

THE UNITED REPUBLIC OF TANZANIA



MINISTRY OF HEALTH

ASSESSMENT OF IMPLEMENTATION OF ACF USING MOBILE CLINIC VANS IN TANZANIA



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EXECUTIVE SUMMARY

Introduction, purpose, and objectives

The national tuberculosis and leprosy program commissioned an assessment to evaluate uptake and impact of mobile clinics using vans as an approach for Active TB Case Finding (ACF) among risk populations. The purpose of the assessment was to determine extent to which the goals, objectives, and results of the mobile clinic van approach were achieved; the likelihood of intended results being sustained; the lessons learned from the implementation of the mobile clinic van program; and which program components should be included in the design of subsequent activities to maximize performance, results, and sustainability. The scope of the assessment was further delimited by the following four evaluation questions:

1. How are the mobile clinic vans operated in Tanzania?
2. To what extent have the use of mobile clinic vans made an impact to increase TB detection, notification?
3. What were the challenges, weaknesses and lessons learnt in implementation of mobile clinic vans approach that impeded the achievement of this approach?
4. What synergies or opportunities exist for successful implementation of using mobile clinic vans approach in TB case findings

Country background

In 2020, an estimated 10 million people fell ill with TB worldwide, of which 1.1million were children. 86% of the new TB cases are accounted for by 30 WHO-identified high TB burden countries, Tanzania being one of them. In 2021, a total of 87,415 cases of all types of TB were notified in Tanzania.¹ In its effort to accelerate TB notification, Tanzania is implementing a national strategic plan that addresses the current and future challenges in the context of a changing economic, social, and technological (PEST) environment as outlined in national, regional, and global strategies. To this effect, Tanzania procured mobile clinic vans that are vital in reaching out to communities with quality health services for TB diagnosis and treatment.

Methodology

The assessment adopted a mixed methods design that integrated an analysis of secondary routine TB service data, with primary qualitative data generated during fieldwork. The secondary data analysis provided the broad foundational evidence for assessment conclusions. The primary data grounded the interpretation of evidence in an understanding of the implementation context. Secondary TB services data were largely quantitative and subjected to descriptive analysis; all qualitative data were subjected to thematic content analysis.

Results

Through the mobile clinic vans approach, all clients are provided TB care services at one point including free TB services across the whole treatment cascade starting from TB screening to initiation of DOT. Presumptive are provided access to digital X-ray and with bacteriological confirmation test. The mobile clinic vans have improved TAT for GeneXpert and time from screening to start of anti-TB. Overall, the approach has increase TB notifications in all implementation districts. All confirmed TB patients are started on Anti-TB in line with the guidelines and linked to a nearby facility for follow up. The direct benefit of this outreach approach as compared to health facility service delivery is a dramatic shift from people going to health facility and instead through vans TB services now going to the people.

Recommendations

1. Zonal or regional referral hospital should designate a team of specific healthcare staff to be attached to the mobile van so that even when the support for current mobile van service project phases out, the team can still deliver the service, provided the van is available.
2. All partners supporting TB and TB/HIV interventions should be encouraged to support the mobile van outreach services.
3. The national programme working with partners should define and implement a maintenance plan for the vans and its equipment including the digital X-ray and GeneXpert machines.
4. The hosting institution should therefore keep a quarterly calendar defining vans movements and monitoring coverage and programmatic results for each region.
5. The Ministry of Health and PORALG should sensitize the IPs / LGAs on the availability of Mobile Vans and advocate for budget allocation for implementation of mobile clinics.

6. The NTLP in collaboration with IPs should develop plans for maintenance of mobile vans, equipment, and van's accessories such as AC and generators or solar panels to enhance working conditions of the mobile Vans.
7. NTLP in collaboration with RHMTs should involve IPs in planning for mobile vans services. Specifically, the national programme should consider handling operation and maintenance of the mobile vans to the private PR, during the global fund application.
8. NTLP should consider options for having strong Vans that are smaller in size to enable access to hard-to-reach communities where large Vans cannot reach or use long route to reach these areas.
9. To enable adequate patient follow-up and reduction of early LTFU, the mobile clinic team needs to have a DOT nurse/clinician from a nearby facility and involve CHWs to support in treatment follow-up.
10. To reduce TAT, the NTLP should consider installing the Vans with 8 or higher module GeneXpert machines in place of existing 4 module machines.
11. To ensure smooth running of mobile clinics services, the NTLP should plan for CAD4TB subscription and ensure adequate quantification, forecast and allocation of GeneXpert cartridges and HIV test kits for Mobile van operations.
12. Conduct cost analysis to identify cost of notifying one TB patient through mobile Van clinics approach.
13. Strengthen integration of TB screening & testing interventions with other health programs
14. Consider expanding utilization of mobile van fixed with digital x-ray equipment and CAD4TB accessories in remote places, high volume facilities with no or broken-down X-ray machines.

ABBREVIATIONS

AIDS	-	Acquired Immuno-Deficiency Syndrome
CCHP	-	Comprehensive Council Health Plan
CHMT	-	Council Health Management Team
CTRL	-	Central Tuberculosis Reference Laboratory
DMO	-	District Medical Officer
DRTB	-	Drug Resistant TB
DTLC	-	District Tuberculosis and Leprosy Coordinator
ETR	-	Electronic TB Register
GFATM	-	Global Fund Against AIDS, Tuberculosis and Malaria
HIV	-	Human Immunodeficiency Virus
HSSP	-	Health Sector Strategic Plan
IPT	-	Isoniazid Preventive Therapy
LGAs	-	Local Government Authorities
MDR	-	Multi- Drug Resistance
MDT	-	Multi Drug Therapy
MKUTA	-	Mapambano ya Kifua Kikuu na UKIMWI (Tanzania association of former TB patients)
MoH	-	Ministry of Health
MTBC	-	Mycobacterium tuberculosis complex bacteria
NACP	-	National AIDS Control Programme
NGO	-	Non-Governmental Organization
NSP	-	National Strategic Plan for TB and Leprosy Program 2015 - 2020
NTLP	-	National Tuberculosis and Leprosy Programme
PORALG	-	Presidents Office, Regional Administration and Local Government
PTB	-	Pulmonary Tuberculosis

1. INTRODUCTION

1.1. Country Context

Tuberculosis (TB) remains the top infectious killer in the world. In 2020, an estimated 10 million people fell ill with TB worldwide, of which 1.1million were children. 86% of the new TB cases are accounted for by 30 WHO-identified high TB burden countries. Tanzania is among these 30 countries. Globally, TB case notification has decreased by 20% following covid19 pandemic. In 2021, a total of 87,415 cases of all types of TB were notified in Tanzania.

Tanzania is implementing the sixth National Strategic Plan (NSP) VI (2020-2025) for Tuberculosis (TB) and Leprosy that addresses the current and future challenges in the context of a changing economic, social, and technological (PEST) environment as outlined in national, regional, and global strategies. This plan is expecting to accelerate the gains made in TB notification whereby, the country increased notifications of all forms, new and relapse from 60,895 in 2015, up to over 87,415 in 2021. In this effect, in 2021 the country through the support of the Global Fund, procured five mobile vans that are fully functional clinics with built-in digital X-ray machines fitted with CAD4TB technological kit and a four-modules GeneXpert machine for diagnosing TB. The vans are vital in reaching out to communities with inadequate provision of quality health services for TB diagnosis and treatment.

Within six months of implementation, the mobile vans have provided TB and HIV services in 18 regions with focus to Key Vulnerable Population (KVP) and screened a total of over 16,000 people, of which 13,000 were TB presumptive, while 42% (5,500) were tested using GeneXpert resulting to identification and notification of 1,300 new TB cases.

1.2. Purpose

The purpose of this assessment was to evaluate uptake and impact of mobile clinics using vans as an approach for Active TB Case Finding (ACF) among risk populations.

1.3. Objective

This assessment had five key objectives that include:

1. To provide information on operationalization of mobile clinic vans approach in Tanzania.
2. To provide information on the impact made by using mobile clinic vans approach in TB case findings in Tanzania.
3. To determine the challenges, weakness, and lessons learned from implementation of using mobile clinic vans approach in TB case findings.
4. To examine synergies (Integration) (or missed opportunities for such synergies) between TB case finding using mobile clinic vans and other HIV, Covid19 or health related services or other ACF initiatives.
5. To provide recommendations to the NTLP on how the design, management, and implementation of active TB case finding through the use of mobile clinic vans can better target efforts to maximize the impact.

2. ASSESSMENT METHODS AND LIMITATIONS

2.1. Assessment Design

An exploratory, mixed methods and participatory design was used for this assessment. The exploratory component ensured independence and allowed respondents to articulate changes without pre-determined frameworks. The mixed methods component facilitated triangulation where secondary quantitative data has been complimented by qualitative inputs from respondents.

2.2 Study Setting and Study Population

This assessment was undertaken in July 2022 in eight regions of Tanzania where mobile clinic van approach has been used in delivering health related services. The regions were purposively selected considering their strategic location. The assessment team collected routine program data and conducted in-depth interviews with health managers at regional and district level. The selected regions were Mara, Mwanza, Kilimanjaro, Morogoro, Tanga, Lindi, Dar es Salaam and Mbeya. All TB cases diagnosed through existing health system and started on treatment between August 2020 and July 2022 in seven selected regions were included in the descriptive analysis.

2.2. Fieldwork Data Collection and Analysis

Key Informant Interviews were conducted with strategic respondents who could authoritatively or in a representative capacity speak on behalf of constituencies of interest to the TB case finding among risk populations using mobile clinic vans. Key informants were selected through expert case sampling to ensure that all those selected will be highly likely to provide information which adds value to the assessment process. Expert sampling (or judgment sampling) is where respondents are drawn from experts in the field of study. The method is used when there is need for opinions or assessment of people with a high degree of knowledge about the study area¹. The assessment team worked with the NTLP to develop a list of key informants to be interviewed as part of the assessment exercise. The assessment team developed a secondary data extraction tool to systematically collect secondary data from monitoring reports to determine implementation progress.

¹Ilker Etikan, Sulaiman Abubakar Musa, Rukayya Sunusi Alkassim. Comparison of Convenience Sampling and Purposive Sampling. American Journal of Theoretical and Applied Statistics. Vol. 5, No. 1, 2016, pp. 1-4. doi: 10.11648/j.ajtas.20160501.11

3. FINDINGS

3.1. Assessment Questions

This section provides details on of the assessment findings. The objectives of this assessment were operationalized in four evaluation questions, which have been renumbered for purposes of this evaluation and presentation of results. The assessment questions include:

1. How are the mobile clinic vans operated in Tanzania?
2. To what extent have the use of mobile clinic vans made an impact to increase TB detection, notification?
3. What were the challenges, weaknesses and lessons learnt in implementation of mobile clinic vans approach that impeded the achievement of this approach?
4. What synergies or opportunities exist for successful implementation of using mobile clinic vans approach in TB case findings

3.2. Mobile Clinic Van Operations

This section presents a thematic analysis of the key informant accounts demonstrating the operation of mobile clinic vans approach in Tanzania and attempt to identify effective practices that plausibly contribute to positive performance of the approach.

3.2.1. Brief Overview

Mobile clinic vans encompass vans, recreational vehicles, and other vehicles that have been repurposed to provide space for clinical services or to deliver equipment to different geographical locations to operate a temporary clinic.

The assessment team identified four different health stakeholders that are currently offering health related services such as HIV prevention services, HIV testing and treatment services and TB case detection using mobile clinic approach.

Table 1 Mobile Clinic Vans at a Glance

Ownership	Type of mobile clinic vans	Target population	Location
ICAP	Boat, mobile clinic mounted on a semi-trailer, quadricycle mobile pharmacy.	HIV KVPs & PLHIV as part of differentiated care delivery at community level	Dar es Salaam, Pwani, Kagera, Mwanza, Kigoma, Mara and Geita
IntraHealth	Rigid boxed trucks	HIV KVPs and Male population VMMC	Mwanza, Mara, Simiyu, Shinyanga, Geita, Kagera
NIMR	Rigid boxed trucks	PLHIV	Mbeya
NTLP	Rigid boxed trucks	TB KVPs	Five zones

3.2.2. Operation Models

3.2.2.1. Different models of Mobile Vans Clinics operations

A. Fikia mobile clinic vans

Fikia mobile clinic vans approach by ICAP provides venue based HTS in workplaces, hotels, guest houses, brothels, low-income areas, bars, markets, fishing communities and mining areas day and night outreach events.

The Fikia approach employs cars, quadracycles, motorbikes, boats, and ‘Backpack’ HCWs going to small, pre- arranged groups of clients.



Image 1 Fikia mobile clinic boat



Image 2 Fikia mobile clinic truck

The mobile clinics are designed to bring all services into community settings, including point of care laboratory assessments for HIV viral load and diagnostic tests.



Image 3 Fikia mobile pharmacy



Image 4 Backpack HCW

Mobile quadricycle bajaj pharmacies are designed to offer ART and PrEP services, HIVST distribution, while backpack nurses offer HIV testing services.

The Fikia approach offers a package of KP-friendly, community- based services such as:

- HIV testing services (HTS)
- Combination prevention, including PrEP
- Linkage to ART and PrEP
- Retention support and community refills

Currently, Fikia project offers its services to hard – to – reach locations in Dar es Salaam, Pwani, Kagera, Mwanza, Kigoma, Mara and Geita, serving communities in:

- Lake Victoria islands and fishing communities
- Informal gold mines
- Outside city markets
- Remote rural areas
- Popular entertainment venues such as bars, lounges, and betting hubs
- Brothels and drug-use camps

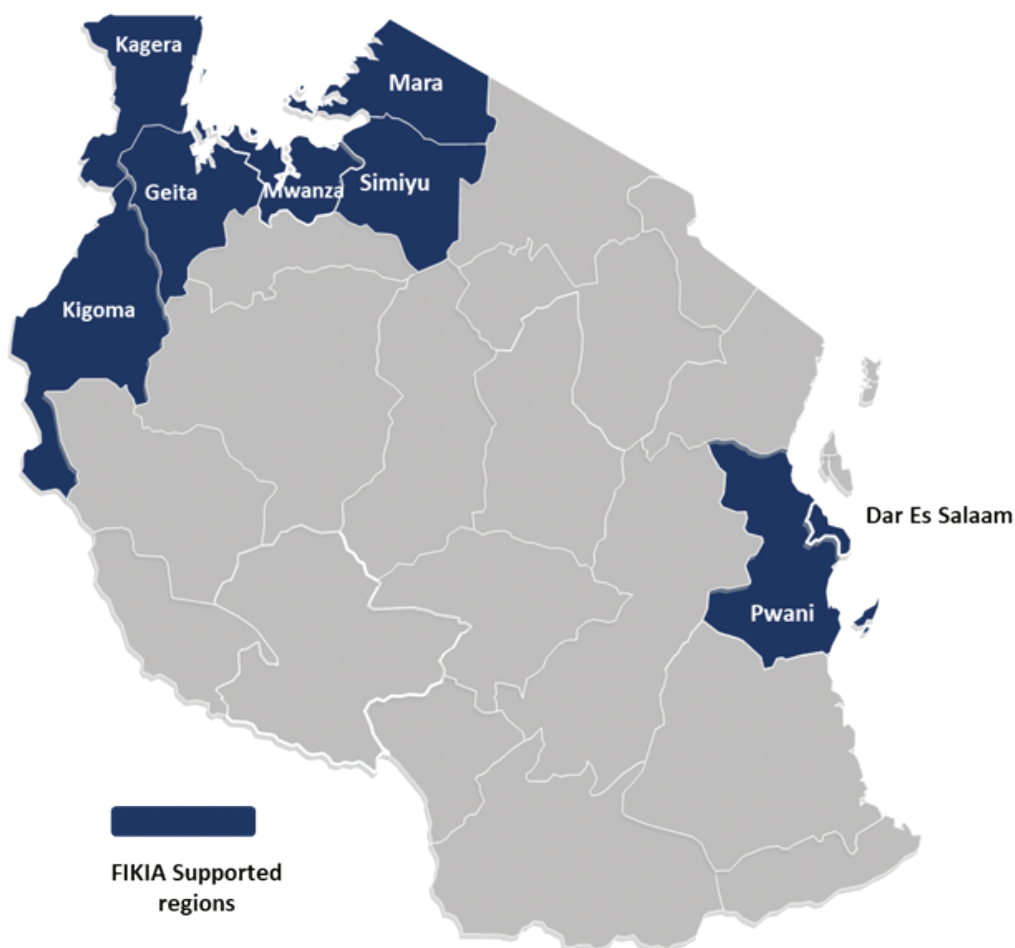


Image 5. A map of Fikia mobile clinic van regions

B. IntraHealth mobile clinic vans

IntraHealth Tanzania, through their VMMC project operated three mobile clinic vans to optimize access to and facilitate privacy for VMMC services. Mobile van services were introduced in 2020 to address bottle necks that were identified. These vans are fully equipped with all supplies and equipment to allow provision of VMMC services at any time and location including solar panels, tents, chairs, and a video unit

The vans are operated by five staff each, including the driver, surgeon, assistant surgeon, counsellor, health educator, and cleaner.

These mobile clinic vans enabled the project team to move further into remote, unreachable areas and operate until extended late working hours to accommodate adult men's work schedules while offering the required privacy and their preferred times.

A mobile clinic is usually stationed at one location for one to two weeks. The vans were parked in areas with potential to reach more adult men such as along highways to target long safari truck drivers, near the beaches to target fisherfolks, and near marketplaces and mines. The mobile clinic vans are equipped with speaker phones that are used by drivers to announce availability of services at the location before and on the activity date.

The Vans operated in the operational regions of Intra-health: Mwanza, Shinyanga, Mara, Simiyu, Geita and Kagera. There was no one permanent location but rather moving around according to needs.

C. NIMR /Walter Reed mobile clinic vans

NIMR and Walter Reed started working together in the Mobile clinics van approach in 2009 to support care and treatment of people living with HIV. The truck is mounted with GeneXpert, Haematology and CD4 machine which was later replaced by a viral load machine. The van offers comprehensive HIV services (HIV testing, VMMC etc) and other additional services including STI screening, Health education, TB screening, and cervical cancer screening. The van targets priority populations such as mining communities.

The mobile clinic van primarily operates in Mbeya, and occasionally serves other regions by request to support international events like Worlds AIDS day and World TB Day.

D. Ministry of Health Supported TB specific mobile clinic vans

Area of Operation

There are five Vans which have been allocated to 5 zones:

1. **Lake Zone:** Operates in the regions of Mwanza, Mara, Shinyanga, Simiyu, Kagera and Geita the van being stationed at Bugando medical centre in Mwanza.
2. **Southern Highland zone:** Serves Mbeya, Ruvuma, Njombe, Iringa & Rukwa regions and is stationed at Mbeya.
3. **Eastern zone:** Serves Morogoro, Dar es Salaam, Pwani and Lindi regions and is stationed at Central TB Reference Laboratory (CTRL) Muhimbili – Dar es salaam.
4. **Northern zone:** Serves Arusha, Tanga, Manyara and Kilimanjaro regions and is Situated at Kibong'oto Hospital in Kilimanjaro.
5. **Central Zone:** Serves Singida, Dodoma and Tabora regions and is situated in Dodoma.

Scheduled use of Mobile Van: Currently, the mobile van outreaches/clinics doesn't have a strict schedule of operations in their specific zones. Operations depends on availability of funds by implementing partners or upon request. Furthermore, there are no periodic schedules for TB screening and testing among attendees of high-volume peripheral health facilities with no existing radiological services/diagnostic services. However, the NTLP is considering expanding utilization of mobile van fixed with digital x-ray equipment and CAD4TB accessories in remote places, high volume facilities with no or broken-down x-ray machines. Furthermore, the currently available model of digital x-ray fixed in big tracks limits such considerations. Therefore, other models including portable equipment will be required to increase coverage and be streamlined to suit various ground requirements and given situations. Also, the NTLP plan is to introduce Truenat Analyzer Quattro machines testing system uses portable, battery-operated devices to rapidly detect Mycobacterium tuberculosis complex bacteria (MTBC) and rifampicin resistance which will complement GeneXpert machines.

Human Resource: The mobile clinic van crew consist of at least 4 people Laboratory technician, Radiographer, Nurse, and driver; the driver in all cases is employed by NTLP with additional of a nurse in some areas. Other team members are recruited from institutions hosting the Van. The van does not come with direct funds for its operations; therefore, the one who requests to use the van covers all the necessary costs.

Roles and responsibilities

1. When the mobile clinic van service is needed; IPs or Office of RMO is responsible for preparing and organizing the site where the van will visit including community & facility announcements, covering costs for the fuel, subsistence allowance for Van crews and entire team that will be involved. Operations are usually preceded by sensitization and campaign at community level, which is facilitated by the budget from IPs and executed by CHWs and local government leaders.
2. The district health team identifies the sites for mobile van operations based on available data on underserved populations, the size of local populations/concentration of people, the list of hotspots with higher TB burdens (for example, fishing and mining communities), sizes of local KVPs, and convenience of reaching/accessing the designated area. Depending on the budget, the van may take 1 to

5 days at a single site. The smaller the budget, the fewer the number of days the van spends at one site. In most cases, the van spent a single full day at a single site. More days at a site would be better since it would provide the chance for servicing more customers.

3. Partnering NGOs such as Amref, MDH and local CSOs engage CHWs in doing mass campaigns for TB screening in chosen/ designated areas. CHWs also perform contact tracing and screening of all individuals living with identified TB-positive cases.
4. The van crew works with service providers at the designated sites including the DTLCs, CHWs and other designated healthcare workers in ensuring accurate collection of relevant data and providing medications and referrals for TB cases.

Guideline and client flow chart

1. There are no specific guidelines and client flow chart for mobile clinic van operations. The available guidelines being used are general ones provided by the Ministry and Health, including the IPC and TB infection control plans, along with the SOPs used by the mobile van operators.
2. In most cases, when a customer arrives at the site:
 - They are registered by a nurse/clinician, then proceeds for screening.
 - Then presumptive TB cases are taken in for x-ray examination, and when suggestive for TB, the customer proceeds for sputum examinations in the clinic van.
 - Those confirmed to have TB get registered and receive medications on the spot.
 - Newly diagnosed clients are then asked to choose a TB clinic of their convenience for further medication and follow-up and linked to a community volunteer or treatment supporter. The team often ensures the contact details (phone number) of the TB patients are correct and valid. For the case of people who inject drugs, the contact details of his/her group leader or a peer from a TB NGO are recorded for easier follow-up. CHWs are also used to follow up TB patients on treatment. Those without TB are given clinical advice and referred to hospitals when necessary.

Health Management Information System: Relevant TB records are kept in the TB presumptive register of the respective DTLCs. Other documentation tools used include the TB register, TB cards, laboratory request forms etc.

CHWs use tools from the Ministry of Health, including TB 12 register for presumptive cases, and a referral form TB 15. The cases obtained from special activities such as the mobile van interventions are all recorded in a single CHWs register.

Mobile Clinic Van Maintenance: NTLP is entirely involved in the direct maintenance of the van through host institutions. The funding partners have never been involved in any formal maintenance activities of the van. There is no available maintenance log or schedule for the van equipment. Currently, some of the vehicle services including those for x-ray and gene-expert equipment are still being done under the agreement which exist between the MoH and the service provider. guarantee offered by the donor. Other vehicle services are handled by NTLP/CTRL.

3.2.2.2. Integration of Mobile Van Clinics operations

There are opportunities for Integration of TB screening & testing in the current HIV key population outreaches i.e., mobile clinic vans approach by ICAP through FIKIA project, and VMMC mobile clinic approach by IntraHealth Tanzania. Multi-disease approaches and integration of TB screening in among other disease control campaigns is the MoH policy and is highly emphasized. However, in some instances encounter challenges in coordination and designing such bidirectional screening scenarios. Already, the NTLP has started dialogue to explore the possibilities of integrating TB screening and testing in mobile vans not primarily designed for TB care and preventive services. Similarly, NTLP is emphasizing on providing opportunity to ruling out TB in among the targeted clients in all diseases screening schemes. NTLP in collaboration with the National AIDS Control Programme (NACP) prepared integrated Sample Referral System guidelines and manual to serve the purpose.

MoH launched the implementation of the integrated sample referral mechanism for all diseases which using spoke and hubs model by MoH of health through directorate of diagnosis is significant initiatives in sharing the resources and minimize costs, however there are some challenges in designing and coordinating the payments of referred samples. NTLP coordinates with implementing partners to facilitate the specimen transportation within hard-to-reach area using motorbike (Bodaboda) through deploying the community Health workers.

3.3. The Impact of Mobile Clinic Van Approach

This section is looking at two assessment questions concerning the impact of mobile clinic vans on TB detection, notification and strengthening local capacity and acceptance. These questions include:

1. How are the mobile clinic vans operated in Tanzania?
2. To what extent have the use of mobile clinic vans made an impact to increase TB detection, notification?

Operationalization of mobile clinic vans: Through this approach, all clients are provided TB care services at one point “one stop shop”. This includes free TB services across the whole treatment cascade starting from TB screening to initiation of DOT. Presumptive are provided access to digital X-ray and with bacteriological confirmation test.

Impact: The mobile clinic vans has improved TAT for GeneXpert and time from screening to start of anti-TB. All confirmed TB patients are started on Anti-TB in line with the guidelines and linked to a nearby facility for follow up. To ensure patient-centred treatment approach, DOT is observed by linking patients to treatment supporter, and with community volunteer for follow up and linkage with health facility. The direct benefit of this outreach approach as compared to health facility service delivery is a dramatic shift from people going to health facility and instead through vans TB services now going to the people. This has increased the access to TB services in the hard-to-reach communities and among key populations.

3.3.1 Access to TB Services

Table 2 Geographical locations visited by TB specific mobile clinic vans - 1

Region	3 rd Q – 2021			4 th Q – 2021			1 st Q – 2022			2 nd Q – 2022		
	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Mbeya					Mbarali				Mbarali		Kyela	Chunya
Mara		Musoma MC	Tarime DC Musoma DC Butiama DC Rorya DC			Rorya Bunda DC					Rorya Musoma DC	Musoma MC Bunda TC Bunda DC Butiama DC
Dar es Salaam					Kinondoni			Ilala	Ubungo			
Kilimanjaro				Moshi MC Moshi DC Mwanga DC	Rombo DC	Siha DC					Moshi MC Same DC	
KVPs reached	Mbeya Mining Communities			Kilimanjaro Fishing, Communities			Dar es Salaam Pastoral PWID, Fishing Communities			Mara Fishing, Mining communities		

The table above shows geographical location visited by TB specific mobile clinic vans, indicating the number of days spent at each council and KVP communities reached per region. Table 3 Geographical locations visited by TB specific mobile clinic vans - 2

Region	4 th Q – 2021			1 st Q – 2022			2 nd Q – 2022			3 rd Q – 2022		
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Morogoro									Mvomero	Kilosa, Mlimba Ifakara, Moro Ulanga, Malinyi		
Lindi										Mtama Ruangwa Nachingwea		
Tanga							Tanga MC	Kilindi DC Lushoto DC	Korogwe DC			
KVPs reached	Lindi Mining, Fishing Communities			Tanga PWID, Fishing, Mining communities			Morogoro Prisons, communities			Pastoral		

Morogoro region

Morogoro region is administratively divided into 9 councils, 214 wards, 669 and 365 villages and streets respectively. The mobile clinic van activities started in April and May 2022 and were carried out for 13 days covering 3 councils (Kilosa DC, Mvomero DC and Gairo DC) visiting one site per day in 12 selected villages/streets in those councils. A total of 1,453 clients were screened and 296 of them were clinically diagnosed with TB using digital chest x-ray, aided with CAD4TB and GeneXpert machines.

The second exercise was rather more successful, reasons for which are thoroughly expanded in the lessons learnt section, took place between June and July 2022 for 26 days consecutively, visiting one location per day in 6 councils, screening 3,857 clients and 1,061 were clinically diagnosed with TB using digital chest x-ray, aided with CAD4TB and GeneXpert machines. These two exercises managed to reach pastoral communities who are found in hard-to-reach areas, and prisons.

In Morogoro region there are 12 prison facilities and the June/July 2022 mobile clinic van managed to visit one of the prison facilities where 290 inmates and prison staff families were tested, and 89 were diagnosed with TB.

*Our mobile van clinic team wanted to visit specific locations with TB key populations such as in Ulanga DC where artisanal miners are located but geographical conditions did not allow us. We also received a visit request from one the prison facility, but time and financial constraints made it difficult – **Regional TB coordinator***

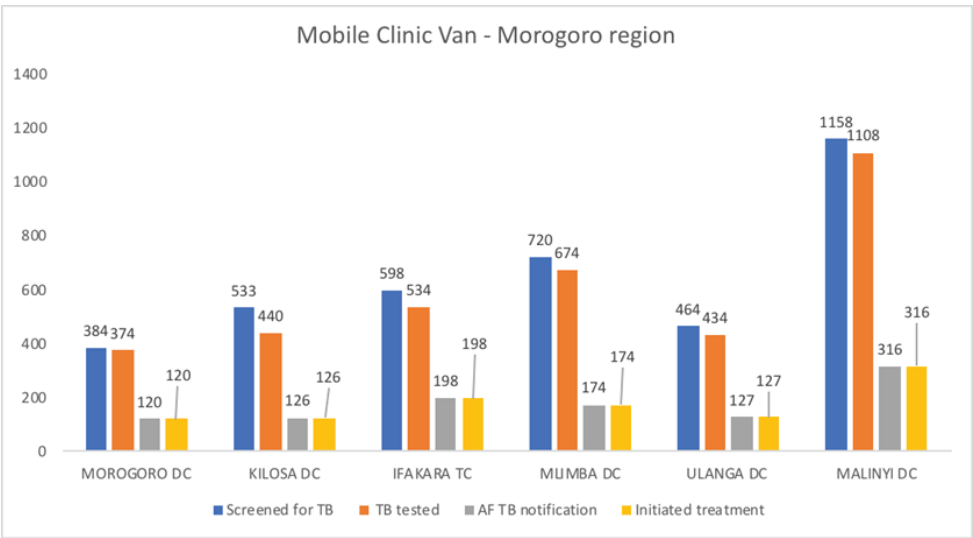


Figure 1: Mobile clinic van yield - Morogoro region

Dar es Salaam TB zonal area

Dar es Salaam region is administratively divided into 5 councils, 102 wards and 564 streets / villages. For TB management purposes, each of the council is termed as a region, in addition to Muhimbili national hospital. The mobile clinic van first visit took place in November 2021, for 16 days visiting 5 sites in 4 TB regions, Ilala 1, Kinondoni, Temeke and Ubungo; screening 2,156 clients and 105 of them were clinically diagnosed with TB using digital chest x-ray and GeneXpert machines. In some of these sites, the van spent more than one day due to the high number of clients turned up. The second and third visits started in February and ended in March 2022, for 2 and 3 days respectively; A total of 433 and 485 clients were screened, of which 30 and 63 were clinically diagnosed with TB using digital chest x-ray and GeneXpert machines. In Ubungo TB region, with 12 congested markets, 9 identified PWID Maskani, 5 Bus Terminals, 25 Squatters Areas, 14 Boarding schools and 2 Universities the mobile van clinic has visited two sites Mabibo Sokoni, and Hon Magufuli bus terminal.

Both mobile clinic van exercises were conducted in public places with close proximity to existing health infrastructures, but yet attracted sizable crowds. Further, 56% of clients screened, and 64% of those who tested positive in the first-round visit were the urban male population. Similarly, during the March visit, 73% of those who tested positive were male. According to some studies, (1,2) male sex, urban residence, educated, with mild symptoms and financial burden, are the main reason why patients with presumptive TB are not seeking health care from health facilities. Can the mobile clinic van approach claim to influence positive health seeking behaviour among urban male population?

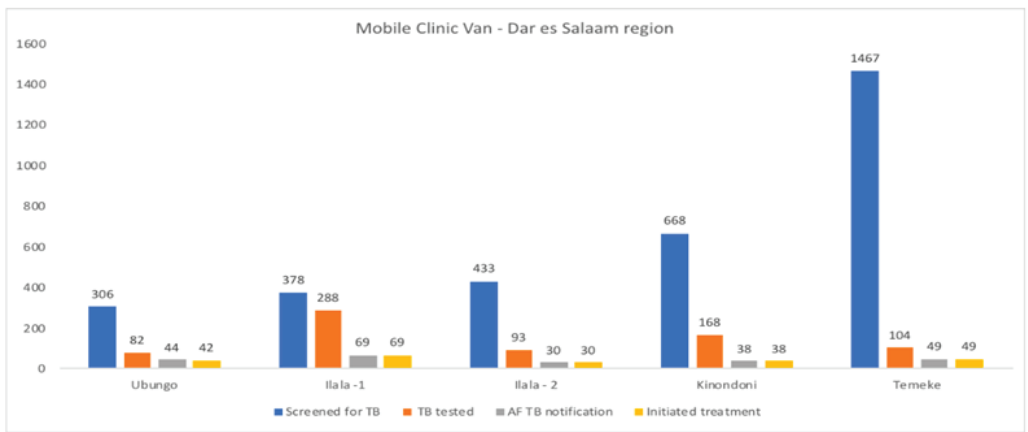


Figure 2: Mobile clinic van yield - Dar es Salaam region

Mara region

Mara region, located on the eastern shores of Lake Victoria has an estimated population of 1.9 million people, and is administratively divided into 7 districts with 9 councils, 179 wards, 458 and 330 villages and streets respectively. The first mobile clinic van activity in this region, rich in fishing and mining activities, started in August to September 2021, for 21 days, visiting 15 sites in 5 councils, namely - Butiama DC, Musoma DC, Tarime DC, Rorya DC and Musoma MC and screening 1,507 clients. 116 were clinically diagnosed with TB using digital chest x-ray and GeneXpert machines.

The second exercise took place in December 2021, where the van visited two councils, screening 2,173 clients. 424 clients were clinically diagnosed with TB using digital chest x-ray and GeneXpert machines. The third round of mobile clinic van exercise took place from 24th May to 8th June, visiting 12 sites within 12 wards wards in 6 councils, namely - Rorya DC, Musoma DC, Butiama DC, Bunda TC, Bunda DC and Musoma MC and screening 1,469. Of these 269 were clinically diagnosed with TB using digital chest x-ray and GeneXpert machines. The mobile clinic van spent one day per each site visited in the five councils, except for Rorya DC, spending five days.

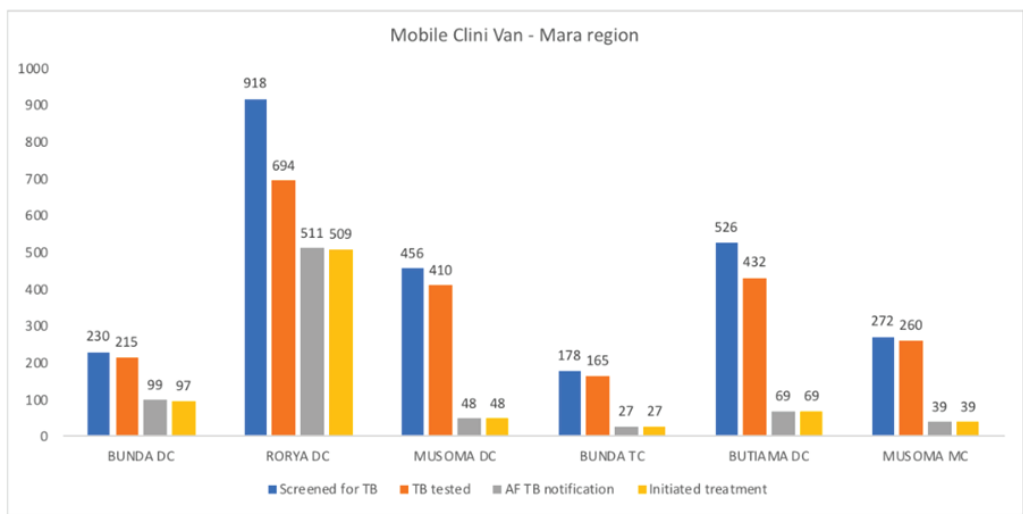


Figure 3: Mobile clinic van yield - Mara region

Lindi region

The mobile clinic van activities in Lindi started in late July 2022 and lasted for nine (9) days, visiting one site per day in three district council and screening 1550 clients. 447 clients were clinically diagnosed with TB using digital chest x-ray and GeneXpert machines and linked to care. This rate is 4-folds the average TB notification rate at the regional level. The approach has reached TB vulnerable communities engaged in fishing activities along the Indian ocean, and artisanal miners.

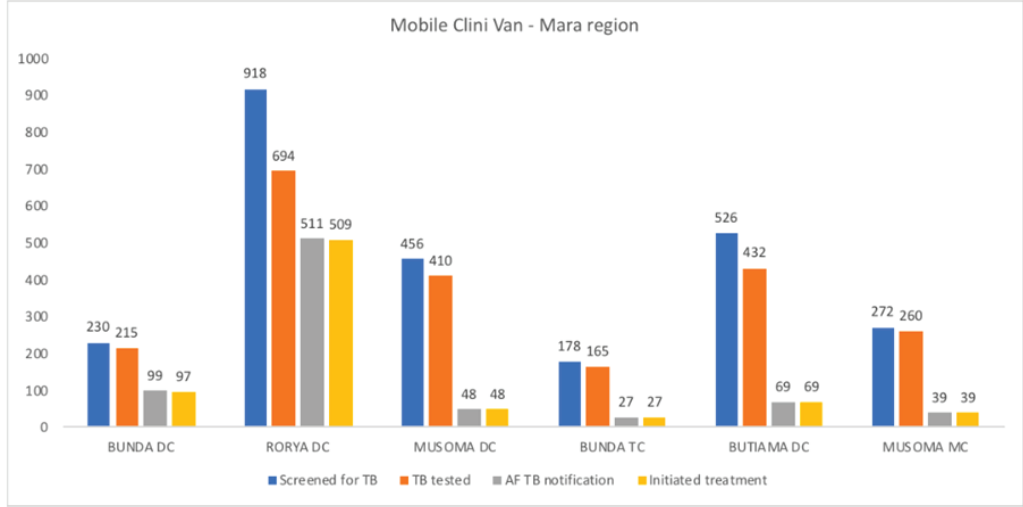


Figure 4: Mobile clinic van yield - Lindi region

Mbeya region

Mbeya region is administratively divided into five districts with seven councils namely: Chunya, Mbeya Rural, Kyela, Rungwe, Busokelo, Mbarali and Mbeya City. Moreover, Mbeya Region is further sub divided into 15 divisions, 176 wards, 547 villages and 271 streets. The mobile clinic van activities in Mbeya started in October 2021 and it has visited communities in Chunya, Mbarali and Kyela district councils. At Chunya district, with 27 wards, the mobile clinic van has visited 7 sites within 4 wards in 7 seven days and screened 565 clients, 60% male, in June 2022. 41 clients were clinically diagnosed with TB using digital chest x-ray and GeneXpert machines and linked to care. Of these, 13 identified themselves as artisanal miners. In Kyela DC, with 31 wards, the van visited 6 sites within 6 wards and screened 499 clients in span of 6 days. 71 clients were clinically diagnosed with TB using digital chest x-ray and GeneXpert machines and linked to care.

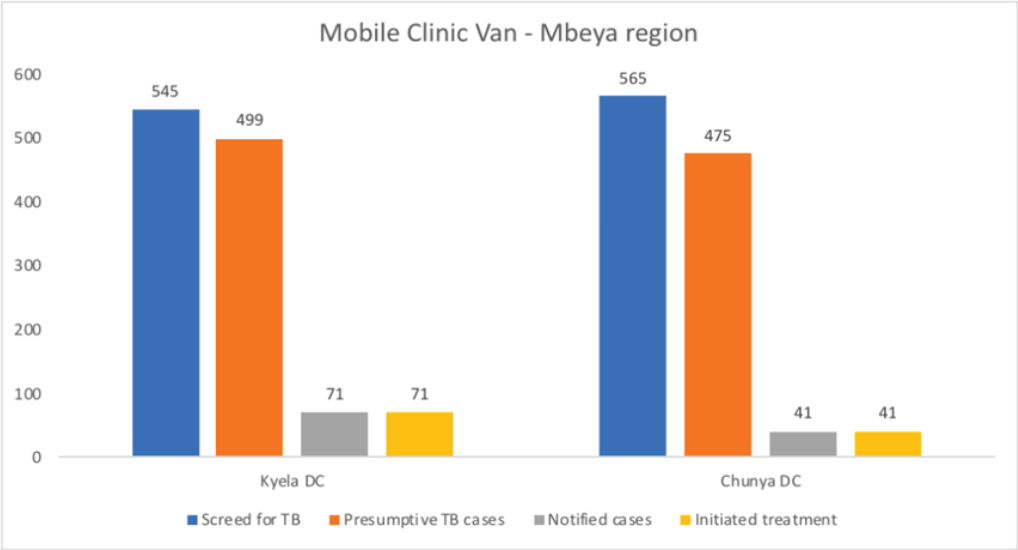


Figure 5: Mobile clinic van yield - Mbeya region

Tanga region

Tanga region is administratively dividend into 10 councils, 227 wards, 687 and 255 villages and streets respectively. The mobile clinic van activities in Tanga were conducted in April 2022, and June 2022. In three councils, namely Lushoto, Korogwe and Kilindi DCs with 83 wards, and active artisan mining among other activities the mobile van clinic has visited 7 sites. The van has screened at total of 1900 client, up until June 2022. 235 clients were clinically diagnosed with TB using digital chest x-ray and GeneXpert machines and linked to care. Of 44 TB cases in Korogwe DC, where two sites were visited, 20 cases identified themselves as current artisanal miners and 19 were initiated on treatment. In Kilindi DC where two sites were visited, 2 identified themselves Ex-miners. In Lushoto DC 3 sites were visited within one ward.

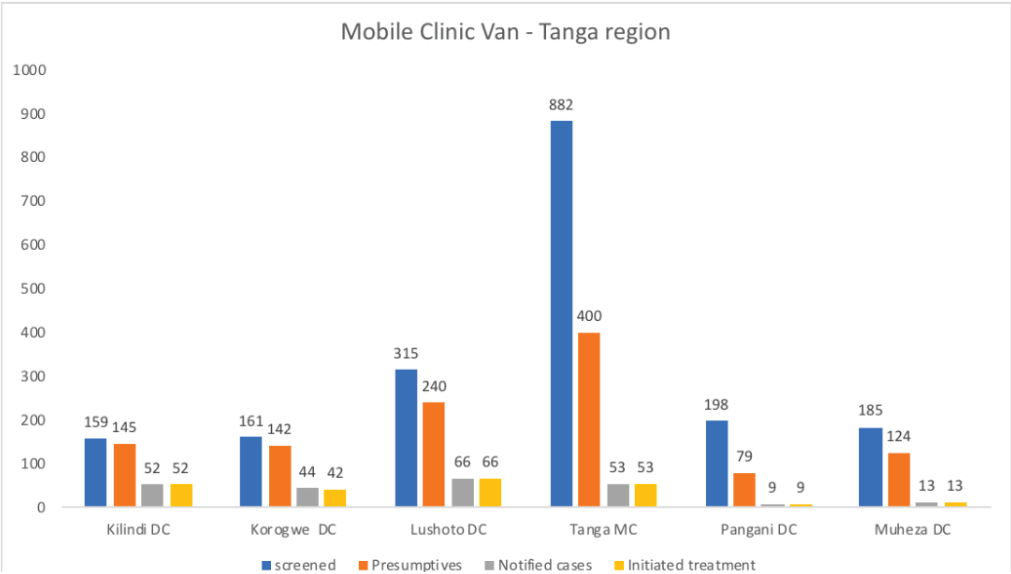


Figure 6: Mobile clinic van yield - Tanga region

Kilimanjaro region

The mobile clinic van in Kilimanjaro started its campaigns in May 2021, and until July 2022 a total of 1300 clients had been screened. In Same DC, out of 306 clients screened in 9 days, 46 clients were clinically diagnosed with TB using digital chest x-ray and GeneXpert machines. In Rombo DC, out of 166 clients tested 5 were clinically diagnosed with TB. In Mwanga DC and Moshi DC, 2 and 3 clients were clinically diagnosed with TB, respectively. The mobile clinic van managed to reach pastoral and fishing communities when it visited Mwanga and Same DC.

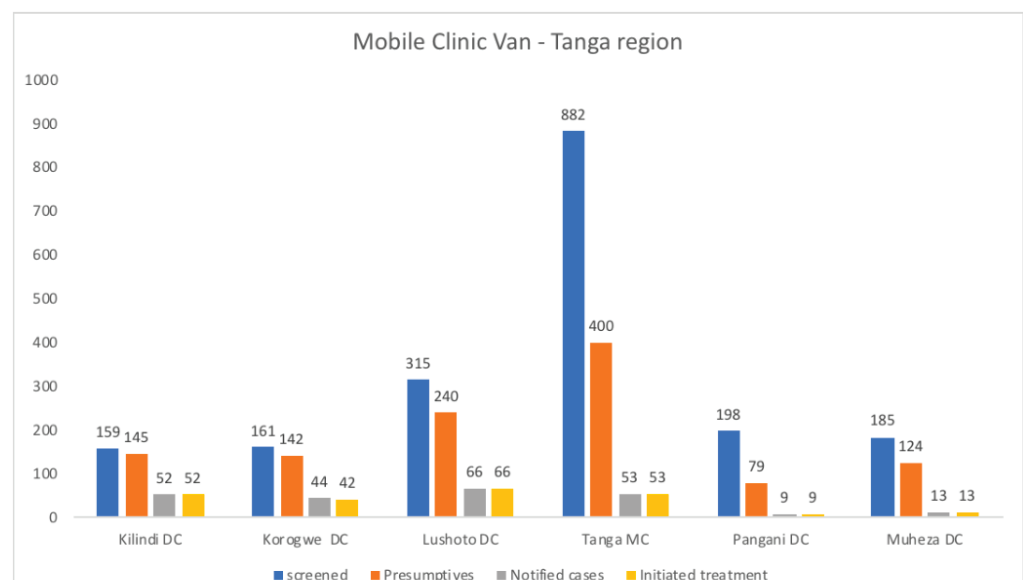


Figure 7: Mobile clinic van yield - Kilimanjaro region

3.3.2 Programmatic Results

3.3.2.1 TB Screening and Testing Services

The number of clients receiving TB screening and testing services in the 14 districts visited by evaluation team had increased from an average of 100s per month in August 2021 to 300s+ per month in September 2021 when mobile clinic van visits a particular district council. This is largely attributable to presence of mobile van which among other things invested in timely community awareness creation activities and proper site selection especially those that are hard to reach areas, with KVPs. Increasing the number of clients receiving TB screening services precipitated a substantial increase in the numbers of people accessing TB testing services.

The increase in numbers accessing services suggests that communities in the vicinity of mobile clinic van service sites were previously severely under-serviced.

The Mobile Clinic Van stayed in our district for 9 days and helped us to reach 306 clients, out of which 227 presumptive TB cases were tested. The Mobile Van’s state-of-the art testing facilities helped us to detect TB in 46 new clients. **District TB coordinator – Same DC**

3.3.2.2 TB case detection

Another form of impact that was observed by the assessment team, are the changes in TB notification of all forms that mostly corresponds in time with the presence of mobile clinic van in visited regions.

Dar es Salaam TB Zone

In figure 1 below, the TB AF notification spikes observed in March 2022 in Dar es Salaam, can be precisely articulated to originate from mobile clinic van presence in Ilala and Ubungu councils.

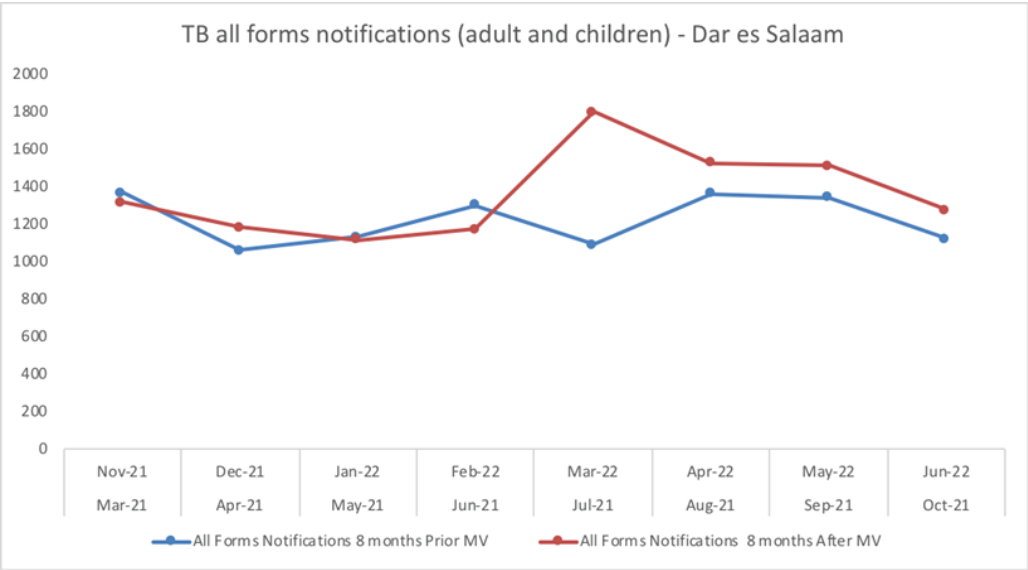


Figure 8: Changes in TB AF notifications (Adult and Children) - Dar es Salaam region

Mara region

Similarly, in Mara regions, the TB specific mobile clinic van started its activities in August/September, December – 2021, and then March 2022, and the changes observed in TB all forms notification in figure 4 below can be related to the reported activities.

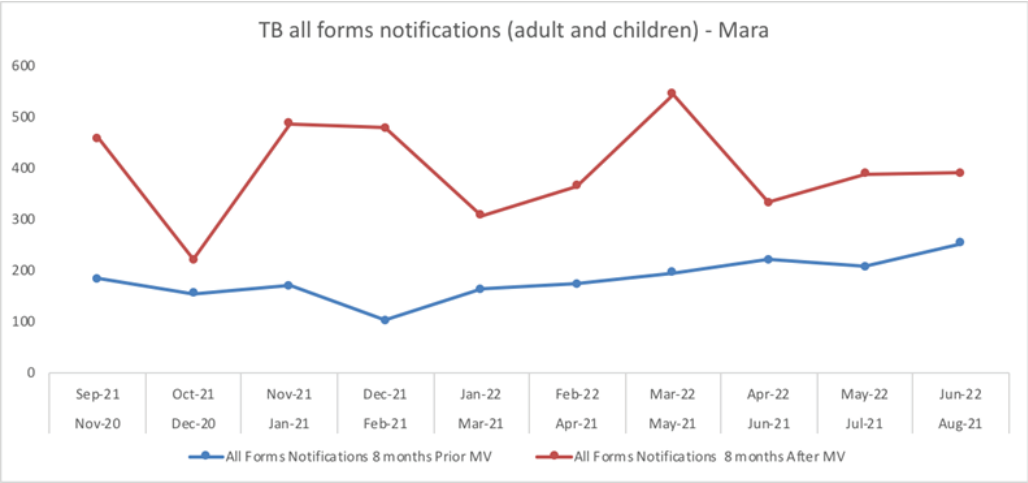


Figure 9: *Changes in TB AF notifications (Adult and Children) - Mara region*

Lindi region

The TB notification rate in Lindi increased four times when the mobile clinic van visited three district council in July 2022 compared to the monthly average notification rate, as evidenced in figure 3 below.

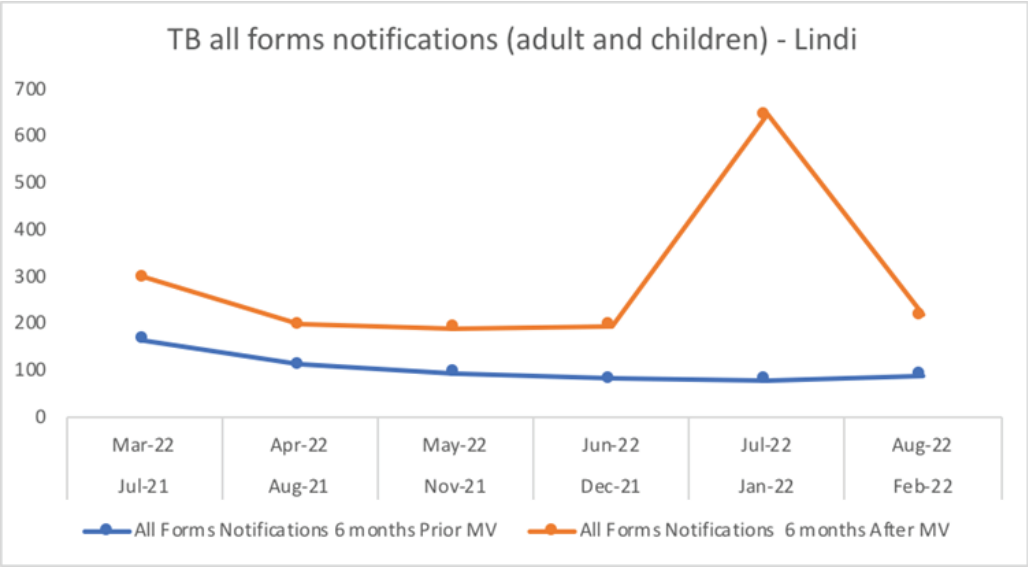


Figure 10 Changes in TB AF notifications (Adult and Children) - Lindi region

Morogoro region

In Morogoro region the TB notification rate experienced a sharp increase during its second leg of the mobile clinic van activity in June / July 2022, as seen in figure 4 below. The significant increase is attributed to thorough pre-exercise preparations that were put in place by the regional TB team. The health management team started with community awareness and mobilization activities, then notified other stakeholders for joint coordination to allow for integration of related health services and proactive engagement of communities and nearby health facilities to ensure linkage and support adherence of clients.

“Our first mobile clinic exercise was in May this year, after that we asked ourselves what can be done to better improve the outcome. We decided to improve our PA, by working with CHWs, and local government leaders, and gave them detailed messages to be communicated in specific places we were planning to visit”. Regional TB coordinator – Morogoro region

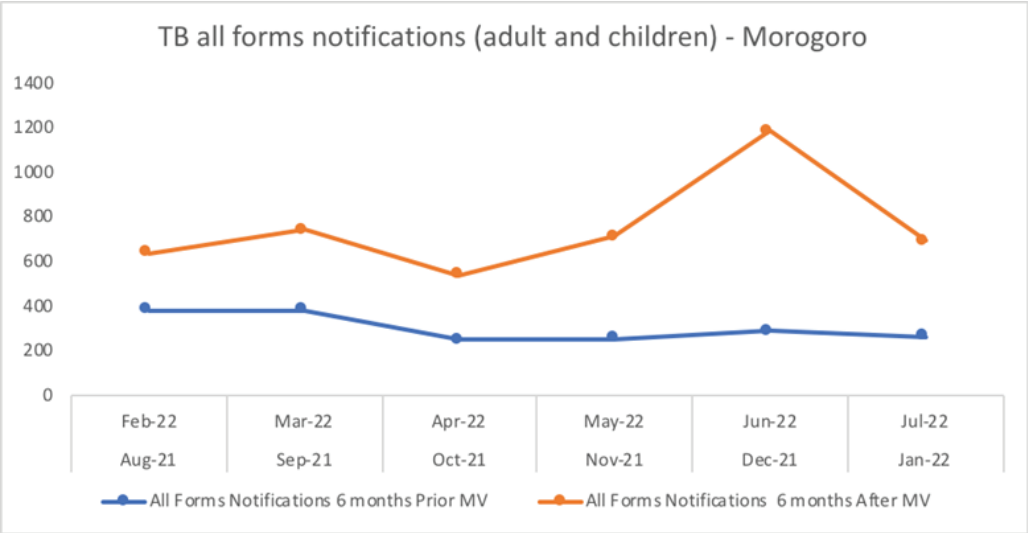


Figure 11 *Changes in TB AF notifications (Adult and Children) - Morogoro region*

Tanga region

TB notification rate in Tanga surged three times compared to the annual monthly average when the mobile clinic van visited three district council in June 2022. This is another evidence of positive contribution in increased TB notification brought by the mobile clinic van approach, as seen in figure 5 below.

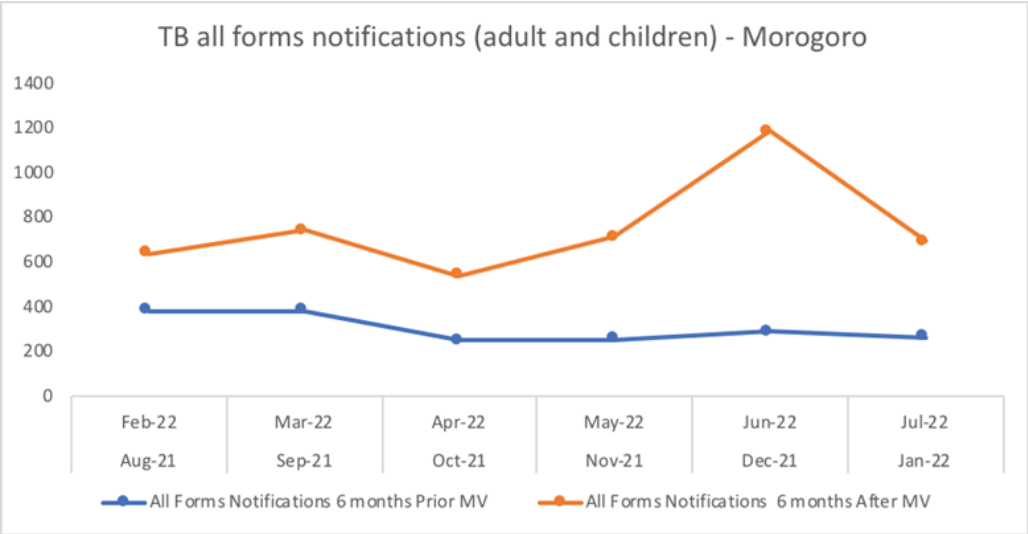


Figure 12 *Changes in TB AF notifications (Adult and Children) - Tanga region*

Mbeya region

Figure 6 below shows wavy trend of TB notification rate, climbing when the mobile clinic van visits a particular district council, such as in Nov – Dec 2021, March 2022, and June 2022.

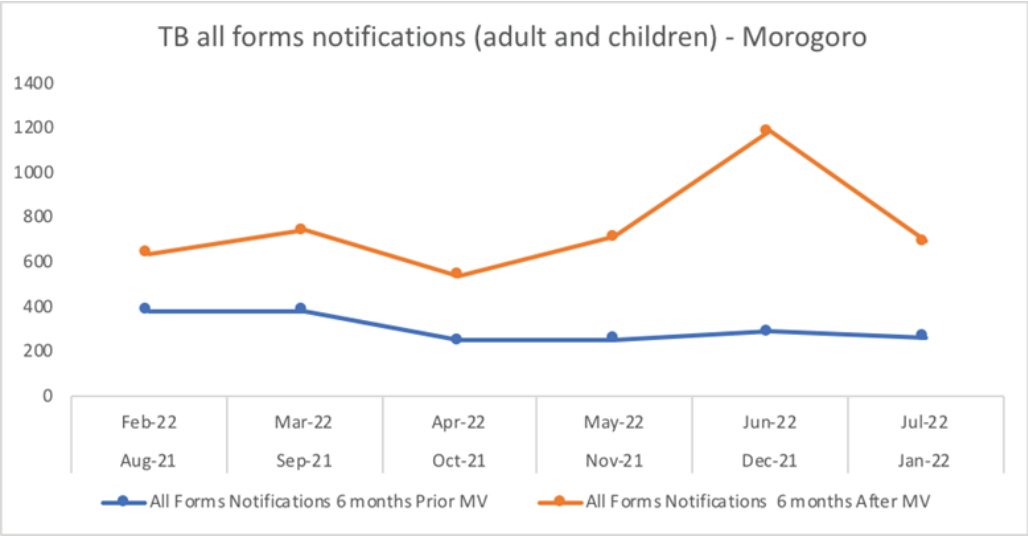


Figure 13 Changes in TB AF notifications (Adult and Children) - Mbeya region

In the above section, the assessment team has tried to correlate increase in TB notifications rate as reported through existing HMIS and actual visit schedule of the mobile clinic vans. The van approach has brought positive impact in identifying TB cases, and further, the increase in identification is said to be attributed largely by the availability of Digital X-ray and artificial intelligence (CAD4TB). X-ray services provided through the mobile clinics van free while in health facilities, x-ray service is provided through cost sharing system, which some clients are not able to afford.

Furthermore, regional teams reported to have managed good linkage to treatment during mobile services and all patients are started on treatment. Community health care workers are involved in TB case identification and follow up, and they play a key role in community sensitization, contact tracing and ensuring completion of treatment.

3.4. Weaknesses and Challenges

This section is looking at three assessment questions concerning the challenges, weaknesses and lessons learnt of mobile clinic vans that impeded the achievement in their effort to finding missing people with TB.

3.4.1. Weaknesses

- i. *Lack of funds allocated for Mobile Vans Services:* In all visited regions the assessment team found that there are no planned budgets for mobile funds operations on the side of the NTLP and implementing partners in specific regions. In Mbeya and Mara regions the vans operations are supported by MDH on ad-hoc basis using the budget components for TB services in key populations i.e., mining communities and active TB case finding (ACF) specifically during specific days such as World TB Day and other Government public days including Saba Saba and Nane Nane. In Mwanza region the Van has not been utilized due the absence of budget line by the implementing partner, ICAP.
- ii. *Absence of plans for maintenance of mobile vans and equipment:* It was observed that there was no clear plan for maintenance of the vans and equipment. All major services require involvement of NTLP at central level, thus result in delays. It was found out that since host institutions do not have a clear MoU on Van maintenance, some small faults are ignored or repaired by mechanics who are not experts in the area leading to more damage. Furthermore, there is lack of calibration guidelines to all the equipment including CAD4TB installed in the mobile vans.

The NTLP should develop plans for maintenance of mobile vans and equipment. Furthermore, the air conditioning (AC) and solar panel should be services to enhance working conditions of the mobile Vans

- iii. *Inadequate partner coordination and involvement in planning for mobile vans services:* The assessment found that there is no clear coordination of partners at zonal level leading to scrambling for the Van during special National events/days. Furthermore, most partners were not involved in the inception of mobile Vans initiative, thus have not fully endorsed the approach, and did not budget for mobile clinic services.

- iv. Absence of CAD4TB in some mobile vans: The Mobile Clinic Van in Kilimanjaro does not have CAD4TB.
To enhance the gains especially in increasing access to TB diagnosis, there is a need to equip all mobile vans with artificial intelligence and to development and implement maintenance place for all the accessories in the mobile vans.
- v. Lack of MV operational guidelines to guide operations and to ensure all teams have the same understanding of their responsibilities.

3.4.2. Challenges

- i. *High operational costs of the mobile vans:* The assessment found that all stakeholders including implementing partners are concerned of high operational costs of the van and inadequate budgeting for the associated services. This resulted for irregular implementation of mobile clinics.
Implementing Partners (IPs) / Local Government Authorities (LGAs) should set budget for implementation of MV activities. In addition, the national programme should consider handling operation and maintenance of the mobile vans to the private PR, during the global fund application.
- ii. *Large size of the vans:* The size of the van has also been consistently mentioned as barrier to reach some of the targeted areas. This is due to challenges including narrow or rough roads, bridges, and electricity lines; hence some planned mobile clinics could not be accomplished.
There should be considerations for options of having mini-vans that can accommodate at least 6 passengers with mobile digital x-ray, GeneXpert machine, generators / power-bank.
- iii. *Difficult to follow-up identified TB patients:* Patients follow-up and pre-treatment lost to follow up were common challenges encountered. This include ensuring that all identified patients are linked to further TB care and follow-up in a nearby health facility. Some of the identified patients i.e., among key populations such as people who use drugs are sometimes lost to follow-up, because most do not have specific areas of residence and means for communication such as mobile phones.

A solution to this can be that the mobile team to have DOT nurse / clinician from a nearby facility and involve CHWs to support in treatment follow-up. If the operation sites are chosen carefully, customers who show up are often people who live in areas nearby the site, which reduces chances that they will be lost to follow up the following day when their examination results are returned. Furthermore, NTP should consider budgeting for supportive vehicles for patient follow-up, community mobilization and contact tracing.

- iv. *Delays in GeneXpert results:* All visited regions have experience a high demand for GeneXpert examination during mobile clinics. Due to the use of four module GeneXpert machines, results may take a while and thus some customers fail to receive their feedback until the following day. This results to initial loss of identified TB patients who do not come back for their results.

NTLP should consider having 8 or higher module GeneXpert machines, and pool mechanism for GeneXpert cartridges.

- v. *Shortages of supplies:* Occasional lack of supplies especially GeneXpert cartridges limits efficiency of mobile clinic services to large extent. Allocation of commodities to support mobile services is inadequate, and facilities are not willing to share their stock for community events in accordance with regulations for management of commodities at facility level.

NTLP should plan for CAD4TB subscription and ensure quantification and allocation of GeneXpert cartridges for Mobile van operations. Furthermore, procurement of cartridges should fall under mass procurement with other health commodities. There should be good forecast of cartridges, HIV test kits etc.

- vi. *Limited time spent by the van in one location:* The time spent in one location by the van is uniformly inadequate. The demand is high and mostly the van spends only one day in a quarter/or even up to six months.

There is a need of appropriate scheduling that will provide adequate time in each targeted area. Adequate time should be allocated for the van to stay in a particular site to provide services to all people who have been mobilized and to allow services to contacts that will be traced.

- vii. *Low bacteriological confirmed TB cases:* For the past 20 years, most of notified TB cases in Tanzania are clinically diagnosed and of recent the situation has been complicated with intensified efforts to screen many more needy people. While NTLP is striving to increase number of people who are reached for TB screening, all resulting presumptive TB patients should access bacteriological confirmation test. An extensive assessment is required to gather all the necessary information from each stage of the TB care cascade to draw the specific interventional actions. The availability of efficient screening and diagnostic tools and approved approaches at point of care remain an important matter.

Expansion on the use of WHO recommended rapid molecular TB diagnostic tests and operationalization of GeneXpert as initial TB test in the country are crucial for increasing bacteriologically confirmed TB cases. NTLP is currently reviewing the placement of new test technologies in relation to approved sputum referral and transportation systems in all districts through Diagnostic Network Optimization assessment. Similarly, evaluation of diagnostic capacities is sought to determine the workable estimates of the number of diagnostic facilities and its efficient distribution.

Deployment of digital X-ray equipped with GeneXpert machines module 16 and wide use of PQE approaches in the districts are essential for quality TB testing among identified presumptive TB patients resulting from various ACF approaches including community-based initiatives like those outreach services by using mobile vans. The Ministry of Health has planned to procure digital x-ray machines (Portable digital x-rays), which will be installed in the “mobile clinics” with GeneXpert machines module XI that will be set up in every region of the United Republic of Tanzania, the main goal being to ensure that special groups are in the environment of acquiring Tuberculosis infection are easily accessible and on time. Currently, the programme is conducting systematic screening of presumptive TB and revised algorithms to maximize diagnosis of TB. Furthermore, the ministry is conducting an assessment on effective mean of saving cost and time of diagnosing TB by GeneXpert machines using pooled testing strategy. Also, expanding the use of trained African rats (SUA apopo project) during TB screening campaigns in the community. Results from apopo project show that 39,274 sample evaluated, 1,502 additional TB cases found

which is 40% increase, in Dar es Salaam and Morogoro during the past five years (2017 - 2021) turned to be positive for patients' recategorization and enrolment on TB treatment. Based on this unspoken finding, the programme is considering employing this technological initiative to maximize on the increase of TB cases confirmed bacteriologically. However, this approach requires the nearby facility capable of perfuming the sputum autoclaving to heat kill microorganism in the sample so that to prevent rats from being infected. Therefore, combination with specimen mechanism will facilitate the transportation of the sample to heating hubs where the heat kills will be performed.

Moreover, a total of 1,720 centres out of 8,549 health centres in the country equal to 20 percent were able to provide Tuberculosis testing services. Among these centres, 304 centres have installed 336 genetic machines (GeneXpert) compared to the goal of reaching 450 centres in 2023. The MoH has the following plan.

- To increase 780 health service centres by 2023/2024.
- To add 102 "GeneXpert" machines, 296 "Truenat" machines and 1,461 microscopes to strengthen TB testing activities in the country.
- Increasing the scope of private health centres that provide Tuberculosis services to reach 25 percent of all 3,987 private centres in the country.

To have efficient testing for quality results, both HCWs and CHCWs need to be well trained and retrained for consistencies. Similarly, the TB presumptive patients should be given education on the importance of good quality samples and how to produce them. Close monitoring of the collection of sputum samples, packaging, transportation, and preparations for examination should highly be emphasized for the best results.

3.4.3. Lessons Learnt

1. Positive Community Response: Implementation of mobile vans activities has demonstrated that when services are rendered close to people, uptake for TB screening and diagnosis increases. This implies that a combination of sensitization and awareness rising with service provision at client's convenience works for some sub-populations especially in rural hard to reach areas and community workplace areas such as marketplaces or among special populations such as fisherfolks and miners. One of the potential explanations for this preference for outreach services is the time constraints, distance and inconveniences in seeking the service for "symptoms that are not serious" at health facilities. Therefore, when the inconveniences are eliminated (distance, paying money, availability of examinations, diagnostic services, and timely results) the uptake of services increases.

Some customers may have clear signs and symptoms of TB, but it would never come to their attention that they may have TB. Bringing the service closer to them via the van helps in identifying such cases.

2. Facilitating Linkage to Care: To ensure that all clients who are diagnosed of TB, are notified, and initiated on treatment, implementers engage the DOT nurse / clinician from a nearby facility. The health provider usually records information obtained in this exercise, in their registers and tools to capture number of individual screened, presumed and notified in respective registers. For those who are diagnosed of TB, the DOT nurse/clinician initiates treatment on the site and defines a follow-up plan. The catchment area CHWs and Ex-TB groups are involved to support adherence and tracking of patients. The community-based support team, also facilitates contact investigation in households and screening for TB and initiation of TB preventive treatment for eligible clients.

3. Integration of Services: The mobile van outreach services offers opportunity for integration of other services including HIV testing services, NCD screening, nutrition counselling among others. Availability of other medical personnel improves the response of communities compared to community outreach activities conducted for only TB services. In particular, the availability of digital X-ray in the van, has facilitated referral and consultation of heart conditions and orthopaedics.

4. Community Engagement: Engagement of community actors and gatekeepers is a prerequisite for the success of mobile vans ACF intervention. It is important to involve community stakeholders in such campaigns. Not only the local chairperson, but also health and other committees of the respective areas, e.g., Bwana/bibi afya wa kata, health and social welfare officers within denominations etc. involving such stakeholders would've made the exercise a bigger success. Such stakeholders should also be involved in the relevant committee meetings/assemblies within the DTLC office.

5. Appropriate targeting and sensitization: Adhering to the recommendation of vans operation, especially in targeting key and vulnerable populations is critical to the success of this intervention. In many locations, mobile vans outreach has improved with better targeting, timely and intensive awareness and community mobilization and integration of services. Mobile vans produce high yield when they are targeting hard to reach communities such as those in mining sites and fisherfolks. Implementation experience has demonstrated that when mobile vans were deployed in other public areas, especially township, the uptake and eventually yield was low. Proper site targeting and use of PAs results into higher yield – case of Morogoro and Kilimanjaro – low yield. Many people die of TB, not because they choose to, but because they face many challenges in accessing health services. Many late-stage TB cases that were identified through the mobile van were due to lack of money or long distance from health facility. If more vans were made available, a bigger number of such cases would be identified and treated

6. Artificial intelligence: Artificial intelligence technology is very useful, not only for TB diagnosis, but potentially for other diseases as well.

3.5. Synergies, Missed Opportunities

The evaluation team posed one question to help examine synergies (or missed opportunities for such synergies) between TB case finding using Mobile Vans and other HIV, Covid19 or health related services or other ACF initiatives.

Synergies

Within the region, TB case finding by mobile clinic vans was provided along with other health services such as HIV testing, covid-19 vaccinations, advocating for the modified health insurance scheme (CHF), and family planning education. In all mobile van operations, there was more than one health service being provided apart from TB screening.

Corporate Social responsibility: Corporate such as mining firms and bank can participate in supporting outreach intervention.

Several opportunities exist for expanding the mobile services and increasing efficiency. These include the opportunity for involving other relevant stakeholders in supporting provision of the service. For example, instead of relying on NGOs such as Amref alone, there is an opportunity for collaborating with banks, mobile phone companies and other commercial firms in sponsoring and supporting the TB mobile van service through their allocated community service packages. Also, for increasing sustainability and availability of the service, DMOs offices could create a budget to support the operations and stakeholders like Amref Tanzania would then only complement the efforts

There is also the opportunity for increasing efficiency in using the van within the zone by creating a specific timetable at the beginning of the year listing in advance all the regions and places the van will provide services throughout the year. This will help stakeholders plan and budget for the van operations and keep the van in the field and operating consistently and for as long as possible throughout the year. In addition, there is an opportunity for saving time and increasing efficiency through making clear plans for how to implement the exercise before the van arrives at the designated sites.

Lastly, even though using AI in the vans increases the quality of the TB results, both a certified radiologist and a radiographer should be trained and attached to the mobile van team so that if the AI technology fails/is not available, the two can cooperate and give more reliable results.

Missed Opportunities

The lack of resources provides several missed opportunities for providing a wider coverage of TB screening services. The fact that there is only one van available for the entire eastern zone misses the opportunity for identifying and treating a higher number of TB cases that would have been identified by the mobile service. Also, since health services are multi-sectorial, there is the missed opportunity for involving and collaborating with other potential stakeholders in supporting mobile van services due to the more centralized nature of the mobile van operations.

3.6. RECOMMENDATIONS

Strategic/Programmatic level recommendations

1. Mobile Vans Operations:

- **Funding for Mobile Vans Operations**

⇒ The NTLP should mobilize resources for operations of mobile clinics. Furthermore, the Ministry of Health and PORALG should sensitize the IPs / LGAs on the availability of Mobile Vans and advocate for budget allocation for implementation of mobile clinics. This should be followed by the appropriate scheduling of mobile clinics to provide adequate time in each targeted area.

⇒ The cost of running the mobile vans should be factors in within the regional and council budgets. All partners supporting TB and TB/HIV interventions should be encouraged to support the mobile van outreach services. Resources from other council budgets and partners including CSR should also be mobilized.

- **Alternative designs for Mobile Vans:**

⇒ Consider options for having strong Vans that are smaller in size i.e., hardtop to enable access to hard-to-reach communities where large Vans cannot reach or use long route to reach these areas. These smaller Vans should be able accommodate at least 6 passengers and should be mounted with portable digital x-ray, GeneXpert machine, generators / power-bank. Existing Vans and digital x-ray fixed at HFs and specialized diagnostic clinics with no artificial intelligence technology should also be considered for digital X-ray and CAD4TB.

⇒ Consider using medical boat equipped with X-ray services, to reach the islands and mobile fishing societies.

- **Scheduling Mobile Van Services:** The assessment found that the vans were rotating in designated regions on a need base. As such there is a risk of competitive demands, inequitable coverage, and inefficiencies.

- ⇒ Consider aligning mobile van schedule among regions to ensure smooth implementation and coverage. The hosting institution should therefore keep a quarterly calendar defining vans movements and monitoring coverage and programmatic results for each region.
- **Maintenance of mobile vans and equipment**
 - ⇒ The NTLP in collaboration with IPs should:
 - ⇒ Develop and implement a maintenance plan for mobile vans and its equipment including the digital X-ray and GeneXpert machines, and van's accessories such as AC and generators or solar panels to enhance working conditions of the mobile Vans. Specifically, the national programme should consider handling operation and maintenance of the mobile vans to the private PR, during the global fund application.
 - ⇒ Maintenance logs and warrant should be kept within the hosting institutions.
- 2. *Digital X-ray:* The additional value of digital X-ray and near real-time diagnostic technology is a game changer for mobile van ACF.
 - ⇒ Tanzania should consider expansion of radiographic services to reach at least all district hospitals and selected health centres in long term. On a short-term basis, the national programme should consider mobile digital X-ray and molecular technology diagnostic to be offered in outreach setting especially in hard-to-reach areas
- 3. *Human Resource:* Sustainability of Human resource team for mobile van, is of importance. While the current model of having dedicated staff increases efficiency, ownership and wider coverage, its sustainability is questionable.
 - ⇒ The host institutions (zonal or regional referral hospital) should designate a team of specific healthcare staff to be attached to the mobile van so that even when the support for current mobile van service project phases out, the team can still deliver the service, provided the van is available. The model used in KIDH, where multiple teams were formed and trained on operating the mobile vans and currently are rotating during mobile outreach services, points to sustainability.

4. *Organization of Mobile Van Services:* Key practices were noted in this assessment and should be embraced.
- ⇒ Implementation of the mobile van activities should therefore be defined with a checklist that entails preparatory phase that, requires community awareness and mobilization activities, joint coordination to allow for integration of related services and proactive engagement of communities and nearby health facilities to ensure linkage, support adherence and track lost to follow up clients.
 - ⇒ NTLP in collaboration with RHMTs should involve IPs in planning for mobile vans services. An annual mobile Van operational plan should be jointly developed by Zonal RHMTs and IPs that shares the van, to enable smooth operations and collaborations. NTLP should consider handling operation and maintenance services to the private PR, during the next Global Fund application.
 - ⇒ Strengthen integration of TB screening & testing interventions with other health programs i.e., the current HIV key population outreaches implemented by ICAP Fikia project and IntraHealth Tanzania mobile clinic vans.
 - ⇒ Consider expanding utilization of mobile van fixed with digital x-ray equipment and CAD4TB accessories in remote places, high volume facilities with no or broken-down X-ray machines.
5. *Patient follow-up:* To enable adequate patient follow-up and reduction of early LTFU, the mobile clinic team needs to have a DOT nurse/clinician from a nearby facility and involve CHWs to support in treatment follow-up.
- ⇒ The NTLP should also consider budgeting for supportive vehicles for patient follow-up, community mobilization and contact tracing during outreach missions.
6. *GeneXpert results turnaround time (TAT):* To reduce TAT, the NTLP should consider installing the Vans with 8 or higher module GeneXpert machines in place of existing 4 module machines.
7. *Licences and Supplies:* To ensure smooth running of mobile clinics services, the NTLP should plan for CAD4TB subscription. To improve diagnostics supplies the NTLP and CHMTs should ensure adequate quantification, forecast and allocation of GeneXpert cartridges and HIV test kits for Mobile van operations. It is suggested that procurement of cartridges should fall under mass procurement with other health commodities.

8. *Operational Research:* Conduct cost analysis to identify cost of notifying one TB patient through mobile Van clinics approach.

Operational level recommendations

1. As it is for Gene-Xpert, presumptive should have free access to X-ray services in all settings of service provision.
2. Increase budget allocation to CHW to reach more communities
3. Support CHW with means for transportation i.e., Motorbikes
4. Increase frequency of mobile clinics and duration of stay at one location
5. Have a separate budget for cartridges for the Mobile Vans.
6. Regular check-up of equipment due to rough roads that prone the equipment to be loose and broke.
7. Have an extra GeneXpert or a machine with more modules eg, 16 modules to be able to test more samples in the field.
8. The van should have an extra laptop/display screen for CAD4TB as they now use the GeneXpert laptop which is slow.
9. Prepare SOPs on how to operate the Van and how to handle clients who come after the van has left.
10. Link QITB mentorship (by DTLC and RTLC) in all facilities involved in mobile van clinics. This will help to screen and detect more TB cases when the van leaves as people will be sensitized to go to HFs. (issues of affordability and accessibility)

ANNEXES

ANNEX I. PERSONS INTERVIEWED AT SITES AND ORGANIZATIONS VISITED

Region / Level	District	Facility / Organization	Staff Interviewed	Position
Arusha	Arusha CC	Mount Meru Hospital	Dr. Chonge Edna Ntulwe	RTL
			Dr. G. Mmary	TB/HIV officer /DTLC West
			Dr. Paulina George	DTLC North
			Dr. M Kingazi	DTLC East
		EANASO	Mr. Rodrick Mugishagwe	TB program officer
		USAID Afya Yangu	Dr. Seleman Mageto	Program officer TB
			Dr. Charles Makoko	Regional program manager
	Karatu DC		Dr. Wenseslausi Mwandu	DTLC
			Ms. Tina Pius	CHW
Dar es Salaam		CTRL	Dr. Basra Doulla	Head of CTRL
			Mr. Edgar Luhanga	Lab Manager
	Ilala	Amref	Dr. Lilian Ishengoma	TB Technical Advisor Amref – GF project
			Dr. Godwin Munuo	Deputy Chief of Party: Afya Shirikishi Project
			Dr. Rose Marwa	TB Coordinator
		ICAP	Dr. Benadeta Msongole	Advisor, Care & Treatment
			Dr. Robert Kisanga	Tech Advisor-TB /HIV Fikia +
	Kinondoni District	Kinondoni District	Dr. Emmanuel Lymo	RTL
		Mwananyamala	Dr. Saudani Hassan	DTLC
		Lugalo	Dr. Geoffrey Shani	DTLC
	Temeke District	Temeke District	Dr. Irene R. Haule	DMO
		Temeke MNH	Dr. Mary Chinyala	RTL
		Yombo Vituka	Ms. Nangenjwa Mrutu	DTLC
		Rangi Tatu	Ms. Joyce Ngohamwende	DTLC

Region / Level	District	Facility / Organization	Staff Interviewed	Position
		Temeke RRH/Wailes 1	Dr. Tulikifri Mbaga	DTLC
		Tambukareli	Dr. Amina Ngayahika	DTLC
		Temeke RRH/Wailes 2	Dr. Silverstar Ngowi	DTLC
		Keko	Dr. Mrisho Kamanga	DTLC
		Mbagala	Dr. Sultani Lusambi	DTLC
Dodoma	Kondoa DC	Bukulu DH	Ms. Praxeda Mangunge	DOT Nurse
			Ms. Rosemary Magwaza	Health Volunteer
			Dr. Daniel B. John	DTHO
			Dr. Alpha Kwilasa	DTLC
	Dodoma CC	Dodoma RS	Dr. Peres Lukango	RTL
		Makole HC	Dr. Rahma Mohamed	CTL
			Ms. Zuhura Nyange	DOT Nurse
			Dr. Alice Marcel	CTO
			Ms. Rose Lema	CHW
		Amref	Mr. Peter Asilia	TB focal person
		NTLP	Dr. Riziki Kisonga	PM
			Dr. Emmanuel Matechi	TB Advisor
			Dr. John Msaki	TB focal
			Dr. Alan Tarimo	PO, mobile van focal
			Mr. Hamimu Kigumi	M&E Community
Morogoro	Morogoro MC	RS	Dr. Marco Shigela	RTL
	Morogoro DC	DED Morogoro DC	Dr. Ayoub Naftari	DTLC
	Gairo	DED Gairo	Dr. Mwajuma Abdalah	DTLC
	SUA	Apopo	Dr. Joseph Soka	Project Manager
Mtwara	Newala DC	Newala DH	Dr. John Mwakipyangu	DTLC
			Ms. Devotha Kapembe	TB health officer
			Ms. Sifa Abdala	DOT Nurse
			Dr. Michael Koni	RTL

Region / Level	District	Facility / Organization	Staff Interviewed	Position
	Tandahimba DC	Tandahimba District Hospital	Dr. Itros Sanga	Program Manager
			Dr. Ahmad Masoud	DTLC
			Ms. Fatuma Juma	TB health officer
			Mr. Hassan Chilomba	DOT Nurse

ANNEX II. DATA COLLECTION INSTRUMENTS

ASSESSMENT OF IMPLEMENTATION OF ACTIVE TB CASE FINDING USING MOBILE VANS IN TANZANIA

Key Informant Interview (KII) Guide for NTLP (RTLCL / DTLC / DTHCo)

Interview date -- Tarehe ya mahojiano: / / (dd-mm-yy)

Interviewer ID -- Namba ya utambulisho ya anayehoji:

District/Council -- Wilaya/Halmashauri: _____

Section A: Open-Ended Qualitative Questions

INSTRUCTIONS: The following questions are only a guide. This is not a required line of questioning but rather suggested questions only. The interviewer should phrase these questions in a way that works best for the participant. Turn on the audio recorder now.

Theme: Site Profile

Theme 1: Operationalization of Mobile Vans for Active TB Case Finding

Evaluation Question 1: How are the Mobile Vans operated?

1. What is the modality for the operating the mobile Van? Probe for:
 - How are TB screening sites selected for mobile Van to operate?
 - How many days does the van spend in a district/village?
 - How is mobile van staffing?
 - Are there SOPs for implementing ACF using mobile Vans? (If yes ask to see them; probe who developed them etc.)
 - Who supports operations of mobile vans in your district/region? (Probe: What support is provided? And

Theme 2: Impact made by the “Active TB Case Finding using Mobile Vans” approach

Evaluation Question 2: To what extent have the “Active TB Case Finding using Mobile Vans” made an impact to increase TB detection, notification?

Sub theme 2.1: Overall Impact of “Active TB Case Finding using Mobile Vans

2. What is the impact of “Active TB Case Finding using Mobile Vans” in increasing TB case finding?

Probe:

- Differences in TB detection, notification according to gender and/or age pre- and post-implementation.
 - Request any monitoring data and reports that confirm the claims
3. What changes (outcomes) did you observe in TB detection and notification as a result of using Mobile Vans including those mounted with digital x - ray with the aid of artificial intelligence (CAD4TB)?
 4. What factors have facilitated/aided “Active TB Case Finding using Mobile Vans” in increasing TB case detection?
Probe:
 5. What factors impeded “Active TB Case Finding using Mobile Vans” in increasing TB case detection?
 6. What is the impact of “Active TB Case Finding using Mobile Vans” on Pediatric and adolescent TB notification and access to services?

Sub theme 2.2: Impact of using Mobile Vans in strengthening local capacity

Efficiency and effectiveness of implementing partners support of Active TB Case Finding using Mobile Vans

7. Can you mention partnerships and collaborative efforts formed/ observed in supporting TB detection and notification since the inception of Active TB Case Finding using Mobile Vans?
8. Can you elaborate how many site you have supported since the inception of Active TB Case Finding using Mobile Vans?
Probe for:
 - Region and district councils.
 - Number of mobile vans procured / plan to procure
 - What is your recommendation on the ideal model? A lorry, or Mini-Bus, Boat or Portable TB screening kit?

9. What is the impact of “Active TB Case Finding using Mobile Vans” in increasing local capacity (regions/ councils) to implement Active TB Case Finding?

Probe for:

- Specific ranges of services introduced/supported as part of the project
10. What factors have facilitated/aided the increase in local capacity (regions/ councils) to implement “Active TB Case Finding using Mobile Vans”?

Probe:

- Examples
11. What factors impeded the increase in local capacity (regions/ councils) to implement “Active TB Case Finding using Mobile Vans”?

Sub theme 2.3: Impact of using Mobile Vans in increasing Local acceptance Active TB Case finding

12. What is the impact of “Active TB Case Finding using Mobile Vans” in increasing local acceptance of Active TB Case finding as an important objective in the national TB response?

13. What factors have facilitated/aided the increase in local (regions/ councils) acceptance of Active TB Case finding as an important objective in the national TB response?

Probe:

- Logistical support, financial support, or political or advocacy support
14. What factors impeded the increase in local (regions/ councils) acceptance of Active TB Case finding as an important objective in the national TB response??

Theme 3: Strengths, challenges, weakness, and lessons learned from implementation of “Active TB Case Finding using Mobile Vans” approach

15. What were the strengths in implementing “Active TB Case Finding using Mobile Vans” that contributed in the impact of this approach?

Probe:

- *specific examples and possible reasons for each mentioned example*

16. What were the challenges in implementing “Active TB Case Finding using Mobile Vans” that impeded the achievement of this approach?
17. What were the weaknesses in implementing “Active TB Case Finding using Mobile Vans” that impeded the achievement of this approach?
18. What are the key lessons learned during implementation of “Active TB Case Finding using Mobile Vans”?

Theme 4: Synergies or missed opportunities between “Active TB Case Finding using Mobile Vans” approach and other health related services

19. What opportunities exist for successful implementation of “Active TB Case Finding using Mobile Vans”?
20. What synergies exists between TB “Active TB Case Finding using Mobile Vans” and other TB, HIV, Covid19 or health related services or other ACF initiatives?
Probe for:
 - Missed opportunities for these synergies.
 - How can these missed opportunities be realized?

Theme 5: Recommendations on how to sharpen “Active TB Case Finding using Mobile Vans” approach for maximal impact

21. What are your recommendations to the NTLP on how can the design, management, and implementation of “Active TB Case Finding using Mobile Vans” can be improved?
Probe for:
 - Efficient, effective, and relevant modalities
 - The ideal model: - A Lorry, or Mini-Bus, or Boat or Portable TB screening kit?
 - Sustainability and the prospects for continuing and expanding the impact of the existing successes
 - Suggested framework for structuring such expansion

Thank you for your time. We have completed the discussion.

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