In addition, multi-sectoral collaboration that addresses the social and economic determinants and consequences of TB may need to be considered. In the EAC context, this response needs to address regional mobility patterns and other factors that affect TB vulnerability and the health of migrants and mobile populations. A robust, migrant-sensitive cross-border health system is a key component of an effective response to TB among migrants (International Organization for Migration, 2018).



Over the last five years, the Cross-Border Health Integrated Partnership Project (CB-HIPP) has collected data on cross-border health in the EA region through formative, baseline, and program assessments. Findings of these assessments were used to design and pilot the innovative cross-border health units (CBHUs) model. As a follow-on, CB-HIPP, in collaboration with EAC partner states (Burundi, Kenya, Tanzania, and Uganda) under the ministries of health of the national HIV and TB programs, conducted an assessment of the TB/HIV programming/services at 12 cross-border sites (seven land-border sites, five wet-border sites) from September to December 2018. Findings from this assessment will be used to support and strengthen cross-border TB and TB/HIV service delivery.

1.1 Study Purpose

The overall purpose of the assessment was to generate data to improve management of TB and TB/HIV services for mobile and cross-border populations at EA border areas.

1.2 Specific Objectives

The specific objectives of the assessment were:

- To determine the capacity and profile of TB and TB/HIV service providers at the EA border areas
- To identify barriers and opportunities related to the TB and TB/HIV cascade of care for the general population and specific mobile key and vulnerable populations
- To describe relationships/linkages between TB and TB/HIV service providers and referral systems across borders

Box 1. Overview of CB-HIPP Project

The Cross-Border Health Integrated Partnership Project (CB-HIPP) (September 2014–August 2019) is a regional project funded by the U.S. Agency for International Development (USAID)/Kenya and East Africa Mission and implemented by a team of partners led by FHI 360. The goal of CB-HIPP is to catalyze and support sustainable and African-led regional health development partnerships to improve health outcomes among mobile populations and vulnerable communities residing along Eastern, Central, and Southern Africa transport corridors and cross-border sites by extending quality integrated health services in strategic land and wet cross-border areas and other transport corridor sites.

CB-HIPP targets hard-to-reach mobile populations, including key and priority mobile cross-border populations, with a focus on those who live and work in cross-border areas or travel regularly across countries in the region. Among the project's achievements during this period is implementation of an innovative Cross-Border Health Unit (CBHU) model for direct service delivery for mobile and cross-border populations.



2 METHODS

2.1 Study Design

A mixed-methods approach was used for the TB/HIV service assessment. A descriptive cross-sectional assessment using both quantitative and qualitative methods was conducted to collect data to address the study objectives. Quantitative data were collected using semi-structured questionnaires administered to randomly selected TB/HIV patients and purposively selected health care workers and community health volunteers who were seeing the patients from health facilities within the CB-HIPP catchment area. Key informant interviews (KIIs) were used to collect data on policy and health management perspectives. The field data collection exercise was conducted September–December 2018 at seven land and five wet cross-border sites.

2.2 Study Population and Selection Methods

Table 2.1 shows the study population for the TB/HIV assessment and where and how they were selected.

Table 2.1. Study population and selection methods

Population	Where Selected	Selection Method	Inclusion Criteria
Members of county/district health management team (C/DHMT)	CB-HIPP catchment area	Purposively selected based on the role in TB management and policy at county/district level	Member of County or Sub-County/District HMT, or TB coordinator, laboratory coordinator ≥18 years of age
Health facility in-charge	From participating health facilities within the CB-HIPP catchment area	Purposively selected	Facility in-charge/manager In charge at the facility ≥3 months ≥18 years of age
Health care workers (i.e., clinical, laboratory, pharmacist)	From participating health facilities within the CB-HIPP catchment area	Purposively selected based on their role in TB/HIV service delivery at TB/HIV clinics/units	Qualified health professionals including providing TB services ≥18 years of age
Community health volunteers (CHVs) supporting TB service delivery through DOT	From participating health facilities within the CB-HIPP catchment area	Purposively selected	CHV supporting TB service delivery through DOT at the select facility Active (reporting to facility) ≥3 months ≥18 years of age
Mobile and cross-border TB and TB/HIV patients	From outpatient department and/or TB and HIV clinics	Randomly selected as they exited the health facility	TB patients registered and attending TB clinics at the selected health facility outpatient department ≥18 years of age

Box 2. Data collection sites

Land cross-border sites:

1. Busia (Kenya/Uganda)
2. Malaba (Kenya/Uganda)
3. Taveta/Holili (Kenya/Tanzania)
4. Namanga (Kenya/Tanzania)
5. Rusumo (Tanzania)
6. Katuna (Uganda)
7. Isebania/Sirare (Kenya/Tanzania)

Wet cross-border sites:

8. Muhuru Bay/Kirongwe (Kenya/Tanzania)
9. Port Victoria, Sio Port/Majanji (Kenya/Uganda)
10. Kabonga/Kagunga (Burundi/Tanzania)
11. Kasensero/Kagera (Uganda/Tanzania)
12. Mbita/Namayingo (Kenya/Uganda)



2.3 Sampling and Participant Selection

Data from a non-human subjects research mapping activity conducted December 2017–February 2018 were used to develop the sampling frame for the health facilities and to determine the number of participants to be targeted from each cross-border site. Details for the selection of each study population group are provided below. Further details on the sampling and selection of participants are provided in Annex 2.

2.3.1 *Key Informant Interview (KII) Participants*

KIIs were conducted with policy leaders at regional and district levels to provide different perspectives on policy, service delivery (facility and community), and defaulter tracing across borders. The 12 cross-border sites fall within 13 regions comprised of 18 districts, i.e., 31 health administration areas. At each administrative area, up to three individuals representing different management levels/categories and roles knowledgeable about (involved in) management and delivery of TB services, including the director of health services, TB coordinator, laboratory coordinator, and/or health information management coordinator were interviewed as key informants.

2.3.2 *Health Facility In-Charge/Managers*

CB-HIPP mapped 388 health facilities that provide different levels of TB services (screening, testing, and treatment). Of these, 195 lie within the project catchment area (a stretch of 10 km along the highway and a 5 km area around the border). The assessment was intended to include IDIs with in-charges/managers of all the 195 health facilities (including dispensary/level 2; health center/levels 3 and 4; and hospitals/county, sub-county/district referral hospitals).

2.3.3 *Health Care Workers (HCWs)*

Of the 388 facilities that were mapped, 157 (40 percent) had patients who were registered and on TB treatment. For the assessment, HCWs from all 157 health facilities that were providing TB treatment and had active registered patients were targeted for possible inclusion. At each facility, three HCWs who provided TB services, for a total of 471 HCWs, were to be selected. This number was determined to ensure representation from all the mapped facilities within the project catchment area and in consideration of the cost of the assessment. At facilities with three or fewer HCWs providing TB services, all staff were to be interviewed. For facilities with more than three HCWs, three of the HCWs were randomly selected for interviews to ensure representation from the different cadres (i.e., medical doctors, clinical officers, nursing officers, pharmacists, and lab technologists), depending on the facility category and staffing levels. Random selection was done by generating a list of HCWs (stratified by type/cadre) before sampling.

2.3.4 *Community Health Volunteers (CHVs)*

The study targeted selection of eight CHVs at each of the 12 cross-border sites (for a total of 96). To ensure equal representation, four CHVs were to be selected from each side of the border. These eight CHVs from each cross-border site were purposively selected from health facilities within the project catchment area. Where there were more than eight facilities within the catchment area, the eight health facilities closest to the border were identified and one CHV was selected from each health facility. The selection of the CHV at the facility was done by the health facility in-charge/manager or an HCW who was responsible for community service delivery. At each facility, the most active CHV (depending on the regularity of reporting and the number of clients the CHV supported) was identified.

2.3.5 *TB/HIV Patients*

Data from the non-human subjects research mapping activity conducted December 2017–February 2018 were used to develop a random sampling frame for the exit interviews. Of the 388 health facilities that were mapped, 157 had records of TB patients enrolled on treatment. The study aimed



to include all the 157 health facilities that had records of patients on TB treatment; therefore, no sampling of health facilities was done. A sample size of 220 was determined for each of the cross-border sites for a total of 2,640 across the 12 cross-border sites. Details of sample size calculation are presented in Annex 2.

The number of patients to be selected from each side of the border was determined proportionate to the number of patients registered in treatment as per the initial mapping exercise. A take-all approach was adopted for the cross-border site with the lower number of registered TB patients, provided that the number did not exceed half of the calculated sample (110). At the facility, the TB register and record of patients was used to generate a sampling frame, and a simple random sampling method was subsequently used to identify the respondents. Table 2.2 below shows a distribution of the study participants by target population and cross-border site. The sample size for TB and TB/HIV patients was estimated based on the number of patients receiving TB treatment during mapping, which was conducted several months before the assessment. Due this and other factors, including the mobility of patients at the border facilities, the actual/achieved sample size was much lower than the expected sample size.

Table 2.2. Expected and actual samples realized in each site

Border Type	Cross-Border Site Name	Facility In-charges		Health Care Workers		Community Volunteers		TB/HIV Patients	
		Expected	Sampled	Expected	Sampled	Expected	Sampled	Expected	Sampled
Land cross-border sites	Busia	19	9	33	26	8	8	220	134
	Malaba	11	17	30	41	8	4	220	86
	Taveta/Holili	15	12	36	28	8	8	220	108
	Namanga	9	9	30	23	8	7	220	187
	Isebania/Sirare	14	6	45	19	8	9	220	109
	Rusumo	4	2	9	6	4	4	110	27
	Katuna	5	16	24	23	4	5	110	71
	All land-sites	77	71	207	166	48	45	1320	722
Wet cross-border sites	Muhuru-Bay/Kirongwe	32	20	81	57	8	9	220	157
	Sio Port/Majanji	12	10	48	35	8	6	220	84
	Kabonga/Kagunga-Lusolo	32	11	27	31	8	9	220	157
	Bukoba-Kagera/Kasensero	10	22	39	39	8	9	220	186
	Mbita-Mfangano/Namayingo	32	14	69	39	8	7	220	162
	All wet-sites	118	77	264	201	40	40	1100	746

2.4 Data Collection and Management

2.4.1 Data Collection Tools

Different data collection tools were used according to type of study participant. All data collection tools (consent forms, interview guides, and questionnaires) were developed/adapted in English and translated into the relevant local languages for the community interviews, and the national/official language for health care managers and workers (i.e., Kiswahili for Kenya and Tanzania; Luganda,



Lusamya, Lukiiga, and Ateso for Uganda; and French and Kirundi for Burundi). A key informant interview guide was developed for the district managers/coordinators and an in-depth interview guide for the facility in-charges. Semi-structured questionnaires, which were programmed on tablets using Open Data Kit (ODK), were used for face-to-face interviews with health care workers, community health workers, and TB/HIV patients. Prior to being deployed for data collection in the field, the data collection tools were pre-tested and refined further (e.g., for the clarity of the questions, accuracy of the translation, completeness of fixed-response choices, and flow of the interview).

2.4.2 Supervision and Monitoring

In each country, the local principal investigator (PI) or co-PI was responsible for oversight of the data collection by conducting supervisory visits to ensure ethical compliance, technical accuracy, and data quality. On each side of the border, a supervisor coordinated with the local co-PI. He/she was responsible for documenting and reporting protocol violations. All members of the field team were trained to strictly adhere to the study protocol. The supervisor received additional training to identify, mitigate, document, and report protocol violations to the local co-PI, who would then liaise with the PI and the local ethics review board.

2.4.3 Selection and Training of Field Study Team

Experienced research assistants who were fluent in English or French and respective local languages were recruited for this study and participated in a five-day training. Knowledge of TB and local health systems were considered when selecting field teams. At each site, the field team consisted of a field supervisor and approximately eight research assistants, depending on the sample size. The training topics and activities included the basics of data collection, etiquette during fieldwork, a detailed review of data collection tools (interview guides, questionnaires, and consent forms), and pilot testing of the data collection tools and procedures. A special session was dedicated to research ethics to ensure that the team was prepared to adhere to ethical requirements, including confidentiality, obtaining informed consent, and respect for the respondents.

2.4.4 Data Management, Cleaning, and Analysis

2.4.4.1 Quantitative Data

Quantitative data were to be collected by trained research assistants using password-protected tablets and then uploaded daily onto a server located at the FHI 360 Nairobi office after review by the supervisor. The data were transferred electronically and stored in a common database at the FHI 360 Nairobi office. The PI and research team had access to the data at the FHI 360 office. Data were deleted from the tablets once they had been backed up at the FHI 360 office.

Data cleaning codes for the quantitative data were developed to check that all skip patterns were executed correctly and the responses to the questions appropriately recoded in preparation for analysis. Frequencies and proportions were calculated for categorical variables. The analyses are presented here by percentages in cases where the denominator was at least 25. For cases where the denominator was less than 25, the actual numbers are presented. Analyses were conducted using STATA software (version 12) for Windows. The findings are presented by wet and land border sites. This format is intended to provide information to inform targeted interventions by respective governments and implementing partners who may need to use the data for this purpose.

2.4.4.2 Qualitative Data

KIs and in-depth interviews (IDIs) were collected by a team of trained research assistants. The interviews, which were audio-recorded, were transcribed using NVivo by a qualified qualitative researcher. The audio recordings and transcripts were stored on password-protected computers. All password-protected data were sent electronically via email to FHI 360 Nairobi or stored securely directly onto FHI 360's network. No names or personal identifiers were attached to any of the data collected or the informed consent documents. The data obtained were used to develop matrices to



summarize information and provide descriptions. The qualitative data were subjected to content analysis. Key perspectives, ideas, views, and emergent themes were summarized for the main thematic areas investigated. All results are presented in a manner to prevent any deductive disclosure of a participant.

2.4.4.3 Characterizing mobility

In this assessment, mobility of patients was defined as patients who reported traveling to another district/county or country at least once within the three months preceding the assessment. The potential effects of mobility on some aspects of TB service delivery and health care seeking behaviors were compared between those who were considered to be mobile and those who were not.

2.5 Ethical Considerations

The assessment protocol was submitted to and approved by FHI 360's Protection of Human Subject Committee (PHSC) and the respective institutional review boards of each of the four participating countries: National Research Ethics Committee (Burundi); African Medical and Research Foundation (AMREF) (Kenya); National Institute for Medical Research (NIMR) and a research permit from the Ministry of Local Government (TAMISEMI) (Tanzania); and The AIDS Support Organization (TASO) (Uganda).



3 RESULTS

This section presents results from the TB and TB/HIV assessment conducted in four East African countries (Burundi, Kenya, Tanzania, and Uganda). It is structured to provide results from the 12 cross-border sites and highlight findings from the seven land and five wet cross-border sites. Where applicable, data from the individual cross-border sites are highlighted. The data on which the report is based, including data disaggregated by site and country, are presented for reference in the tables in Annex 1. Additional summary reports have been developed that highlight the key findings from the cross-border sites between countries, as well as country-specific data, so that the respective countries can use and follow up on recommendations, as needed.

3.1 Characteristics of the Study Participants

3.1.1 *In-charges and Other Health Care Workers*

A total of 148 health facility in-charges/managers were interviewed from 148 health facilities located within the 12 land and wet cross-border sites targeted for the TB/HIV assessment. Seventy-one (48 percent) were in-charges from health facilities in the land cross-border sites, and 77 (52 percent) were from health facilities in the wet cross-border sites.

A total of 367 HCWs from 173 health facilities (78 land sites, 95 wet sites) providing TB services were also interviewed for the assessment. Of these, 166 (45 percent) were interviewed at the land cross-border sites, while the remaining 201 (55 percent) were working at the wet cross-border sites (Annex Table 1). Most of the HCWs (79 percent) interviewed were from public health facilities, while 10 percent were from faith-based health facilities. A majority of the HCWs who were interviewed were either nurses (42 percent) or clinical officers (19 percent) (Figure 3.1.1). Few of the HCWs in any of the countries were medical officers. As shown in Figure 3.1.2, most of the HCWs (84 percent overall) were registered with their respective professional bodies: 90 percent in Burundi, 94 percent in Kenya, 67 percent in Tanzania, and 86 percent in Uganda.

Figure 3.1.1. Distribution of health care worker study participants by type

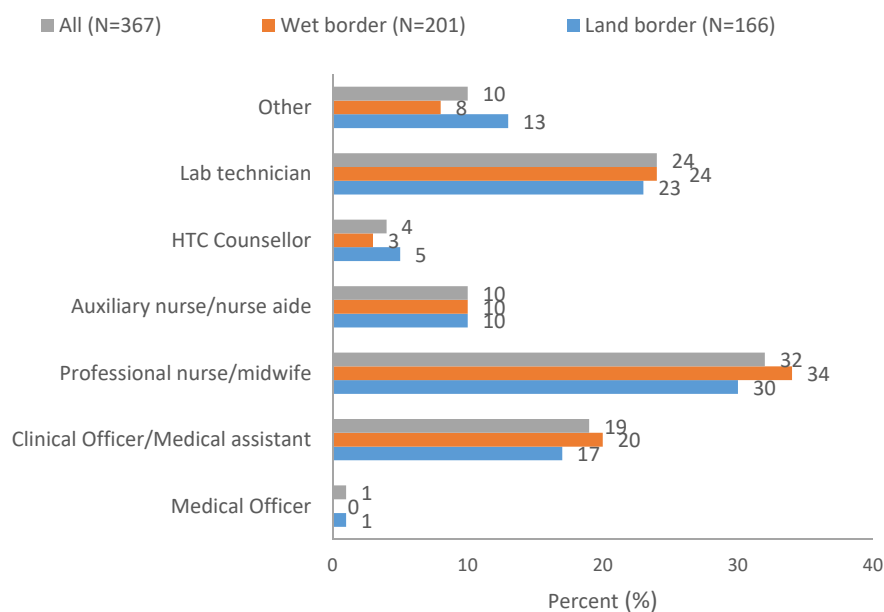
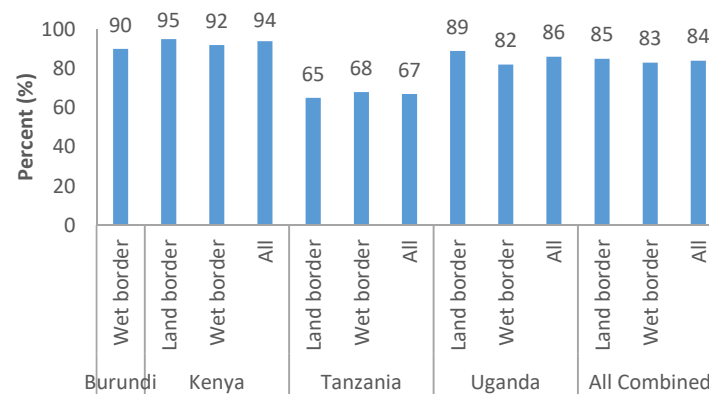


Figure 3.1.2. Percentage of health care workers registered with their respective professional bodies



3.1.2 Community Health Volunteers (CHVs)

A total of 85 community health volunteers (45 in land sites, 40 in wet sites) were interviewed from a total of 68 health facilities (35 in land sites, 33 in wet sites). Overall, more than one-third of the CHVs who were interviewed were ages 50 years or older (40 percent and 35 percent at the land and wet cross-border sites, respectively), and 46 percent were female (40 percent and 53 percent at the land and wet cross-border sites, respectively) (Table 3.1).

Table 3.1. Characteristics of the community health volunteers interviewed

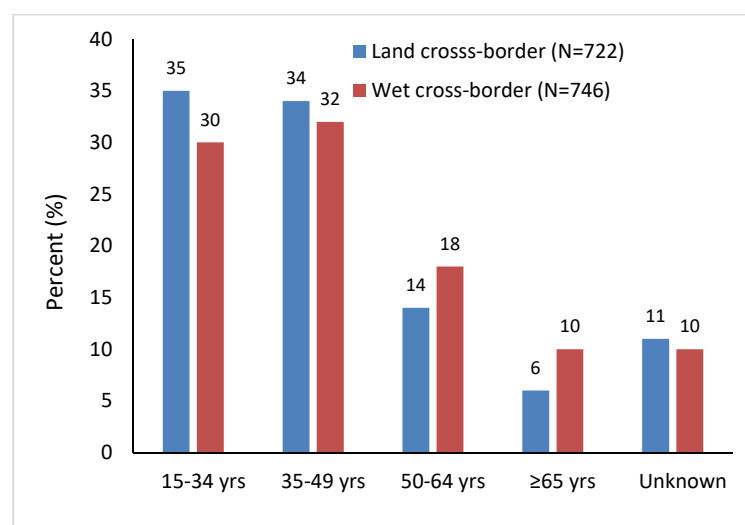
Characteristics	Land Border	Wet Border	All
	%	%	%
Age group			
<35 years	13	15	14
35–49 years	47	50	48
≥50 years	40	35	38
Sex			
Male	60	47	54
Female	40	53	46
Level of education			
None	0	0	0
Some primary	53	52	53
Some secondary	40	40	40
College/university	7	8	7
Type of DOT supporter			
CHV	93	90	92
Former TB patient	2	0	1
Community leader	0	2	1
Other/don't know	5	8	6
N	45	40	85



3.1.3 TB and TB/HIV Patients

A total of 1,468 TB/HIV patients were interviewed during the assessment, 722 (49 percent) from the land cross-border sites, and 746 (51 percent) from the wet cross-border sites (Annex Tables 2a and 2b). Most of the patients were male (60 percent at land sites, 55 percent at wet sites). As with the HCWs, most of the patients (92 percent at land sites, 81 percent at wet sites) were being treated at public health facilities. For both land and wet cross-border sites, most of the patients were less than 50 years of age (Figure 3.1.3 and Annex Tables 2a and 2b).

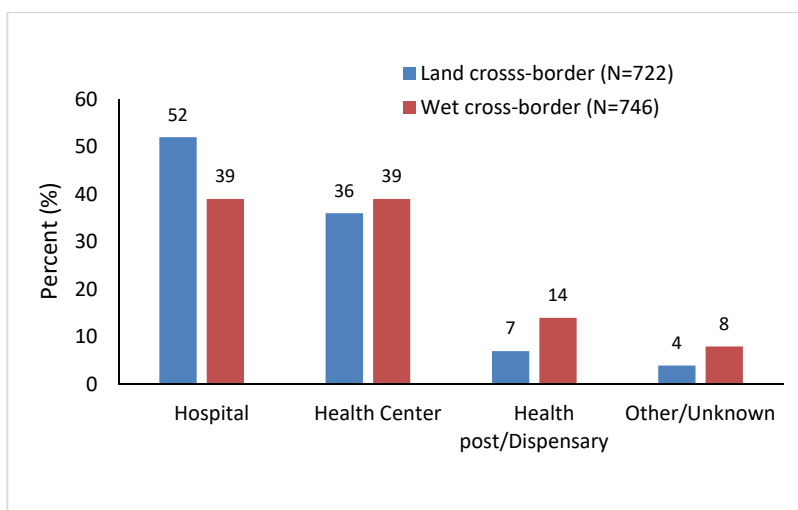
Figure 3.1.3. Age distribution of the TB/HIV patients



More than half (52 percent) of the TB/HIV patients at the land cross-border sites were enrolled in treatment at a hospital, while 36 percent and 7 percent were enrolled at a health center (levels 3 and 4) and dispensary (level 2), respectively. Among those who were interviewed from the wet cross-border sites, 39 percent were enrolled for treatment at a hospital, while 39 percent and 14 percent were receiving treatment at a health center and dispensary, respectively (Figure 3.1.4 and Annex Tables 2a and 2b).

Figure 3.1.4. Distribution of TB/HIV patients by health facility level





As with the other characteristics (age and sex), the distribution of the education levels of TB/HIV patients at the land and wet cross-border sites was similar. Thirteen percent (land sites) and 14 percent (wet sites) had no formal education, while 52 percent (land sites) and 58 percent (wet sites) had primary education (Annex Tables 2a and 2b).



3.1.4 Key Informant and In-depth Interview Participants

Overall, there were a total of 106 KIIs conducted with policy leaders at regional and district levels within the catchment areas of the cross-border sites. In addition to the KIIs, 82 IDIs were conducted among the health facility in-charges. Table 3.2 shows how the KIIs and IDIs were distributed across the four countries where the assessment was conducted.

Table 3.2: Summary of the key informant interviews and in-depth interviews by country

Type of Interview	Country	Number
Key informant interviews	Kenya	43
	Uganda	33
	Burundi	7
	Tanzania	23
	Total	106
In-depth interviews	Kenya	30
	Uganda	12
	Burundi	0
	Tanzania	40
	Total	82

3.2 KEY FINDINGS: Health Facility Capacity and Provision of TB/HIV Services

3.2.1 Training of HCWs for Provision of TB/HIV Services

Health care providers were asked whether they had received at least basic or refresher training for several aspects of TB/HIV service provision, including screening, diagnosis, and treatment of TB; treatment of drug-resistant (DR) TB, and provision of IPT, among others. As shown in Table 3.3, a majority (over 90 percent) of the HCWs had been trained on the various aspects of the TB-related services that they were providing. This was the case for HCWs both at the land and wet cross-border sites. However, there were some notable cases where the HCWs were not equipped with the necessary training for the services they provided. In Burundi, only half of the 20 HCWs had been trained on treatment of DR TB, while in the wet cross-border sites in Tanzania, 33 percent of those who provided IPT (n=103) had not received any the requisite (basic or refresher) training.



Table 3.3. Health care workers who had received training (basic or refresher) for the specific service they provided

Characteristic	Burundi	Kenya			Tanzania			Uganda			All Combined		
	Wet border*	Land border	Wet border	All	Land border	Wet border	All	Land border	Wet border	All	Land border	Wet border	All
		%	%	%	%	%	%	%	%	%	%	%	%
TB screening	16/20	100	99	99	95	93	94	97	93	95	98	94	96
Providing TB information, education, and communication and patient education	20/20	97	96	96	98	93	95	93	93	93	96	95	95
Diagnosis and treatment of TB	19/20	100	99	99	91	98	95	98	95	97	97	98	97
Diagnosis and treatment of HIV	18/20	97	100	99	98	97	97	100	98	99	98	98	98
Diagnosis and treatment of DR TB	10/20	95	97	96	91	93	92	100	98	99	96	92	93
Provision of IPT	20/20	97	96	96	86	77	81	93	98	95	93	91	92
Management of TB contacts	28/20	98	96	97	91	95	93	95	91	93	95	94	95
TB infection control	19/20	98	99	99	91	97	94	95	95	95	95	97	96
HIV testing and counseling/provider-initiated testing and counseling	20/20	100	95	97	98	93	95	95	100	97	98	96	97
Antiretroviral therapy (ART)	20/20	97	96	96	98	93	95	95	98	96	96	96	96
Prevention of mother-to-child transmission	20/20	97	97	97	100	93	96	98	100	99	98	97	98
Referral	20/20	95	96	96	95	92	93	92	95	93	94	95	95
N	20	62	77	139	43	60	103	61	44	105	166	201	367

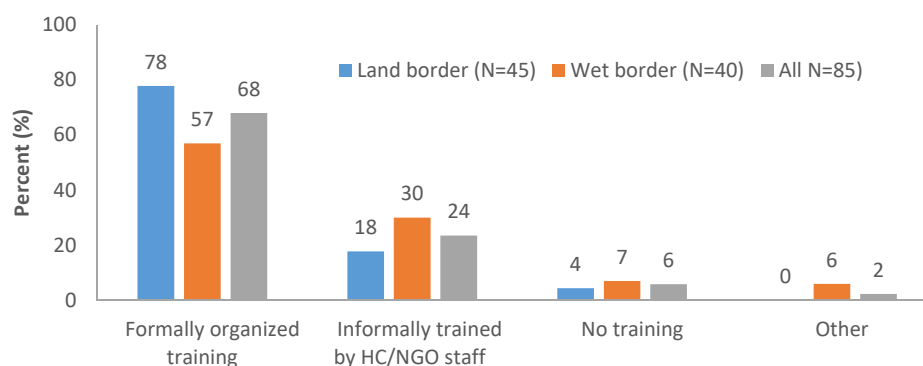
*Absolute numbers are provided where the denominator was less than 25.

3.2.2 Training of Community Health Volunteers

As shown in Figure 3.2.1, most of the CHVs interviewed had received some form of training to facilitate their TB service provision. Overall, 68 percent reported that they received formal training (78 percent at land sites, 57 percent at wet sites). An additional 24 percent had received some informal training (18 percent at land sites, 30 percent at wet sites).



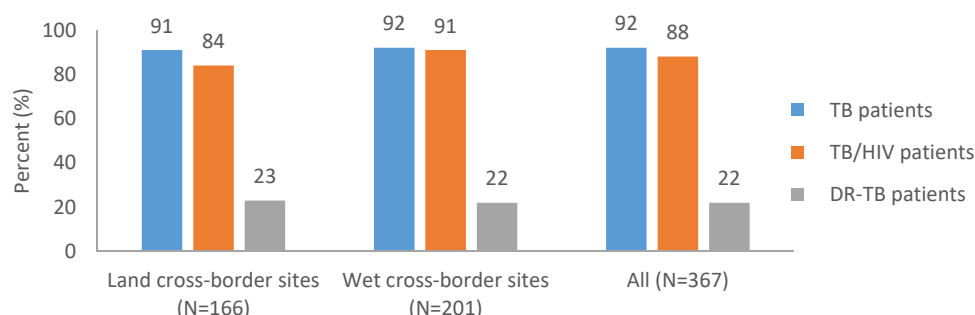
Figure 3.2.1. Training of the community health volunteers



3.2.3 Service Provision to TB and TB/HIV Patients

As shown in Figure 3.2.2, most of the HCWs (91 percent at land sites, 92 percent at wet sites) reported providing services to TB patients within the three months preceding the assessment. A similarly high percentage of HCWs across both land and wet cross-border sites had seen TB patients who were co-infected with HIV (84 percent at land sites, 88 percent at wet sites) in the last three months. One in every five HCWs (23 percent at land sites, 22 percent at wet sites) reported providing services to a patient with DR TB within the three months preceding the assessment. As shown in Annex Table 3, the highest percentage of HCWs who reported seeing patients with DR TB was observed in Tanzania (35 percent at land sites, 37 percent at wet sites).

Figure 3.2.2. Type of TB patients served by health care workers in the last three months



Findings from the narratives showed that health providers treat all the populations equally and have positive attitude toward them. It was clear that service providers do not discriminate against the different populations, regardless of their nationality.

The participants stated that all populations (including key and vulnerable populations) have equal rights to health care. Participants

"Providers here, we don't view them like they are special people... They are just like any other client, because he is a... yeah... the client may be a key population maybe he is having HIV and then TB is coming in, we treat them like any other client. We don't separate them, like these are key populations or what. We give them the service that is due."

– IDI, health care worker, Muhuru Bay, Kenya

"And sometimes we give a special attention to them, especially like the truck drivers who come, and they need maybe those services to be offered very fast so that you can go continue with their journey."

– IDI, health facility in-charge, Malaba, Kenya



from private facilities also stated strongly that these populations are all important to them and that they are provided with services equally whenever they come for services, provided that he/she can pay for them.

It also emerged that, where necessary, HCWs extend some of their services (such as contact tracing and follow-up of patients) to the other side of the border. A case in point was in Busia, Kenya, where health facilities operating at the border also organized outreach activities to provide for health services and help with tracing for the TB clients lost to follow-up.

It was clear from the interviews across the different sites that all TB/HIV services are offered at no cost to the client for public facilities, regardless of the client's nationality. Some respondents in the assessment did indicate that some private facilities do charge for testing services for TB.

3.2.4 Supportive Supervision for Health Care Workers

As shown in Annex Table 4, among the HCWs at the land cross-border sites, 59 percent and 22 percent reported that they received supportive supervision monthly and quarterly, respectively. Similarly, 60 percent and 29 percent of the HCWs at the wet cross-border sites reported that they received supportive supervision on a monthly and quarterly basis, respectively. Among the HCWs interviewed at the land cross-border sites, 39 percent reported that they had received supportive supervision from the (C/DHMT), while 9 percent had received supervision from the national Ministry of Health (MOH) headquarters. Among those at the wet cross-border sites, 32 percent had received supportive supervision from the CHMT/DHMT, while 4 percent had received it from the national MOH headquarters.

3.2.5 Policy Guidelines for TB/HIV Service Provision

Of the 74 facility in-charges interviewed, 64 acknowledged that TB/HIV policies and guidelines do exist. At the policy management level, 34/36 KII respondents who were members of the C/DHMTs confirmed that there are specific TB/HIV policies and guidelines in operation from the national governments. The existence of these policies and guidelines was acknowledged across the different study sites. However, it also emerged from the IDIs that some facility in-charges were not aware of the existing TB/HIV guidelines because, according to them, there was no documentation to show that they existed.

"We actually we don't treat them like Ugandans. We just give them [the] same services we give to a Kenyan. Whatever is free they just enjoy, whatever is there they will enjoy, they have equal rights."

– IDI, health facility in-charge, Malaba, Kenya

"I think all the health providers, once you get a person who is eligible for maybe TB treatment or for presumptive cases, we normally have outreach outside this clinic to mostly those Ugandans who have relatives here in Kenya, so we normally do a contact tracing."

– IDI, health facility in-charge, Busia, Kenya

"Not really, this is a government facility, the services are free. They are very, very free to Ugandans; not [only] Ugandans, but to all our clients, because we have some from Kenya."

– IDI, health facility in-charge, Uganda

"Here you don't pay even if you are from Tanzania. We don't care where you come from, here we just give the services."

– IDI, health facility in-charge, Taveta, Kenya

"Since it's a private facility, we ask for testing charges, UGX.10, 000 for TB and UGX.5000 for HIV. Treating we don't do, we refer."

– IDI, health facility in-charge, Katuna, Uganda

"The booklet they provided us with, they have policies on TB/HIV management. It speaks of dosages, treatment, and prevention and even the relationship [between] HIV/TB."

– IDI, facility in-charge, Busia, Uganda

"What we use is the national guideline. It is being revised. When it is being implemented, our coordinator always calls in the staff for sensitization, so the only tool we use for reference is the national TB guideline and we incorporate it with HIV because TB-HIV they go together. Like currently, we have some few changes. Like already we have known in the treatment of HIV and TB, there are some new drugs coming in, and there [is] also management of special groups like pregnant mothers. I thought it was last week when the new guideline was being sensitized in Mbita, so I think he keeps updating the staff, and even he does it himself. Like now, if he finds people, he could do it to save time."

– IDI facility in-charge, Mbita/Mfangano,



Respondents indicated that the TB/HIV policies were issued by the national government, then cascaded down to the counties/districts. Among the key elements of the policy guidelines that were mentioned by the respondents were free treatment for all without discrimination, guidelines on TB/HIV treatment and care, management of special groups, treatment and prevention of TB/HIV, management of infectious diseases, and dosages. Participants clearly indicated that although these policies are not specific to mobile and cross-border populations, all populations are served the same way and have the right to health care regardless of their origin.

Summary 1. Capacity of TB/HIV Service Providers

- Nearly all of the TB/HIV service providers had received either basic and/or refresher training on diagnosis and treatment of TB.
- Capacity of the HCWs, as indicated by training received, was similar between those interviewed at the land sites and those at the wet sites.
- There was an apparent gap in training for HCWs in the management of DR TB and provision of IPT, as indicated in some of the responses from participants in Burundi and Tanzania.
- A substantial number of HCWs, both at the land and wet cross-border sites, reported having seen patients with DR TB within the last three months.
- TB/HIV services at the public health facilities are provided to clients free of charge, while private facilities charge a fee.
- TB/HIV patients who seek services across the border are served without discrimination.
- Although most health facility in-charges across the different sites and members of the C/DHMTs acknowledged the existence of national guidelines for the provision of TB/HIV services, they did not provide guidance on how to provide services/manage TB and TB/HIV clients who cross country borders.

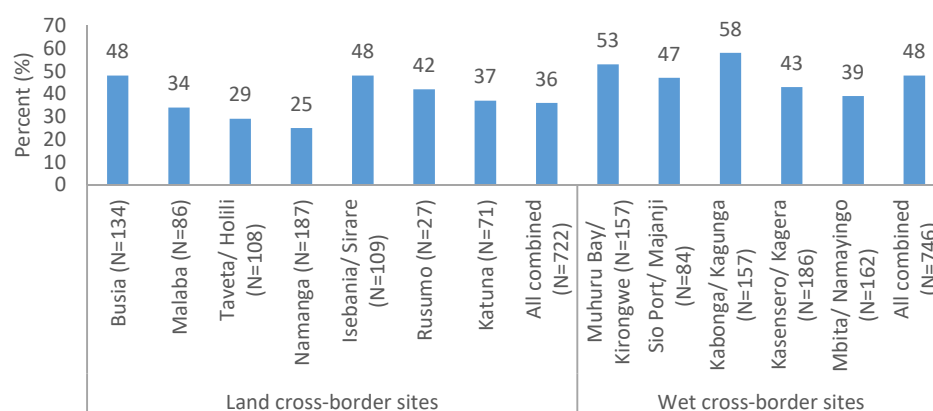


3.3 KEY FINDINGS: Barriers and Opportunities for Provision of TB/HIV Services

3.3.1 Household Sizes of the TB/HIV Patients

A majority (more than 80 percent) of the TB/HIV patients interviewed were living with one or more people in their households. More than one-third (36 percent) of the patients at the land cross-border sites, and nearly half (48 percent) at the wet cross-border sites were living in households with five or more other people (Figure 3.3.1 and Annex Tables 6a and 6b).

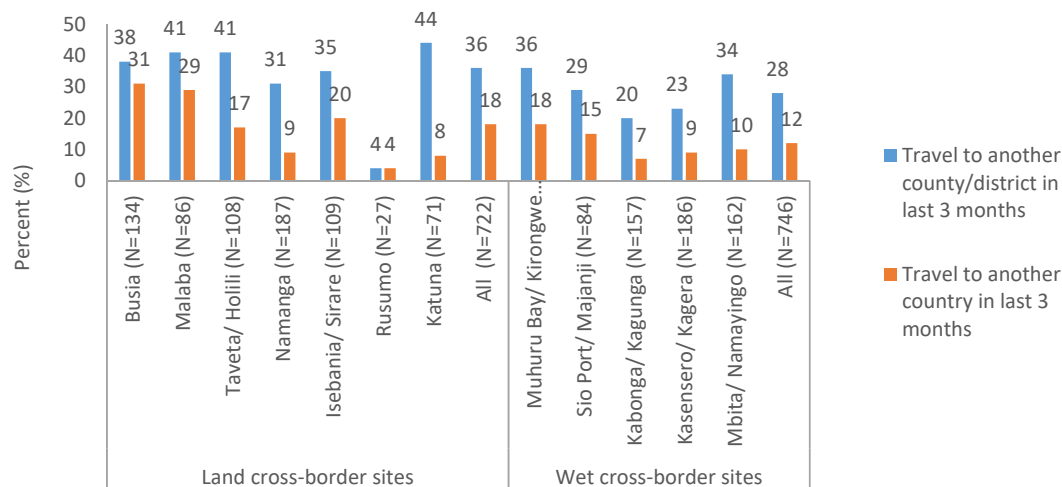
Figure 3.3.1. TB/HIV patients who lived with five or more household members



3.3.2 Mobility of TB/HIV patients

In this assessment, a mobile TB/HIV patient was defined as a patient who had traveled to another county/district or country within the three months preceding the survey. Overall, mobility was slightly lower among the TB/HIV patients interviewed at the wet cross-border sites compared to their counterparts at the land sites. Among the patients who were interviewed at the land cross-border sites, 36 percent (36 percent of men, 33 percent of women) reported travel to another county/district, while 18 percent (19 percent of men, 15 percent of women) had travelled to another country (Figure 3.3.2 and Annex Tables 7a and 7b). Among those interviewed at the wet cross-border sites, 28 percent (29 of men, 22 percent of women) had traveled to another county/district, while 12 percent (12 percent of men, 10 percent of women) had traveled to another country within the three months preceding the assessment.

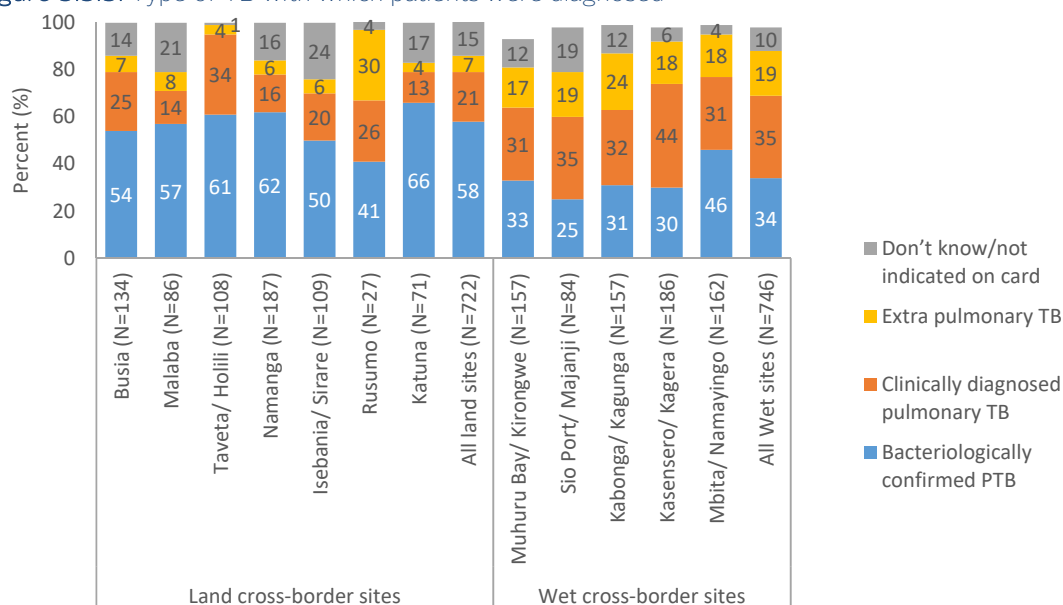
Figure 3.3.2. TB/HIV patients who reported traveling away from their residence in the last three months



3.3.3 TB Diagnosis and Screening for TB among Household Contacts

In addition to the face-to-face interviews, the research assistants also reviewed the TB registers at the facility and the treatment cards to get additional information related to the patient's TB management. Of the TB/HIV patients who were interviewed at the land cross-border sites, 58 percent had bacteriologically laboratory-confirmed TB, 7 percent had extrapulmonary TB, and 21 percent had been clinically diagnosed with TB. The type of TB was not known for 15 percent of the patients at the land sites (Figure 3.3.3 and Annex Tables 8a and 8b).

Figure 3.3.3. Type of TB with which patients were diagnosed



Among those interviewed at the wet cross-border sites, a comparatively lower percentage had bacteriologically confirmed TB (34 percent) than the 58 percent at the land sites) and a higher percentage (35 percent vs. 21 percent) were clinically diagnosed with TB. Notably, the percentage of those diagnosed with extrapulmonary TB was higher at the wet sites (19 percent) than the land sites (7 percent). Cases of clinically diagnosed TB at the five-wet cross-border sites ranged from 31 percent (at the Muhuru Bay/Kirongwe site) to 44 percent (at the Kasensero/Kagera site). At the Kasensero/Kagera site specifically, the percentage of patients with clinically diagnosed TB was 48 percent among the patients interviewed on the Tanzanian side of the border and 42 percent on the Ugandan side. The Rusumo wet cross-border site in Tanzania had the highest percentage (30 percent) of patients diagnosed with extrapulmonary TB.

IDIs among the facility in-charges indicated the existence of clear guidelines for screening all patients suspected of TB. If any of the screening questions is met, the patient is sent for a chest x-ray, or a sputum sample is collected for diagnosis of TB bacteriologically or using GeneXpert. Once confirmed as positive, the patient is started on TB treatment.

Twenty-eight percent (29 percent of men, 30 percent of women) of the TB/HIV patients who were interviewed at the land cross-border sites reported that at least one family member had also been screened

"Cough of any duration, if the cough is present, you go ahead and collect sputum as you look for other symptoms of TB. If the client can produce sputum, you collect sputum; those ones that you can send for x-ray you send for x-ray and then this sputum that you collect we are sending for GeneXpert. If the GeneXpert results come back positive of TB, you start on treatment. If it is negative, then there is no TB. If the test is negative, it is not presumptive TB. We provide routine management."

– IDI, facility in-charge, Mbita Mfangano, Kenya

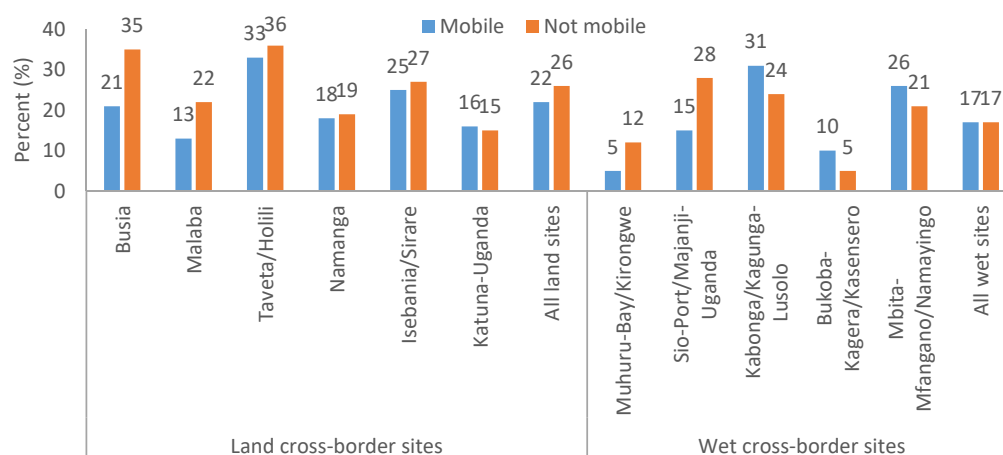
"We screen all patients who are coughing. If they have a productive cough, we ask for sputum. Those with dry cough and cannot produce sputum, we refer them for x-ray. For HIV co-infected, their sputum is all for GeneXpert."

– IDI, facility in-charge, Malaba, Uganda



for TB at the health facility. A slightly lower percentage (15 percent; 16 percent of men, 15 percent of women) reported that their household members and/or co-workers had been screened for TB at home or in the workplace (Annex Table 8a). The Katuna site in Uganda had the highest percentage of patients who reported that any family member had also been screened for TB at the health facility. Among the patients interviewed at the wet cross-border sites, 25 percent (27 percent of men, 26 percent of women) and 19 percent (22 percent of men, 19 percent of women) reported that their family members had been screened at the facility and at home, respectively. The Mbita-Mfangano/Namyingo site had the highest percentage of patients who reported screening for their family members at the facility where they were receiving treatment for TB (38 percent). For this specific site, 37 percent of the patients on Kenya side of the border and 39 percent on the Uganda side had their family members screened for TB (Annex Table 8b).

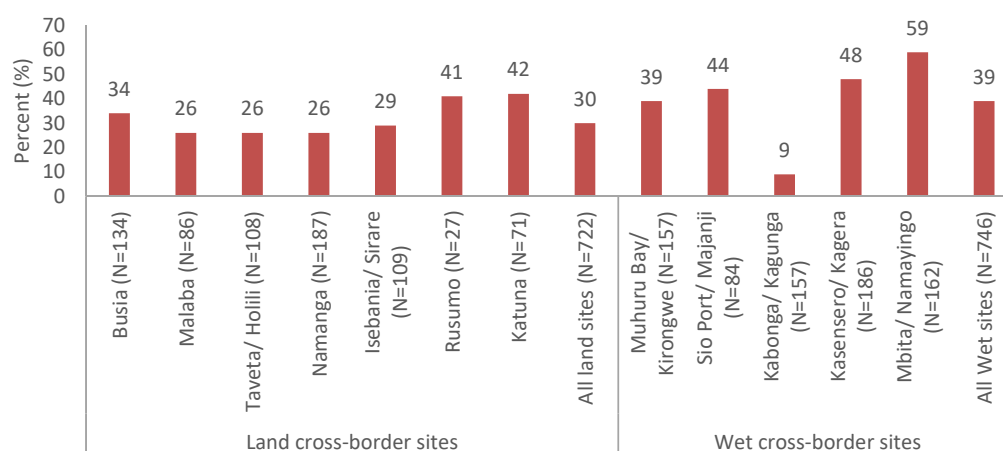
Figure 3.3.4. Patients with a clinical diagnosis of TB by mobility classification



3.3.4 TB and HIV Co-infection and Integration of Services

Among the TB/HIV patients interviewed, 30 percent (26 percent of men, 43 percent of women) at the land cross-border sites were living with HIV, while 39 percent (38 percent of men, 44 percent of women) of their counterparts at the wet sites were HIV infected. These data were based on those who self-reported an HIV-positive status, as well as verified HIV-infected cases from patients' clinical records. Among the land cross-border sites, Katuna (on the Uganda side) had the highest percentage (42 percent) of TB patients co-infected with HIV, while 26 percent of the patients of Malaba, Taveta/Holili, and Namanga were co-infected with HIV (Figure 3.3.5 and Annex Tables 8a and 8b).

Figure 3.3.5. TB patients co-infected with HIV

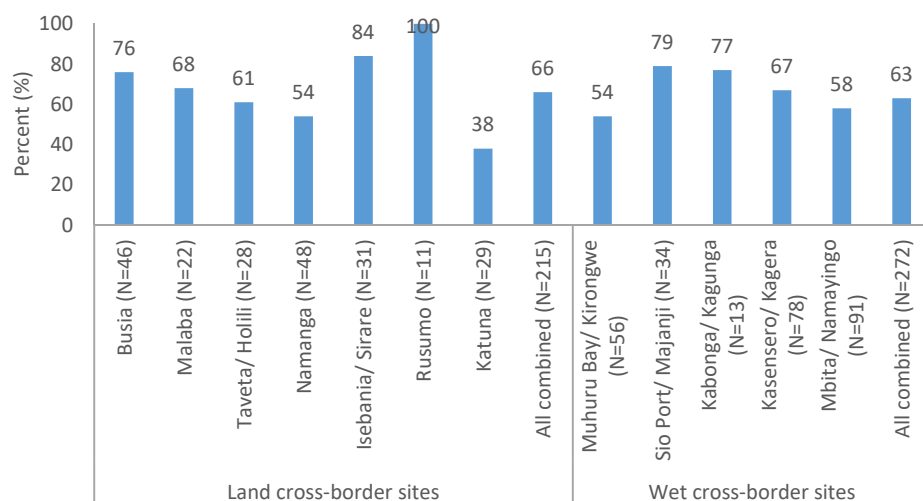


Among those interviewed at the wet cross-border sites, the Mbita-Mfangano/Namayingo cross-border site had the highest percentage of TB patients co-infected with HIV (59 percent) followed by Kasensero/Kagera (48 percent). The site with the lowest level of TB-HIV co-infection was Kabonga/Kagunga (9 percent).

Of the TB patients co-infected with HIV, nearly all (97 percent of both those interviewed at the land and wet cross-border sites) were enrolled on antiretroviral therapy (ART).

About two-thirds of patients (66 percent at land sites, 63 percent at wet sites) had also been screened for TB at the ART clinic when they learned of their HIV-positive status (Figure 3.3.6 and Annex Table 8a and 8b).

Figure 3.3.6. HIV-infected patients screened for TB when they tested positive for HIV



In IDIs with the health facility in-charges and KIIs with members of the C/DHMTs, most confirmed that it was routine to also test patients for HIV if they are screened and found to have TB. Similarly, the facility in-charges indicated that it was a policy requirement for them to screen patients living with HIV for TB.

It was clear from most of the KII respondents that most of the accredited public, private, and faith-based facilities did provide integrated services. Respondents mentioned that integration of services in most facilities had been achieved through the support of partners such as AMPATH, APhiAPlus, and MSF in Kenya, and RHITES-EC in Uganda. For facilities where the services were not integrated, the health care workers referred patients accordingly.

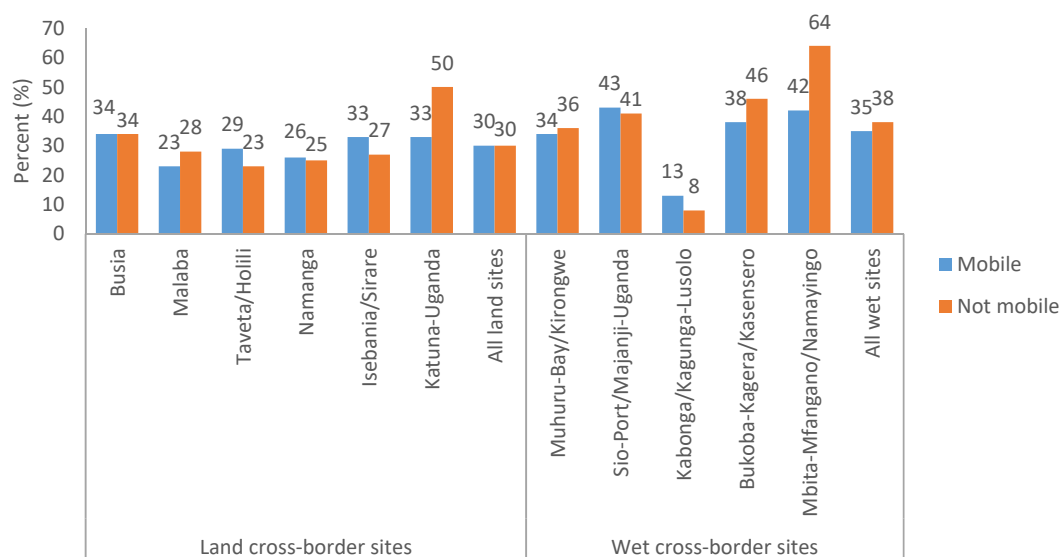
Overall, the distribution of patients who were co-infected with TB and HIV by their mobility characterization was similar across the land cross-border sites (30 percent for mobile patients vs. 30 percent for non-mobile patients), as well as at the wet cross-border sites (35 percent for mobile patients vs. 38 percent for non-mobile patients) (Figure 3.3.7). However, the percentage of those who were co-infected with TB and HIV was higher among those who were not mobile compared to those who were mobile at the Katuna site (50 percent vs. 33 percent) and at the Mbita-Mfangano/Namayingo site (64 percent vs. 42 percent).

“Even if they were [already] tested, we would like them to be re-tested unless they are patients who have come from the PAC who are already on care... because somebody will come and tell you, of course I have been tested, but how will you [have] proof? So we make sure that all those patients are being screened...tested whether ... unless you are HIV positive and... you have been referred from the HCC to the TB clinic.”

– KII health facility-in-charge, Isebania, Kenya



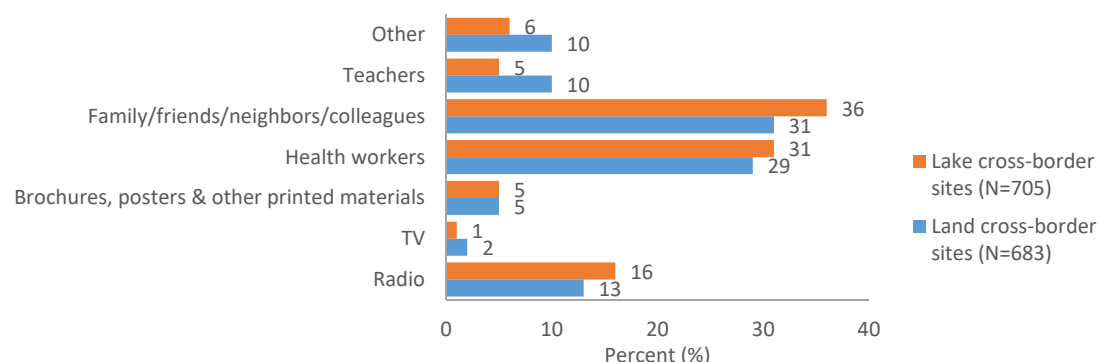
Figure 3.3.7. Percentage of patients with a TB and HIV co-infection by mobility classification



3.3.5 Knowledge, Attitudes, and Perceptions of TB

Overall, the sources of information regarding TB among TB patients interviewed at the land sites were similar to those interviewed at the wet cross-border sites. Most of the TB/HIV patients interviewed reported that they first learned of TB through either family members or friends (31 percent for respondents at land sites, 36 percent at wet sites), or through a health care worker (29 percent for respondents at land sites, 31 percent at wet sites) (Figure 3.3.8 and Annex Table 9a and 9b).

Figure 3.3.8. TB/HIV patients' first source of information regarding TB



"Yeah, out of the 32, 31 are integrated, only one which is not integrated; that is St. Camillus...Health facilities...offering TB/HIV services only one is not integrated." – KII, CHMT member, Muhuru Bay, Kenya

"Yeah, almost all our health facilities, we have to integrate. Where are going to get health workers who are doing these separately, even if you went to county referral, MSF really integrated things here. You know people come to study how we are doing our things in HIV, even ARVs, you know we are the first people to start giving ARVs." – KII, CHMT member, Mbita, Kenya

"Government facilities and also RHITES-EC are all offering integrated services." – KII, DHMT member, Namayingo, Uganda

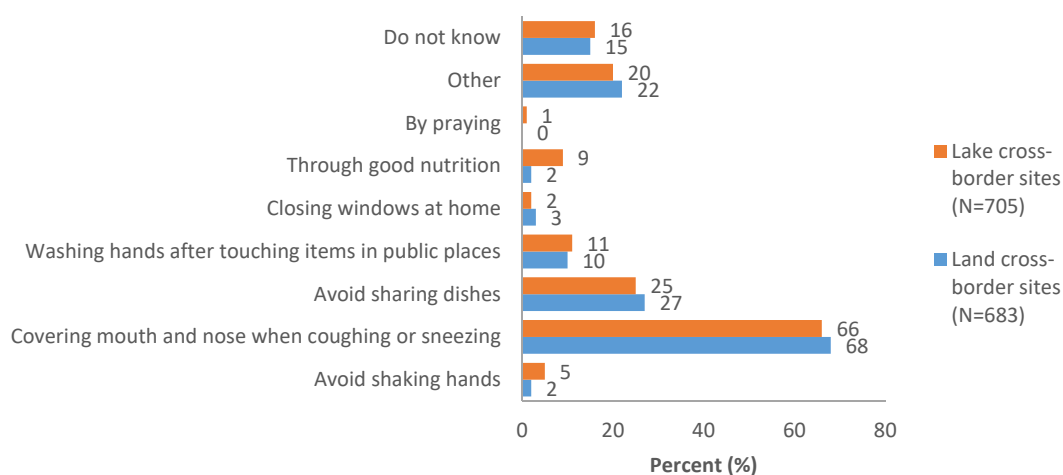
Overall, knowledge of the signs and symptoms of TB was high among the TB/HIV patients interviewed, regardless of where they were coming from. The most commonly listed signs were cough of any duration (86 percent of respondents at both land and wet sites), night sweats (listed by 46 percent of land-site patients, 40 percent of wet-site patients), and chest pains (listed by 38 percent of land-site patients, 40 percent of wet-site patients) (Annex Tables 9a and 9b).



Similarly, most patients were able to correctly identify at least one mode of TB transmission. A majority of the patients (81 percent at land sites, 81 percent at wet sites) mentioned that a person gets TB through the air when a person who is infected sneezes. However, 10 percent of TB/HIV patients at the land sites and 12 percent at the wet sites did not know how TB is transmitted (Annex Tables 9a and 9b).

Regarding knowledge of how a person can prevent TB infection, the most commonly listed option was covering one's mouth and nose when coughing or sneezing (68 percent at land sites, 66 percent at wet sites). A substantial number of the respondents did not know how to prevent oneself from getting TB (15 percent at land sites, 16 percent at wet sites) (Figure 3.3.9 and Annex Tables 9a and 9b). Most (more than 80 percent) of the TB/HIV patients interviewed across the study sites knew that TB is a contagious disease.

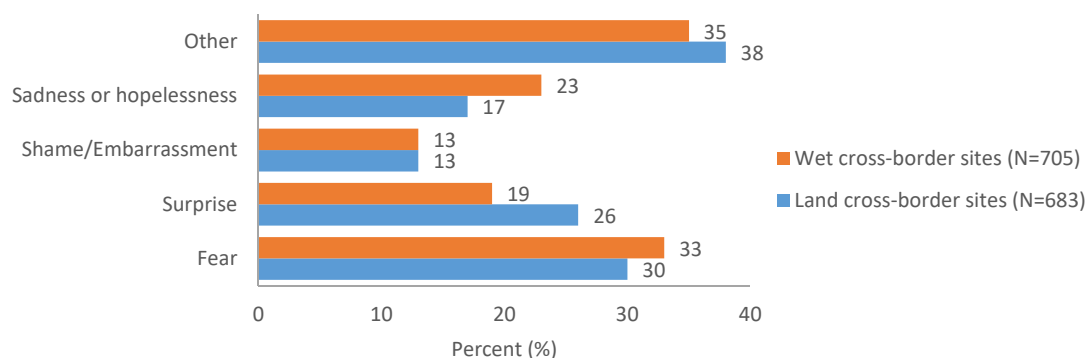
Figure 3.3.9. TB/HIV patients' knowledge of how TB can be prevented



When TB/HIV patients were asked about their reactions when they first learned they had TB, they reported varied but similar actions across the land and wet cross-border sites. A substantial percentage across the divide, 13 percent (11 percent of men, 18 percent of women) for both the land and wet sites said that they were shameful or embarrassed of being infected with TB. Among the responses, 17 percent (16 percent of men, 21 percent of women) at the land sites and 23 percent (23 percent of men, 24 percent of women) at the wet sites mentioned that they were sad or felt hopeless (Figure 3.3.10 and Annex Tables 10a and 10b). Of the patients interviewed from the land cross-border sites, the highest percentage of TB/HIV patients who reported feeling ashamed or embarrassed of their TB status were from the Rusumo site in Tanzania (38 percent). Among the patients from the wet cross-border sites, the highest percentage who reported feeling ashamed or embarrassed of having TB were from Kabonga/Kagunga (28 percent) and Kasensero/Kagera cross-border sites (17 percent).



Figure 3.3.10. TB/HIV patients' reaction upon learning that they had TB



As noted from the IDIs with the HCWs, the reaction of the patients when they learned their TB status was informed by a combination of factors, including perception of potential HIV infection and witchcraft.

These observations of how the TB/HIV patients reacted when they learned their TB status are also reflected in how the respondents perceived that the community would regard a person who has TB. Similar percentages of the respondents from the land and wet cross-border sites (21 percent and 25 percent) said that most people in the community would reject a person who had TB, while 28 percent in the land sites and 30 percent in the wet sites said that people would appear to be friendly but would generally avoid a person who has TB (Figure 3.3.11 and Annex Tables 10a and 10b).

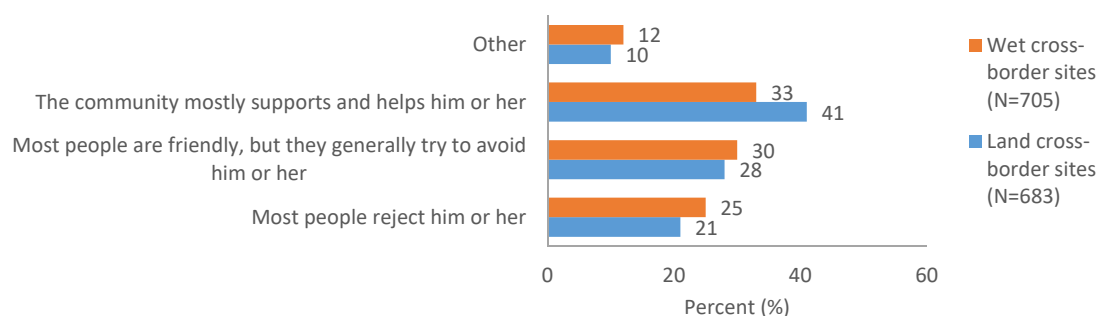
"In most cases, they are very scared, they are very depressed. They know these things have been going around. If you have TB you also have HIV, but that is what is in their mind. Even before I test for HIV, most think they have HIV."

– IDI, health facility in-charge, Malaba, Uganda

"You know, people perceive it in different ways. Others think TB is witchcraft, others think whoever has TB has HIV."

– IDI, health facility in-charge, Busia, Uganda

Figure 3.3.11. TB/HIV patients' perceptions of how members of the community would regard a person who had TB

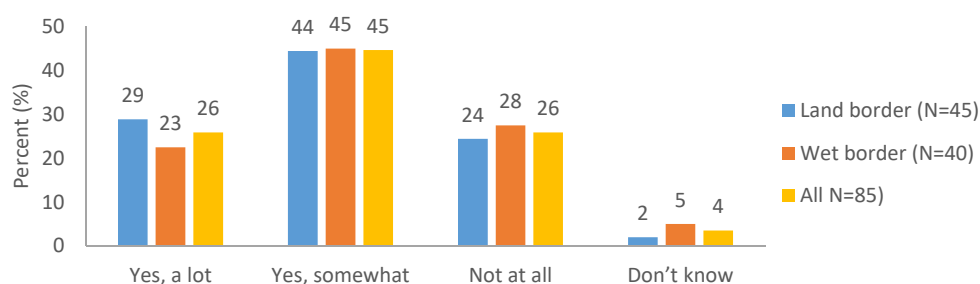


However, when asked about what a man in the community would do if he realized that his wife had TB, most respondents (79 percent at land sites, 81 percent at wet sites) said that he would pay for her care and treatment. However, 3 percent of respondents at both the land and the wet cross-border sites thought that the man would chase his wife away upon learning that she had TB.

When the CHVs who were interviewed were asked whether there is stigma associated with TB in their community, 26 percent answered affirmatively (29 percent at land sites, 23 percent at wet sites), while 45 percent (44 percent at land sites, 45 percent at wet sites) indicated some level of stigma in the community (Figure 3.3.12).



Figure 3.3.12. Community health volunteers who reported stigma against TB patients in the community



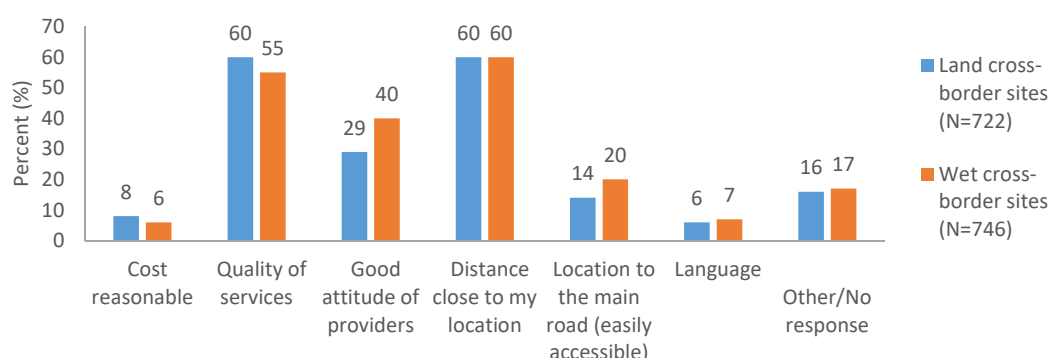
Stigma against TB was highlighted by some HCWs as a reason why TB/HIV patients seek health care services across the border in a neighboring country. As indicated by one respondent, patients who seek care across the border do so because they do not want to access health services in facilities where they are known.

“Those whom they see, they kind of either running away from a situation that is not working or they are running away from stigma. Because of stigma they come to where they are not known, and they access the services, and then they go back.”
– IDI, health facility in-charge, Katuna, Uganda

3.3.6 Access to Health Care Services and Perceptions of Services Received by TB/HIV Patients

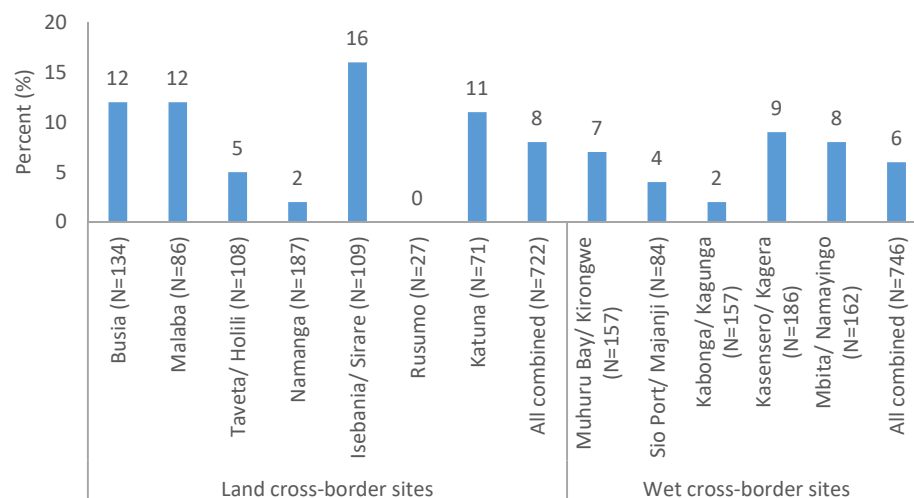
As shown in Annex Tables 11a and 11b, a majority of the TB/HIV patients interviewed had visited the health facility for a refill of their TB medications (90 percent at land sites, 92 percent at wet sites). Most of the TB/HIV patients had accessed the health facility either on foot, by bicycle, or by motorbike. The factors that influenced their decision to seek care at that specific health facility were varied but similar for the land and wet cross-border sites. The most common reason given for seeking care at the facility was the close proximity of the health facility to the respondent's residence (cited by 60 percent at both the land and wet sites) (Figure 3.3.13 and Annex Tables 12a and 12b). The other reasons were “quality of services provided” (cited by 60 percent and 55 percent of respondents at the land and wet cross-border sites, respectively) and “good attitude of health care workers” (cited by 29 percent and 40 percent of respondents at the land and wet cross-border sites, respectively).

Figure 3.3.13. Reasons given by the TB/HIV patients for seeking TB treatment at the facility where they were interviewed



A majority of the TB/HIV patients (over 90 percent) across all the study sites reported that they had received all the services that they sought from the health facility. Similarly, most of the patients (more than 80 percent) reported that they were either satisfied or very satisfied with the TB services that they received from the health facility (Annex Tables 12a and 12b). However, a substantial percentage of respondents were referred for other services, as shown in Figure 3.3.14. The cross-border site of Isebania/Sirare had the highest percentage of patients referred for other services, with most of the referrals occurring from the Kenya side of the border (24 percent) compared to 2 percent on the Tanzanian side of the border (Annex Tables 12a and 12b).

Figure 3.3.14. Percentage of TB/HIV patients who were referred for other services



According to the IDIs with HCWs, among the major challenges they experienced with regard to provision of TB/HIV services to the mobile and cross-border patients were the difficulty of ensuring proper follow-up of patients who are on treatment and language barriers, which hinder effective communication and require them to work through translators.

“By[the] time you are taking the bio data before you initiate treatment, you will ask somebody where he resides or how long he will be around, because the treatment takes six months. We normally advise them if they are planning to relocate [that] they come, we give them a letter for them to continue with their treatment. Others will tell you that am just here for two weeks then I will be moving, or I will be leaving to other places.”

– IDI, health facility in-charge, Mbita/Mfangano, Kenya

“As I said, it is hard to follow these people, because I won’t know if they started treatment, they have continued as they are supposed to be, to adhere to the treatment, so they view them as they are slippery, running away from a situation or stigma. That is why they are coming here.”

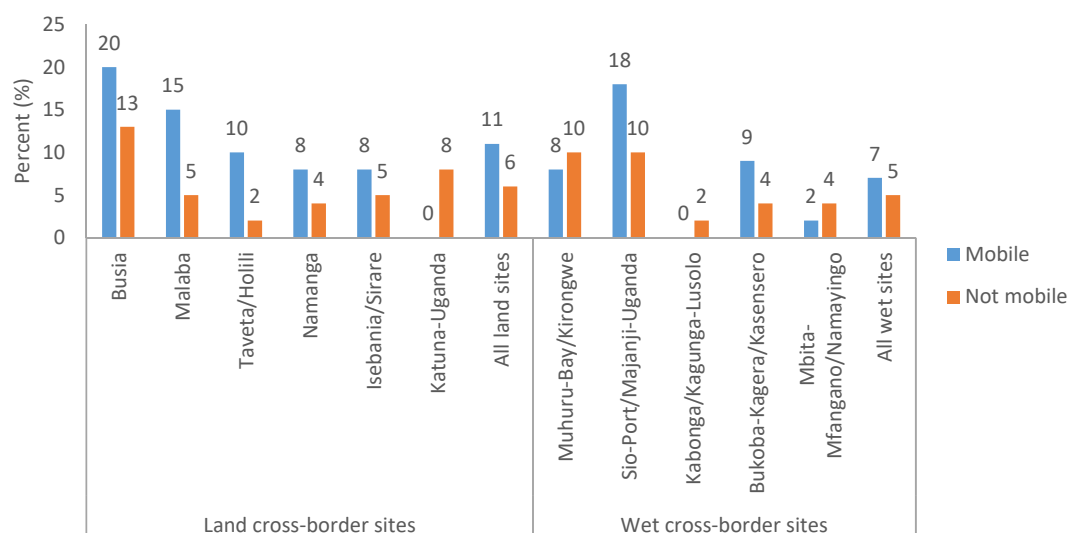
– IDI, health facility in-charge, Katuna, Uganda



3.3.7 Health-Care-Seeking Behaviors among TB/HIV patients

A majority of the respondents said that they first went to a public health facility when they fell ill with TB (82 percent at land sites, 81 percent at wet sites) (Annex Tables 13a and 13b). Ten percent and 7 percent at the land and wet sites, respectively, went to a private facility. However, a small number of the respondents reported that they first consulted a drug seller or pharmacy (6 percent at land sites, 5 percent at wet sites). The sites of Busia (12 percent), Malaba (10 percent), Muhuru Bay/Kirongwe (10 percent), and Sio Port/Majanji (9 percent) had relatively high numbers of patients who first went to a pharmacy. When assessed by mobility characterization, a higher percentage of patients who were mobile compared to those who were not reported buying drugs at a pharmacy (11 percent vs. 6 percent). At the wet cross-border sites, the percentage of those who reported self-medicating was similar between those who were mobile and those who were not (7 percent vs. 5 percent) (Figure 3.3.15).

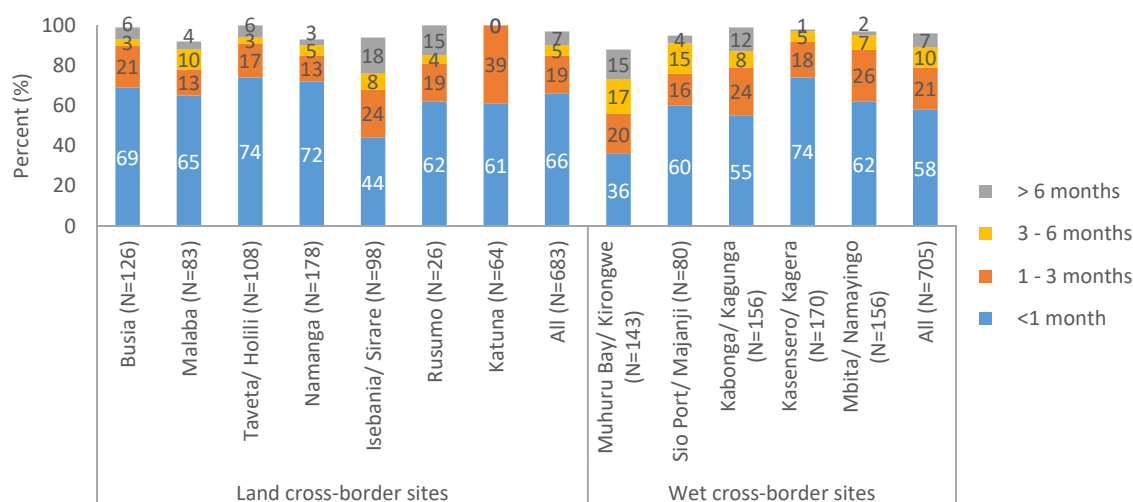
Figure 3.3.15. Percentage of patients who first went to a drug shop or pharmacy by mobility characterization



Although a majority of the respondents said that they first sought health care at a public or private health facility, a substantial percentage of the TB/HIV patients delayed seeking health care (more than a month after onset of TB symptoms). This was noted across all of the cross-border sites where the assessment was conducted. As shown in Figure 3.3.16 and Annex Tables 13a and 13b, 66 percent (66 percent of men, 67 percent of women) of TB/HIV patients at the land sites and 58 percent (64 percent of men, 52 percent of women) at the wet sites were able to seek care within one month of the onset of TB-related symptoms. Delays in seeking care for TB-related symptoms were particularly high among TB/HIV patients interviewed at the Muhuru Bay/Kirongwe and the Isebania/Sirare cross-border sites, where 36 percent and 44 percent, respectively, reported seeking health care within one month of the onset of symptoms. For both of these sites, the percentages of those who were able to seek care within one month were lowest on the Tanzania side of the border (16 percent and 23 percent, respectively) (Annex Tables 13a and 13b).

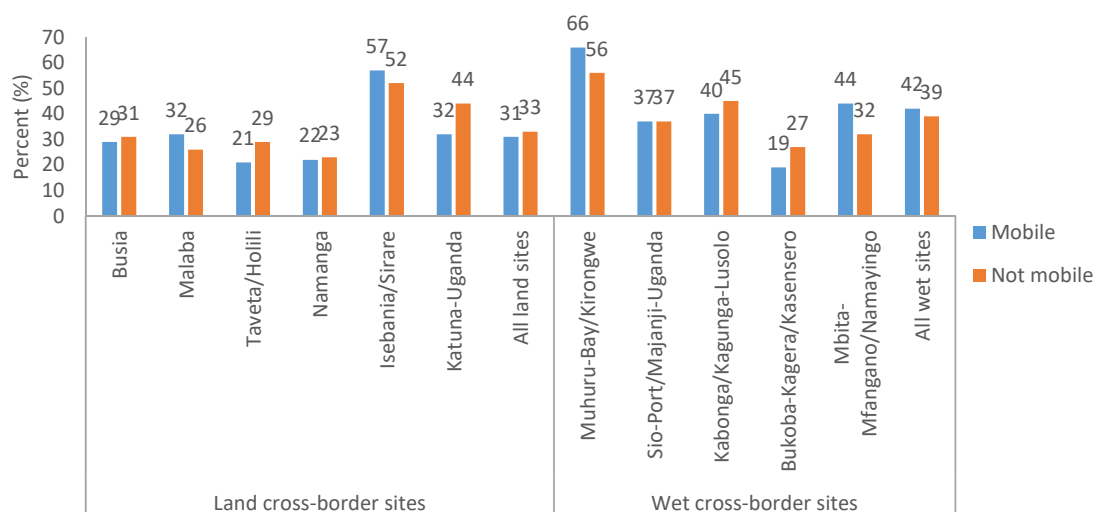


Figure 3.3.16. Duration from the onset of TB symptoms to the first contact with a provider



Overall, there was no evidence to suggest whether respondents who were mobile delayed seeking health care at a health facility (went to a facility more than a month after onset of TB-related symptoms) compared to those who were not mobile (Figure 3.3.17).

Figure 3.3.17. Percentage of patients who delayed seeking health care by mobility characterization

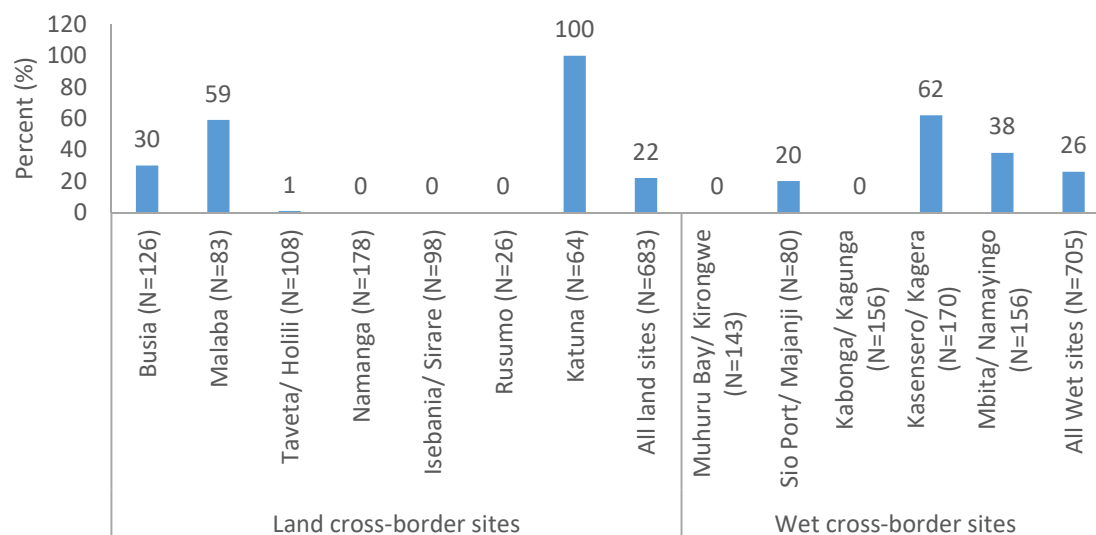


Fifteen percent and 14 percent of the TB/HIV patients from the land and wet cross-border sites, respectively, reported that they had ever been treated for TB before the current treatment regime. The cross-border sites with the highest percentage of relapse cases was Rusumo (23 percent) in Tanzania. Others were Muhuru Bay/Kirongwe (20 percent) and Sio Port/Majanji (20 percent) (Annex Tables 13a and 13b).

As shown in Figure 3.3.18, there were notable cases of patients who reported sharing their TB drugs with someone. Overall, 22 percent of the TB/HIV patients at the land sites and 26 percent at the wet sites reported that they had shared their TB drugs. As shown in Annex Tables 12a and 12b, nearly all of the TB/HIV patients who reported sharing their TB drugs were interviewed from the Uganda side of the cross-border site.



Figure 3.3.18. TB/HIV patients who reported sharing their TB drugs with someone



Summary 2: Barriers and Opportunities for Provision of TB/HIV Services

- More than a third of the TB/HIV patients live in large households with five or more other household members.
- Approximately one-third of the TB/HIV patients (21 percent at land sites, 35 percent at wet sites) were clinically diagnosed with TB.
- One in every four TB/HIV patients (28 percent at land sites, 25 percent at wet sites) had their household members screened for TB at the facility.
- More than one-third of TB patients (30 percent at land sites, 39 percent at wet sites) were co-infected with HIV.
- HCWs and family members play an important role in transmission of health information related to TB.
- About one in 10 TB/HIV patients do not know how TB is transmitted, and one in six do not know how to prevent themselves from getting TB.
- Thirteen percent of the TB/HIV patients feel ashamed or embarrassed of having TB.
- Over 20 percent of TB/HIV patients (21 percent at land sites, 25 percent at wet sites) think the community would reject a person who has TB disease, and one in four CHVs believe there is stigma in the community related to TB.
- Once at the health facility, over 90 percent of the patients received all services they had sought.
- The quality of services and proximity to the health facility were the two major determinants of seeking health care among TB/HIV patients.
- Ensuring proper follow-up of patients on TB treatment and potential language barriers are some of the major challenges for provision of services to the mobile and cross-border populations.
- A majority of the patients (approximately 90 percent) first sought health care from a health facility when they thought they had TB.
- Five percent of the TB/HIV patients first tried self-medicating before visiting a health facility when they had TB-related symptoms.
- More than one-third of the TB/HIV patients (33 percent at land sites, 42 percent at wet sites) sought health care more than one month after the onset of TB-related symptoms.
- Fifteen percent of the TB/HIV patients had ever been treated for TB before the current treatment regime.
- Nearly all of the TB/HIV patients at the Uganda sites reported sharing their TB medicines.



3.4 KEY FINDINGS: Linkages between TB/HIV Service Providers and Referral Systems

3.4.1 Patient Referral and Tracking Systems

In all sites visited, referral systems existed but were limited to being within the countries. There were no guidelines on how to refer or transfer clients across the borders, despite the high mobility reported among the clients. Referral of clients was mainly within each specific partner state/county. The percentage of HCWs who reported that they refer patients to other health facilities within the country was similar between respondents at the land sites (89 percent) and the wet sites (90 percent). A majority of the HCWs reported that they make their referrals formally (72 percent at land sites, 67 percent at wet sites) (Annex Table 4).

“Yes, we have a referral system within and outside the facility for like the interdepartmental, like maybe somebody with a cough in the inpatient ward can be referred for investigations. We have referral forms and also for CHVs in the community have their referral forms, they usually come with a referral form and a copy is returned to them showing what the client has been given. All the services the client has been given, and we have a file where we file the referral forms.”

– IDI, health care provider, Isebania, Kenya

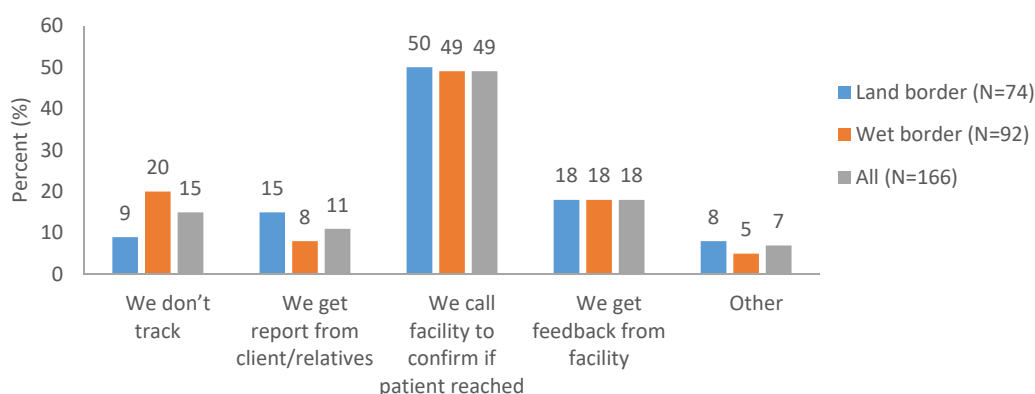
“The CHVs are at the community level. They have a referral form, so they identify whoever is coughing, they refer them to the facility, and we proceed with ICF, we find them positive, we do our screening. If from screening they are sent to the lab for further investigation, and others[are] referred for x ray for diagnosis.”

– IDI, health care provider, Muhuru Bay, Kenya

Overall, 31 percent of the HCWs who were interviewed reported that they refer patients to health facilities in another country, but this was mainly initiated (requested) by the clients. The percentage of HCWs who reported such referrals to neighboring countries were higher among the land sites (44 percent) compared to the wet sites (23 percent).

Although there are no formal tracking system and tools to track referrals across the border, approximately half of the HCWs interviewed (50 percent at land sites, 49 percent at wet sites) reported that they actively call the recipient facility to confirm if the patient has reached the facility (Figure 3.4.1).

Figure 3.4.1. How HCWs track the patients they have referred to health facilities in another country



With regard to referrals from the community to the health facility, IDIs with the health facility in-charges indicated that most (more than two-thirds) across the different cross-border sites had standard referral tools for referral from community to the facility. However, there were several cases pointed out in which standardized referral tools do not exist; instead, service providers use plain paper to write referral notes.



Whereas mechanisms were evidently available for referral from one facility to another within the same country, it was also evident from the IDIs that there were no proper referral and follow-up mechanisms for patients who moved to neighboring countries. In fact, the majority of the respondents expressed that this gap needs to be addressed for proper cross-border service delivery.

3.4.2 Role of Community Health Volunteers

Fourteen percent of the TB/HIV patients at the land sites who were interviewed and 17 percent of those at the wet cross-border sites reported that they had been visited by a CHV before they went to the health facility for TB treatment (Annex Tables 14a and 14b). The Mbita/Namayingo cross-border site had the highest percentage of TB/HIV patients who reported receiving visits by a CHV prior to seeking treatment for TB at a health facility. Within this cross-border site, the highest percentage of visits by CHVs was reported among TB/HIV patients on the Uganda side of the border (40 percent, compared to 16 percent on the Kenya side).

Seven percent of the TB/HIV patients interviewed reported that a CHV had referred them to the health facility to get tested for TB. The cross-border sites that had comparatively higher levels of referrals by CHVs were Namanga (11 percent), Taveta/Holili (10 percent), and Kasensero/Kagera (10 percent) (Annex Tables 14a and 14b). Most of the TB/HIV patients reported that they referred themselves to the facility.

As indicated by the IDIs with the health facility in-charges, CHVs play an important role in identifying the suspected TB patients in the community and getting them referred to the health facility for further screening and management.

"The community health volunteers, the CHWs in the community, they have been trained and they have the knowledge to identify and refer these clients to the facility."

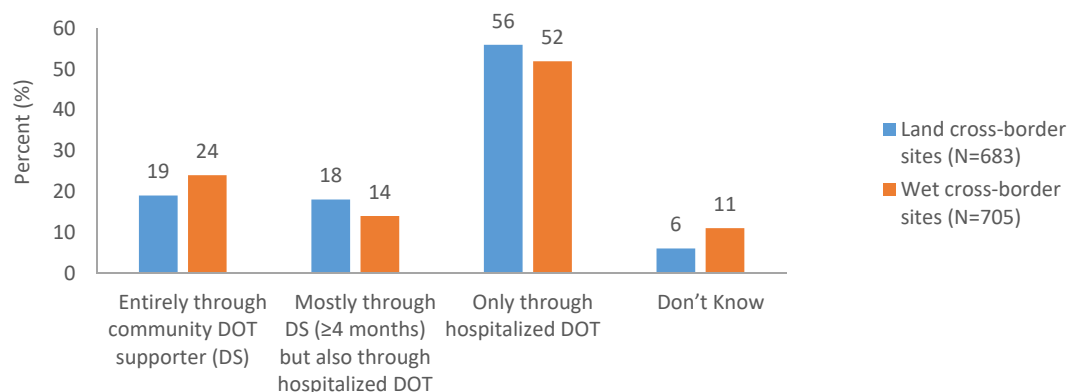
– IDI, health care provider, Busia, Kenya

"There is no procedure to follow up, because you can refer them to Taveta and they change the route, they can even go to Tanzania or they can go to Loitokitok, so there is no set mechanism in place to follow it up. Human beings are just human beings, you can tell them to go to Taveta Hospital but once they move out of the gate, they change their mind, they go to Tanzania."

– IDI, health care provider, Taveta, Kenya

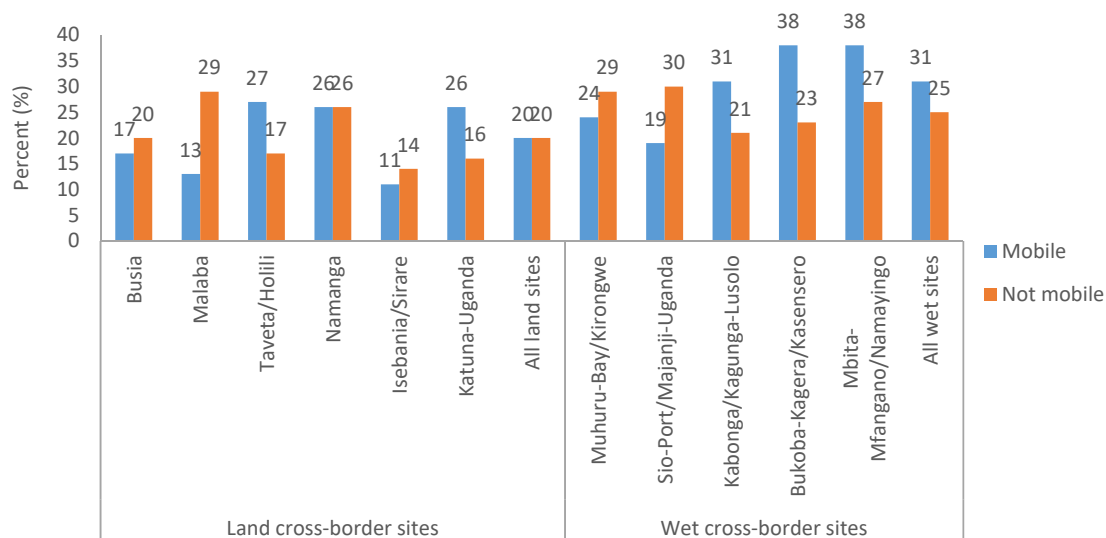
CHVs also played a substantial role in facilitating TB treatment. As shown in Figure 3.4.2 and Annex Tables 14a and 14b, 19 percent of TB/HIV patients at the land sites and 24 percent at the wet sites got their DOT entirely through a community DOT supporter. However, a majority of the TB/HIV patients reported that they were receiving the DOT entirely through the health facility (56 percent at land sites, 52 percent at wet sites).

Figure 3.4.2. Type of DOT treatment the TB/HIV patients were on



A slightly higher percentage of TB/HIV patients who were interviewed at the wet-cross border sites and had traveled away from their residence within the three months prior to the assessment reported that they got their DOT entirely through the CHV (Figure 3.4.3).

Figure 3.4.3. Percentage of patients who got their DOTS through a CHV, by mobility characterization



Summary 3: Linkages between Service Providers and Referral Systems

- Most (more than 85 percent) HCWs reported that they had referred TB patients to other health facilities within the country.
- One-third of the HCWs had referred patients to a facility in a neighboring country.
- Half of the HCWs do not actively follow up to confirm if the referred patients reached the referral facility.
- Structures exist for referral of TB/HIV patients within each country. However, no developed mechanisms are in place for referral of patients to health facilities in neighboring countries.
- Slightly more than half of the TB/HIV patients get their treatment exclusively through hospitalized DOTS, while about 20 percent do so exclusively through community DOTS.



4 DISCUSSION AND CONCLUSION

4.1 Discussion

This report provides a snapshot of the TB and TB/HIV services at 12 cross-border sites located in Burundi, Kenya, Tanzania, and Uganda whose findings will help to support and strengthen cross-border TB and TB/HIV service delivery. Overall, the findings from the assessment show no difference on most of the aspects of the TB and TB/HIV services across the different sites. Some of the main findings of the assessment are discussed further below.

4.1.1 *Capacity of the Service Providers*

Generally, findings from the assessment show that the HCWs were adequately equipped with the necessary training to provide TB/HIV services, and nearly all HCWs were registered with their professional bodies. However, there were a few notable areas of concern. In Burundi and Tanzania, there were a number of HCWs who reported providing services for which they had received no basic or refresher training. This particularly applied to treatment of DR TB and the provision of IPT. Although the sample size of HCWs interviewed was low and the finding may not necessarily be generalizable to all the HCWs, it would be fair to expect that any case where an HCW who provides services without training may warrant the necessary follow-up to ensure that they are properly trained. In addition, despite training, the quality of TB and TB/HIV services continues to encounter challenges that may need to be addressed through continuous capacity-building efforts such as mentorships, coaching, and continuing medical education sessions if the capacity in these sites is to be sustained.

4.1.2 *Policy Guidelines for Management of TB*

Most of the HCWs reported that national policy guidelines for managing TB/HIV exist in the respective East African countries. However these policies lack guidelines for cross-border service provision, particularly related to referral and follow-up of patients. It may be important for the respective countries to update their guidelines and develop the necessary tools or forms to facilitate cross-border referrals and follow-up. Addressing this policy gap will serve to ensure better access to TB/HIV services among the cross-border and mobile populations.

4.1.3 *TB Diagnosis and Screening for TB among Household Contacts*

Most of the TB patients who were interviewed had pulmonary TB, which is consistent with what has been reported elsewhere. However, a notably high percentage of extrapulmonary TB was observed from the Rusumo cross-border site (30 percent), which may warrant further follow-up. Clinical diagnosis of TB was also notably high at the wet cross-border sites compared to land sites. It is not clear why this was the case. However, it suggests that health facilities at the wet cross-border sites may not be as well equipped with resources for TB diagnosis compared to those located at the land cross-border sites.

One in every four TB patients across the different cross-border sites reported that their household contacts had been screened for TB. However, considering that most TB patients (more than 80 percent) reported living in households that had at least one other member, it would be expected that the percentage of those who reported that their household members had been screened would be higher than the observed 25 percent. This notwithstanding, nearly half of the TB patients had fairly large households (with more than five household members), which highlights the potential for transmission of TB in the household and hence the need to screen household contacts. Household contact screening and investigation, in addition to passive case finding, has been shown to be a more effective way to improve TB detection in a high-prevalence setting (Fox, Nhung, and Marks, 2018; Nair, et al, 2016).

All the countries where the assessment was conducted have guidelines that emphasize the need to screen household contacts of TB patients, particularly children less than five years of age, those who are living with HIV, and the elderly (Kenya MOH, 2013; Tanzania MOH, 2013; Uganda MOH, 2017).



WHO recommends treatment for latent TB infection for people living with HIV, and children under five years of age who are household contacts of someone who has bacteriologically confirmed pulmonary TB. However, as of 2018, new guidelines were issued by WHO that recommend testing and treatment for people age 5 years or more and are household contacts of bacteriologically confirmed pulmonary TB cases.

4.1.4 *TB and HIV Co-infection*

Findings from the assessment showed a substantially high percentage of HIV co-infection among the TB patients who were interviewed. This was particularly high among the patients interviewed at the wet cross-border sites, which ranged from as low as 9 percent at the Kabonga/Kagunda site to as high as 59 percent at the Mbita-Mfangano/Namayingo cross-border site. Furthermore, it is possible that the actual level of co-infection in the study population may be higher, as these findings reflect only people who self-reported their HIV status as positive; some of those who reported an HIV-negative result may actually be HIV infected (Mbithi, et al, 2014). However, of note is that nearly all (97 percent) of those who were co-infected were on ART.

Studies conducted in the region have reported levels of co-infection of TB and HIV similar to this assessment's findings. The WHO's report on TB burden estimates as of 2017, for example, shows that 29 percent, 40 percent, and 31 percent of patients with TB in Kenya, Uganda, and Tanzania, respectively, were co-infected with HIV (WHO, 2018b). A national TB survey conducted in 2014–2015 in Uganda found a co-infection rate of 25 percent in the population compared to a rate of 45 percent when health facility data were used (Uganda MOH, 2017b). And in Kenya, a survey conducted in 2012 found that the prevalence of laboratory-confirmed HIV infection in people who reported prior TB infection was 33 percent (Mbithi, et al, 2014).

4.1.5 *Knowledge and Attitudes toward TB*

Overall, the TB/HIV patients interviewed demonstrated high levels of knowledge of TB symptoms, how TB is transmitted, and how it can be prevented. However, even with these seemingly high levels of knowledge of TB, responses from the patients who were interviewed indicated high levels of stigma toward TB in the community. A similar finding was observed among the CHVs who were interviewed.

The observed levels of TB-related stigma reflect what has previously been observed in the region. A study in Tanzania found that TB-related stigma was prevalent, and the main elements of TB-related stigma identified were fear, self-isolation, ostracization and loss of status within the community, and provider discrimination (Miller, et al, 2017). Another study conducted in the region reported high levels of stigma toward TB patients that were associated with HIV infection, alleged immoral behavior, and the perception that TB could not be cured (Cremers, et al, 2015).

High levels of stigma around TB in the community could potentially result in patients delaying to seek care, dropping out of treatment, or not seeking care at all (Courtwright and Turner, 2010). In turn, this may facilitate continued transmission of TB in the community, as well as treatment failure. Understanding how stigma operates as a barrier to health care seeking, and how it potentially differs by gender, could help to inform the development of appropriate interventions to reduce the barriers to care and increase case detection (Daftary, et al, 2017).

4.1.6 *Access to Health Care and Referrals for Services*

Whereas a majority of the patients reported that they were able to receive all of the services that they had sought (more than 90 percent), a substantial number of patients reported that they had been referred for other services either at the same health facility or to another health facility altogether. This highlights a potential gap that calls for better integration of services at the TB clinics. Referrals to other health facilities may pose a challenge, as they may result in missed opportunities for service provision. Interviews with the HCWs, for example, revealed that slightly half of the HCWs made a deliberate effort to follow up and ensure that the patient was linked to the service to which they had been referred. For most TB/HIV patients who were interviewed, proximity to the health facility and the quality of services seemed to be the major determinants of whether or not they would



seek health care. Given that proximity of the health facility is an important determinant of health care seeking, a system for cross-border referral may be warranted so that patients can access the nearest facility, irrespective of the side of the border where it is located.

4.1.7 Health Care Seeking among TB Patients

Although a majority of the TB/HIV patients reported to have first sought health care at a health facility (public or private) when they fell ill with TB, there was a considerable percentage who tried to self-medicate. Some sites (Busia, Malaba, Muhuru Bay/Kirongwe, and Sio Port/Majanji) had comparatively higher percentages of respondents who reported a visit to a drug shop or pharmacy as their first action when they suspected they had TB. But even for those who went to a health facility, the data from the assessment shows that there was a considerable delay in seeking health care, as only about 60 percent reported that they sought health care within one month of the onset of symptoms.

A survey conducted in Uganda in 2014–2015 found poor health-care-seeking behaviors among people who reported chronic cough, where 37 percent of symptomatic TB cases did not take any actions to address their symptoms (Uganda MOH, 2017b). The reasons given by that survey's respondents for not seeking care included ignored illness (31 percent) and self-treated (31 percent). Understanding and addressing barriers to service access is crucial so as to maximize the demand for and utilization of services. Delays in seeking health care could result in unnecessary continued transmission in the community. Early diagnosis of TB, together with effective anti-TB treatment, remains the most important intervention for reducing the risk of TB transmission in the household.

For most of the sites on the Ugandan side of the border, findings from the assessment show that nearly every patient reported sharing their TB drugs. This finding is particularly concerning because of the potential negative impact on treatment outcomes. Overall, nearly one in every five TB/HIV patients interviewed at both the land and wet cross-border sites had ever been treated for TB and could either have been a case of re-infection or a relapse of the TB disease. This suggests that slightly more than 80 percent of the TB cases were new cases. This is higher than the percentage of 64 percent reported by WHO as new cases of TB in 2017 (WHO, 2018).

4.1.8 Mobility of the TB Patients and Access to Services

In this assessment, mobility of TB/HIV patients was defined as reporting travel away from their residence to another county/district or to a neighboring country within the three months preceding the study. Findings from the assessment showed that TB/HIV patients who reported mobility were more nearly twice likely to report self-medication compared to their counterparts who did not travel at the land cross-border sites. Although a similar trend was observed among those at the wet cross-border sites, the difference was marginal (7 percent vs. 5 percent). This highlights the potential for delayed health-care-seeking behaviors among mobile populations.

The study also investigated whether the mobility of TB/HIV patients was associated with other aspects of TB/HIV service provision, such as reliance on community DOTS, having a clinical diagnosis of TB, and co-infection with HIV. However, no meaningful differences were found between those who reported travel within the three months preceding the study and those who did not. There is a possibility that the TB/HIV patients were generally able to access services regardless of their mobility status, or that using the criterion of “travel within the last three months” alone may not have truly captured patients who were mobile.

4.2 Conclusion

The findings from the assessment generally indicate that the HCWs are adequately trained to provide TB/HIV services and that national policy guidelines for managing TB/HIV exist in the respective East African countries. The findings also show that the factors affecting the management of TB and TB/HIV services for mobile and cross-border populations at EA border areas are similar. However, there is need to develop and harmonize policies for the provision of cross-border services, particularly regarding referral and follow-up of patients, while ensuring that the existing national policy guidelines are implemented.



4.3 Recommendations

We recommend the following based on the study results:

1. The large household sizes present a favorable environment for TB transmission among cross-border communities. The risk of widespread transmission could be higher among mobile patients who interact not only with household members of their usual place of residence but also other locations, particularly in congested environments such as fishing landing beaches and socialization venues. This highlights the need for enhanced screening for TB of all members of TB patients' households, as well as other contacts for those who are mobile. Active case-finding activities in these settings could be hampered by the mobility of the target population and hence requires innovative strategies.
2. A substantially high number of the patients did not have their household contacts screened for TB. More efforts may be warranted to ensure screening of household members, particularly young children under five years of age and those who are immunocompromised.
3. There is a substantially high percentage of TB/HIV co-infection (30 percent at land sites, 39 percent at wet sites). This highlights the need for concerted efforts to integrate TB/HIV service provision to ensure that patients are promptly linked to services, as needed, while being cognizant of the challenge presented by mobility.
4. Data from TB patients suggest high levels of self-medication and delay in seeking health care. A comparatively higher proportion of mobile patients reported purchasing drugs over the counter, highlighting the challenge of late diagnosis and poor adherence to treatment among them. Mobility is therefore an important factor in health-care-seeking behavior. A higher proportion of patients who reported mobility said they purchased drugs from drug shops compared to those who did not report mobility at land sites (11 percent vs. 6 percent). A similar trend was observed at wet sites, where 7 percent of the mobile patients said they purchased drugs over the counter compared to 5 percent of those who were not mobile. Therefore, there is a need to enhance mobile and cross-border populations' access to and uptake of TB and TB/HIV services, including early initiation, and adherence and completion of treatment. Making health services friendly and easily accessible, irrespective of where one is, becomes key to control of transmission.
5. Patients showed high levels of knowledge regarding how TB is transmitted and how it can be prevented. However, stigma exists toward TB patients, which could potentially have the negative consequences of further delays in seeking and completing treatment. Mobile and cross-border populations are likely to fear real or perceived stigma at health facilities in a country not their own and, therefore, avoid going for screening/treatment. Community education and sensitization are needed, as well as development and implementation of social behavior communication strategies to help fight stigma toward TB.
6. Most HCWs reported that they refer patients to other health facilities, including to neighboring countries. However, nearly half of HCWs do not track their patients to ensure that the referral has been completed. This may have the negative consequences of patients delaying access to TB/HIV services or potentially dropping out from treatment. Tracking patients from another country is even more challenging in the absence of a policy framework for cross-border referral and follow-up. As such, there is a need to develop tools and standard operating procedures for referral and tracking of patients across borders. Partner states need to incorporate cross-border referral of clients into TB and TB/HIV guidelines.
7. Data from the interviews with TB/HIV patients suggested that proximity to the health facility and the perception of the quality of services received as some of the key considerations that patients made before seeking health care. As proximity of the health facility is an important determinant



of health care seeking, a system for cross-border referral that allows the patients to access the nearest facility, irrespective of which side of the border it lies on, may be warranted.

8. The data from the interviews with the TB/HIV patients suggested some substantial levels of mobility of the respondents both within countries and across the border to other countries. Mobility is a substantial barrier to screening, diagnosis, and treatment of TB, as clients may have limited time to come to the clinic or even provide household contacts for active screening; hence, this is a significant barrier for management of TB. It may be important to develop or implement protocols for screening for TB among mobile populations in each of the countries.



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ANNEX 1. DATA TABLES

Annex Table 1. Demographic characteristics of the health care providers

Characteristic	Burundi			Kenya			Tanzania			Uganda			All Combined		
	Land border	Wet border	All*	Land border	Wet border	All	Land border	Wet border	All	Land border	Wet border	All	Land border	Wet border	All
		%		%	%	%	%	%	%	%	%	%	%	%	%
Sex															
Male	-	11/20	11/20	16	14	15	40	32	35	13	20	16	21	25	23
Female	-	9/20	9/20	13	12	12	60	68	65	33	11	24	33	32	32
Unknown	-	0/20	0/20	71	74	73	0	0	0	54	68	60	46	43	45
Age															
18–34 years	-	9/20	9/20	15	16	15	47	50	49	30	14	23	28	28	28
35–54 years	-	9/20	9/20	13	10	12	44	37	40	13	16	14	21	23	22
≥55 years	-	2/20	2/20	2	0	1	7	13	11	3	2	3	4	5	5
Unknown	-	0/20	0/20	71	74	73	2	0	1	54	68	60	47	43	45
Type of sector															
Government	-	17/20	17/20	90	81	85	84	62	71	64	98	78	79	79	79
Faith-based	-	0/20	0/20	10	6	8	5	17	12	20	2	12	12	8	10
Private	-	3/20	3/20	0	13	7	12	22	17	13	0	8	8	13	11
Other	-	0/20	0/20	0	0	0	0	0	0	3	0	2	1	0	1



Department where HCW works															
MCH/FP	-	3/20	3/20	15	27	22	19	22	20	15	7	11	16	20	18
CCC/HIV Care clinic	-	8/20	8/20	44	55	50	21	38	31	25	18	22	31	40	36
Outpatient department	-	3/20	3/20	18	35	27	19	32	26	31	18	26	23	28	26
TB clinic	-	10/20	10/20	47	42	44	56	43	49	25	27	26	41	40	40
Laboratory	-	3/20	3/20	10	5	7	14	5	9	18	11	15	14	7	10
Other	-	5/20	5/20	29	25	27	23	27	25	28	39	32	27	28	28
Designation															
Medical Officer	-	0/20	0/20	0	0	0	2	2	2	2	0	1	1	0	1
Clinical Officer/Medical assistant	-	0/20	0/20	26	35	31	21	18	19	7	7	7	17	20	19
Professional nurse/midwife	-	12/20	12/20	27	36	32	23	28	26	38	27	33	30	34	32
Auxiliary nurse/nurse aide	-	3/20	3/20	0	0	0	23	18	20	10	14	11	10	10	10
HIV testing counsellor	-	2/20	2/20	8	1	4	0	3	2	5	2	4	5	3	4
Other	-	0/20	0/20	15	5	9	5	10	8	18	14	16	13	8	10
Lab technician	-	3/20	3/20	24	22	23	26	20	22	21	36	28	23	24	24
Duration of work at health facility															
<1 year	-	0/20	0/20	3	6	5	5	7	6	3	0	2	4	4	4
1–4 years	-	4/20	4/20	52	58	55	35	28	31	46	39	43	45	41	43
5+ years	-	15/20	15/20	45	31	37	51	62	57	44	50	47	46	49	48
Unknown	-	1/20	1/20	0	4	2	9	3	6	7	11	9	5	5	5
Registered by professional body	-	18/20	18/20	95	92	94	65	68	67	89	82	86	85	83	84
N	0	20	20	62	77	139	43	60	103	61	44	105	166	201	367

*Absolute numbers are presented where the denominator was less than 25.



Annex Table 2a. Individual and sociodemographic characteristics of TB patients in the land cross-border sites

Characteristic	Busia			Malaba			Taveta/Holili			Namanga			Isebania/Sirare			Rusumo	Katuna	All combined
	Kenya	Uganda	All	Kenya	Uganda	All	Kenya	Tanzania	All	Kenya	Tanzania	All	Kenya	Tanzania	All	Tanzania	Uganda	
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	
Age																		
15–34 years	39	36	38	39	25	30	23	28	26	43	38	40	43	32	39	19	35	35
35–49 years	23	33	26	30	47	41	43	43	43	31	35	33	25	41	31	37	37	34
50–64 years	13	28	17	18	11	14	25	22	23	11	11	11	6	17	10	15	13	14
≥65 years	9	0	7	6	8	7	10	7	8	3	7	5	0	0	0	26	0	6
Unknown	16	3	12	6	9	8	0	0	0	12	10	11	26	10	20	4	15	11
Sex																		
Male	43	67	50	58	74	67	60	79	72	68	54	59	43	51	46	67	69	60
Female	41	31	38	36	17	24	40	21	28	20	36	30	31	39	34	30	15	30
Unknown	16	3	12	6	9	8	0	0	0	12	10	11	26	10	20	4	15	11
Facility type																		
Public	96	95	96	97	98	98	93	78	83	99	98	98	99	100	99	26	85	92
Faith-based	0	5	1	0	0	0	5	13	10	0	2	1	0	0	0	74	8	6
Other/unknown	4	0	3	3	2	2	3	9	6	1	0	1	1	0	1	0	7	3
Facility level																		
Hospital	67	3	49	61	60	60	43	54	50	64	9	30	88	46	72	56	75	52
Health center	19	92	40	21	40	33	25	21	22	36	76	60	12	51	27	4	20	36
Health post/dispensary	9	0	7	15	0	6	30	7	16	0	15	9	0	2	1	7	1	7
Other/unknown	4	5	4	3	0	1	3	18	12	0	0	0	0	0	0	33	4	4



Level of education																		
None	5	0	4	6	13	10	10	1	5	30	29	29	3	7	5	22	8	13
Some primary	46	79	56	45	49	48	75	81	79	28	43	37	41	63	50	74	45	52
Some secondary	23	18	22	33	25	28	13	15	14	22	16	18	24	15	20	0	21	19
College/university	8	0	6	0	2	1	3	1	2	8	2	4	4	5	5	0	10	4
Other/unknown	17	3	13	15	11	13	0	1	1	12	10	11	28	10	21	4	15	12
Marital Status																		
Not married	17	26	19	18	30	26	15	18	17	31	19	24	25	24	25	11	21	22
Married	49	59	52	48	42	44	58	49	52	46	53	50	28	46	35	78	48	49
Separated/divorced	9	5	8	15	9	12	23	29	27	5	12	9	6	17	10	0	8	12
Widow(ed)	8	8	8	12	9	10	5	4	5	5	6	6	15	2	10	7	7	7
Other/unknown	16	3	12	6	9	8	0	0	0	12	10	11	26	10	20	4	15	11
Occupation																		
Unemployed/ no IGA	21	26	22	18	30	26	20	6	11	36	12	22	25	20	23	15	21	21
Farming	9	15	11	24	6	13	35	38	37	4	3	3	10	41	22	48	24	17
Salaried worker	16	15	16	6	15	12	10	15	13	12	4	7	6	2	5	4	8	10
Business (owner, small business)	17	23	19	15	11	13	10	31	23	16	11	13	18	10	15	7	6	15
Other	21	18	20	30	28	29	25	10	16	19	42	33	15	12	14	22	25	23
Unknown	16	3	12	6	9	8	0	0	0	12	28	22	26	15	22	4	15	14
N	95	39	134	33	53	86	40	68	108	74	113	187	68	41	109	27	71	722



Annex Table 2b. Individual and sociodemographic characteristics of TB patients in the wet cross-border sites

Characteristic	Muhuru Bay/Kirongwe			Port Victoria, Sio Port/Majanji			Kabonga/Kagunga			Kasensero/Kagera Region			Mbita/Namayingo			All Combined
	Kenya	Tanzania	All	Kenya	Uganda*	All	Burundi	Tanzania	All	Tanzania	Uganda	All	Kenya	Uganda	All	
	%	%	%	%		%	%	%	%	%	%	%	%	%	%	%
Age																
15–34 years	38	21	29	22	4/17	23	30	32	31	13	31	25	48	28	40	30
35–49 years	24	26	25	30	6/17	31	32	30	31	45	39	41	34	28	31	32
50–64 years	8	22	16	21	3/17	20	27	20	24	28	11	17	11	24	16	18
≥65 years	3	20	12	18	3/17	18	9	17	12	6	6	6	1	9	4	10
Unknown	28	11	18	9	1/17	8	2	2	2	8	14	12	6	10	8	10
Sex																
Male	50	38	43	55	9/17	55	67	53	61	61	57	59	56	60	57	55
Female	22	53	39	36	7/17	37	31	45	37	31	29	30	38	30	35	35
Unknown	28	9	18	9	1/17	8	2	2	2	8	14	12	6	10	8	10
Facility type																
Public	56	52	54	63	17/17	70	88	88	88	80	100	93	92	94	93	81
Faith-based	42	40	41	31	0/17	25	11	11	11	9	0	3	0	1	1	15
Other/unknown	3	8	6	6	0/17	5	1	2	1	11	0	4	8	4	7	4
Facility level																
Hospital	40	1	19	34	12/17	42	43	56	48	44	48	47	65	1	39	39
Health center	11	56	36	12	5/17	15	57	23	43	42	48	46	18	78	43	39
Health post/dispensary	25	31	28	18	0/17	14	0	15	6	9	3	5	17	16	17	14
Other/unknown	24	12	17	36	0/17	29	0	6	3	5	0	2	0	4	2	8



Level of education																
None	1	16	10	15	2/17	14	40	20	31	8	13	11	1	13	6	14
Some primary	49	66	58	48	11/17	51	38	65	50	67	62	64	61	63	62	58
Some secondary	19	7	13	27	3/17	25	18	12	15	11	10	10	24	13	20	16
College/university	3	1	2	1	0/17	1	0	2	1	5	1	2	7	0	4	2
Other/unknown	28	9	18	9	1/17	8	4	2	3	9	14	12	6	10	8	10
Marital Status																
Not married	10	8	9	6	0/17	5	18	18	18	5	25	18	14	13	14	14
Married	56	59	57	48	11/17	51	70	61	66	47	40	42	60	54	57	55
Separated/divorced	3	4	3	21	2/17	19	5	9	7	30	14	19	7	6	7	11
Widow(ed)	4	20	13	16	3/17	17	4	11	7	11	7	8	13	16	14	11
Other/unknown	28	9	18	9	1/17	8	2	2	2	8	14	12	6	10	8	10
Occupation																
Unemployed/no IGA	19	21	20	21	5/17	23	20	45	31	9	10	10	24	22	23	21
Farming	14	47	32	30	3/17	27	58	32	47	59	39	46	4	27	14	34
Fishing	11	4	7	13	2/17	13	1	2	1	0	2	2	19	21	20	8
Salaried worker	0	8	4	6	0/17	5	7	6	6	3	3	3	9	0	6	5
Business (owner, small business)	13	5	8	7	2/17	8	2	9	5	8	10	9	26	7	19	10
Other	15	5	10	13	4/17	15	10	5	8	13	22	19	11	12	11	12
Unknown	28	11	18	9	1/17	8	2	2	2	8	14	12	6	10	8	10
N	72	85	157	67	17	84	91	66	157	64	122	186	95	67	162	746

*Absolute numbers are presented where the denominator was less than 25.



Annex Table 3. Types of clients for whom the health care worker provided services at the facility in the last three months

Characteristic	Burundi			Kenya			Tanzania			Uganda			All Combined		
	Land border	Wet border*	All*	Land border	Wet border	All	Land border	Wet border	All	Land border	Wet border	All	Land border	Wet border	All
				%	%	%	%	%	%	%	%	%	%	%	%
Types of clients for which individual HCW provided services at the facility in the last 3 months															
TB patients	-	15/20	15/20	98	94	96	100	92	95	77	98	86	91	92	92
TB/HIV patients	-	13/20	13/20	90	94	92	81	90	86	80	98	88	84	91	88
DR TB patients	-	0	0	24	18	21	35	37	36	13	18	15	23	22	22
Female sex worker	-	7/20	7/20	37	38	37	23	22	22	56	66	60	40	39	40
Men who have sex with men	-	0	0	6	4	5	7	12	10	10	14	11	8	8	8
People who inject drugs	-	1/20	1/20	10	5	7	21	10	15	23	23	23	17	10	14
PWHIV	-	15/20	15/20	94	100	97	88	92	90	84	91	87	89	93	91
Vulnerable women and girls	-	9/20	9/20	77	88	83	37	42	40	64	61	63	62	64	63
Fisherfolk	-	10/20	10/20	29	86	60	14	47	33	33	75	50	27	68	49
Long distance truck drivers/assistants	-	5/20	5/20	66	31	47	42	28	34	66	43	56	60	32	45
Forwarding and clearing agents	-	4/20	4/20	32	5	17	23	13	17	46	27	38	35	14	23
N	0	20	20	62	77	139	43	60	103	61	44	105	166	201	367

*Absolute numbers are presented where the denominator was less than 25.



Annex Table 4. Referral of patients and tracking of referrals by health care workers

Characteristic	Burundi			Kenya			Tanzania			Uganda			All Combined		
	Land border	Wet border	All	Land border	Wet border	All	Land border	Wet border	All	Land border	Wet border	All	Land border	Wet border	All
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Do you refer any of your clients to any other facility within the country?	-	15/15	15/15	17/18	18/22	88	79	90	85	96	15/16	95	89	90	90
How do you refer your clients to other facilities in the country?															
Verbal referral only		1/15	1/15	0/18	0/22	0	0	0	0	0	1/16	2	0	2	1
Informal written (and verbal) referral		7/15	7/15	3/18	4/22	18	4	8	6	11	4/16	16	9	20	15
Formal written (and verbal) referral		7/15	7/15	12/18	14/22	65	68	79	75	79	10/16	73	72	67	69
Telephone referral		0/15	0/15	0/18	0/22	0	4	0	1	0	0/16	0	1	0	1
Escorted referral		0/15	0/15	3/18	4/22	18	21	10	15	11	1/16	9	16	10	13
Other		0/15	0/15	0/18	0/22	0	4	3	3	0	0/16	0	1	1	1
Do you refer any of your clients to a facility in another country?	-	4/15	4/15	7/18	4/22	28	14	15	15	68	7/16	59	41	23	31
How do you track your referred clients/patients?															
We don't track		6/15	6/15	1/18	5/22	15	11	8	9	11	4/16	16	9	20	15
We get report from client/relatives		3/15	3/15	4/18	0/22	10	18	8	12	7	1/16	7	15	8	11
We call facility to confirm if patient reached		1/15	1/15	6/18	9/22	38	36	64	52	75	10/16	70	50	49	49
We get feedback from facility		5/15	5/15	3/18	3/22	15	32	21	25	4	1/16	5	18	18	18
Other		0/15	0/15	4/18	5/22	23	4	0	1	4	0/16	2	8	5	7



How often do you receive supportive supervision?															
Monthly		8/15	8/15	8/18	9/22	43	71	77	75	57	8/16	55	59	60	60
Quarterly		6/15	6/15	6/18	11/22	43	11	8	9	25	7/16	32	22	29	26
Every 6 months		0/15	0/15	0/18	0/22	0	0	5	3	0	0	0	0	2	1
Other		1/15	1/15	4/18	2/22	15	18	10	13	18	1/16	14	19	9	13
Who do you receive supportive supervision from?															
Head of department		3/15	3/15	0/18	1/22	3	46	33	39	21	5/16	25	26	24	25
Facility in-charge		9/15	9/15	1/18	0/22	3	11	31	22	39	6/16	39	20	29	25
Team from CHMT/DHMT		3/15	3/15	17/18	11/22	70	29	28	28	14	4/16	18	39	32	35
Team from the national MOH HQ/Government		0/15	0/15	0/18	2/22	5	11	5	7	14	0	9	9	4	7
Other		0/15	0/15	0/18	8/22	20	4	3	3	11	1/16	9	5	11	8
N	O	15	15	18	22	40	28	39	67	28	16	44	74	92	166

C/DHMT – county/district health management team; MOH – Ministry of Health



Annex Table 5. Service delivery and perceptions of services given to patients/clients by health care worker

Characteristic	Burundi			Kenya			Tanzania			Uganda			All Combined		
	Land border	Wet border*	All*	Land border*	Wet border*	All	Land border	Wet border	All	Land border	Wet border*	All	Land border	Wet border	All
	%					%	%	%	%	%		%	%	%	%
Do you screen your clients for TB at this facility?	-	7/15	7/15	18/18	20/22	95	96	67	79	93	15/16	93	96	74	84
Do you provide isoniazid preventive therapy (IPT) to child contacts under 5 years?	-	8/15	8/15	13/18	18/22	78	93	74	82	39	11/16	50	68	72	70
Do you provide IPT to people living with HIV?	-	3/15	3/15	14/18	19/22	83	86	85	85	57	11/16	61	73	72	72
Does this facility implement TB infection prevention/control measures?	-	10/15	10/15	17/18	21/22	95	89	95	93	89	16/16	93	91	91	91
In this department/facility, do you provide TB Active Case Finding (ACF) to all your patients?	-	6/15	6/15	15/18	19/22	85	64	62	63	75	14/16	80	73	68	70
In this department/facility, do you offer antiretroviral therapy (ART) to all HIV-positive TB patients?	-	15/15	15/15	13/18	20/22	83	86	82	84	79	14/16	82	80	88	84
In this facility, do you offer CPT to all HIV-positive TB patients?	-	15/15	15/15	14/18	19/22	83	79	85	82	86	14/16	86	81	88	85
In the last 6 months, have you been unable to provide TB services because you ran out of the following supplies:															
No	-	12/15	12/15	0/18	0/22	0	96	90	93	0	0/16	0	36	51	45
Lab supplies	-	3/15	3/15	2/18	1/22	8	4	10	7	18	0/16	11	11	9	10



Drugs	-	0/15	0/15	16/18	20/22	90	0	0	0	79	16/16	86	51	39	45
Don't know	-	0/15	0/15	0/18	1/22	3	0	0	0	4	0/16	2	1	1	1
How comfortable are you discussing TB with clients?															
Very uncomfortable	-	4/15	4/15	3/18	11/22	35	11	10	10	7	3/16	11	11	24	18
Somewhat uncomfortable	-	2/15	2/15	4/18	1/22	13	0	10	6	7	2/16	9	8	10	9
Comfortable	-	8/15	8/15	5/18	2/22	18	39	44	42	39	8/16	43	36	38	37
Very comfortable	-	0/15	0/15	6/18	8/22	35	46	33	39	39	3/16	32	41	26	33
Unknown	-	1/15	1/15	0/18	0/22	0	4	3	3	7	0/16	5	4	2	3
Perception of the community's supportiveness about providing services to key and priority populations															
Very supportive	-	6/15	6/15	4/18	12/22	40	32	28	30	32	7/16	36	30	39	35
Somewhat supportive	-	4/15	4/15	10/18	7/22	43	29	41	36	39	5/16	36	39	35	37
Not very support	-	0/15	0/15	3/18	1/22	10	7	13	10	11	1/16	9	11	8	9
Not supportive at all	-	0/15	0/15	0/18	0/22	0	14	5	9	0	2/16	5	5	4	5
Other	-	5/15	5/15	1/18	1/22	5	0	0	0	7	0/16	5	4	7	5
Don't know	-	0/15	0/15	0/18	1/22	3	18	13	15	11	1/16	9	11	8	9
N	0	15	15	18	22	40	28	39	67	28	16	44	74	92	166

*Absolute numbers are presented where the denominator was less than 25.



Annex Table 6a. Living arrangements of TB patients in the land cross-border sites

Characteristic	Busia			Malaba			Taveta/Holili			Namanga			Isebania/Sirare			Rusumo	Katuna	All Combined
	Kenya	Uganda	All	Kenya	Uganda	All	Kenya	Tanzania	All	Kenya	Tanzania	All	Kenya	Tanzania	All	Tanzania	Uganda	
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	
Living with one or more people	80	89	83	94	79	85	83	79	81	80	86	84	76	95	84	96	88	84
Alone	20	11	17	6	21	15	18	21	19	22	14	17	24	5	16	4	12	16
One	4	3	3	13	10	11	15	1	6	6	10	8	0	0	0	12	7	6
Two	15	8	13	35	4	16	18	7	11	6	10	8	14	3	9	4	5	10
Three	15	13	14	6	21	15	8	21	16	22	30	27	12	11	11	12	22	18
Four	6	0	4	10	6	8	15	21	19	20	12	15	16	14	15	27	18	13
Five or more	40	66	48	29	38	34	28	29	29	25	25	25	34	68	48	42	37	36
Has dependents	70	66	69	71	77	75	73	79	77	66	57	60	68	76	71	73	50	67
N	95	39	134	33	53	86	40	68	108	74	113	187	68	41	109	27	71	722
Number of dependents																		
None	30	34	31	29	23	25	28	21	23	34	43	40	32	24	29	27	50	33
1–2	30	18	26	39	21	28	38	28	31	17	25	22	16	11	14	12	18	23
3–4	23	18	21	26	19	22	23	34	30	34	18	24	26	32	29	42	10	24
≥5	18	29	21	6	38	25	13	18	16	15	15	15	26	32	29	19	22	20
N	80	38	118	31	48	79	40	68	108	65	102	167	50	37	87	26	60	645



Annex Table 6b. Living arrangements of TB patients in the wet cross-border sites

Characteristic	Muhuru Bay/Kirongwe			Port Victoria, Sio Port/Majanji			Kabonga/Kagunga			Kasensero/Kagera Region			Mbita/Namayingo			All Combined
	Kenya	Tanzania	All	Kenya	Uganda*	All	Burundi	Tanzania	All	Tanzania	Uganda	All	Kenya	Uganda	All	
	%	%	%	%		%	%	%	%	%	%	%	%	%	%	%
Living with one or more people	92	86	88	90	14/16	90	96	92	94	93	90	91	91	90	91	91
Alone	8	14	12	11	2/16	12	9	9	9	7	10	9	9	10	9	10
One	0	9	5	3	0/16	3	1	3	2	2	2	2	9	5	7	4
Two	4	6	5	5	2/16	6	8	11	9	15	13	14	15	10	13	10
Three	17	12	14	18	2/16	17	7	9	8	24	16	19	18	10	15	14
Four	17	5	10	16	2/16	16	12	15	14	19	10	13	16	18	17	14
Five or more	54	53	53	46	8/16	47	63	52	58	34	49	43	34	47	39	48
Has dependents	85	51	64	77	12/16	77	46	57	51	80	71	74	78	48	66	65
N	72	85	157	67	17	84	91	66	157	64	122	186	95	67	162	746
Number of dependents																
None	15	49	36	21	4/16	22	54	43	49	20	29	26	22	52	34	34
1-2	13	13	13	21	1/16	18	13	6	10	27	21	23	20	10	16	16
3-4	33	14	22	25	3/16	23	15	29	21	32	26	28	29	10	21	23
≥5	38	23	29	33	8/16	36	18	22	19	20	25	23	28	28	28	26
N	52	77	129	61	16	77	89	65	154	59	105	164	89	60	149	673

*Absolute numbers are presented where the denominator was less than 25.



Annex Table 7a. Mobility of TB patients in the land cross-border sites

Characteristic	Busia			Malaba			Taveta/Holili			Namanga			Isebania/Sirare			Rusumo	Katuna	All Combined
	Kenya	Uganda	All	Kenya	Uganda	All	Kenya	Tanzania	All	Kenya	Tanzania	All	Kenya	Tanzania	All	Tanzania	Uganda	
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	
Frequency of travel to another county/district in the last 3 months																		
Never	61	64	62	48	66	59	80	47	59	77	64	69	69	59	65	96	56	64
Weekly	2	5	3	9	8	8	5	6	6	4	3	3	4	5	5	0	10	5
Monthly	9	8	9	6	15	12	5	29	20	4	5	5	6	7	6	0	25	11
Quarterly	20	23	21	24	9	15	5	16	12	11	21	17	9	24	15	4	8	15
Other	7	0	5	12	2	6	5	1	3	4	7	6	12	5	9	0	0	5
Frequency of travel to another country in the last 3 months																		
Never	64	82	69	42	89	71	88	81	83	85	96	91	76	85	80	96	92	82
Weekly	23	8	19	30	8	16	5	9	7	7	3	4	12	2	8	0	3	9
Monthly	4	0	3	12	0	5	0	3	2	3	1	2	1	5	3	0	3	2
Quarterly	5	5	5	9	4	6	5	6	6	1	0	1	6	5	6	4	1	4
Other	3	5	4	6	0	2	3	1	2	4	1	2	4	2	4	0	1	2
N	95	39	134	33	53	86	40	68	108	74	113	187	68	41	109	27	71	722



Annex Table 7b. Mobility of TB patients in the wet cross-border sites

Characteristic	Muhuru Bay/Kirongwe			Port Victoria, Sio Port/Majanji			Kabonga/Kagunga			Kasensero/Kagera Region			Mbita/Namayingo			All Combined
	Kenya	Tanzania	All	Kenya	Uganda*	All	Burundi	Tanzania	All	Tanzania	Uganda	All	Kenya	Uganda	All	
	%	%	%	%		%	%	%	%	%	%	%	%	%	%	%
Frequency of travel to another county/district in the last 3 months																
Never	63	66	64	73	11/17	71	77	83	80	67	83	77	67	64	66	72
Weekly	1	2	2	3	2/17	5	1	2	1	3	4	4	2	7	4	3
Monthly	7	0	3	12	3/17	13	3	2	3	11	8	9	9	13	11	7
Quarterly	11	29	21	10	1/17	10	13	14	13	16	4	8	17	10	14	13
Other	18	2	10	1	0/17	1	5	0	3	3	1	2	4	4	4	4
Frequency of travel to another country in the last 3 months																
Never	88	76	82	84	15/17	85	92	94	93	94	90	91	95	82	90	88
Weekly	1	1	1	4	0/17	4	2	0	1	0	2	1	0	4	2	2
Monthly	6	2	4	3	2/17	5	1	0	1	0	4	3	2	6	4	3
Quarterly	4	19	12	6	0/17	5	2	6	4	6	3	4	1	6	3	6
Other	1	1	1	3	0/17	2	2	0	1	0	1	1	2	1	2	1
N	72	85	157	67	17	84	91	66	157	64	122	186	95	67	162	746

*Absolute numbers are presented where the denominator was less than 25.



Annex Table 8a. Screening for TB and HIV at the land cross-border sites

Characteristic	Busia			Malaba			Taveta/Holili			Namanga			Isebania/Sirare			Rusumo	Katuna	All Combined
	Kenya	Uganda	All	Kenya	Uganda	All	Kenya	Tanzania	All	Kenya	Tanzania	All	Kenya	Tanzania	All	Tanzania	Uganda	
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Type of TB with which the patient was diagnosed																		
Bacteriologically confirmed PTB	51	62	54	67	51	57	80	50	61	62	62	62	40	68	50	41	66	58
Clinically diagnosed pulmonary TB	21	33	25	21	9	14	18	44	34	20	12	16	26	10	20	26	13	21
Extrapulmonary TB	11	0	7	6	9	8	3	4	4	4	8	6	4	7	6	30	4	7
Don't know/not indicated on card	18	5	14	6	30	21	0	1	1	14	18	16	29	15	24	4	17	15
Had any other family member examined for TB at the HC or hospital	33	5	25	36	13	22	33	15	21	36	34	35	28	10	21	30	45	28
Had household member(s) or workmate(s) screened for TB at home/workplace	5	8	6	18	9	13	28	6	14	18	20	19	9	7	8	7	37	15
Patient was HIV infected**	34	36	34	27	25	26	28	25	26	26	26	26	29	29	29	41	42	30
N	95	39	134	33	53	86	40	68	108	74	113	187	68	41	109	27	71	722
Reported to have been screened for TB when tested positive for HIV	81	9/14	76	7/9	8/13	15/22	8/11	9/17	61	11/19	52	54	19/20	7/11	84	11/11	38	66
HIV infected and on ART	100	14/14	100	9/9	13/13	22/22	11/11	16/17	96	17/19	90	90	20/20	10/11	97	11/11	100	97
N	32	14	46	9	13	22	11	17	28	19	29	48	20	11	31	11	29	215

**Including a self-reported HIV-positive status



Annex Table 8b. Screening for TB and HIV at the wet cross-border sites

Characteristic	Muhuru Bay/Kirongwe			Port Victoria, Sio Port/Majanji			Kabonga/Kagunga			Kasensero/Kagera Region			Mbita/Namayingo			All Combined
	Kenya	Tanzania	All	Kenya	Uganda*	All	Burundi	Tanzania	All	Tanzania	Uganda	All	Kenya	Uganda	All	
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	
Type of TB with which the patient was diagnosed																
Bacteriologically confirmed PTB	45	22	33	25	4/16	25	31	32	31	13	39	30	53	34	46	34
Clinically diagnosed pulmonary TB	29	32	31	34	6/16	35	32	32	32	48	42	44	34	27	31	35
Extrapulmonary TB	8	25	17	19	3/16	19	26	20	24	30	12	18	11	28	18	19
Don't know/not indicated on card	3	19	12	20	2/16	19	9	15	12	7	6	6	1	8	4	10
Had any other family member examined for TB at the HC or hospital	33	8	20	21	6/17	24	18	11	15	25	29	27	45	25	37	25
Had household member(s) or workmate(s) screened for TB at home/workplace	26	7	16	10	6/17	15	0	5	2	8	30	23	37	39	38	19
Patient was HIV infected**	41	38	39	42	8/16	44	7	12	9	38	53	48	71	42	59	39
N	72	85	157	67	17	84	91	66	157	64	122	186	95	67	162	746
Reported to have been screened for TB when tested positive for HIV	59	48	54	77	7/8	79	3/5	7/8	10/13	18/20	59	67	59	56	58	63
HIV infected and on ART	96	93	95	100	8/8	100	5/5	7/8	12/13	20/20	98	99	98	96	98	97
N	27	29	56	26	8	34	5	8	13	20	58	78	64	27	91	272

*Absolute numbers are presented where the denominator was less than 25; **Includes a self-reported HIV-positive status



Annex Table 9a. TB patients' knowledge of TB at the land cross-border sites

Characteristic	Busia			Malaba			Taveta/Holili			Namanga			Isebania/Sirare			Rusumo	Katuna	All Combined
	Kenya	Uganda	All	Kenya	Uganda	All	Kenya	Tanzania	All	Kenya	Tanzania	All	Kenya	Tanzania	All	Tanzania	Uganda	
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	
Where patient first learned about tuberculosis or TB																		
Radio	17	39	24	10	31	23	8	18	14	4	2	3	17	13	15	0	8	13
TV	1	3	2	3	15	11	0	7	5	0	1	1	0	0	0	0	0	2
Brochures, posters, and other printed materials	6	0	4	6	0	2	5	9	7	7	6	7	3	5	4	4	0	5
Health workers	14	11	13	10	13	12	33	41	38	21	65	48	2	51	21	54	19	29
Family/friends/neighbors/colleagues	43	21	37	55	29	39	30	7	16	51	11	26	47	21	37	8	53	31
Teachers	14	24	17	6	2	4	13	4	7	9	3	5	25	5	17	0	13	10
Other	6	3	5	10	10	10	13	13	13	7	12	10	5	5	5	35	8	10
Signs and symptoms of TB mentioned by patients																		
Cough of any duration	94	63	85	87	96	93	75	96	88	79	89	85	78	79	79	88	86	86
Coughing up blood	17	50	27	3	23	16	18	25	22	13	25	21	15	36	23	27	50	25
Severe headache	16	18	17	6	10	8	15	15	15	7	11	10	8	8	8	12	6	11
Nausea	9	13	10	6	10	8	8	13	11	3	15	10	14	8	11	8	19	11
Weight loss	35	42	37	32	44	40	35	53	46	25	41	35	24	26	24	23	41	36
Night sweats	45	61	50	32	15	22	25	68	52	34	76	60	39	31	36	42	34	46
No appetite	28	21	26	35	17	24	28	22	24	19	12	15	10	3	7	4	16	18
Chest pain	58	66	60	55	37	43	40	12	22	43	22	30	32	21	28	42	47	38
Fever	13	18	14	16	10	12	18	28	24	16	19	18	19	15	17	4	20	17
Fever without clear cause that lasts more than 7 days	2	0	2	6	0	2	0	13	8	0	2	1	0	0	0	12	2	3
Shortness of breath	23	5	17	10	4	6	23	12	16	29	8	16	12	21	15	12	16	15



Ongoing fatigue	31	5	23	29	10	17	38	38	38	34	16	23	39	13	29	19	11	24
Other	18	3	13	13	6	8	15	0	6	13	0	5	14	3	9	4	14	8
Patients' knowledge of how a person can get TB																		
Through handshakes	0	5	2	0	4	2	0	7	5	0	1	1	0	3	1	4	5	2
Through the air when a person with TB coughs or sneezes	81	92	84	97	79	86	73	97	88	60	89	78	85	72	80	62	72	81
Through sharing dishes	16	47	25	6	21	16	40	12	22	35	9	19	19	13	16	19	34	21
Through eating from the same plate	11	26	16	3	6	5	18	3	8	12	5	7	2	15	7	8	55	13
Through touching items in public places	0	0	0	3	6	5	10	21	17	0	1	1	0	0	0	0	2	4
Other	8	3	6	32	13	20	25	0	9	38	8	20	27	21	24	27	39	18
Do not know	14	8	12	3	10	7	15	0	6	16	11	13	8	10	9	27	3	10
Patients' knowledge of how a person can prevent getting TB																		
Avoid shaking hands	1	8	3	0	4	2	0	1	1	0	3	2	0	5	2	0	3	2
Covering mouth and nose when coughing or sneezing	70	92	77	81	79	80	55	94	80	28	81	61	61	41	53	46	69	68
Avoid sharing dishes	22	55	32	6	15	12	45	16	27	29	10	17	19	26	21	31	72	27
Washing hands after touching items in public places	3	16	7	0	15	10	15	44	33	3	2	2	0	0	0	4	14	10
Closing windows at home	5	0	3	0	2	1	5	0	2	10	3	6	0	3	1	4	0	3
Through good nutrition	1	5	2	0	2	1	13	0	5	1	0	1	0	3	1	0	2	2
By praying	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other	26	8	21	39	19	27	13	1	6	37	10	20	31	18	26	27	44	22
Do not know	17	5	13	19	8	12	28	1	11	26	10	16	22	26	23	23	5	15
Patient knows if TB is a contagious disease	77	100	84	61	92	81	90	100	96	87	93	90	86	92	89	96	94	89
N	88	38	126	31	52	83	40	68	108	68	110	178	59	39	98	26	64	683



Annex Table 9b. Patients' knowledge of TB at the wet cross-border sites

Characteristic	Muhuru Bay/Kirongwe			Port Victoria, Sio Port/Majanji			Kabonga/Kagunga			Kasensero/Kagera Region			Mbita/Namayingo			All Combined
	Kenya	Tanzania	All	Kenya	Uganda*	All	Burundi	Tanzania	All	Tanzania	Uganda	All	Kenya	Uganda	All	
	%	%	%	%		%	%	%	%	%	%	%	%	%	%	
Where patient first learned about tuberculosis or TB																
Radio	18	12	15	28	3/16	26	38	2	23	10	12	11	10	16	12	16
TV	0	0	0	2	0/16	1	0	2	1	0	3	2	1	2	1	1
Brochures, posters, and other printed materials	5	0	2	8	0/16	6	0	3	1	10	0	4	16	2	10	5
Health workers	11	43	28	13	1/16	11	14	68	37	50	46	48	17	23	20	31
Family/friends/neighbors/colleagues	56	38	46	41	10/16	45	41	5	26	18	33	28	42	45	44	36
Teachers	11	1	6	2	1/16	3	2	0	1	3	5	5	10	11	10	5
Other	0	6	3	8	1/16	8	4	22	12	8	1	4	3	2	3	6
Signs and symptoms of TB mentioned by patients																
Cough of any duration	76	75	76	92	15/16	93	95	91	93	90	81	84	86	84	85	86
Coughing up blood	15	40	29	13	1/16	11	18	37	26	57	57	57	14	23	18	30
Severe headache	9	25	17	9	0/16	8	8	5	6	33	35	35	5	6	6	15
Nausea	8	13	10	6	0/16	5	31	8	21	33	39	37	3	6	4	17
Weight loss	27	21	24	28	3/16	26	29	31	29	62	36	45	27	42	33	33
Night sweats	50	47	48	41	4/16	38	52	52	52	45	40	42	20	23	21	40
No appetite	20	6	13	16	0/16	13	24	5	16	38	25	30	9	19	13	18
Chest pain	33	18	25	59	9/16	59	45	29	38	42	35	38	40	61	49	40
Fever	20	13	16	22	1/16	19	12	15	13	42	21	28	18	16	17	19
Fever without clear cause that lasts more than 7 days	0	9	5	5	0/16	4	11	23	16	18	7	11	1	2	1	8



Shortness of breath	17	9	13	14	1/16	13	20	17	19	8	21	16	9	9	9	14
Ongoing fatigue	45	35	40	25	1/16	21	42	23	34	40	14	23	28	9	21	28
Other	14	0	6	13	0/16	10	11	15	13	0	4	2	23	0	13	9
Patients' knowledge of how a person can get TB																
Through handshakes	0	9	5	0	0/16	0	0	2	1	3	9	7	0	3	1	3
Through the air when a person with TB coughs or sneezes	79	62	70	81	13/16	81	74	82	77	72	96	88	91	83	88	81
Through sharing dishes	9	16	13	8	5/16	13	34	5	22	17	47	36	13	16	14	21
Through eating from the same plate	8	16	12	2	2/16	4	30	3	19	15	35	28	4	6	5	15
Through touching items in public places	3	4	3	2	1/16	3	1	2	1	0	18	12	0	3	1	4
Other	18	4	10	9	2/16	10	25	11	19	12	6	8	22	6	15	13
Do not know	11	27	20	17	2/16	16	10	17	13	17	1	6	8	9	8	12
Patients' knowledge of how a person can prevent getting TB																
Avoid shaking hands	0	8	4	0	1/16	1	1	3	2	10	8	9	0	13	5	5
Covering mouth and nose when coughing or sneezing	55	55	55	73	11/16	73	34	58	44	67	94	84	74	73	74	66
Avoid sharing dishes	11	12	11	20	5/16	23	40	11	28	22	55	44	13	22	17	25
Washing hands after touching items in public places	5	5	5	3	0/16	3	3	3	3	10	43	31	4	6	5	11
Closing windows at home	0	1	1	2	0/16	1	0	3	1	3	1	2	0	11	4	2
Through good nutrition	3	1	2	2	0/16	1	42	2	25	5	10	8	1	3	2	9
By praying	0	0	0	0	0/16	0	0	0	0	0	4	2	0	0	0	1
Other	35	8	20	17	3/16	18	36	28	33	12	5	7	29	11	22	20
Do not know	18	35	27	14	1/16	13	9	25	15	18	2	8	20	16	18	16
Patient knows if TB is a contagious disease	80	94	87	70	16/16	76	95	92	94	95	94	94	98	91	95	91
N	66	77	143	64	16	80	91	65	156	60	110	170	92	64	156	705

*Absolute numbers are presented where the denominator was less than 25.



Annex Table 10a. Patients' attitudes and perceptions of TB at the land cross-border sites

Characteristic	Busia			Malaba			Taveta/Holili			Namanga			Isebania/Sirare			Rusumo	Katuna	All Combined
	Kenya	Uganda	All	Kenya	Uganda	All	Kenya	Tanzania	All	Kenya	Tanzania	All	Kenya	Tanzania	All	Tanzania	Uganda	
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Patients' reaction when s/he found out that s/he had TB																		
Fear	28	53	36	16	42	33	30	34	32	22	24	23	15	23	18	8	56	30
Surprise	40	13	32	29	17	22	20	19	19	41	32	35	39	5	26	4	16	26
Shame/embarrassment	1	26	9	6	2	4	13	22	19	3	31	20	0	21	8	38	5	13
Sadness or hopelessness	16	45	25	16	19	18	28	16	20	9	4	6	20	13	17	12	31	17
Other	47	24	40	61	33	43	58	28	39	40	28	33	29	56	40	50	36	38
In your community, how is a person who has TB usually regarded/treated?																		
Most people reject him/her	17	18	17	13	17	16	25	12	17	22	14	17	29	33	31	31	31	21
Most people are friendly, but they generally try to avoid him/her	28	55	37	16	48	36	15	34	27	19	29	25	17	10	14	12	41	28
The community mostly supports and helps him/her	49	26	42	65	17	35	50	50	50	51	48	49	44	13	32	58	16	41
Other	6	0	4	6	17	13	10	4	6	7	9	8	10	44	23	0	13	10
What would a man in your community do if his wife got TB?																		
Take care of her treatment	65	92	73	68	85	78	75	100	91	87	75	80	56	79	65	92	88	79
Chase her away	1	8	3	0	2	1	10	0	4	3	5	4	7	5	6	0	2	3
Other	15	0	10	23	0	8	0	0	0	3	0	1	15	8	12	8	5	6
Do not know	19	0	13	10	13	12	15	0	6	7	20	15	22	8	16	0	6	12
N	88	38	126	31	52	83	40	68	108	68	110	178	59	39	98	26	64	683



Annex Table 10b. Patients' attitudes and perceptions of TB at the wet cross-border sites

Characteristic	Muhuru Bay/Kirongwe			Port Victoria, Sio Port/Majanji			Kabonga/Kagunga			Kasensero/Kagera Region			Mbita/Namayingo			All Combined
	Kenya	Tanzania	All	Kenya	Uganda*	All	Burundi	Tanzania	All	Tanzania	Uganda	All	Kenya	Uganda	All	
	%	%	%	%		%	%	%	%	%	%	%	%	%	%	%
Patients' reaction when s/he found out that s/he had TB																
Fear	9	16	13	22	6/16	25	49	9	33	28	69	55	15	53	31	33
Surprise	24	9	16	30	5/16	30	31	11	22	12	19	16	13	14	13	19
Shame/embarrassment	0	17	9	5	1/16	5	16	45	28	35	7	17	0	2	1	13
Sadness or hopelessness	15	14	15	23	1/16	20	20	17	19	33	41	38	16	25	20	23
Other	39	48	44	47	4/16	43	33	35	34	20	13	15	66	16	46	35
In your community, how is a person who has TB usually regarded/treated?																
Most people reject him/her	17	25	21	19	1/16	16	51	11	34	37	21	26	22	19	21	25
Most people are friendly, but they generally try to avoid him/her	21	22	22	30	11/16	38	21	11	17	13	59	43	23	52	35	30
The community mostly supports and helps him/her	38	17	27	45	3/16	40	18	77	42	48	17	28	37	19	29	33
Other	24	36	31	6	1/16	6	11	2	7	2	3	2	18	11	15	12
What would a man in your community do if his wife got TB?																
Take care of her treatment	65	81	73	66	15/16	71	93	100	96	87	92	90	58	83	68	81
Chase her away	0	9	5	5	1/16	5	1	0	1	2	4	3	3	5	4	3
Other	9	3	6	8	0/16	6	2	0	1	3	0	1	22	0	13	5
Do not know	26	8	16	22	0/16	18	3	0	2	8	5	6	17	13	15	10
N	66	77	143	64	16	80	91	65	156	60	110	170	92	64	156	705

*Absolute numbers are presented where the denominator was less than 25.



Annex Table 11a. Services wanted by the TB patients at the land cross-border sites when they visited the health facility

Characteristic	Busia			Malaba			Taveta/Holili			Namanga			Isebania/Sirare			Rusumo	Katuna	All Combined
	Kenya	Uganda	All	Kenya	Uganda	All	Kenya	Tanzania	All	Kenya	Tanzania	All	Kenya	Tanzania	All	Tanzania	Uganda	
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	
Type of services wanted by the TB patients																		
Screening for TB	1	8	3	0	9	6	3	0	1	0	4	2	1	0	1	0	10	3
TB DOTS	0	21	6	0	4	2	0	0	0	0	2	1	1	5	3	0	0	2
TB medication refill	94	69	87	100	94	97	90	93	92	88	91	90	90	88	89	100	89	90
Isoniazid preventive therapy (IPT)	0	0	0	0	4	2	0	0	0	0	0	0	1	2	2	0	4	1
Chest/cough pains	0	0	0	0	4	2	3	0	1	1	2	2	0	0	0	0	3	1
TB testing	0	5	1	0	2	1	0	1	1	1	2	2	1	0	1	0	4	2
HTS	0	0	0	0	4	2	0	1	1	0	0	0	0	0	0	0	4	1
Brought sputum specimen	1	3	1	0	0	0	5	0	2	4	0	2	1	2	2	0	11	2
Follow Smear	2	5	3	6	2	3	5	0	2	1	1	1	1	2	2	0	11	3
Treatment for common illnesses	2	0	1	0	4	2	3	3	3	7	1	3	0	0	0	0	7	2
Laboratory services	0	0	0	0	2	1	0	1	1	3	4	3	0	0	0	0	0	1
ARV refill	5	8	6	12	4	7	3	1	2	5	6	6	6	5	6	15	11	6
Nutrition services	3	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	4	1
Screening for NCD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Others	11	8	10	24	2	10	25	3	11	5	4	5	4	2	4	7	14	8
N	95	39	134	33	53	86	40	68	108	74	113	187	68	41	109	27	71	722



Annex Table 11b. Services wanted by the TB patients at the wet cross-border sites when they visited the health facility

Characteristic	Muhuru Bay/Kirongwe			Port Victoria, Sio Port/Majanji			Kabonga/ Kagunga			Kasensero/Kagera Region			Mbita/Namayingo			All Combined
	Kenya	Tanzania	All	Kenya	Uganda*	All	Burundi	Tanzania	All	Tanzania	Uganda	All	Kenya	Uganda	All	
	%	%	%	%		%	%	%	%	%	%	%	%	%	%	%
Type of services wanted by the TB patients																
Screening for TB	1	0	1	3	0/17	2	2	0	1	3	2	2	1	1	1	1
TB DOTS	0	1	1	1	1/17	2	10	5	8	5	7	6	0	1	1	4
TB medication refill	94	98	96	88	16/17	89	85	98	90	95	89	91	91	97	93	92
Isoniazid preventive therapy (IPT)	0	0	0	3	0/17	2	1	0	1	3	2	3	0	0	0	1
Chest/cough pains	0	0	0	0	0/17	0	1	0	1	0	7	4	2	0	1	1
TB testing	0	0	0	1	0/17	1	1	0	1	2	3	3	1	0	1	1
HTS	1	0	1	0	0/17	0	0	0	0	0	1	1	3	0	2	1
Brought sputum specimen	1	1	1	1	0/17	1	2	0	1	0	7	4	2	1	2	2
Follow Smear	0	0	0	3	0/17	2	0	2	1	2	8	6	3	0	2	2
Treatment for common illnesses	1	1	1	0	0/17	0	0	0	0	6	5	5	0	0	0	2
Laboratory services	3	0	1	0	0/17	0	0	0	0	2	2	2	2	0	1	1
ARV refill	8	4	6	7	1/17	7	0	3	1	5	14	11	16	10	14	8
Nutrition services	0	1	1	0	0/17	0	0	0	0	0	1	1	0	1	1	0
Screening for NCD	0	1	1	0	0/17	0	0	0	0	0	0	0	0	0	0	0
Others	8	1	4	6	0/17	5	10	0	6	0	2	2	8	4	7	5
N	72	85	157	67	17	84	91	66	157	64	122	186	95	67	162	746

*Absolute numbers are presented where the denominator was less than 25.



Annex Table 12a. Access to health care services and perception of services received by TB patients at the land cross-border sites

Characteristic	Busia			Malaba			Taveta/Holili			Namanga			Isebania/Sirare			Rusumo	Katuna	All Combined
	Kenya	Uganda	All	Kenya	Uganda	All	Kenya	Tanzania	All	Kenya	Tanzania	All	Kenya	Tanzania	All	Tanzania	Uganda	
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	
Main mode of transport to the health facility																		
Walking/on foot	29	33	31	30	34	33	35	6	17	16	19	18	31	20	27	37	21	24
Motorcycle/bicycle (Boda-boda)	60	67	62	45	47	47	65	37	47	24	26	25	53	78	62	63	41	46
Matatu/taxi	5	0	4	12	13	13	0	57	36	41	53	48	16	2	11	0	27	24
Other	5	0	4	12	6	8	0	0	0	19	3	9	0	0	0	0	11	5
Reasons for choice of current facility for TB treatment																		
Cost reasonable	4	10	6	9	4	6	23	6	12	9	4	6	12	12	12	0	13	8
Quality of services	65	41	58	55	57	56	50	74	65	45	70	60	63	34	52	59	75	60
Good attitude of providers	32	51	37	45	30	36	40	22	29	30	14	20	18	20	18	15	49	29
Distance close to my location	69	82	73	73	43	55	73	32	47	53	75	66	53	63	57	74	39	60
Location to the main road (easily accessible)	7	36	16	6	19	14	18	51	39	1	13	9	3	12	6	0	4	14
Language	1	18	6	0	21	13	3	0	1	0	18	11	0	0	0	0	6	6
Other/no response	14	8	12	18	21	20	20	7	12	18	8	12	12	12	12	4	44	16
What the patients liked most about the services received from the facility																		
Quality of services	55	0	39	48	0	19	38	68	56	42	61	53	59	22	45	52	0	40



Good attitude of providers	21	0	15	24	0	9	30	4	14	23	23	23	24	44	31	30	0	18
Distance close to my location	19	0	13	12	0	5	25	9	15	23	14	18	7	15	10	15	0	12
No response	1	100	30	0	100	62	0	0	0	1	0	1	1	2	2	0	100	23
Others	4	0	3	15	0	6	8	19	15	11	2	5	9	17	12	4	0	7
Waiting time before the patient received services at the facility																		
Too long	3	3	3	0	4	2	8	0	3	1	4	3	10	2	7	4	0	3
Reasonable	72	77	73	64	70	67	73	43	54	57	77	69	62	46	56	41	82	66
No waiting	24	21	23	36	26	30	20	57	44	41	19	28	28	51	37	56	18	31
Don't know	1	0	1	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0
Received all services wanted at a health facility	96	100	97	94	100	98	93	99	96	99	98	98	99	100	99	100	96	98
Patient was referred to any other services than those for which health care was sought at the facility	12	13	12	12	11	12	8	3	5	4	1	2	24	2	16	0	11	8
Were you satisfied with the services you received from health facility provider for TB?																		
Very satisfied	66	36	57	82	45	59	80	41	56	72	41	53	49	24	39	56	79	56
Satisfied	24	59	34	12	47	34	13	56	40	16	47	35	32	68	46	37	11	35
Unsatisfied	1	3	1	0	0	0	3	3	3	0	4	3	1	0	1	4	0	2
Very unsatisfied	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0
Don't know/refused	8	3	7	6	8	7	5	0	2	12	7	9	18	7	14	4	10	8
N	95	39	134	33	53	86	40	68	108	74	113	187	68	41	109	27	71	722



Annex Table 12b. Access to health care services and perception of services received by TB patients at the wet cross-border sites

Characteristic	Muhuru Bay/Kirongwe			Port Victoria, Sio Port/Majanji			Kabonga/Kagunga			Kasensero/Kagera Region			Mbita/Namayingo			All Combined
	Kenya	Tanzania	All	Kenya	Uganda	All	Burundi	Tanzania	All	Tanzania	Uganda	All	Kenya	Uganda	All	
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	
Main mode of transport to the health facility																
Walking/on foot	25	24	24	25	5/17	26	60	39	52	22	20	20	28	24	27	30
Motor cycle/bicycle (Boda-boda)	61	71	66	63	12/17	64	34	39	36	41	68	59	60	75	66	58
Matatu/taxi	11	5	8	9	0	7	0	21	9	31	12	19	7	0	4	10
Other	3	1	2	3	0	2	5	0	3	6	0	2	4	1	3	3
Reasons for choice of current facility for TB treatment																
Cost reasonable	11	0	5	3	0	2	10	2	6	9	11	10	4	6	5	6
Quality of services	57	40	48	70	7/17	64	38	61	48	72	89	83	29	39	33	55
Good attitude of providers	35	36	36	46	10/17	49	34	5	22	22	89	66	14	46	27	40
Distance close to my location	61	64	62	72	6/17	64	45	79	59	59	47	51	73	57	66	60
Location to the main road (easily accessible)	3	21	13	6	8/17	14	55	0	32	23	20	21	5	31	16	20
Language	3	1	2	1	8/17	11	8	0	4	3	11	9	0	30	12	7
Other/no response	24	16	20	21	3/17	20	15	5	11	11	21	18	21	10	17	17
What the patients liked most about the services received from the facility																
Quality of services	46	31	38	43	0	35	14	45	27	45	0	16	35	0	20	26
Good attitude of providers	26	38	32	24	0	19	31	14	24	28	0	10	31	0	18	20
Distance close to my location	19	18	18	28	0	23	48	38	44	17	0	6	21	0	12	20



No response	0	5	3	1	17/17	21	0	0	0	0	100	66	0	100	41	28
Others	8	9	9	3	0	2	7	3	5	9	0	3	14	0	8	6
Waiting time before the patient received services at the facility																
Too long	13	2	7	1	4/17	6	1	6	3	8	3	5	2	4	3	5
Reasonable	63	41	51	70	11/17	69	68	70	69	77	85	82	89	70	81	71
No waiting	24	56	41	25	2/17	23	31	24	28	16	11	12	8	25	15	24
Don't Know	1	0	1	3	0/17	2	0	0	0	0	1	1	0	0	0	1
Received all services wanted at a health facility	99	99	99	94	17/17	95	98	98	98	98	98	98	98	97	98	98
Patient was referred to any other services than those for which health care was sought at the facility	15	0	7	3	1/17	4	2	2	2	0	13	9	8	7	8	6
Were you satisfied with the services you received from health facility provider for TB?																
Very satisfied	54	31	41	72	7/17	65	45	39	43	19	66	50	52	39	46	48
Satisfied	24	59	43	19	9/17	26	53	59	55	73	22	40	43	51	46	44
Unsatisfied	0	1	1	0	0	0	1	0	1	0	1	1	1	1	1	1
Very unsatisfied	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Don't know/refused	22	9	15	9	1/17	8	1	2	1	8	11	10	4	9	6	8
N	72	85	157	67	17	84	91	66	157	64	122	186	95	67	162	746

*Absolute numbers are presented where the denominator was less than 25.



Annex Table 13a. Health-seeking behavior for TB among patients at the land cross-border sites

Characteristic	Busia			Malaba			Taveta/Holili			Namanga			Isebania/Sirare			Rusumo	Katuna	All Combined
	Kenya	Uganda	All	Kenya	Uganda	All	Kenya	Tanzania	All	Kenya	Tanzania	All	Kenya	Tanzania	All	Tanzania	Uganda	
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	
Where/Whom did you first approach when you fell ill with TB?																		
Public health center or referral hospital	82	95	86	58	83	73	80	85	83	76	85	82	90	74	84	69	81	82
Private health facility	6	5	6	16	13	14	13	12	12	15	5	9	3	15	8	4	20	10
Drug seller or pharmacy	16	3	12	26	0	10	8	0	3	4	0	2	2	8	4	0	8	6
Other	11	0	8	23	4	11	5	3	4	0	25	16	0	8	3	27	8	10
How long did it take you from the onset of symptoms to the contact with the first provider?																		
<1 month	65	79	69	71	62	65	55	85	74	75	71	72	58	23	44	62	61	66
1–3 months	20	21	21	13	13	13	28	10	17	9	15	13	19	33	24	19	39	19
3–6 months	5	0	3	3	13	10	8	0	3	6	5	5	7	10	8	4	0	5
> 6 months	9	0	6	10	0	4	8	4	6	4	3	3	12	28	18	15	0	7
Don't know/refused	1	0	1	3	12	8	3	0	1	6	6	6	5	5	5	0	0	4
Patient gets any material support to avail self for TB services	24	5	18	23	6	13	18	12	14	42	3	18	4	16	9	0	17	15
Patient has ever been treated for TB in the past (before the current treatment)	11	8	10	6	13	11	33	10	19	26	10	16	14	21	16	23	16	15
Have you missed any dose for more than 2 days during the treatment?	1	13	5	0	15	10	10	3	6	3	6	5	2	3	2	15	6	6
Do you sometimes share your TB medications with anybody?	0	100	30	0	94	59	3	0	1	0	0	0	0	0	0	0	100	22
N	88	38	126	31	52	83	40	68	108	68	110	178	59	39	98	26	64	683



Annex Table 13b. Health-seeking behavior for TB among patients at the wet cross-border sites

Characteristic	Muhuru Bay/Kirongwe			Port Victoria, Sio Port/Majanji			Kabonga/Kagunga			Kasensero/Kagera Region			Mbita/Namayingo			All combined
	Kenya	Tanzania	All	Kenya	Uganda	All	Burundi	Tanzania	All	Tanzania	Uganda	All	Kenya	Uganda	All	
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	
Where/Whom did you first approach when you fell ill with TB?																
Public health center or referral hospital	61	66	64	72	12/16	73	90	78	85	90	94	92	88	75	83	81
Private health facility	5	6	6	14	2/16	14	0	3	1	2	7	5	10	13	11	7
Drug seller or pharmacy	2	18	10	11	0/16	9	0	3	1	0	5	4	3	2	3	5
Other	20	10	15	11	3/16	13	10	17	13	7	5	6	0	6	3	9
How long did it take you from the onset of symptoms to the contact with the first provider?																
<1 month	59	16	36	58	11/16	60	67	38	55	60	81	74	64	58	62	58
1 - 3 months	15	25	20	17	2/16	16	23	26	24	23	15	18	26	25	26	21
3 - 6 months	9	23	17	17	1/16	15	7	9	8	12	2	5	4	11	7	10
> 6 months	2	27	15	5	0/16	4	2	25	12	3	0	1	3	0	2	7
Don't know/Refused	15	9	12	3	2/16	5	1	2	1	2	2	2	2	6	4	5
Patient gets any material support to avail self for TB services	14	10	12	20	0/16	16	2	0	1	3	3	3	1	2	1	5
Patient has ever been treated for TB in the past (before the current treatment)	17	23	20	20	3/16	20	12	5	9	10	7	8	16	13	15	14
Have you missed any dose for more than 2 days during the treatment?	2	5	3	3	3/16	6	18	3	12	0	3	2	3	8	5	6
Do you sometimes share your TB medications with anybody?	0	0	0	0	16/16	20	0	0	0	0	95	62	0	94	38	26
N	66	77	143	64	16	80	91	65	156	60	110	170	92	64	156	705

*Absolute numbers are presented where the denominator was less than 25.



Annex Table 14a. Role of community health volunteers in facilitating TB services at the land cross-border sites

Characteristic	Busia			Malaba			Taveta/Holili			Namanga			Isebania/Sirare			Rusumo	Katuna	All Combined
	Kenya	Uganda	All	Kenya	Uganda	All	Kenya	Tanzania	All	Kenya	Tanzania	All	Kenya	Tanzania	All	Tanzania	Uganda	
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Did any community volunteers for TB visit you before you went to HC or hospital for TB treatment?	5	26	11	16	16	16	25	1	10	6	28	19	9	11	10	12	17	14
Who referred you to the health center/hospital to get tested for TB?																		
Community TB volunteers	2	3	2	3	8	6	18	6	10	3	16	11	5	5	5	0	6	7
Self-referral (includes if referred by friends, family)	73	71	72	45	63	57	65	91	81	75	42	54	80	64	73	100	55	67
Private care providers (both formal and informal)	0	0	0	0	6	4	0	4	3	3	3	3	2	15	7	0	3	3
Public health care worker/provider	18	24	20	26	12	17	10	1	5	10	5	7	0	8	3	0	39	12
Other/refused	7	3	6	26	8	14	10	1	5	6	33	22	8	5	7	0	2	11
Kind of DOT treatment that the patient got																		
Entirely through community DOT supporter (DS)	13	32	18	19	16	18	23	21	21	34	19	25	5	21	12	4	19	19
Mostly through DS (≥4 months) but also through hospitalized DOT	22	8	17	16	16	16	5	9	7	11	50	35	2	21	10	0	19	18
Only through hospitalized DOT	63	61	62	48	45	46	70	66	68	55	26	37	80	55	70	96	55	56
Don't know	3	0	2	16	22	20	3	4	4	0	6	4	13	3	9	0	8	6
N	88	38	126	31	52	83	40	68	108	68	110	178	59	39	98	26	64	683



Annex Table 14b: Role of community health volunteers in facilitating TB services at the land cross-border sites

Characteristic	Muhuru Bay/Kirongwe			Port Victoria, Sio Port/Majanji			Kabonga/Kagunga			Kasensero/Kagera Region			Mbita/Namayingo			All Combined
	Kenya	Tanzania	All	Kenya	Uganda	All	Burundi	Tanzania	All	Tanzania	Uganda	All	Kenya	Uganda	All	
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	
Did any community volunteers for TB visit you before you went to HC or hospital for TB treatment?	13	14	14	8	6/16	14	14	6	11	14	22	19	16	40	26	17
Who referred you to the health center/hospital to get tested for TB?																
Community TB volunteers	3	5	4	3	1/16	4	10	5	8	7	12	10	3	9	6	7
Self-referral (includes if referred by friends, family)	67	70	69	70	12/16	71	64	94	76	75	45	56	88	66	79	70
Private care providers (both formal and informal)	2	12	7	5	0	4	0	0	0	0	3	2	1	2	1	3
Public health care worker/provider	0	8	4	17	2/16	16	10	2	6	10	47	34	2	17	8	14
Other/refused	14	8	10	8	1/16	8	16	2	10	8	1	4	4	3	4	7
Kind of DOT treatment that the patient got																
Entirely through community DOT supporter (DS)	30	22	26	19	7/16	24	33	2	20	39	15	23	4	61	27	24
Mostly through DS (≥4 months) but also through hospitalized DOT	4	16	11	20	0/16	16	23	29	26	29	9	16	1	0	1	14
Only through hospitalized DOT	57	60	59	52	7/16	50	24	68	42	24	58	46	81	32	61	52
Don't know	9	3	5	9	2/16	10	20	2	12	8	18	15	13	6	10	11
N	66	77	143	64	16	80	91	65	156	60	110	170	92	64	156	705



ANNEX 2. METHODS

Sample Size Estimation for TB/HIV Patients

The sample size of clients (TB/HIV patients) required for each of the 12 border sites was determined considering a 50 percent level of satisfaction among clients, 5 percent level of significance, and 7 percent margin of error. The following sample size formula was used for estimating single proportion:

$$n = \frac{(z_{1-\alpha/2})^2 \times p \times (1 - p)}{d^2}$$

where n is the required sample of clients in each site, p is the assumed prevalence, and d is the desired precision or margin of error. Based on the assumed information, a sample size of 196 clients was required from each cross-border site with a 10 percent adjustment to account of non-response (216) and rounded to 220.

Annex Table 15. Expected and actual sample sizes that were realized by cross-border and country

Border Type	Cross-border Site Name	Facility In-Charges		Healthcare Workers		Community Volunteers		TB/HIV Patients	
		Expected	Sampled	Expected	Sampled	Expected	Sampled	Expected	Sampled
Land cross-border sites	Busia	19	9	33	26	8	8	220	134
	Kenya	10	6	27	17	4	5	148	95
	Uganda	9	3	6	9	4	3	72	39
	Malaba	11	17	30	41	8	4	220	86
	Kenya	3	4	6	12	4	2	156	33
	Uganda	8	13	24	29	4	2	64	53
	Taveta/Holili	15	12	36	28	8	8	220	108
	Kenya	10	9	21	14	4	4	-	40
	Tanzania	5	3	15	14	4	4	-	68
	Namanga	9	9	30	23	8	7	220	187
	Kenya	6	3	12	9	4	3	-	74
	Tanzania	3	6	18	14	4	4	-	113
	Isebania/Sirare	14	6	45	19	8	9	220	109
	Kenya	9	2	27	10	4	4	43	68
	Tanzania	5	4	18	9	4	5	177	41
	Rusumo	4	2	9	6	4	4	110	27
	Tanzania	4	2	9	6	4	4	110	27
	Katuna	5	16	24	23	4	5	110	71
	Uganda	5	16	24	23	4	5	110	71
	All land-sites	77	71	207	166	48	45	1320	722



Wet cross-border sites	Muhuru-Bay/Kirongwe	32	20	81	57	8	9	220	157
	Kenya	21	6	42	28	4	4	105	72
	Tanzania	11	14	39	29	4	5	115	85
	Sio Port/Majanji	12	10	48	35	8	6	220	84
	Kenya	8	6	33	27	4	4	-	67
	Uganda	4	4	15	8	4	2	-	17
	Kabonga/Kagunga-Lusolo	32	11	27	31	8	9	220	157
	Burundi	14	6	15	20	4	5	-	91
	Tanzania	18	5	12	11	4	4	-	66
	Bukoba-Kagera/Kasensero	10	22	39	39	8	9	220	186
	Tanzania	7	7	18	20	4	5	-	64
	Uganda	3	15	21	19	4	4	-	122
	Mbita-Mfangano/Namayingo	32	14	69	39	8	7	220	162
	Kenya	20	9	45	22	4	5	93	95
	Uganda	12	5	24	17	4	2	127	67
	All land-sites	118	77	264	201	40	40	1100	746

Selection and Recruitment of Study Population

Provincial/District/County Managers of Health Services: The respondents for this category were technical/management staff involved in decision making in TB/HIV service delivery at the county/district level. The respective local PI worked with the MOH head office to get relevant authorization. He/she was responsible for sensitizing all stakeholders in advance, including the MOH head office and district/county health management teams, informing them about the study, including the study participants. The field team then visited the director at the county/subdistrict level to get permission to schedule appointments with each selected respondent at least one day before the interview. When the respondent could not be interviewed, the person who deputized them was selected as a replacement.

Health Facilities In-Charges/Managers: All 195 health facilities mapped within the project catchment area were involved in the study. Health facilities' in-charge were informed in advance by the district/county lead about the study. The research team then visited the facility and provided detailed information about the objectives of the study, duration of the interview, and other relevant information for the in-charge to make an informed decision whether to participate. The study aimed to interview the head (in-charge) or his/her representative who was knowledgeable about TB/HIV and other health services provided at the facility.

Health Care Workers (HCWs): At each facility, the in-charge was briefed about the study and requested to provide the list of HCWs disaggregated by cadre and the clinic/unit in which they work. Those who worked at the TB/HIV clinic were prioritized in recruitment. One from each cadre (medical doctor, nursing officers, and lab technologists) was selected to ensure representation of the different cadres, depending on the facility category and staffing levels. Where more than one person in each cadre was eligible, one person was randomly selected. Where there were fewer than three HCWs in the TB/HIV clinic, all those who worked in the unit were selected before adding others who occasionally worked in



the unit. A trained interviewer approached the selected HCW in person at the health facility to inform him/her about the study and request an interview. Those who were willing to participate completed a written consent form before the interview started.

Community Health Volunteers (CHVs): At each of the 12 cross-border areas, 8 CHVs were selected and interviewed using a semi-structured interview guide (four from each side of the border). Only CHVs involved in TB service delivery as DOT supporters (any service from case identification, referral of suspected TB cases to treatment adherence) were eligible for selection. Where there were eight or less facilities, one or an equal number of CHVs/DOT supporter (DS) were selected from each facility. Where there were more facilities within the catchment area, the eight closest to the border were identified and one DS was selected from each by the respective health facility in-charge. At each facility, the DS with the highest number of clients being supported and/or reports submitted was identified and selected to participate.

TB/HIV Patients at the TB clinic: All patients receiving services at the TB clinic at the health facility during the duration of the assessment were eligible to participate in the study. A sample size of 220 respondents was determined for each cross-border site. The 220 respondents were distributed across each side of the border using probability proportionate to size. At the facility, the TB register was used to generate a list for selection of respondents. A sampling interval was determined for each facility depending on the number of TB patients and required sample size for that facility. The list was used to select respondents using systematic sampling from the register. Those who were selected were informed by the service provider about the study. Those who were willing to participate were referred to a trained interviewer at the health facility who provided detailed information about the study, including the objectives of the study and duration of the interview. They then provided their informed consent. If the selected respondent was not willing to participate, the next patient in the register was selected. Where there were fewer patients than the required sample size, all the available TB/HIV patients during the study period and willing to participate were selected. Patients were only asked to participate after services have been provided, upon exiting.

