



REPUBLIC OF KENYA

MINISTRY OF HEALTH

ANNUAL REPORT

2022



**NATIONAL TUBERCULOSIS, LEPROSY
AND LUNG DISEASE PROGRAM**



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TABLE OF CONTENTS

Acronyms and Abbreviations.....	iv
Executive Summary	v
Acknowledgement.....	viii
1.0 Epidemiology of Tuberculosis and Leprosy in Kenya	1
1.1 Drug-Sensitive Tuberculosis	1
1.2 Childhood TB	4
1.3 Drug-Resistant Tuberculosis (DR-TB).....	7
1.4 TB/HIV and Other Comorbidities.....	10
1.5 TB Preventive Therapy/ Latent TB Infection	13
1.6 Leprosy	15
2.0 Strategies for Finding Missing People With TB.....	17
2.1 Background Information	17
2.2 Active Case Finding at the Health Facility Level.....	18
2.5 Public-Private Mix (PPM).....	21
2.3 Contact Management	21
2.4 Kenya Innovation Challenge Tuberculosis Fund.....	22
2.6 Lessons Learned	26
3.0 Diagnostic Capacity and Surveillance of TB	29
3.1 Introduction	29
3.2 The National Diagnostic Committee of Experts	30
3.3 Increasing TB diagnostic access.....	30
3.4 Integrated laboratory Specimen Referral Systems (ISRS)	32
3.5 Remote logging	32
3.6 CXR/CAD	32
3.7 Tuberculosis Testing Menu.....	34
3.8 Technical Assistance.....	38
3.9 External Quality Assurance/Proficiency testing	38
4.0 Social Support, Nutrition, Human Rights and Gender.....	43
4.1 Social Support.....	43
4.2 Nutrition	44
4.3 Human Rights and Gender (HRG)	45

5.0 Supply Chain Management, Pharmacovigilance and ADSM	47
5.1 Situational analysis.....	47
5.2 Commodity Security Committee.....	48
5.3 NTLD-Program Forecasting, Quantification and Procurement	48
5.4 Quality and Safety Assurance for TB Medicines (PV, PMS & ADSM).....	48
5.5 Order Management Team	48
5.6 Commodity Reporting	49
5.7 Storage and Distribution Achievements	49
5.8 Stock Management and Procurement.....	49
5.9 Integration of TB/COVID Commodities in the KHIS TB Reporting Tool	50
6.0 Prevention, Health Promotion and Community Engagement	51
6.1 Community Engagement	52
6.2 Advocacy in TB response.....	52
6.3 Communication.....	57
7.0 Monitoring, Evaluation and Research	63
7.1 End Term Review for the 2019 - 2023 National Strategic Plan	63
7.2 NSP 2023-2028	64
7.3 UNHLM	65
7.4 Data Quality Improvement Plan.....	66
7.5 Annual Data Quality Improvement Forums.....	66
7.6 Performance Review Meeting	67
7.7 TB Diagnostic Data Connectivity Solution (TIBULIMS).....	69
7.8 Public-Private Mix	72
7.9 Digital Adherence Technology (DAT)	72
7.10 Data Quality Assessment 2022	73
7.11 KHIS/TIBU Training	73
7.12 MOH Virtual Academy	74
8.0 Resource Mobilization	75
9.0 Finance Administration and Human Resources.....	77
9.1 Funding Summary and Performance.....	77
9.2 COVID-19 Funding.....	78
9.3 Human Resources and Administration	78
Annexes	80

ACRONYMS & ABBREVIATIONS

ACF	Active Case Finding	KEMRI	Kenya Medical Research Institute
aDSM	Active Tuberculosis Drug-safety Monitoring and Management	KIC-TB	Kenya Innovation Challenge TB Fund
BMI	Basal Metabolic Index	KII	Key Informant Interviews
BSCs	Bio-safety Cabinets	LF-LAM	Lateral Flow Lipoarabinomannan
CAPA	Corrective Action Preventive Action	LPA	Line Probe Assay
CDC	Centers for Disease Control and Prevention	LTFU	Loss To Follow Up
CHAI	Clinton Health Access Initiative	M&E	Monitoring and Evaluation
CHS	Center for Health Solutions	MCH	Maternal and Child Health
CHVs	Community Health Volunteers	MTB	Mycobacterium Tuberculosis
CMEs	Continuous Medical Education	NSP	National Strategic Plan
CNR	Case Notification Rate	NTRL	National Tuberculosis Reference Laboratory
COE	Committee of Experts	PPEs	Personal Protective Equipment
COVID-19	Corona Virus Disease, 2019	PT	Panel Testing
DM	Diabetes	PV	Pharmacovigilance
DQA	Data Quality Assessment	RR	Rifampicin Resistant
DRTB	Drug-Resistant Tuberculosis	SDP	Service Delivery Point
DST	Drug-Susceptibility Testing	SI	Strategic Initiatives
DSTB	Drug-Sensitive Tuberculosis	SLA	Service Level Agreement
ECHO	Extension for Community Healthcare Outcomes	TB	Tuberculosis
EPI	Epidemiological Review	TB ARC II	TB Accelerated Response and Care II
EQA	External Quality Assessment	TPT	Tuberculosis Preventive Therapy
FM	Fluorescent Microscopy	TSR	Treatment Success Rate
HCWs	Health Care Workers	UHC	Universal Health Care
IFR	Injection-free Regimen	UNHLM	UN High-Level Meeting
IGRA	Interferon Gamma Release Assay	USAID	United States Agency for International Development
KCCB Komesha TB	Kenya Conference of Catholic Bishops-Komesha TB	WHO	World Health Organization
		ZN	Ziehl Neelsen

EXECUTIVE SUMMARY



TB remains a global threat to public health and is the second leading cause of death by a single infectious agent. An estimated 10.6 million people developed TB in 2021 with 1.6 million deaths. Kenya has a high burden of TB and HIV-associated TB. While Kenya transitioned from the list of high-burden Drug Resistant TB (DRTB) countries, DRTB remains a threat to TB control gains and its control needs to be prioritized.

In 2022, Kenya reported 90,560 drug-susceptible TB (DSTB) cases representing a 16.7% increase relative to 77,854 cases notified in 2021. Similarly, the country reported an improvement in childhood TB cases notified from 9.6% in 2021 to 11.4% in 2022. The increase is attributed to intensified case finding initiatives through Active Case Finding (ACF) strategy at health facility and community levels. Other strategies include strengthening the quality of TB data through data quality improvement meetings, introduction of more sensitive TB screening tools (AI enabled digital chest x-ray) and WHO recommended rapid molecular diagnostic platforms (GeneXpert, Truenat and LF-LAM). Whereas according to WHO estimates, Kenya is estimated to have about 133,000 incident cases of TB; the intensified case finding efforts in place will accelerate progress towards closing the case finding gap.

In Kenya, up to 23% of persons diagnosed with TB in 2022 were co-infected with HIV. PLHIV have a higher risk of mortality from TB, underscoring the need to ensure optimal HIV and TB treatment. The country has consistently had a 97% uptake of Antiretroviral Treatment (ART) among the patients with TB/HIV co-infection, highlighting the strong TB/HIV collaborative efforts in place.

Drug resistance (i.e. Resistance to at least one anti-tuberculosis drug) remains a significant public health scourge in Kenya. In Kenya routine surveillance for drug resistant TB is limited to high-risk groups including those previously treated for TB. In 2022, Kenya reported 752 cases of drug-resistant TB. The country has adopted novel TB diagnostic platforms such as Truenat and GeneXpert Ultra that will go a long way to enable timely diagnosis and treatment of DRTB.

Treatment success rate (TSR) for all forms of TB was 86% (2021 cohort) representing 2% improvement in comparison to the previous year. This increase signals the consolidation of gains post the COVID-19 pandemic and a dedication to improving patient outcomes.

Kenya adopted the WHO's TB prevention recommendations in 2020 and in 2022, most of the counties were sensitized on the newer TB Preventive Treatment (TPT) recommendations. The target populations

identified to be at risk of TB include; people living with HIV, all household contacts of people with pulmonary TB and other risk groups (Health care workers, Prisoners and clinical at-risk groups). These populations have been prioritized for TPT. In 2022, 32,512 contacts of bacteriologically confirmed pulmonary TB cases were symptomatically screened for TB disease, an increase of over 150% from previous years. The country will seek to sustain contact screening and management efforts, leveraging on the Community Health Promoters program launched by the government.

One hundred and sixteen (116) leprosy cases detected in 2022, a 6% increase as compared to the cases notified during the previous year. The counties have sustained the efforts towards diagnosis of Leprosy, which will be sustained.

There have been gains made and lessons learned in case finding initiatives. Quality improvement dubbed Program Quality and Efficiency (PQE) was introduced to curb the inefficiency of ACF activities through integrating the utilization of quality improvement principles in enhancing TB case finding at the health facility. The Kenya Innovation Challenge (KIC) TB Fund is one of the Global Fund-supported strategic initiatives to find missing people with TB by creating demand for TB services, screening people for TB and linking those with symptoms suggestive of TB to diagnostic and treatment services. Public Private Mix (PPM) collaboration resulted in strengthened engagement and participation by the private sector in the fight against TB. The current approaches to engaging private providers are outlined in the PPM Action Plan 2021-2023 which describes goals, objectives, and interventions for expanding and scaling up current PPM in the country.

The DNTLDP has expanded access to TB diagnostic and screening services throughout the country through strategic placement of the WHO-approved molecular diagnostic tests (mWRDs) and other newer TB diagnostic platforms. The country scaled up access to GeneXpert Ultra, Truenat, Chest X-ray/CAD for TB, Quantiferon test for latent TB diagnosis, LF LAM, and TB-LAMP tests.

About 80% of DR TB patients in Kenya are currently managed in the community, where healthcare workers and community health volunteers provide Directly Observed Therapy (DOT) services daily. In addition, patients with Drug Resistant TB are enrolled into the social health insurance program NHIF to reduce out-of-pocket costs incurred during treatment. This is in line with the End TB Goal of ensuring zero families face catastrophic costs due to TB.

Human rights and gender-related barriers continued to create inequalities in accessing services. To address these challenges, the TB Program continues to implement rights and gender-sensitive policies and programs aimed at increasing access to TB services for all. The implementation of TB human rights and gender activities is done through a Joint Technical Working Group for TB, HIV, and Malaria.

Advocacy and communication continue to play a crucial role in TB management in Kenya and it is conducted through raising awareness, mobilizing resources, and promoting policy changes. Through advocacy, there is increased political goodwill and prioritization of resources for TB prevention, diagnosis, and treatment. The Multisectoral Accountability Framework launched in 2023 will strengthen engagement of other key sectors in TB control. The program ensures that communities infected and affected by TB are engaged in decision-making processes. This, coupled with strong advocacy and communication efforts fostered a patient-centered approach and addressed human rights and gender barriers. Ultimately, these initiatives enhanced demand for TB services, encouraged innovation, and contributed to achieving the goal of ending TB in Kenya.

The cumulative funding received during the year for implementation of TB control activities was USD 27,174,266, with 55% of the program resource needs remaining unfunded. Mobilizing additional resources towards TB control will be critical to ensure Kenya remains on track to achieve the End TB goals.



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The program would like to thank specifically CHS TB ARC II for their financial support for the meeting held to develop this report.

EPIDEMIOLOGY OF TUBERCULOSIS AND LEPROSY IN KENYA

1.1 Drug-Sensitive Tuberculosis

1.1.1 TB Case Finding

a. National summary

In 2022, Kenya reported a total of 90,560 drug-sensitive tuberculosis (DSTB) cases, where 8.3% were previously treated. This represented a 16.6% increase compared to 77,854 notified DSTB patients in 2021. This is a sustained upward trend in overall annual TB case notification from 2020. The case notification rate for the year was 168 per 100,000 population, an increase from 147 per 100,000 population in 2021. This is attributed to intensified case finding initiatives through Active Case Finding (ACF) strategy at health facility and community levels. Other strategies include strengthening the quality of TB data through data quality improvement meetings, introduction of more sensitive TB screening tools (AI enabled digital chest x-ray) and WHO recommended rapid molecular diagnostic platforms (GeneXpert, Truenat and LF-LAM).

TB incidence in the country is estimated at 133,000 in 2022, which is a 68% case detection rate indicating that at least 42,159 (32%) of incident TB cases are either missed or not notified in the year.



90,560

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were previously treated

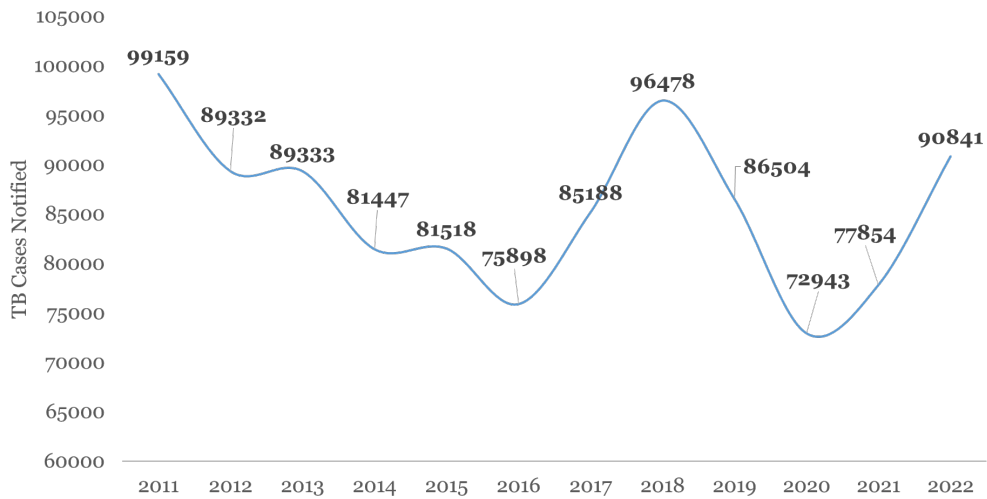


Figure 1.1: Drug Susceptible Tuberculosis case notification trends in Kenya (2011 - 2022)

b. County performance summary

Nine (9) counties reported an increase in case notification of 28% or more in 2022 (figure 1.2). These include Vihiga, Murang'a, Marsabit, Kajiado, Nakuru, Uasin Gishu, Kiambu, Nyeri and Garissa.

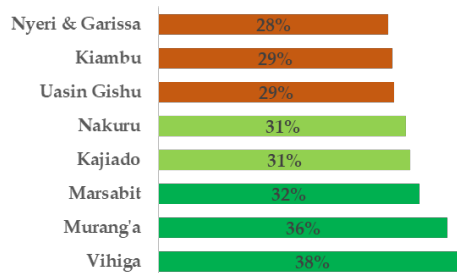


Fig 1.2. Counties with the greatest increase in case finding in 2022

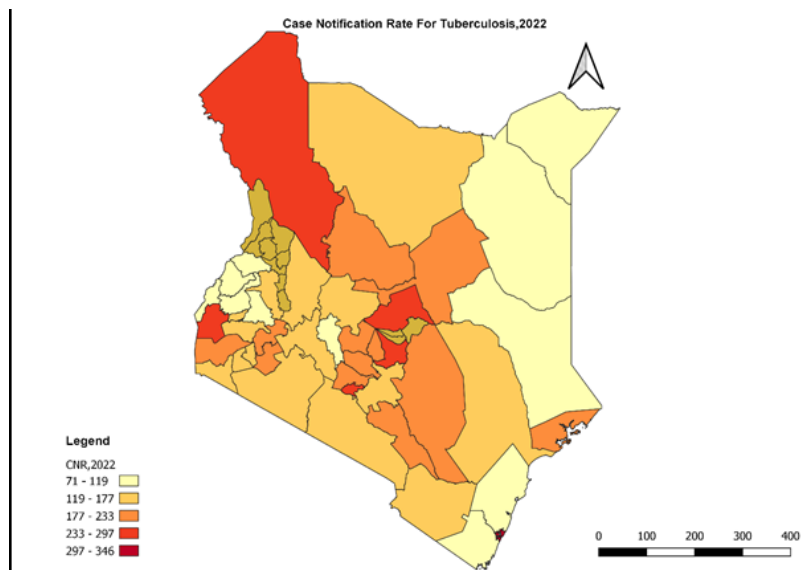


Figure 1.3: DSTB Case notification rates per County 2022

c. Age-Sex distribution

More males, 59,162 (65%) were diagnosed with TB in the year, the highest proportion being in the age group 25-44 years with 69% males notified. This indicates a need to have targeted interventions for men especially in the age group 25-44 years. which forms 45% of all patients notified. The proportion of children (0-14) years was 11.4% (10,324) which is within the acceptable range that is targeted for childhood TB (figure 1.4).

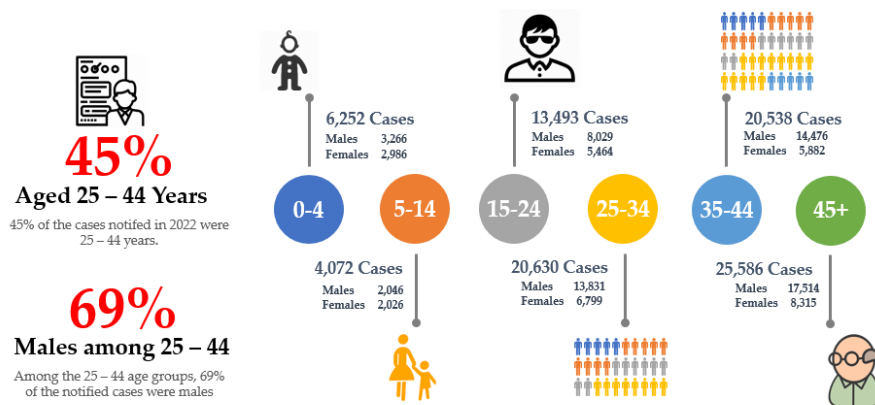


Figure 1.4: Age-sex Distribution of the DSTB Cases in Kenya, 2022

d. Proportion of bacteriologically confirmed cases

The proportion of patients notified with bacteriological confirmation (through either smear microscopy, GeneXpert, Truenat and Culture) increased from 57% in 2021 to 59% in 2022. This is attributed to a shift in focus from clinical diagnosis to bacteriological confirmation for diagnosed TB cases. The trend in bacteriological confirmation over the years is shown in figure 1.5 below.

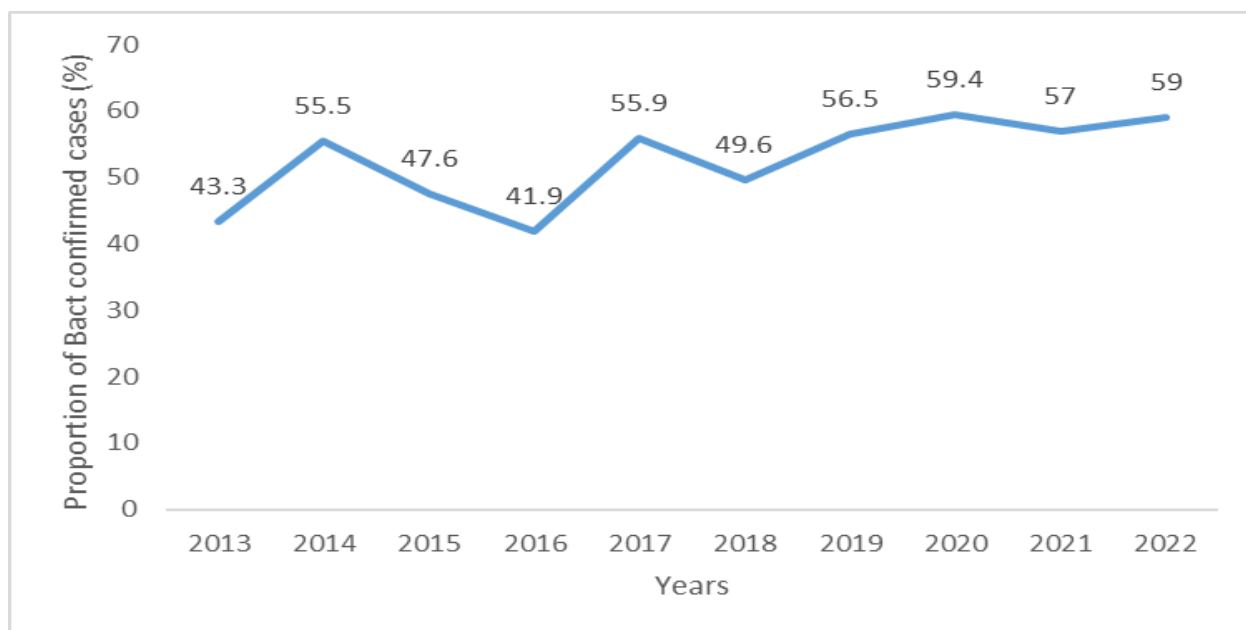


Figure 1.5: Bacteriologically-Confirmed TB cases, 2013- 2022

1.1.5 DSTB Treatment Outcomes

The cure rate among new bacteriologically confirmed cases reduced from 79% in 2020 to 76% in 2021. TB treatment success rate increased from 84% in 2020 to 87% in 2021. There was a marginal reduction in death rate from 7% to 6% in the same period as shown in figure 1.6 below

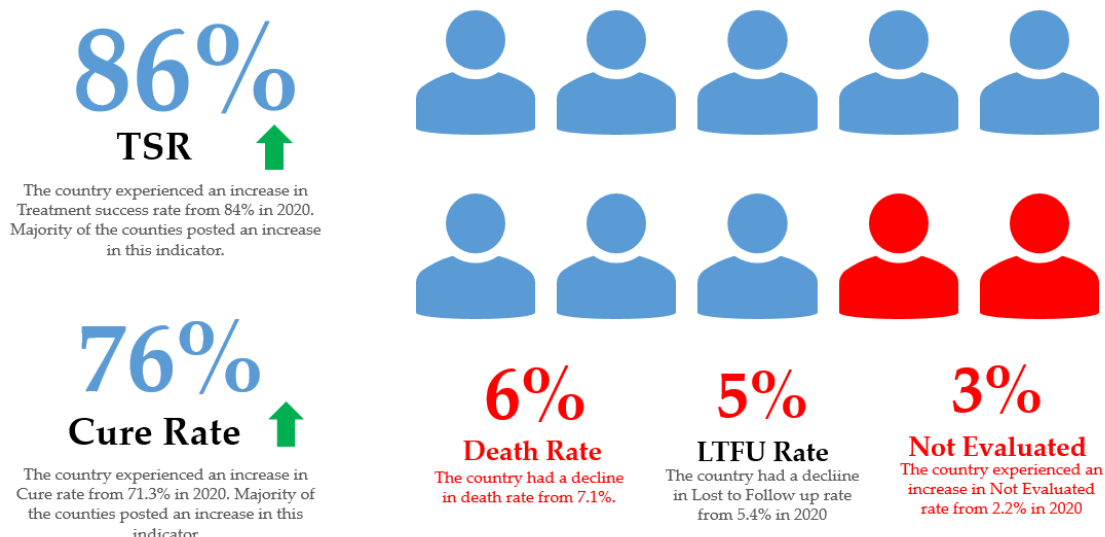


Figure 1.6: Treatment Outcomes among Drug-Susceptible TB Cases in Kenya

1.1.6 Other Key interventions in the year

a) TB patient education and literacy

Patient information packages addressing TB patient literacy to improve adherence to treatment were developed and disseminated. The package covers patient information on TB, TB/HIV, and DRTB.

1.2 Childhood TB

1.2.1 Case finding

The National target for the proportion of childhood TB cases is 10- 15% of the total TB case notified. In 2022, the country notified 10,324 childhood TB cases, accounting for 11.4% of all reported cases. This was an improvement from 9.6% in 2021.

The counties of Narok, Mandera, Mombasa, Muranga, Lamu, Embu, Tana River, Turkana, and Nyeri reported a proportion of between 13% to 22%, while Kitui, Transnzoia, Machakos, Makueni, and Nandi counties reported 6%. The low case finding in some counties could be due to health worker knowledge gaps in screening and diagnosing TB among children. The figure 1.8 shows the pediatric TB case finding trend in Kenya between 2016 and 2022.

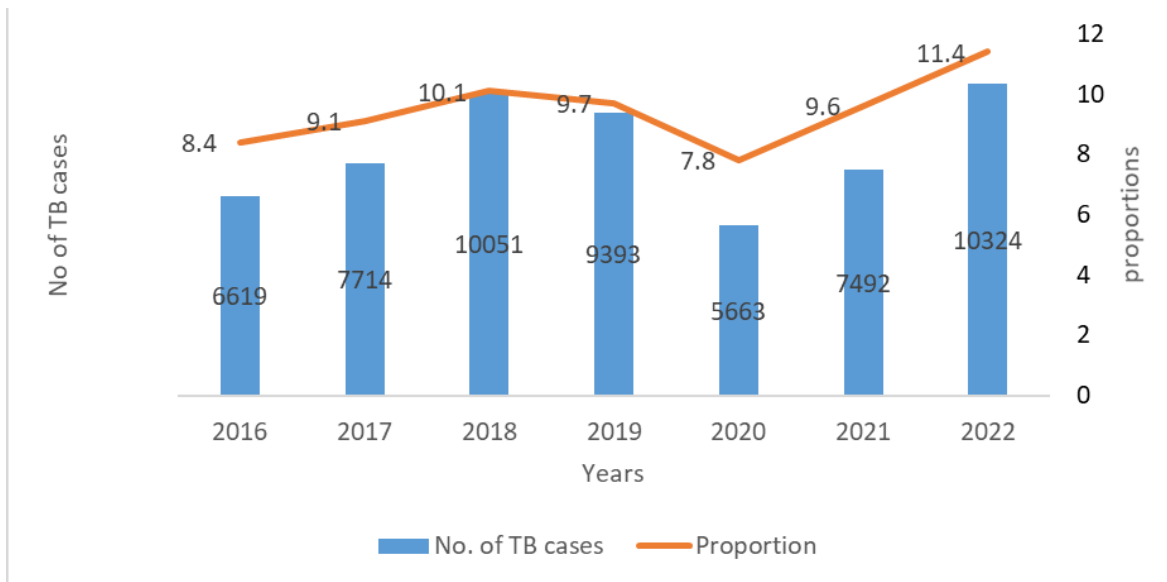


Figure 1.8: Number and proportion of pediatric TB cases, 2016-2022

1.2.2 Characteristics of Childhood TB cases

a. TB HIV

In 2022 the HIV coinfection for childhood TB was 10.4% (926) which was an improvement from that of 2021 which was 12%. The proportion of HIV coinfecting children who were initiated on ART was 98.4% which was higher as compared to that of adults.

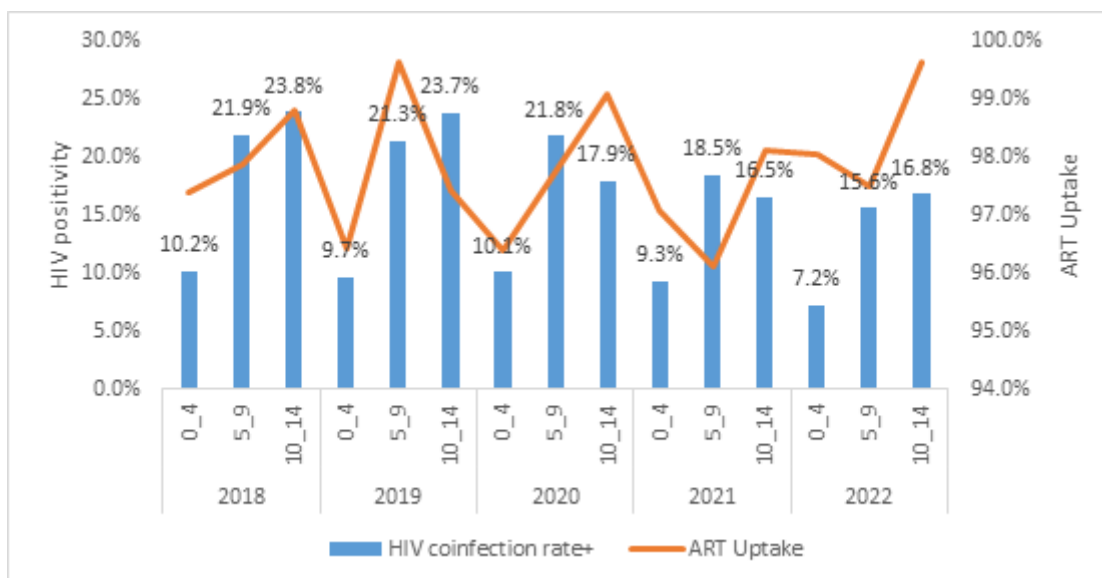


Figure 1.9: Childhood TB/HIV co-infection rate and ART uptake by age group in Kenya, 2018-2022

b. Age-sex distribution

The younger children (0-4 years) contributed 60% (6,209) of the total childhood TB cases notified. The proportion of male children was 51% of the total notified childhood TB cases. This calls for consolidated efforts to initiate contact management for all pulmonary bacteriologically confirmed TB cases.

1.2.3 Treatment outcome

The treatment success rate (TSR) for children who were notified in 2021 was 91%. This was an improvement as compared to the TSR for the 2020 cohort which was 88%. The other treatment outcomes per different age groups are shown in the table 1.1. below.

Table 1.1 Treatment outcomes by age group 2018-2021

	Age Groups	TSR Overall			Mortality			LTFU		
		Overall	BC	CD	Overall	BC	CD	Overall	BC	CD
2018	0_4	89.0%	85.6%	89.1%	3.9%	5.7%	3.8%	4.8%	4.5%	4.8%
	5_9	90.6%	91.3%	90.4%	2.8%	2.7%	2.9%	4.2%	4.6%	4.2%
	10_14	90.3%	93.1%	89.0%	4.1%	2.4%	5.0%	3.5%	3.0%	3.8%
2019	0_4	88.4%	88.7%	88.4%	5.1%	4.2%	5.1%	5.0%	6.7%	4.9%
	5_9	89.0%	91.3%	88.6%	4.0%	2.0%	4.4%	4.4%	4.6%	4.4%
	10_14	88.2%	90.6%	87.0%	5.9%	2.6%	7.7%	3.6%	4.2%	3.2%
2020	0_4	87.3%	79.1%	87.9%	6.3%	5.5%	6.4%	4.6%	4.5%	4.6%
	5_9	90.0%	84.9%	91.0%	5.1%	5.8%	5.0%	3.2%	3.6%	3.1%
	10_14	88.0%	89.8%	86.9%	5.0%	2.4%	6.6%	4.4%	3.1%	5.2%
2021	0_4	89.6%	85.1%	90.0%	4.9%	5.2%	4.9%	4.6%	4.9%	4.6%
	5_9	91.3%	88.3%	91.9%	4.1%	4.3%	4.1%	3.5%	5.5%	3.1%
	10_14	92.9%	93.8%	92.3%	3.6%	2.0%	4.6%	2.3%	2.2%	2.4%

NOTE: CD- clinically diagnosed, BC- bacteriologically confirmed.

1.2.4 Activities conducted for childhood TB in 2022

The following activities were conducted in 2022;

1. The training curriculum for pediatric and adolescents TB developed.
2. 141 CHMTs members (3) from each County sensitized on the pediatric training curriculum.
3. 160 health care workers trained using the pediatric training curriculum.
4. The adoption of the WHO recommendation on pediatric TB management.
 - i. The use of integrated treatment decision algorithm

- ii. The WHO shorter term regimen criteria developed and approved by the pediatric TWG and awaiting TB ICC approval.
- iii. The policy on use of stool and Xpert Ultra for initial diagnosis of TB in children developed.

1.3 Drug-Resistant Tuberculosis (DR-TB)

1.3.1 Drug resistant TB Case notification

The number of DR TB patients notified in 2022 was 752. This is a 6.6% reduction from those notified in 2021. Based on 2022 WHO estimates, this performance represents a treatment coverage of 69% among MDR/RR TB patients (WHO country profile 2022).

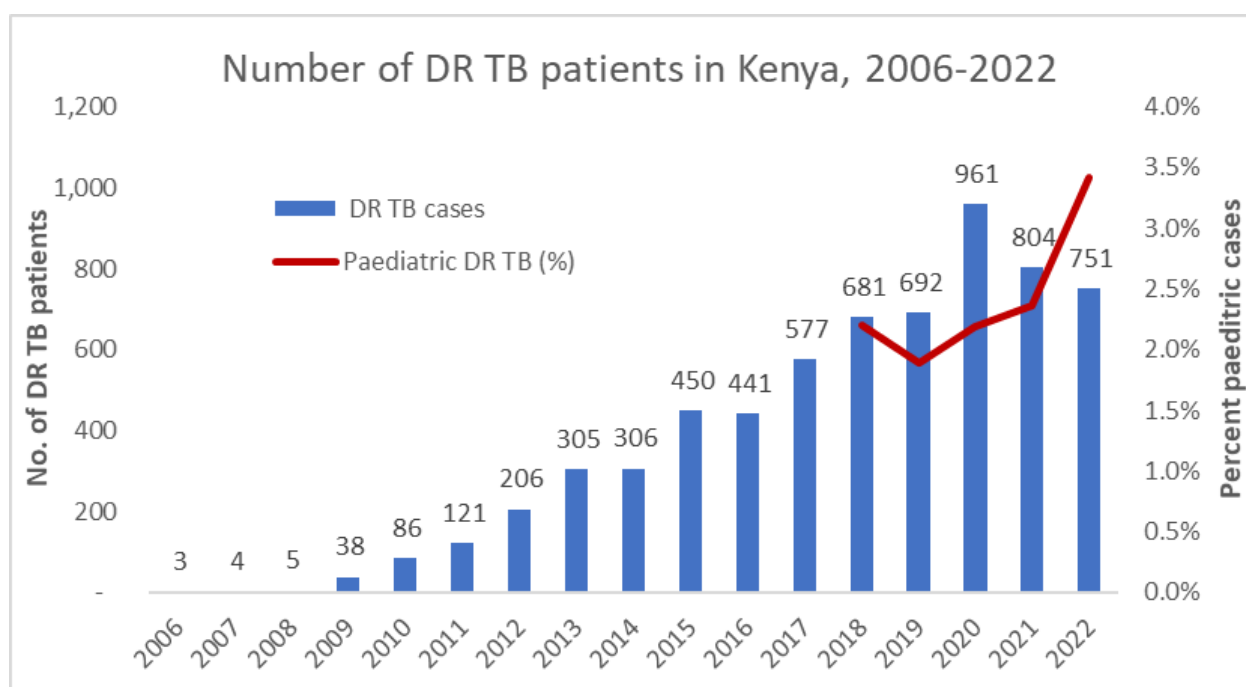


Figure 1.10 Trend of DRTB case and proportion of paediatrics 2012-2022

71% (535) of the patients were male while those aged 25-44 years contributed to 54% of the total DR-TB cases. Children aged <15 years were 26 (3.4%), which was a 36.8% increase from the number notified in 2021.

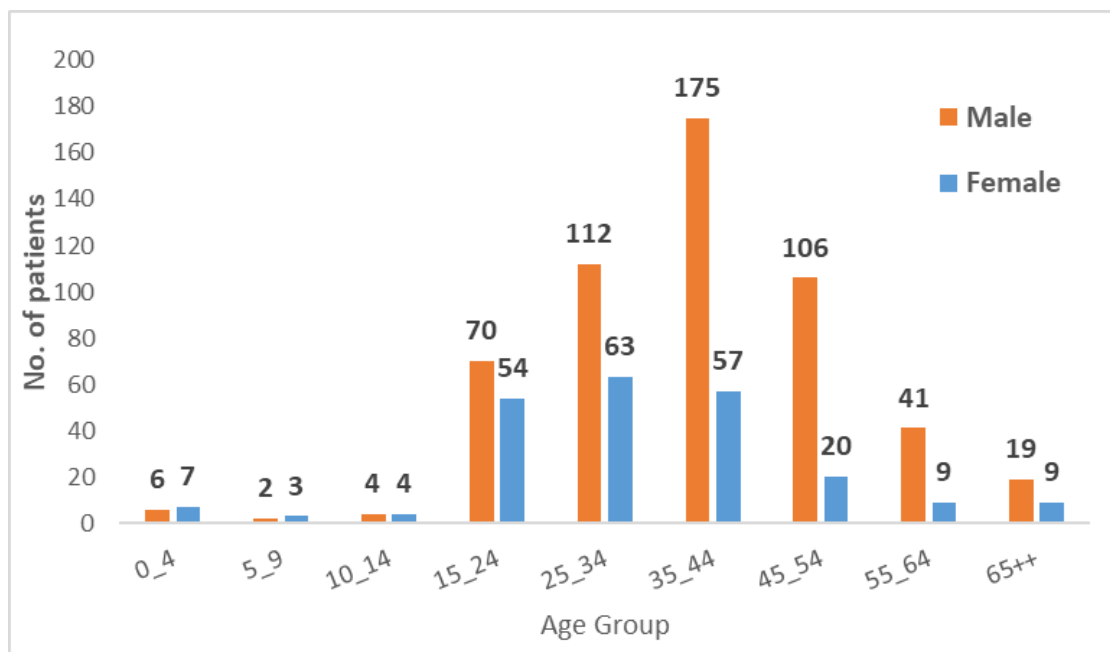


Figure 1.11 Age sex distribution for DR TB patients, 2022

The HIV testing rate for the year was 93% which was a decline from the testing rate of 2021 and the HIV co-infection rate was 22%, a 33% decline from 2020. ART initiation was 96% this was similar to that of 2021.

1.3.2 Resistance patterns

The proportion of Isoniazid mono-resistance has steadily increased by 2 ½ fold (146% increase) in 2022 compared to 2021, despite a reduction in the other resistance patterns. This is attributable to the increased awareness and improved access to First Line DST. There was one (1) XDR TB patient who was notified in 2022. This was a previously treated TB case who was resistant to Rifampicin, Isoniazid (high level), Bedaquiline, Linezolid, Fluoroquinolones, and Clofazimine. The emergence of XDR TB is a concern and further cases should be prevented at all costs.

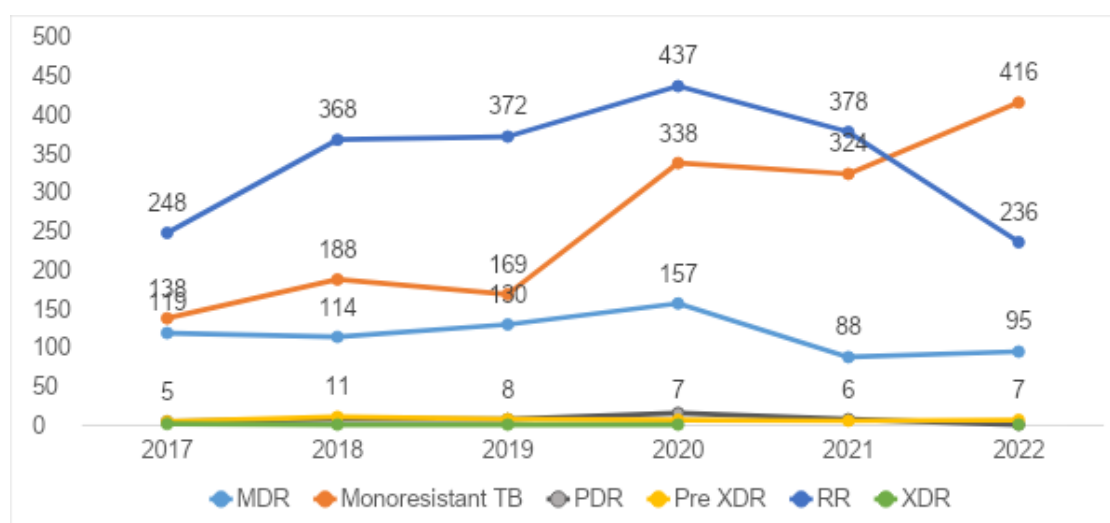


Figure 1.12 Trend of DRTB cases by resistance pattern 2017- 2022

1.3.3 Treatment outcomes

The analysis for outcomes was conducted for the patients who were initiated on treatment in 2020. A total of 957 patients were notified in 2020 and of these 81% completed treatment successfully, 11% died and 4% were lost to follow-up.

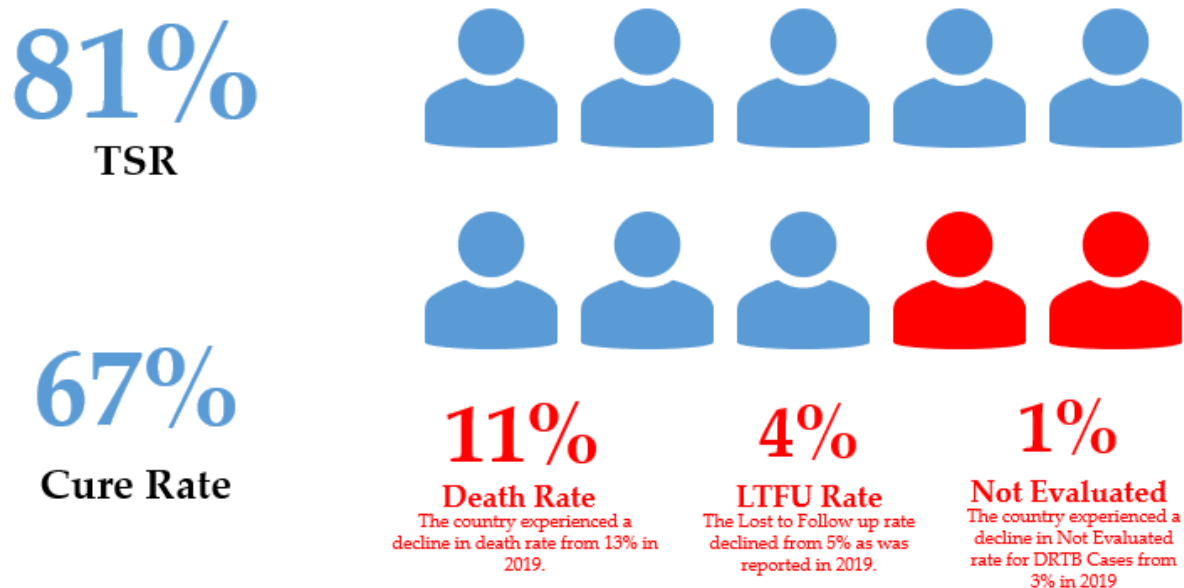


Figure 1.13 Treatment outcomes for DRTB patients in 2020

A further analysis of the outcomes by HIV status was conducted which revealed that the HIV coinfecting DRTB patients had a lower TSR (71%) as compared to the HIV negative patients which was 87%. This low TSR was attributed to high proportions of deaths among these patients (21% for the co-infected and 6% for the HIV negative). Finally, the proportion of lost to follow up was 4% for the HIV negative patients and 6% for the co infected patients.

1.3.4 DR TB surveillance

The WHO recommends universal DST for Rifampicin, among all bacteriologically confirmed drug sensitive TB patients. The DST coverage among previously treated DS TB patients was 57% (4,287 out of 7,524 cases). This represents a notable decrease from 77% in 2021. This was largely attributed to the stock outs of laboratory DST commodities, especially the GeneXpert cartridges. It is worth noting that the MTB/Rif assays that are recommended for TB testing were not available. DST for isoniazid (INH), and therefore potentially miss the initial INH Mono resistant patients, who may now be picked during follow up as a result of poor response to treatment or after relapse.

Activities conducted in 2022

The following activities were conducted under DRTB section.

1. Training of healthcare workers on the injectable-free regimen.
2. GLC mission to the counties.

3. Engagement meetings with PMDT centers of excellence in 10 counties.
4. DRTB TA missions by NTP to counties.

Challenges

1. The emergence of XDR TB poses major public health and clinical problems due to the limited choice of effective medicines required for cure. In addition, these patients have also presented with other major complications further complicating the situation.
2. ADR reporting among DR patients is alarmingly low and requires urgent intervention.
3. Availability of Data in TIBU on correct regimen by patient remains a major challenge.
4. Low pediatric DR TB case notification rate (2.6%).

There is great need to improve the quality of care for all TB patients. All DRTB should be managed by multidisciplinary clinical teams to improve adherence, prevent the poor outcomes, manage ADRs and manage emergence of more complicated resistant TB forms.

1.4 TB/HIV and other comorbidities

1.4.1 HIV testing among TB patients

Kenya achieved an overall HIV testing rate of 93% among all notified TB cases in 2022, compared to the target of 100%. This was a decrease from the previous year's performance of 97%. The graph below depicts a declining trend in HIV testing coverage over the last four years. While there may be various reasons for this decline, it highlights the need for continued efforts to ensure that all TB patients are tested for HIV.

By addressing barriers to testing and increasing awareness about the importance of early detection and treatment, Kenya can work towards achieving the goal of 95% HIV testing coverage among TB patients.

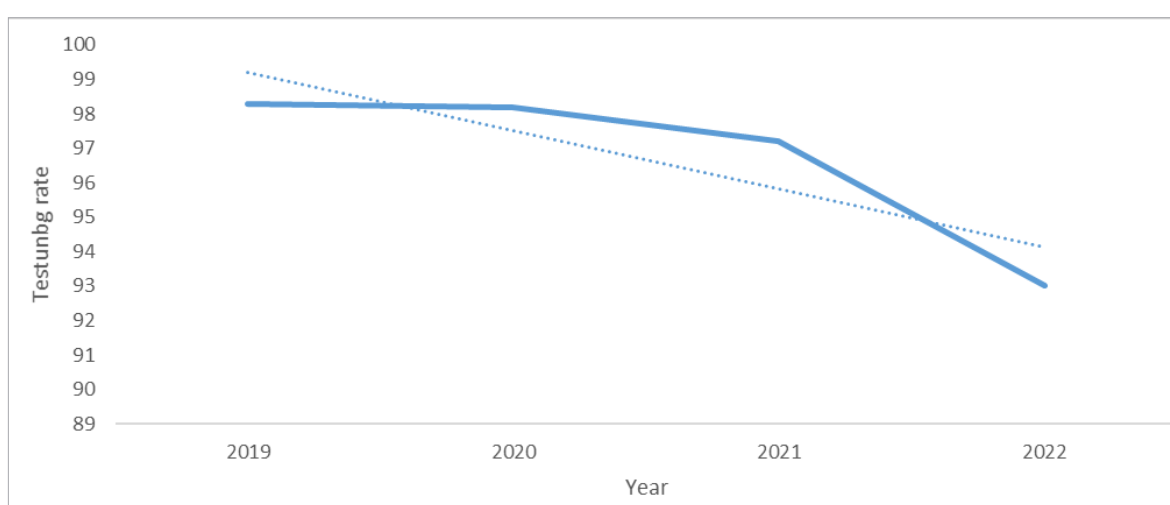


Figure 1.15 HIV testing among TB patients in Kenya 2019-2022

Among the counties; Elgeyo Marakwet, Homa Bay, Kisii, Lamu, Machakos, Mandera, Nyamira, Nyandarua, Tana River, and Tharaka Nithi counties had 100% HIV testing rates, while Isiolo and Marsabit counties had 51% and 55%, respectively. The HIV testing rate was 94% for both genders. Both adult and pediatric TB patients tested at 93%. The high HIV testing rates in the mentioned counties indicate a positive trend towards HIV prevention and control.

1.4.2 TB/HIV coinfection and ART uptake

In 2022, the overall HIV coinfection rate among TB patients was 23%. This is a decrease from 24% in 2021. The rate of HIV coinfection was comparable for both sexes. Overall, 30% of females tested positive for HIV, compared to 18% of males. For the last four years, ART coverage has remained at 97%. Elgeyo Marakwet, Homa Bay, Kwale, Lamu, Mandera, Mombasa, Nyandarua, Siaya, Tana River, and Wajir counties had 100% coverage, while Kajiado and Nyeri counties had 83% and 89% coverage, respectively.

1.4.3 Treatment outcomes in TB/HIV co-infected patients

The country achieved a treatment success rate of 78.6% among the TB/HIV co-infected cohort, with variations across counties. Wajir county had a 100% treatment success rate. Three Counties surpassed the national average in TSR for this cohort. These include Homa Bay (92.1%), Migori (90.8%), and Kisii (89%). Some counties, on the other hand, fell below the national average, with Turkana having the lowest treatment success rate of 60.4%.

1.4.4 TB/HIV supported activities

In the reporting period, the following national and county level TB/HIV coordination activities were carried out.

a. National TB/HIV Stakeholders' Forum

This activity is conducted on a quarterly basis, facilitated by the Ministry of Health, and serves as a platform to bring together various stakeholders. The Division of National Tuberculosis, Leprosy, and lung disease program (DNTLD-P) and the National STI and AIDS Control Program (NAS COP) jointly coordinate this effort with support from USAID through the TB ARC II activity. The stakeholders participating in these meetings include representatives from the County governments, Development partners, and Implementing partners. The collaboration among these entities allows for comprehensive engagement and collaboration in addressing tuberculosis, leprosy, lung diseases, STIs, and HIV/AIDS.

Overall, this joint initiative fosters effective communication, cooperation, and coordination among the stakeholders, ensuring a holistic approach to addressing the respective health challenges.

b. TB/HIV Stakeholder Forums in 11 Counties

Through the USAID TB ARC II activity, 11 Counties (Nairobi, Mombasa, Kwale, Kilifi, Homa Bay, Migori, Nyamira, Siaya, Meru, Isiolo and Tharaka Nithi) were supported to conduct quarterly TB/HIV Stakeholder forums. The purpose of these meetings was to convene all stakeholders involved in TB-HIV control and enhance the implementation of collaborative TB/HIV activities.

This comprehensive approach ensures the integration of services, proactive identification of TB cases, effective infection prevention and control measures, timely initiation of ART, and increased access to TB preventive therapy for both TB-HIV co-infected individuals and other at-risk populations.

c. Joint TB/HIV Support Supervision/Technical assistance missions

These activities were carried out in collaboration with implementing partners in the counties of Kajiado, Homa Bay, Nyandarua, Lamu, Makueni, Migori, Meru, Uasin Gishu, and Kirinyaga. The primary objective was to address the performance gaps related to TB-HIV co-infection.

The focus of these efforts was to improve access to the comprehensive package of care for clients co-infected with HIV and TB. This included enhancing treatment adherence and completion rates for these individuals. Additionally, identifying and addressing challenges in the integration of TB and HIV services was a key aspect of the initiative.

1.4.4 Treatment success rate among TB patients with other comorbidities

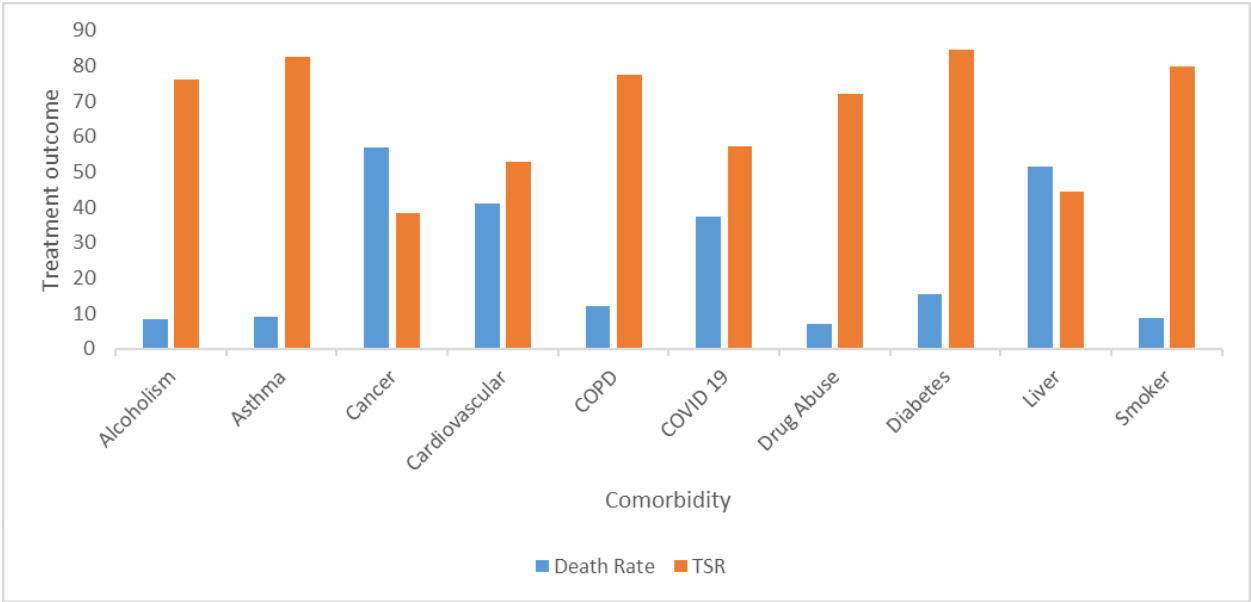


Figure 1.16 Treatment outcome by other comorbidities

According to the graph above, TB patients with diabetes mellitus had the highest treatment success rate (TSR) (84%), while those with TB and cancer had the lowest (38%). Death rates were highest among patients with tuberculosis and cancer (57%) and cardiovascular disease (40.9%).

1.4.5 Sensitization of health workers on Integrated TB and COVID-19 Bi-Directional Screening and Testing

This was intended to strengthen bi-directional screening for the two diseases which share several signs and symptoms. Through the support from Clinton Health Access Initiative, the program conducted sensitization of HCWs from 16 counties targeting county and subcounty managers. A total of 354 TOTs from 81 sub counties in the 16 counties were sensitized who are in turn expected to cascade the same to the facility level in their respective counties/sub counties.

1.5 TB Preventive therapy/ Latent TB Infection

1.5.1 Introduction

TB Prevention is a key intervention to ensure that the Country achieves the goal of ending TB by 2035. Preventing tuberculosis (TB) infection and stopping progression from infection to disease are critical to reduce TB incidence. This section offers the progress and achievement made in the country in 2022.

Kenya adopted the WHO's TB prevention recommendations in 2020 and in 2022, most of the counties were sensitized on the newer TPT recommendations. The target populations identified to be at risk of TB include; people living with HIV, all household contacts of people with pulmonary B and other risk groups (Health care workers, Prisoners and clinical at-risk groups).

For TPT initiation in 2022, the country focused on People Living with HIV, Household contacts and Health care workers in some counties. This prioritization was based on availability of funds to conduct sensitization to health care workers and to procure the shorter TPT regimens. Health care workers from 43 counties had undergone the sensitization and received medicines for the shorter TPT regimens by the end of 2022.

1.5.2 TB preventive treatment: overall status of progress

a. Household contacts

In 2022, there were 32,512 contacts of bacteriologically confirmed pulmonary TB cases that were reported in TIBU and were symptomatically screened for TB disease. These were contacts of 10,873 index TB cases out of 53,596 pulmonary bacteriologically confirmed TB cases notified in the same period. This shows a coverage of 20% for index TB patients whose contacts were screened for TB.

From the TB symptom screening that was conducted, there were 30,364 (93%) contacts who were found to be asymptomatic while 2148 (7%) had TB symptoms. The symptomatic contacts were investigated and 556 (25.9%) were diagnosed with TB, 5 of these had drug resistance TB.

The contacts who were asymptomatic were the target for TPT initiation. However, 21,787 (72%) were initiated on TPT of which 11,015 were initiated on 3HP, 10,456 were initiated on 3RH and 316 were on 6H. On TPT outcomes, 18,186 (83%) completed TPT course successfully while 3,188(14.6%) were not evaluated hence they did not have an outcome. The proportion of contacts who discontinued and those who were lost to follow up was 1% each.

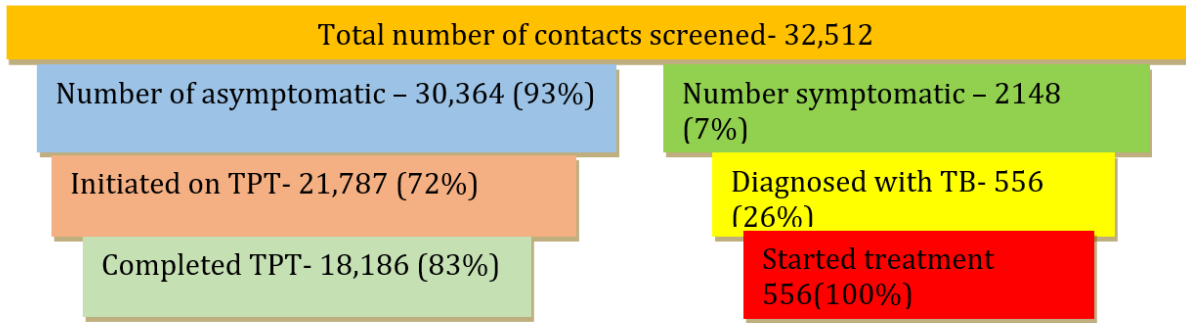


Figure 1.17 Contact management cascade

The treatment success was an improvement from that of 2021 which was at 45%. This was likely due to the introduction of the shorter TPT regimens hence better adherence and completion. In addition, there was marked improvement on those not evaluated from 53% in 2021 to 14.6% in 2022.

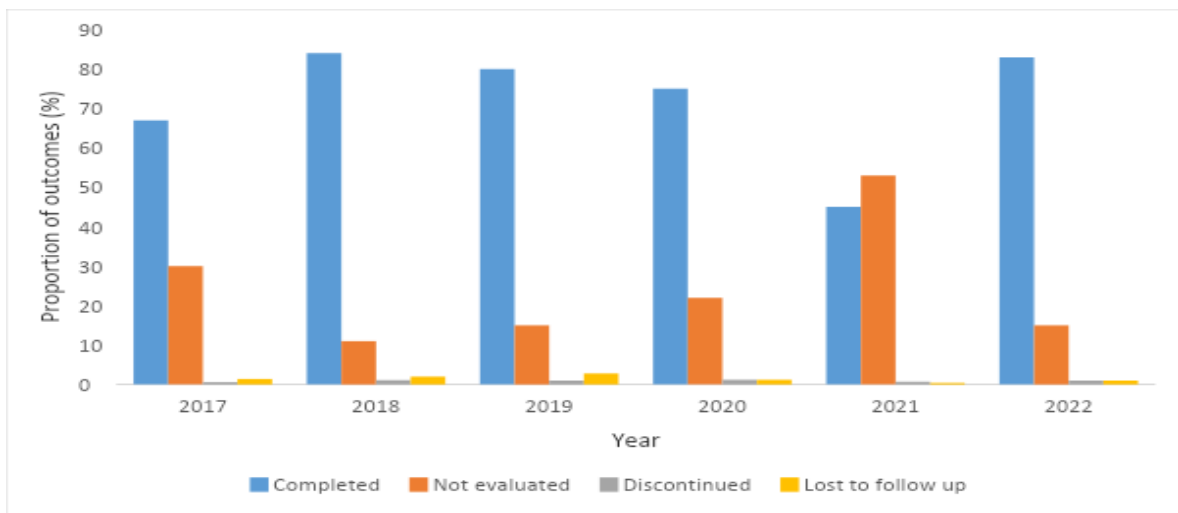


Figure 1.18 TPT outcomes for household contacts 2017-2022

b. Health care workers

There were 7,025 health care workers who were screened for TB and were notified in TIBU in 2022 from 40 counties. 6,997 (99%) were asymptomatic while 28 (1%) were symptomatic. Those with TB symptoms were investigated and one of them was diagnosed with Drug sensitive TB and was initiated on treatment. For those who were asymptomatic 6831(97%) were initiated on TPT and 80% successfully completed their course of TPT. This proportion is low as compared to that of household contacts. The negative outcomes that led to low completion rates were; discontinuation of TPT at 3% and not evaluated at 15%.

1.5.3 TPT Discontinuation

Clients initiated on TPT can be discontinued because of various reasons such as; development of TB in the course of TPT, development of ADRs, poor adherence. For these to be picked, the health care worker should keenly assess and monitor the progress of the clients as they come for their clinical reviews. In 2022, there were 440 out of 31,101 clients that were discontinued from TPT. The reasons for discontinuation were development of TB (3%), ADRs (34%), poor adherence (32%) and other reasons like conceiving (31%).

1.5.4 Testing for TB infection before TPT initiation

Testing for TB infection can help to target TB preventive treatment to people who can benefit the most from it. In 2022, Nairobi and Kajiado counties reported using interferon gamma release assays (IGRA) to test at-risk populations before initiation of TB preventive treatment.

A total of 1,698 persons were tested, from these 1,357 (84.7%) were Health care workers, 204 (12.7%) were household contacts and 41 (2.6%) were prisoners and staff working in the prison setting. Positivity among healthcare workers, contacts and prisoners/prison workers was 57.6% vs 49.3% vs 62.8% respectively. TPT initiation among those who tested positive in all target groups was 100%. This indicates that the uptake of TPT can be improved when testing for infection is done.

1.6 Leprosy

1.6.1 Background information of leprosy

Leprosy is a chronic infectious disease caused by a bacillus, *Mycobacterium leprae*. *M. leprae* multiplies slowly and the incubation period of the disease, on average, is 5 years. Symptoms may occur within 1 year but can also take as long as 20 years or even more. It mainly affects the skin, the peripheral nerves, mucosa of the upper respiratory tract, and the eyes. The disease is curable with multidrug therapy.

Leprosy is likely transmitted via droplets, from the nose and mouth, during close and frequent contact with untreated cases. Untreated, leprosy can cause progressive and permanent damage to the skin, nerves, limbs, and eyes.

1.6.2 Leprosy case finding data progress

There were 116 leprosy cases detected in 2022 from 14 counties as indicated on the graph below and 73 (63%) of these were male. This was a 6% increase as compared to the cases notified in 2021, however there was a drop in the number of counties that notified leprosy cases from 21 counties in 2021 to 14 in 2022 (*dashboard.nltp.co.ke*). The proportion of children was 3% which was similar to the proportion of children in 2021 and in 2020.

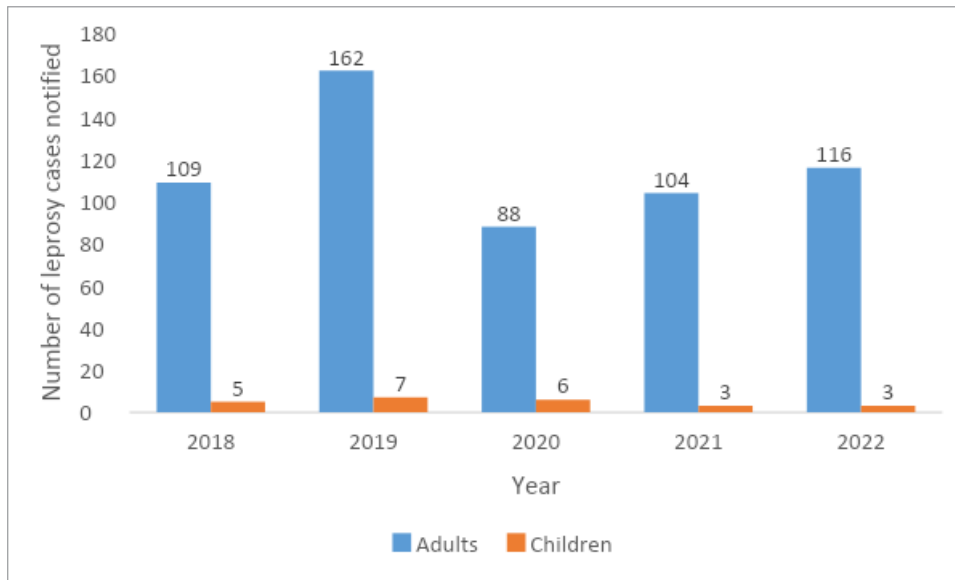


Figure 1.19: Trend of total notified leprosy cases and the number of childhood leprosy cases

1.6.3 Patients classification and Disability grading

The proportion of patients with Multi bacillary (MB) type of leprosy in the year was 84% which was a drop as compared to 2021 that was 87% while those with disability grade 2 were 23 (20%) an increase from 16% in 2021. There is a need to continue doing sensitization to health care workers and awareness creation at the community level. This could mean that there might have been improvement in seeking care and that the health care workers were able to make a diagnosis of leprosy early.

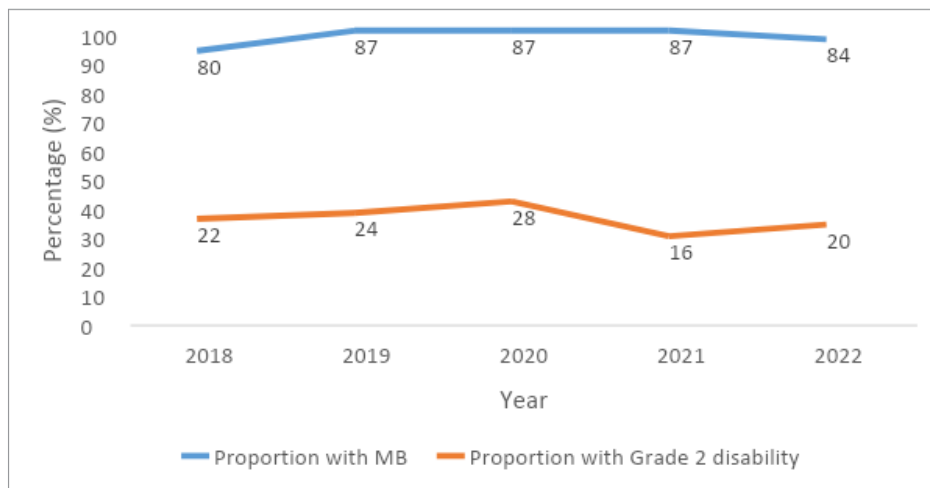


Figure 1.20: Proportion of MB type of leprosy and G2D, 2018- 2022

1.6.4 Treatment outcomes

Review of treatment outcomes for the 109 patients who were initiated on leprosy treatment in 2021, there were 82 (75%) cases who were released from treatment successfully, 10(9%) were lost to follow up, 3(3%) died and 11(10%) were not evaluated for treatment completions.

STRATEGIES FOR FINDING MISSING PEOPLE WITH TB

2.1 Background information

Active case finding (ACF) is the systematic identification of persons with symptoms that suggest TB from a predetermined target group/population by conducting symptomatic screening, detailed history taking, physical examinations, and further laboratory and/or radiological investigations to diagnose TB. The NSP 2019-2023 envisions that patients presenting to any health service delivery point (SDP) are symptomatically screened for TB. The use of other TB screening options, such as chest radiographs (CXR), is necessary for particular patient groups, such as children and PLHIV, as recommended in the diagnostic algorithms.

There have been gains made and lessons learned in case finding initiatives. The key challenge identified by the GF mission in 2019 was the inefficiency of ACF activities. Quality improvement is a mainstay in improving key indicator outcomes in TB response; the initiative is currently being implemented in 10 counties and continuously learns from QI for the HIV program, which is more established.

To respond to gaps revealed during the 2016 prevalence survey, the TB program implemented strategic initiatives that would find the missing people with TB. The Kenya Innovation Challenge (KIC) TB Fund is one of the Global Fund-supported strategic initiatives to

16.6%

Increase in patients notified in 2022 compared to 2021 due to NTP's intensified efforts toward case finding in health facilities

find missing people with TB. The KIC TB initiative involves creating demand for TB, screening people for TB and linking the symptomatic suggestive TB to diagnostic and treatment. Other strategic initiatives include Private Mix (PPM) and contact management.

PPM collaborations provide continuous strengthening and expansion of meaningful engagement and participation by the private sector in the fight against TB. The current approaches to engaging private providers are outlined in the PPM Action Plan 2021-2023 which describes goals, objectives, and interventions for expanding and scaling up current PPM in the country.

2.2 Active case finding at the health facility level

In 2022, the NTP continued with intensified efforts toward case finding in health facilities, as a result, patients notified increased by 16.6% compared to 2021.

2.2.1 Achievement

- a) **Mentorship and support supervision:** During the year, counties benefited from the facility-specific ACF mentorship and supervision. These were integrated into the routine TA missions to counties.
- b) **Sensitization of health care workers:** In order to address the knowledge gap among HCWs and hence get their buy-in and ownership on TB screening, 5499 health care workers were sensitized/re-sensitized on ACF from 423 health facilities across the 25 counties. The table below provides a summary of the ACF sensitizations

Table 2.2.1: HCW facility-based ACF Sensitization 2020-2022

HCW facility-based ACF Sensitization 2020-2022					
	Activity	Counties	Number of sub-counties	Number of facilities	Number of HCWs
2020	HCW Sensitization on ACF	11	99	198	3,603
2021	HCW Sensitization on ACF	5	29	80	1,053
2022	HCW Sensitization on ACF	25	141	423	5499

In 2022, facility-based sensitization meetings were conducted in all quarters of the year.

- c) **ACF cascade:** The ACF is monitored based on performance indicators across the cascade of care of patients. The table below summarizes trends in achievement 2020 - 2022.

Table 2.2.2: Performance ACF care cascade 2020-2022

Indicator	2020		2021		2022	
Workload	68,234,948		79,481,469		73,221,107	
	2020	%	2021	%	2022	%
Respiratory conditions	18,147,117		25,938,025		21,622,286	
Screened for TB	15,203,738	22	18,239,923	23	25,253,561	34
Presumptive TB cases identified	460,491	3	499,381	2.7	812,882	3.2
Presumptive TB cases investigated for TB	273,769	59	245,902	49	502,970	62
presumptive cases clinically diagnosed to have TB	8,580	31	8,347	32	13,331	32
presumptive cases bacteriologically confirmed to have TB	19,355	69	18,096	68	28,402	68
Total presumptive cases confirmed to have TB	27,935	6	26,443	5	41,733	8
Confirmed TB cases started on treatment	25,511	91	24,414	92	39,738	95
Presumptive cases referred by CHV	23,402		14,020		22,952	

Since the incorporation of ACF indicators in TIBU, there has been an increase in reporting from the counties, resulting in almost full-scale documentation. Despite a decrease in the workload of 7.9% in 2022 compared to 2021, there was an increase of 38% of people screened for TB and an increase of 63% of the presumptive TB cases identified. The proportion of those investigated increased from 49% in 2021 to 62% in 2022. The efforts result from improvement in the reporting in TIBU due to inclusion of the ACF indicators in the annual performance scorecard for the TB program.

In 2022, as part of the Global Fund TB project, Amref continued its support for the implementation of facility-based TB active case finding (ACF) across all 47 counties. The project provided assistance to 581 linkage assistants stationed at 535 high-volume health facilities nationwide. These linkage assistants played a crucial role in facilitating the ACF process by guiding clients through various departments within the health facility while seeking TB services.

d. Program Quality Efficiency and Improvement (PQE)

To align with the Kenya Quality Model for Health, which outlines the ministry's strategic approach to managing healthcare service quality in the country, the National Tuberculosis, Leprosy, and Lung Disease Program (NTLDP) have adopted the Patient-Centered Quality improvement and Efficiency (PQE) approach for locating individuals with TB in healthcare facilities. The primary objective of implementing PQE in Active Case Finding (ACF) is to enhance TB case detection by institutionalizing the PQE model within health facilities across Kenya.

To facilitate this, the program developed the PQEACF handbook and the Quality Improvement (QI) framework. Subsequently, the program focused on capacity building to stakeholders at various levels to improve participation and ownership. Initially, the implementation targeted 10 counties, encompassing 250 facilities, before expanding to cover all 47 counties. The following activities were conducted:

⊙ **TOT sensitization - National program officers, Partners, and CTLCs (10 PQE counties)**

The training activity was led by the Ministry of Health's Directorate of Health Regulations, Quality Assurance, and Standards and CHMT/SCHMT on the fundamentals of quality improvement in healthcare.

⊙ **SCTLCs, Mentors/Coaches Sensitization**

This training served as an orientation for PQE Mentors, and served to provide them with a comprehensive understanding of the ACF-PQE approach. The objective was to enable the Mentors to effectively support PQE teams at the facility level and establish effective partnerships with the SCTLCs (Synergizing the Quality Improvement and TB expertise). A total of 50 Mentors/coaches (5 coaches per county) were sensitized during the workshop, along with the SCTLCs exclusively from the PQE implementing facilities.

⊙ **Facility HCWs PQE sensitization**

Sensitizations were done at 2 levels to provide guidance in implementing QI activities to the HCWs.

1. Two-day sensitization meeting; 5 meetings per county targeting 5 HCWs from the 250 facilities (1250 HCWs reached).
2. Facility-based sensitization targeting 10 HCWs per facility from the 250 facilities.

⊙ **Review meetings and Mentorship**

Mentorship was conducted by QI coaches/mentors supporting the WIT and QIT at the facility level. A total of 186 PQE ACF sites hosted 577 Quality Improvement meetings throughout the year, as part of the effort. Mentorship at the facility was supported through NTP by AMREF.

Achievements

Over the initial implementation cycle, the 250 health facilities registered an increase in the case-finding outcomes. Cumulatively, a quarterly comparison of the case-finding trend showed preliminary results of a 16.6% improvement in the TB case-finding median performance and this was more than double the 6.7% case-finding increase reported in 2021 in the country.

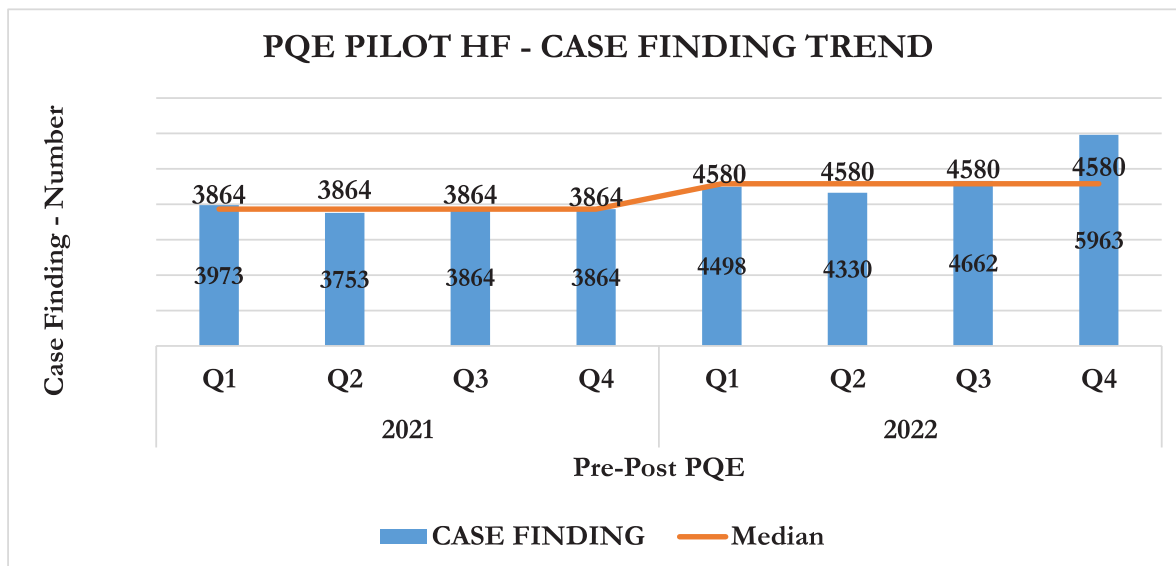


Figure 2.2.1: Results PQE pilot Health Facilities - Case finding Trends

2.3 Contact Management

In 2022 there were 32,512 contacts who were screened for TB and notified in TIBU, of whom 30,364 (93%) were asymptomatic while 2148 (7%) had symptoms that suggest TB. Among the symptomatic contacts investigated, 556 (25.9%) were diagnosed with TB, five of whom had drug resistance, revealing a higher positivity rate for TB among contacts. More effort should be dedicated to scaling up of contact management to find persons missed with TB in the community for prompt treatment.

2.4 Kenya Innovation Challenge Tuberculosis Fund

Kenya has been implementing targeted community-based TB case-finding innovations under the Kenya Innovation Challenge Tuberculosis (KIC-TB) fund since July 2019, with Global Fund (GF) support. Four innovations are supported through Amref Health Africa under the GF TB grant for July 2021 to June 2024. These are:

- i. Expanding TB screening services for truck drivers and corridor communities in Mombasa;
- ii. Screening school-going children in Kakamega and facilitating them to screen their household members;
- iii. TB screening at select police stations in Kiambu and Nairobi, targeting detainees in police cells; police officers and their families, and community members visiting the stations; and
- iv. Use of Automated TB Screening Machines (ATSM) for self-screening of persons seeking services at high-traffic government offices and community hotspots.

In 2022, a total of 314,117 people were screened through the four innovations. Out of these, 37,386 (12%) were presumed to have TB, and 26,164 (70%) referred either through sample or human referral. Among the presumptive cases, 18,924 (51%) were investigated for TB,

resulting in 1,177 (6%) individuals diagnosed with TB, 74% were bacteriologically confirmed. By the end of the year, 1,106 (94%) of those diagnosed were initiated on TB treatment. Notably, among the individuals diagnosed with TB, 70% were men.

A consultant with support of GF was engaged to support the implementation of the KIC-TB, conduct an assessment and provide recommendations to address leakages in the TB care cascade for each of the innovations.

Below is a snapshot of the TB care cascade for the four innovations:

Snap KIC TB Performance

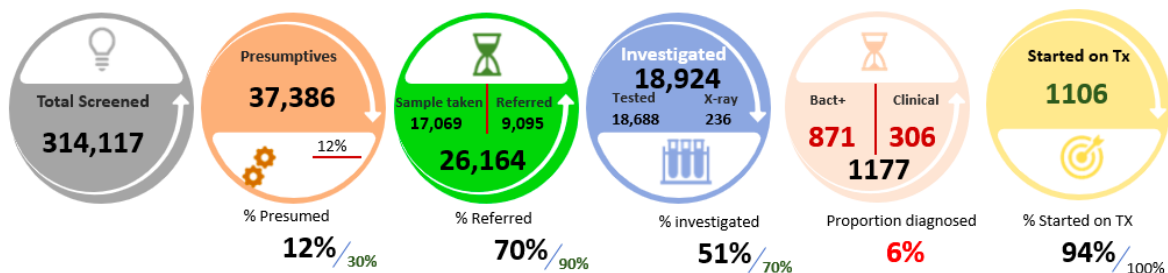


Figure 2.4.1: Snapshot of the TB care cascade for the four innovations

2.5 Public-Private Mix (PPM)

The National Tuberculosis Program (NTP) has made significant efforts to expand the coverage of TB services in the private sector. This expansion has resulted in the establishment of linkages between the TB program, private for-profit facilities, the corporate sector, faith-based organizations, the informal sector, civil society, and communities. These linkages have played a crucial role in improving the availability and accessibility of TB services to a larger population. Moreover, they have contributed to enhancing the quality of care provided and are aligned with the goal of ending TB by 2030.

There was an increase in the number of cases notified from the private sector, from 15,905 patients in 2021 to 17,191 patients in 2022. Despite the increase in cases notified from the private sector, the contribution dropped from 21% in 2021 to 19% in 2022 (Figure 2.5.1).

Some of the interventions include;

1. Support supervision to private facilities in TB high burden counties. This initiative aimed to improve the quality of healthcare services provided by private facilities by ensuring they adhered to standard protocols and guidelines, ultimately leading to better health outcomes for patients.
2. A global meeting of TB partners, civil society and countries of the working group on public private mix (PPM) for TB prevention and care was held on November 2-4 in Nairobi, Kenya. The meeting called for greater collaboration with all care providers to get the TB response back-on-track and to enhance accountability. Kenya had an opportunity to share experiences and innovations, especially toward building stronger health systems after the pandemic for the private sector.

3. The PPM Committee of Experts (CoE) continued to provide a strong advisory and monitoring role for the implementation of PPM activities. This was done together with the implementing partners; AMREF Health Africa through the Global Fund support, the Center for Health Solutions in Kenya (CHS) through the USAID TB ARC II activity, and the Kenya Conference of Catholic Bishops (KCCB) through the USAID KOMESHA TB program. The objective of these CoE is to review progress of ongoing PPM projects and programs in the country and provide guidance and propose solutions to challenges identified in implementation. In PPM CoE played an advisory and monitoring role for all PPM activities in the country.

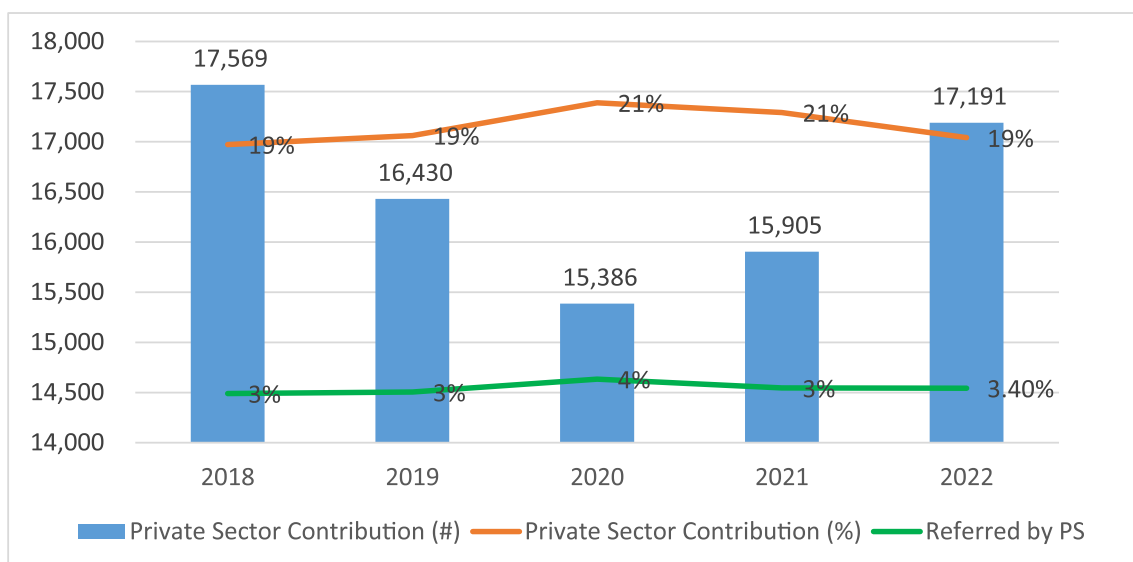


Figure 2.5.1: Contributions of the private sector to TB case finding in Kenya, 2018-2022, including proportions notified and those referred by the private sector

Contributions from NTP Partners

a) Amref Health Africa in Kenya: PPM Intervention implemented through Global Fund

Amref Health Africa in Kenya, through the Global Fund's New Funding Model III (NFM III), implemented PPM interventions in all 47 counties. Implementation was carried out by several interface agencies; Respiratory Society of Kenya (ReSOK), NEPHAK and by the CSO implementing community TB activities. Below is a summary of key activities implemented and achievements.

- Conducted mapping and a rapid needs assessment where 4103 private facilities were mapped and 3,174 targeted for engagement; 917 of them started reporting by the end of the year under review.
- Provided data bundles to the private providers to promote reporting, where a total of 241 HCWs were supported.
- Sensitization of 1,262 HCWs from the engaged private facilities on TB screening using the national TB curriculum.
- A total of 277 riders were sensitized on infection prevention and handling of laboratory samples, and 77 of them were engaged to support TB sample networking from the private facilities to the GeneXpert sites.

- Incentives to promote TB case finding were provided at a rate of Ksh1000 per TB case successfully identified and linked to treatment.
- PPM TWGs were supported at the county to provide a forum for the county, private providers, and various players to discuss TB in the private sector.
- Support for human resources to provide technical support at the county level
- Joint support supervision visit between the County and the interface agencies were done

b) USAID-supported Center for Health Solutions - Kenya (CHS) TB ARC II PPM activities.

In the reporting period, effort was directed towards the identification and engagement of additional facilities as well as strengthening systems for case finding at the supported facilities. These activities were supported through the TB ARC II in collaboration with the NTP, PPM CoE and County TB coordinators. Facility identification was guided by the County TB coordinating teams from the 5 counties; Meru, Kirinyaga, Mombasa, Kilifi, and Nyeri, who proposed the various facilities for inclusion.

- **PPM Committee of Experts (CoE) Meetings:** USAID TB ARC II continued to support the national PPM CoE and participated in four quarterly PPM technical working group meetings held during the year under review, in support of the NTP's objectives.
- **Facility Based Continuous Medical Education (CMEs) and On the Job Training (OJT):** USAID TB ARC II conducted facility-based CMEs targeting health care workers from the private sector in the 5 priority counties. A total of one thousand four hundred and eighty-nine (1,489) HCWs were trained during the first 3 quarters of the year under review. In the 4th quarter of the year, focus was on drug resistant TB and management of Latent TB infection, where a total of 808 (331 females/447 males) healthcare workers were sensitized.
- **AFB Microscopy Refresher Training in Private Healthcare Facilities:** In support of NTP's NSP objective of ensuring quality delivery of services, USAID TB ARC II in collaboration with the county TB medical laboratory technologists conducted refresher training on AFB microscopy in private laboratories. In addition, USAID TB ARC II continued to support and strengthen linkage of samples from private facilities to sites with more sensitive diagnostic tests. A total of sixty-one (61) laboratory technicians were trained during the year.
- **Continuous Mentorship and Support Supervision:** USAID TB ARC II continued to provide routine mentorship and support supervision within the five counties supported for PPM in a bid to ensure sustained gains in provision of quality TB services to patients in accordance with the international standards of TB care.
- **PPM Experience Sharing Workshops at County Levels:** USAID TB ARC II in collaboration with NTLD-P and respective CHMTs held PPM experience workshops in the five PPM focus counties, to share experiences and lessons learned during implementation of PPM activities. These forums provided an opportunity to share new information regarding TB and further build the capacity of HCWs to better manage TB.
- **Case finding in the Private Sector:** In the reporting period, a total of 998 TB patients were notified from the private sector in the 5 TB ARC II supported Counties. This is a 149% increase in case finding from the previous year, where a total of 415 TB patients

were notified. Under three PPM models (Chemist, private facilities, and workplace/corporate models of engagement).

- **Contact Management:** TB ARC II also supported contact management activities in the private facilities. There was a general improvement in elicitation and TPT initiation in absolute numbers during this implementation period as compared to the previous year.

c) Kenya Conference of Catholic Bishops (KCCB)–USAID Komesha TB Program

USAID's Kenya Conference of Catholic Bishops (KCCB) Komesha TB Program implementation in 2022 continued to build on the success of intensified TB response gained over the last three years. The program extended its focus on technical strategies for program implementation: service delivery at the health facility, use of religious platforms, use of faith-based platforms, and use of media for advocacy. The coverage of implementation within the reporting period was 138 Faith-Based and Private health facilities spread across nine counties of Bungoma, Busia, Homa Bay, Kakamega, Kisii, Kisumu, Migori, and Vihiga.

The program contributes to the national TB program through a participation committee of experts, including public-private mix (PPM), DRTB, diagnostic, and pediatric TB.

During the period under review, the program notified 2430 patients, an increase of 121% compared to 1996 patients notified in 2021. Pediatric TB notification was 234 (10%). Overall, PPM performance in the region of support was 20%, out of which 69% was contributed by the Program.

The program is keen on improving the quality of care, optimizing active case finding, being a part of the remedial process around TB diagnosis, and instituting enabling environments for TB patients, and stakeholders in its fourth year of implementation.

Activities carried out during the period include;

- ④ **Support supervision:** In collaboration with MoH officials from the county/sub county conducted support supervision to 113 HFs to assess the quality of TB services. The supervision revealed a good understanding of intensified case finding by HCWs, good documentation, and intensive follow up of patients. More support on patients screening for TB referred for diagnosis is needed.
- ④ **Community TB case finding:** To complement TB case finding at the facility, the program engaged 161 community health volunteers who referred 21084 patients to health facilities for assessment by health care providers, of whom 193 patients were diagnosed with TB and started on treatment. The program continues to conduct sensitization for CHVs during monthly meetings to optimize screening and referral of patients for TB diagnosis.
- ④ **Capacity building in TB management:** To sustain the quality of care, the program reached 3755 healthcare providers through capacity building; they included sensitization for 2075 healthcare providers, continuous medical education for 1476 healthcare workers, and on-the-job training for 204 healthcare providers.
- ④ **Advancing the alternative PPM model:** under the public-private mix models chemist, workplace, and pediatric TB models were employed in optimizing opportunities to find TB. During the period, the program engaged a total of five chemists through incentives and frequent engagement.

2.6 Lessons Learned

2.6.1 ACF-PQE

1. Continuous support to Work Improvement Teams (WITs) and Quality Improvement Teams (QITs) through PQE technical assistance, mentorships and coaching enhanced understanding of quality improvement approaches and strengthened implementation of ACF.
2. Institutionalized school health education programs with clear linkages to health facilities for diagnosis and treatment yielded results.
3. Flexibility in working with change ideas is necessary for target achievement.
4. Incorporating PQE ACF teams into other existing QITs improves the understanding of the QI concept and enhances the uptake of the intervention.
5. TB data use can help health facilities better understand their implementation gaps.
6. Proper documentation at health facilities was key for the availability of quality data for decision-making.
7. PQE implementation in the facilities has helped staff to utilize data for decision making.

2.6.2 KIC TB

1. These innovations were key to finding TB among targeted key populations that did not have specific interventions previously.
2. All four innovations were able to find people with TB in the community earlier than they would have been found by the mainstream health system and the strategies used should be considered for incorporation into routine programming.
3. Community level implementers e.g. CHVs, Tibika champions (peers) and TB screening volunteers are central to the success of community level innovations and should remain an integral part of any related interventions.

2.6.3 PPM

Engagement, Mapping and Selection:

- Integrating TB services with other health services to cross-subsidize TB control efforts and expand program reach.
- It is key to map as many providers as possible with a clear selection criterion including gaps.
- Structured advocacy & engagement for site / chemist owners / admins/ professional bodies is key to getting a buy-in.

Capacity building of private providers:

- Defining the roles of providers including screening, testing, Diagnosis, Treatment, and DOT helps define task pick up for various models.
- Comprehensive integrated training should be considered-purposive selection of participants.
- Frequent and continuous OJT to mentor new staff due to possible high turnover are key for private facilities.
- Provision of IEC materials and knowledge portals including easy to access info for all stakeholders through t-bu lite are helpful to the small private facilities.
- Innovative models of capacity building like virtual meetings, WhatsApp discussions are easy to use
- The county health management teams play a key role of the in-capacity building for treatment and non-treatment sites.
- Upgrade of private facilities to treatment centers and capacity building to provide services gives them the encouragement to offer services.

Reporting & Documentation:

- PPM efforts have contributed to improved access to TB services as the number of facilities treating TB has been increasing albeit at a slow pace.
- There was significant under reporting of the private sector noted.
- Electronic reporting helps but, in most facilities, the EMRs available are focused to provide payments and accountability for sales.
- There is need for customized tools for private providers/t-bu lite (Especially standalone providers and pharmacies).
- Simplified tools capturing key indicators work best. Need for periodic DQA sessions.

Linkage/ Referral system

- Need to link the private facilities to the public - Laboratory services, treatment services.
- Establish networks of the private facility- hub and spoke.

Incentivization

- Using incentives and enablers to engage private providers and encourage patient and provider participation is key in TB care and control.
- Combination of monetary & non monetary innovations.
- Need to incentivize the processes rather than only outcomes.

Coordination and Review meetings

- The Active Committee of Experts (COE) played a key role in guiding the implementation of PPM activities in the country.
- Focal persons are key in activating cold spots & driving teamwork within counties.
- Experience sharing platforms are a good learning opportunity for the private providers to scrutinize gaps and come up with mitigation measures.
- Optimize what other partners are doing-don't disband what is working.

DIAGNOSTIC CAPACITY AND SURVEILLANCE OF TB

3.1 Introduction

The Division of National Tuberculosis, Leprosy, and Lung Diseases Program (DNTLD-P) and the National Tuberculosis Reference Laboratory (NTRL) has plans to steadily improve access to TB diagnosis which includes microscopy, LF LAM, molecular testing by use of WHO-approved rapid diagnostic tests (TB LAMP, TRUE NAT and GeneXpert) and in addition ensure surveillance by having surveillance supported with culture and drug susceptibility testing (DST). This aligns with the DNTLD-P Strategic Plan 2019-2023, which aims to diagnose and treat at least 597,000 persons with tuberculosis (TB) by the end of 2022. The DNTLD-P/ NTRL are in collaboration with all 47 county governments with a mission to enhance case notification through various areas of scope spanning from healthcare workers' capacity-building, surveillance, dissemination of integrated specimen referral systems, optimization of diagnostic platforms, commodity management, equipment maintenance through service level agreements, implementation of external quality assurance, and introduction of new tools project (*iNTP*).

Current status of the TB diagnostics network in Kenya, is working- towards increasing coverage of safe quality assured TB testing and surveillance at all levels of healthcare supported by current policies and guidelines as well as capacity improvement of the laboratory workforce, improving access and enhancing the TB diagnosis and surveillance system. The NTLDP/ NTRL has decentralized the TB testing and surveillance services to point of care, peripheral facilities, regional/ county facilities and the National Tuberculosis Reference Laboratory.

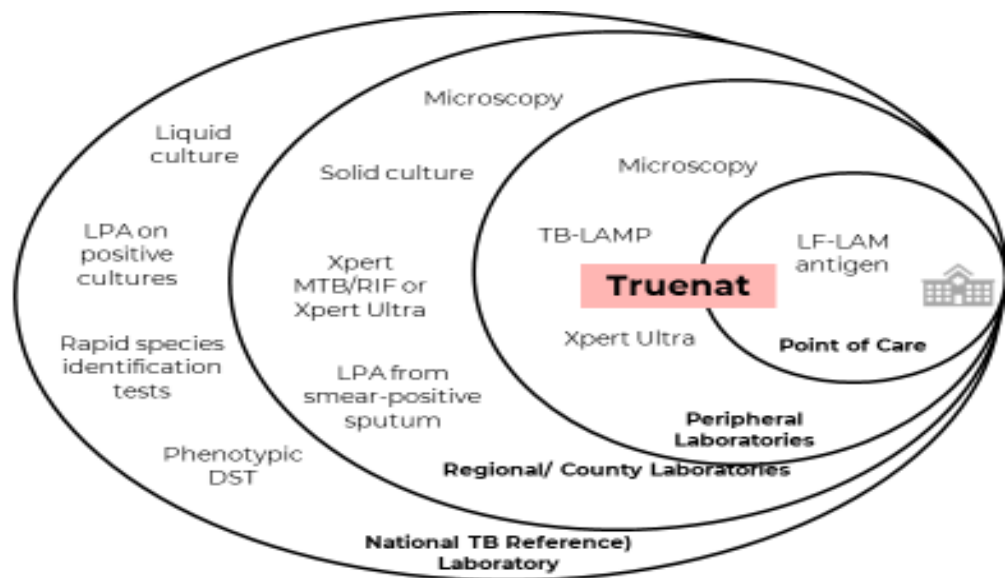


Figure 3.1: TB diagnostic network

3.2 The National Diagnostic Committee of Experts

The DNTLD-P through support by USAID TB ARC II, held CoE meetings in 2022 to spearhead the rollout of TB diagnostics to ensure efficiency of the TB diagnostic network. The aim was to bring key stakeholders (MoH, implementing partners, GoK agencies, and the private sector) together to rationalize the implementation of laboratory-related activities including mWRDs, Service Level Agreement (SLA), commodity security and management, sample referral, guide adoption of new TB diagnostics in the country including GeneXpert Ultra cartridge, stool for pediatric diagnosis of TB using GeneXpert platform, scale-up of LF LAM, TrueNat implementation among others. Overall, the National Diagnostic CoE provided essential policy direction, technical guidance, and coordination to optimize the implementation of laboratory diagnostics for TB. By bringing together key stakeholders, the CoE fostered collaboration and ensured that TB diagnostic services were standardized, efficient, and accessible throughout the country.

3.3 Increasing TB diagnostic access

The DNTLDP has expanded access to TB diagnostic and screening services throughout the country through strategic placement of the mWRDs tools after spatial analysis. The focus diagnostic tools under this engagement included; Ultra cartridge for Xpert testing, Truenat, Chest X-ray/CAD for TB, Quantiferon test for latent TB diagnosis, LF LAM, and TB-LAMP in the regions as shown by the following map.

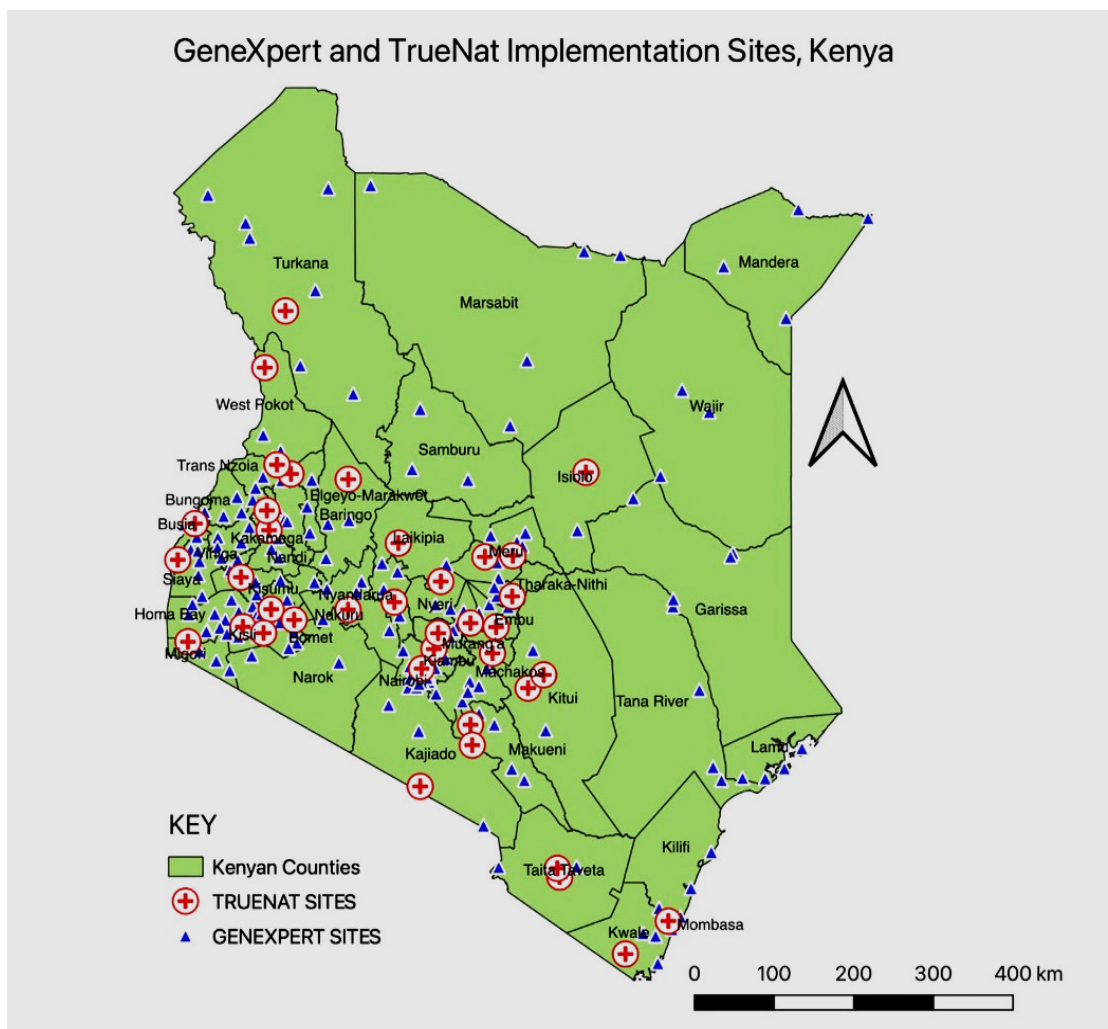


Figure 3.2: Truenat and GeneXpert sites in Kenya

mWRDs Expansion Over Time

Year	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
mWRDs (Xpert/Truenat) Targets	3	18	115	120	170	200	250	500	500	500	500	500
Actual	3	11 61%	24 21%	71 59%	126 74%	146 73%	159 64%	189 38%	189 38%	193 39%	193 39%	249 50%
TB LAMP											2	28
LPA	2	2	2	2	2	2	2	2	2	3	5	5

The mWRDs targets for 2022 were informed by the 2018 Diagnostic Network Optimization report that recommended upscaling of instruments to 500 to ensure optimal access to TB testing in Kenya.

3.4 Integrated laboratory Specimen Referral Systems (ISRS)

In 2022, sputum samples were referred routinely for diagnosis and drug-resistance surveillance of Tuberculosis, within the counties, inter-county, regional, and NTRL using motor riders, courier, and health care workers. The sample transport was supported by national and local implementing partners:

- A robust mechanism for results feedback amongst the referring and the testing laboratory
- Use of *TIBULIMS* and *Labware* to communicate via short text messages (SMS) and/or email to the corresponding clinicians/ facilities. For GeneXpert results, GXLIMS sends results to clinicians directly.
- Dissemination of ISRS through the support by USAID TB ARC II to 10 counties and additional 9 Arid and Semi-Arid Land (ASAL) counties supported by AMREF.
- The country encouraged the integration of specimen referral by facilities across the country.
- Lack of mechanism to aid in samples referrals.

The NTP/NTRL synergized by the USAID TB ARC II supports sputum sample transport from the 23,420 TB treatment facilities to respective G4s and EMS courier centers across the country for onward transport to higher testing laboratories. The samples are transported to the two culture labs for surveillance services, and the decentralized LPA sites.

3.5 Remote logging

NTRL in collaboration with AMREF rolled out TB culture sample remote login services to 17 counties (Meru, Embu, Kiambu, Kirinyaga, Murang'a, Nyeri, Laikipia, Isiolo, Machakos, Kitui, Mombasa, Kilifi, West Pokot, Transzoia, Kericho, Nakuru and Nairobi) where 64 facilities were covered. This is aimed at ensuring that the healthcare workers at the facilities referring samples to culture labs have real time access to the labware system. Therefore, requesters can follow up on the progress of their patient samples at the click of a button. This also ensures elimination of transcription errors that may occur while transferring information from request forms into LIMS.

Spatial analysis was used to select the sites with a GeneXpert/ Truenat platform and high workload. The sites were visited by one lab personnel and an IT person. Installation made is a web based which targeted to reach 100 sites by 2024. This has been implemented to 64 sites so far.

3.6 CXR/CAD

The National TB program prioritized the use of Chest X-ray as a TB screening tool as from 2016 following the recommendations from the National TB prevalence survey.

Through the introducing New Tools Project (iNTP), Kenya National Tuberculosis, Leprosy and Lung Disease Program (NTLD-Program) in collaboration with USAID funded Tuberculosis

Accelerated Response and Care (TB ARC II) rolled out Computer Aided detection (CAD) enabled portable digital Chest X-ray (CXR) machines for TB screening and triaging which commenced in July 2022. The CAD software analyzes the X-ray images taken and provides output in the form of a probabilistic score for pulmonary TB ranging from 0 (low probability) to 99 (high probability) and a heat map showing where abnormalities were detected. The country, informed by findings of the 2016 national TB prevalence survey, adopted a threshold score of 60.

The Chest X-ray machines were placed in 8 facilities across 7 counties and paired with an mWRD for follow-on diagnostic testing of patients found to be radiologically suggestive of TB. In the period July - December, 2022, over 9000 chest X-rays were taken both at facility level and during targeted community outreaches.



Figure 3.3: Beach-side TB screening outreach, using Chest X-ray, targeting fisherfolk

Chest X-ray with CAD TB Screening Data (Jul 2022- Dec 2022)									
	Jomvu	Kalobeyei	Madiany	Mathare North	Mutomo	Mutuati	Pandpieri	Rhodes	Total
How many people underwent screening for TB using X-ray and CAD/AI (for diagnosis) during this reporting period?	1500	598	1713	1041	1259	1137	1374	911	9533
Of the people that underwent screening for TB using X-ray and CAD/AI (for diagnosis), how many people screened positive for TB? (CAD Score above 60)	81	63	88	76	94	199	73	135	809
Number referred for confirmatory testing using Truenat	64	0	0	0	0	0	71	0	135
Number referred for confirmatory testing using Xpert	0	51	31	44	37	98	0	51	312

	Jomvu	Kalobeyei	Madiany	Mathare North	Mutomo	Mutuati	Pandpieri	Rhodes	Total
Number referred for confirmatory testing using microscopy	0	12	43	16	33	53	0	37	194
Number referred for confirmatory testing using another laboratory test (eg TB LAM)	0	0	3	3	0	0	0	0	6
Positive using Truenat	27	0	0	0	0	0	16	0	43
Positive using Xpert	0	34	7	24	14	31	0	13	123
Positive using microscopy	0	7	2	2	17	11	0	9	48
Positive using another laboratory test	0	0	3	0	0	0	0	0	3
Clinically diagnosed	2	22	26	25	3	64	17	43	202

Lessons learnt

- Using digital X-ray screening for TB is acceptable to clients at both facility and community level.
- Placing digital X-ray screening before bacteriological testing leads to a high yield leading to saving of diagnostic resources, 31% yield after a high score from CXR screening vs 2-5% yield using symptom screening.
- Use of digital X-ray also identified other chest abnormalities that were referred for further management for example features of cardiomegaly, malignancies, hydatid cysts, osteoarthritic features among others.

3.7 Tuberculosis testing menu

The current molecular diagnostic techniques in line with the Kenya TB screening and diagnostic algorithm include; molecular WHO Rapid Diagnostic platforms (GeneXpert MTB/RIF ULTRA, Truenat MTB/RIF, TB LAMP) and LF LAM as primary diagnostic tests; all presumptive cases should access it, followed by phenotypic Liquid and solid culture and drug susceptibility testing (DST), Line probe assays (LPA), and smear microscope for treatment follow-ups.

3.7.1 TB LAM

Since TB LAM use was recommended for use by the WHO in 2015, only few countries have rolled out the test. In 2017, Kenya agreed to adopt the use of TB-LAM to aid in diagnosis of TB among the eligible PLHIV. A pilot was carried out in 12 high burden TB/HIV Counties (Homa Bay, Siaya, Kisumu, Busia, Kisii, Kakamega, Uasin Gishu, Nyandarua, Nairobi, Nakuru, Mombasa and Kiambu). The pilot of the TB LAM testing from 12 counties to 47 counties. All the counties in select health facilities are currently utilizing the test for TB diagnosis for the PLHIV eligible population. In this period under review, a total 2464 (HIV+ 1404, HIV- 954, ND 37, HEI 66) positive results were posted in Tibu from across the testing facilities.

3.7.2 GeneXpert MTB/RIF assay Implementation

In 2022, as part of the National TB screening and diagnostic algorithm in Kenya, the Xpert® MTB/RIF Ultra assay became the first test for presumptive TB cases, aligning with the National TB Strategic Plan 2019-2023. With support from USAID TB ARC II, 211 GeneXpert machines were bundled monthly to enable electronic result relay to clinicians and online reporting to the National GXLims dashboard. GeneXpert superusers, who are medical laboratory technologists, provided on-site support and maintenance for the equipment, addressing any issues and escalating them when necessary. A national TB diagnostics data review workshop supported by USAID TB ARC II was conducted, involving participants from counties and implementing partners, to assess the performance of GeneXpert testing for TB at the counties. Service Level Agreement (SLA) documentation was also emphasized, ensuring the maintenance of GeneXpert equipment across the country.

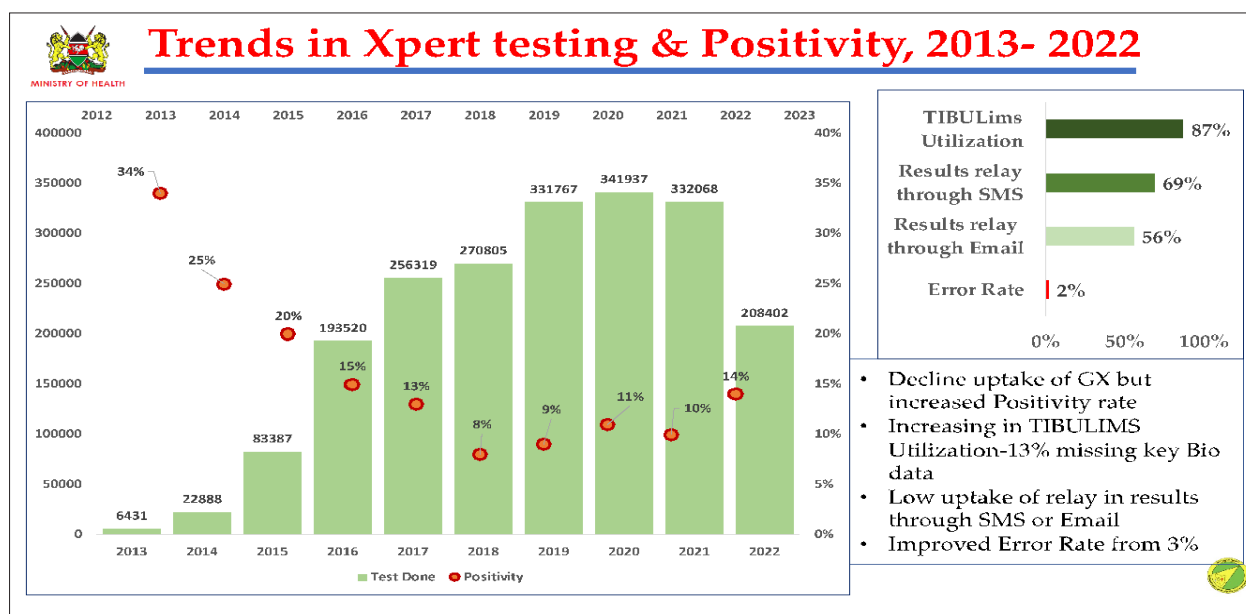


Figure 3.4: Trends in Xpert testing and Positivity, 2013-2022

Service Level Agreement (SLA) implementation

The NTLD-P continued to support the GeneXpert Service Level Agreement (SLA) signed with Cepheid International for the maintenance of all GeneXpert equipment countrywide. The program is monitoring the KPIs (Refer table on the right) to assess performance of the cepheid during this period of implementation.

Component	Duration	N	Freq.	Percent
Module replacement	< 5 days	11	7	64%
	> 5 days		4	36%
Hardware component	<15 days	9	8	89%
	>15 days		1	11%
Errors	< 5 days	37	20	54%
	> 5 days		17	46%
Software component	<15 days	12	10	83%
	>15 days		2	17%
Others	< 5 days	27	17	63%
	> 5 days		10	37%

3.7.3 Truenat

As part of the iNTP initiative the program installed the Truenat tools in selected facilities (38) in 33 counties to increase access to TB diagnosis. This necessitated various teams to visit these sites to offer technical assistance and address any technical challenges that might arise. The visit also provided an opportunity to install the sim cards, in preparation of linking the TrueNat to TIBULIMS for real time relay of results to the stakeholders for patient management

TrueNat Data Status, July – December, 2022

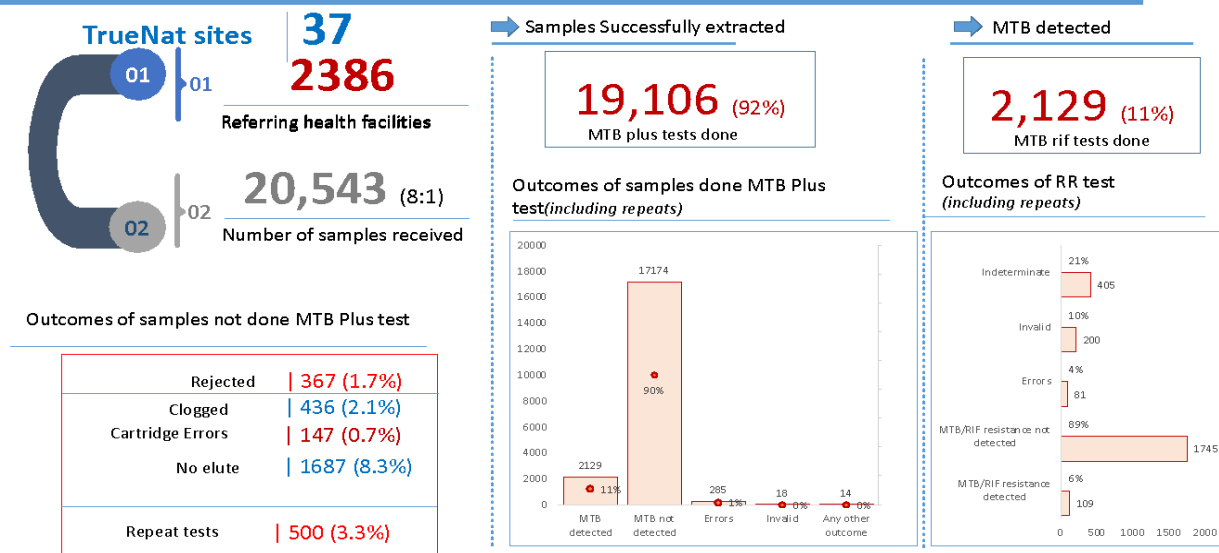


Figure 3.5: TrueNat Data, July - December, 2022

3.7.4 TB LAMP

Kenya rolled out Loop-Mediated Isothermal Amplification for tuberculosis (TB LAMP) diagnosis in 2022. A total of 26 TB LAMP were procured through GoK funding and distributed to 26 facilities in 18 counties. The rollout process involved identification of health facilities for machine installation, training of end-users, and commodities distribution. The assay offers a rapid and accurate alternative for smear microscopy for TB diagnosis. A total of 9,150 tests with 845 (9.2%) positive cases were reported in this period of review.

3.7.5 Smear Microscopy

Smear microscopy plays a vital role in TB diagnosis and treatment monitoring, particularly when there are stockouts of commodities for Mycobacterium tuberculosis Work Request Documents (mWRDs). During the review period, all laboratories received sufficient AFB (acid-fast bacilli) commodities, and no stock outs were reported.

In this period under review, six clusters were taken through AFB Microscopy refresher training. The support was through GF funding (50 participants) and USAID TB ARC II targeting medical laboratory technologists. However, there is need for continuous partner support for the refresher training for their respective counties.

3.7.6 Quantiferon Test for Latent TB Diagnosis (IGRA)

The rollout of IGRA in Kenya began in July 2022 and was anchored in the introducing New Tools Project (iNTP). The process began with; planning, assessment, and selection of health facilities suitable to carry out IGRA. Interferon Gamma Release Assays (IGRAs) are blood-based TB infection tests that measure the immune sensitization to mycobacterial protein antigens that occur following infection by the TB bacterium. Unlike the tuberculin-based Mantoux skin test, IGRAs are not affected by prior BCG (bacille Calmette-Guérin) vaccination. Under the iNTP, Kenya piloted use of IGRA for LTBI targeting TB bacteriologically positive contact, prisoners, HCWs and other risk groups. In 2022, Currently, implementation has been done in Nairobi County Pumwani Maternity Hospital and Kajiado County Referral Hospital.

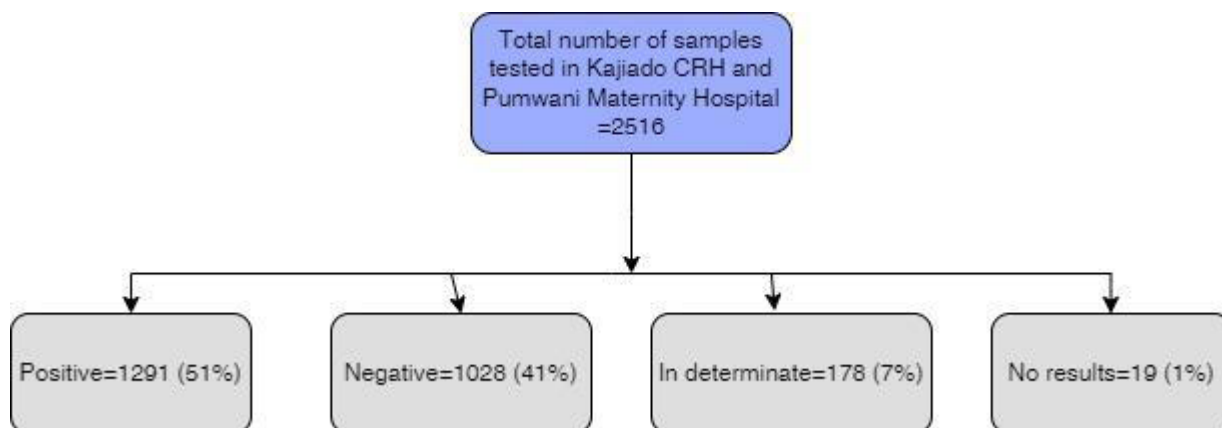


Figure 3.6: IGRA tests done and positivity rates

3.7.7 LPA

The national TB lab supported by the USAID TB ARC II project conducted quarterly mentorship visits to the decentralized LPA sites (Machakos, Malindi, Kitale and Kemri Kisian labs). Along with these, the labs were also supplied with commodities for both first- and second-line genotypic testing (LPA) and all equipment for these tests are under service contracts. This was to bring the 1st and 2nd line services closer to the patients.

3.7.8 Culture and drug susceptibility testing (CDST)

Kenya National tuberculosis surveillance workload has seen an increase of close to 20%, up from **19,526** in 2021. This is due to decentralizing TB surveillance services to regional labs. In the year under review, a total of 23,420 samples were received for testing. Out of the samples received, 98% (23,099) were subjected to culture, 7,288 (31%) to line probe assay (LPA), 758 (3.2%) to second line LPA, 1719 (7.3%) to 1st line phenotypic DST, 50 (0.2%) to 2nd line DST, 321 (1.3%) samples were rejected.

To enhance the relay of results back to the clinicians, systems have been strengthened to effect test turnaround time (TAT) as follows; 48 hours for microscopy, 7 days for LPA, and 65 days for culture and DST (sample reception to release of results).

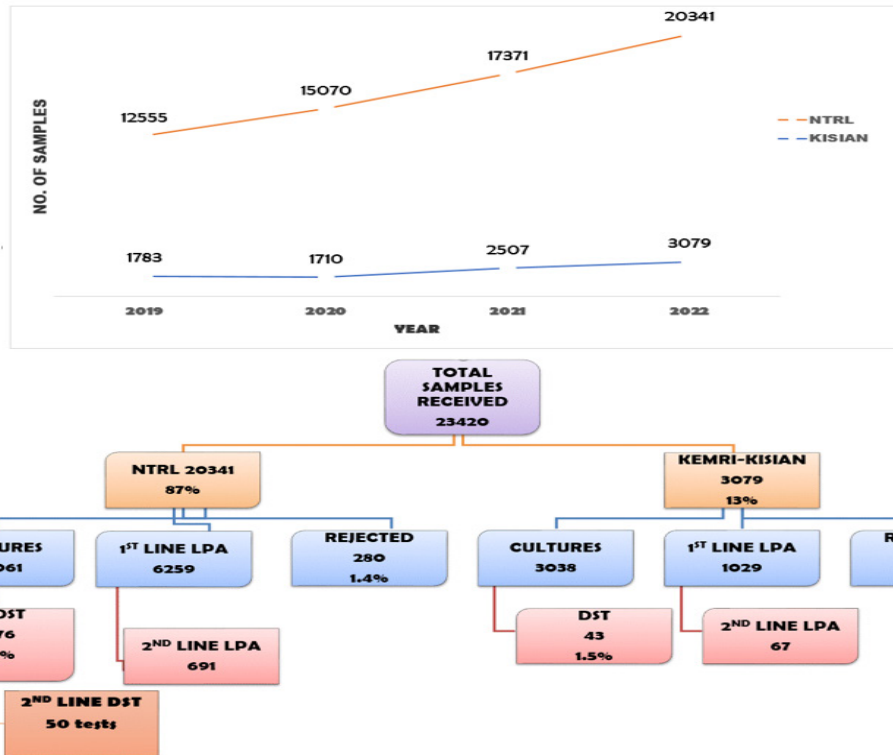


Figure 3.7: No. of samples received

This has been achieved through support from our Donors and implementing partners (MOH, GF, USAID CDC, CHS).

3.8 Technical Assistance

During 2022, NTRL provided technical assistance and mentorship to all the 4 regional labs with support from USAID TB ARC II and CAPAs supported by GF funding and AMREF on a quarterly basis. As part of the objective of the TA was demand creation and advocacy for sample referral to the testing sites to increase utilization of the instruments while improving test turnaround time (TAT) at the testing facility. In addition, the team participated in several technical assistance with the NTP to the counties to oversee the TB diagnostic network in the country.

3.9 External Quality Assurance/Proficiency testing

The National TB Laboratory developed a national quality management framework for TB diagnostic laboratories and engaged in several workshops to link up NTRL data with TIBULIMS through support of GF funding. This is guided by having quality assurance for all TB diagnostic processes.

3.9.1 Online EQA reporting

In the period under review, implementation and monitoring of electronic EQA reporting continued. A total of 19 counties and 1086 facilities were supported to ensure transmission of EQA results, performance analysis to inform corrective actions, preventive actions as well as training need assessment for facilitation. The county participation rate in the reporting period was 100%, however, facility participation rate was 84% (Q1), 85%(Q2), 85% (Q3) and Q4(84%) recording an average of 85% participation, and 3% error rate.

3.9.2 Microscopy Blinded Rechecking External Quality Assurance (EQA) performance

Microscopy External Quality Assessment (EQA) is crucial for assessing laboratory performance and ensuring accurate results. In the reporting period, USAID TB ARC II facilitated EQA cost reimbursement in 47 counties, covering 80% of the 2,813 AFB microscopy sites in the country. The average error rate remained below 5%, and corrective action was taken for labs with errors. The number of diagnostic sites enrolled for EQA increased from 2186 Q1 to 2,245 in Q4 2022, but participation varied due to factors such as low workload, staff turnover, and lab closures.

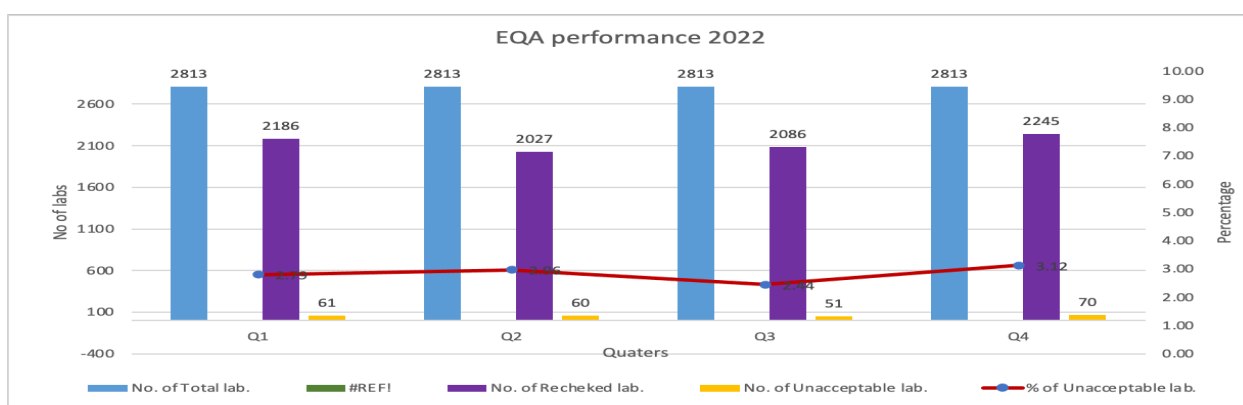


Figure 3.8: EQA performance across the quarters in Kenya, 2022

NTRL Oversight's quality assurance in the TB diagnostic network in Kenya through: Blinded rechecking, External quality Panel production and distribution: supervision and mentorship. NTRL is accredited for ISO 17043 under the KNEQAS program for External quality panel production and distribution for various assays cope; DTS for MTB/RIF ultra for (202/250 sites), AFB microscopy (102/2700 sites), LPA (4/4 sites) as distributed for cycle 2023-A. NTRL is currently establishing capacity for PT production to support EQA for TB -LAMP, LF TB LAM, and TRUENAT assay.

Table 3.8.2: NTRL EQA performance in Kenya, 2022

Round	Expected sites	No. enrolled	Response	% Participation	% Satisfactory
Gene xpert-RD 2022-A	194	194	174	89.69%	167 (95.98%)
Gene xpert-RD 2022-B	199	197	Ongoing	N/A	N/A
Truenat-RD2022-A	38	38	38	100%	(31) 82%
Truenat-RD 2022-B	38	38	38	100%	(34) 89%
Truenat-RD 2022-C	38	38	37	98%	(34) 92%
Microscopy-2022	90	90	80	89%	75%

Feedback reporting, data analysis and management is done on an online system. Annually NTRL conducts CAPA review, mentorship and site supervision, in addition to integrated PT review meetings with stakeholders on PT services.

Items	Achievements/Successes	Challenges	Way forward
Chest X-ray	<ul style="list-style-type: none"> Successful roll out of 8 CAD-enabled CXR in 7 counties. Over 9000 images taken. High bacteriological yield for those with CAD>60 threshold scores (up to 30% positivity) reducing the number needed to test to identify one TB case 	<ul style="list-style-type: none"> Stock out of GeneXpert cartridges Weak laboratory-clinical interface leading to leakages in the diagnostic cascade CAD4TB software is not validated for use in children under 15 years of age. In-country radiation regulations limit use of the DELFT X-ray machine to chest imaging only. 	<ul style="list-style-type: none"> Strengthen the laboratory-clinical interface to minimize diagnostic leakages Ensure availability of mWRD commodities for follow-up with a diagnostic test. Radiological reporting of images with CAD scores of 40 and above to guide on management of the patients.
mWRDs	<ul style="list-style-type: none"> Successful rollout of 38 Truenat MTB/RIF assay in 33 counties Increase of testing sites from 193-249 Trained end users, superusers, clinicians, and other program managers on mWRDS Renewal of SLA for 2022 Superuser support in mWRDs implementation Use of score-card to rank performance of mWRDs Technical assistance missions to counties National data review forums 	<ul style="list-style-type: none"> Stock out of GeneXpert cartridges affecting TB testing across the country Incomplete county reports for appropriate commodity F&Q Procurement delays leading to stock outs Inadequate resources/funds for staff capacity building Low yield of MTB from tested samples 	<ul style="list-style-type: none"> Strengthen procurement procedures Ensure adequate reporting for effective F & Q Avail resources for capacity building More sensitization for the HCW on the TB screening

Items	Achievements/Successes	Challenges	Way forward
Culture, DST, and Genome Sequencing	<ul style="list-style-type: none"> Performing DST for new IFRs regimen Sending samples to SRL for interlaboratory comparison Support for samples referral for testing from peripheral facilities Implementation of specimen referral systems in private hospitals for transportation of TB sputum samples through Public Private Mix (PPM) for surveillance 	<ul style="list-style-type: none"> Only 2 laboratories currently performing TB culture Significant stock-outs of phenotypic commodities in the country Inadequate resources for staff capacity building Delayed commencement for NTRL's infrastructure status HR inadequacy in the NTRL Lack of support for genome sequencing Lack of support for operations research 	<ul style="list-style-type: none"> Consider facilitating existing labs with infrastructure to carry out culture /DST Provide adequate resources to support capacity for NTRL staff Fix NTRL infrastructural needs Consider genome sequencing for TB To conduct a diagnostic network assessment Ensure adequate reporting for effective F & Q Consider expanding the 2nd line DST through placement of GeneXpert 10 color machines Come up with dashboard to monitor commodities Conduct a Drug Resistance Survey Introduction of genome sequencing
AFB Smear microscopy	<ul style="list-style-type: none"> Increase in AFB sites enrolled for EQA from 2,186 to 2,245 Continued support supervision County AFB commodity support Staff capacity building 	<ul style="list-style-type: none"> Closure of laboratories due staff turnover Untimely EQA submissions 	<ul style="list-style-type: none"> Counties to lobby for more medical laboratory staff Enhance support supervision by CMLCs
LPA	<ul style="list-style-type: none"> Strengthening of LPA sites (Kitale, Malindi, and Machakos, KEMRI TB Lab Kisian) to conduct 1st and 2nd line molecular DST Continuous training and mentorship of site staff on LPA testing 	<ul style="list-style-type: none"> Insufficient, erratic supplies leading to massive stock outs of commodities Inadequate staffing Inadequate resources to support HR, equipment, training etc. No system linkage for results relay (LIMS) to NTRL No Mapping of laboratories supported by decentralized LPA sites 	<ul style="list-style-type: none"> Improve on procurement procedures Seek support for more staffing Communication with the county government on retention of HR trained on LPA testing Establish a system for reporting LPA results to NTRL Source for more funds Perform LPA sites mapping

Items	Achievements/Successes	Challenges	Way forward
EQA and PT	<ul style="list-style-type: none"> • Support for AFB Smear microscopy PT in enrolled sites • Blinded rechecking for microscopy performed by 80% of all diagnostic facilities • SCMLC's supported to conduct EQA processes in their regions. • Xpert PT also conducted in 100% public facilities • All Truenat facilities enrolled and participated in PT supported by Smartspot • Maintained the accreditation status of ISO 17043 standard 	<ul style="list-style-type: none"> • Inadequate financial support for PT production. • NTRL urgently needs additional financial support to cater for Human resource and PT supplies/ consumables. • Knowledge gap on digital results submission • Delay in results submission from participants hence interfered TAT • Non adherence to the SOP and panel processing procedures • Wrong panel delivery by courier services hence loss or delay results submission by testing facility • Stockout of Xpert cartridges affecting PT testing • Due to the staff turnover most 1st and 2nd controllers are not trained • Not all facilities are enrolled for the microscopy EQA 	<ul style="list-style-type: none"> • Support NTRL to expand the PT program to new TB diagnostic platforms • Seek for support for additional for HR • Training on digital submission for PT results • Enroll all facilities into EQA and PT programs • Conduct a pilot on LF LAM and TrueNAT for external quality assurance • Training of EQA 1st and 2nd controllers on AFB Microscopy • Scale up microscopy PT sites to 300
Sample referral systems (SRS)	<ul style="list-style-type: none"> • Referrals for culture/DST samples supported by USAID TB ARCII countrywide • SRS for Xpert testing in counties supported by Local IPs • There was effective and efficient support for courier through both G4s and EMS companies 	<ul style="list-style-type: none"> • SRS not fully optimized in all counties • Inadequate support for trainings (SRS, guidelines, policies) • Inadequate triple packaging materials for sample referrals • Lack of monitoring and evaluation systems for SRS. 	<ul style="list-style-type: none"> • Review 2018 integrated sample referral guideline to include other diseases • Disseminate integrated guidelines for SRS to all stakeholders including sample riders • Develop ICT mechanisms for managing SRS from the counties • Seek support to provide packaging materials.

SOCIAL SUPPORT, NUTRITION, HUMAN RIGHTS AND GENDER

4.1 Social Support

4.1.1 Cash transfers to DR TB patients and DOT workers

Kenya supports all patients with Drug Resistant TB with social support in the form of monthly cash transfers to reduce out-of-pocket costs incurred during treatment. This is in line with the End TB Goal of ensuring zero families face catastrophic costs due to TB. The support enables patients to take care of non-medical expenses such as nutritional needs and transport to the health facilities when needed.

About 80% of DR TB patients in Kenya are currently managed in the community, where healthcare workers and community health volunteers provide Directly Observed Therapy (DOT) services daily. To facilitate their visits to the community, DOT workers are supported monthly with funds to cater for transport costs.

Through the support of the Global Fund, AMREF in collaboration with DNTLD-P and TB coordinators, facilitated monthly cash transfer to 1,410 DR TB patients and 1,186 DOT workers from January to December 2022. This represents 97% of the 1,451 patients eligible based on the TIBU register. The proportion of patients on community-based management increased progressively throughout the year.

On average, 706 patients and 539 DOT workers were supported monthly during that period. This was a drop from the previous year's performance of 817 patients and 595 DOT workers, due to the drop in the number of DR TB cases notified in 2021 and 2022 compared to 2020. The funds were disbursed directly to the patients or their appointed nominees, and DOT workers, through mobile money transfer on the Tibu Cash platform.

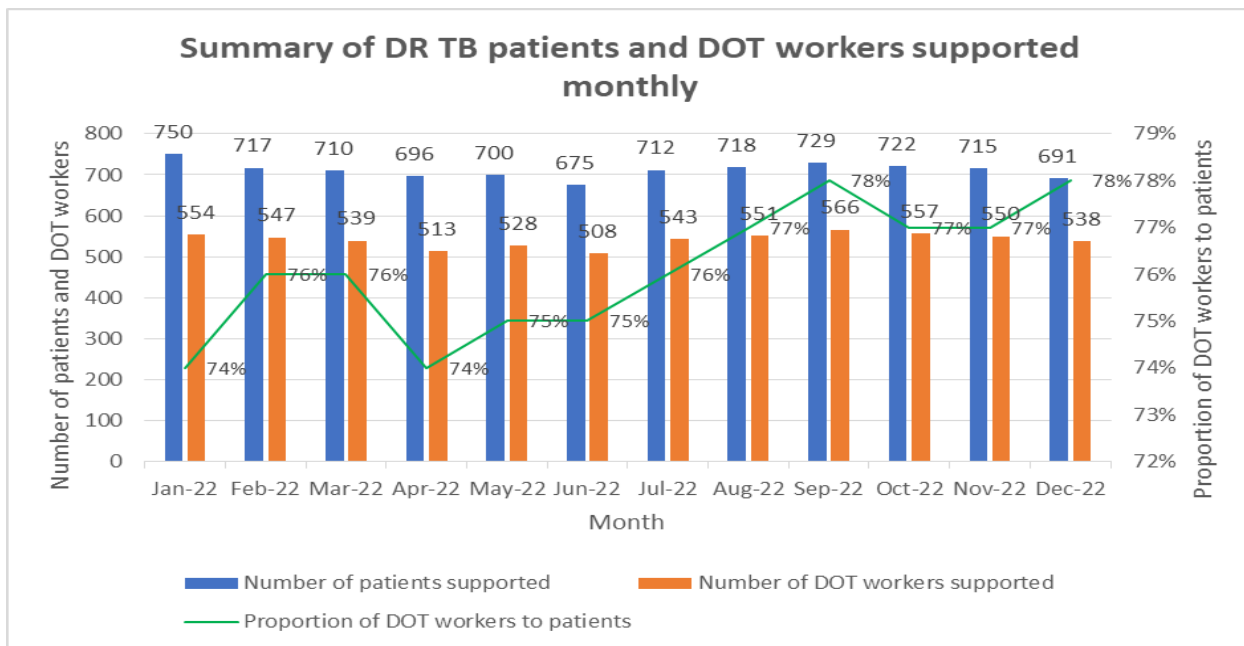


Figure 4.1: Summary of DR TB patients and DOT workers supported monthly

4.2 Nutrition

Optimal nutrition plays a key role in the proper functioning of body systems, including the immune system, which is responsible for the host's resistance to various infectious diseases. It has been demonstrated that undernutrition is a risk factor for progression from TB infection to active TB disease and that undernutrition at the time of diagnosis of active TB is a predictor of increased risk of death and TB relapse. There is evidence that TB treatment alone is often not enough to improve the quality of care of patients, which underscores the need for nutrition screening, assessment, and management as integral components of TB treatment and care.

In 2022, 49.3% of the 90,789 notified TB cases were undernourished with 19.4% (17,251) having SAM and 29.9% (26,561) having MAM. 55% of the 578 drug-resistant TB cases were also reported to be undernourished at the time of diagnosis. About 42% of pediatrics were undernourished with 24.3% having SAM and 17.8% having MAM.

4.2.1 Nutrition Support

Only 31.8% (5491/17,251) of the eligible patients were put on therapeutic feeding while 22.3% (5927/26,561) were put on supplementary feeding.

4.2.2 Capacity building

On Job Training (OJT) and mentorship are among the strategies that the National TB Program has put in place to ensure that the capacity of Health Care Workers is sustained at all levels. In 2022, (OJT) on nutrition management for TB patients was conducted in 23 out of 47 countries, with 48.9% coverage. The counties visited include Muranga, Murang'a, Kirinyaga, Embu, Machakos, Kitui, Nandi, Uasin Gishu, Kisumu, Siaya, Kiambu, Machakos, Homa Bay, Bungoma, Kericho, Laikipia, Lamu, Mombasa, Nyandarua, Tharaka Nithi, Bomet, Vihiga, Kisumu, and Meru. Among the findings during the implementation of the OJT

and mentorship programs were that most of the facilities had functional anthropometric equipment and patients were regularly assessed for nutritional status. There was, however, a notable knowledge gap among HCWs on nutrition management in tuberculosis, and though RUTF and RUSF were available, they were most often wrongly dispensed. In addition, most facilities lacked reference charts for proper categorization of nutritional status and inclusion/exclusion criteria in nutrition programming.

As an effort to prevent and manage malnutrition beyond food supplementation, the program is in the process of developing a Nutrition Information Package to be used by communities

4.3 Human Rights and Gender (HRG)

One of the key human rights issues in the TB response in Kenya is the need to address gender inequalities. Human rights and gender-related barriers continue to create inequalities in accessing services. To address these challenges, the TB Program has implemented rights- and gender-sensitive policies and programs aimed at increasing access to TB services for all. The implementation of TB human rights and gender activities is done through a Joint Technical Working Group for TB, HIV, and Malaria, whose secretariat is the National Syndemic Diseases Control Council (formerly NACC).

In 2022, the NTP conducted activities related to human rights. This includes gender violence sensitization targeting the 47 Counties in regard to TB and COVID19. These targeted law enforcers included police and prison wardens, health care workers, community gatekeepers, rescue center operators, and religious leaders. Violence prevention and response is a joint collaborative initiative, and all the key players should work as a team to effectively address issues of violence, e.g., lawyers, police, program staff, and key population networks.

The NTP worked closely with the National Syndemic Diseases Control Council (NSDCC), Kenya Red Cross Society (KRCS), NASCOP, and KELIN to create awareness about TB and respond to human rights and gender-related barriers among various stakeholders. Through the joint human rights and gender technical working group, the TB program and other stakeholders continue to facilitate the exchange of information and evidence and support decision-making toward TB control. In 2022, various sensitizations were carried out across sectors with a focus on understanding the basics of TB and its associated stigma and discrimination. The target groups included;

- i. Heads of School/head teachers, Beacon teachers, Kenya Network Of HIV-positive Teachers (KENEPOTE) teachers, and school matrons focus on creating awareness of TB identification and prevention among students and their parents. There was a call to facilitate check-ups and tracing of students who have been in contact, including prompt health-seeking upon symptoms, as well as improve ventilation in classrooms and dormitories
- ii. Public, private, and informal sector associations focusing on the need to ensure provision for non-discrimination on basis of both HIV and TB in all workplace policies and adherence to policies
- iii. Training on the legal framework in the context of HIV, TB and Malaria across members of the joint technical working group
- iv. Strategic Plan-Comprehensive response to human rights and gender-related barriers to HIV, TB and malaria services in Kenya-2021-2023

- v. Virtual sensitizations of private sector workplaces on HIV and TB related stigma and discrimination in adherence to policies and relevant acts of parliament towards a transformed workplace- over 155 participants joined

The KRCS implemented the HRG activities through the sub-recipients at the county level. These included training of pro bono lawyers on HIV human rights and law in relation to HIV and TB, targeting the North Rift, coast, lower eastern, upper eastern, north-eastern region, and upper eastern region.

Through KELIN, with support from the Stop TB Partnership, TB champions from Nandi, Busia, Makueni, and Kajiado Counties were empowered on TB and human rights.

SUPPLY CHAIN MANAGEMENT, PHARMACOVIGILANCE AND ADSM

5.1 Situational analysis

The availability and accessibility of commodities are crucial factors in determining the provision of services within healthcare facilities and ensuring the sustainability of the healthcare system.

Kenya is among the countries with a high burden of TB, and ensuring the availability of high-quality and effective TB medicines, diagnostic tests, and nutritional commodities at all levels is of utmost importance. The current National Strategic Plan for the National Tuberculosis, Leprosy, and Lung Health Program has established clear indicators for the division to apply and monitor its performance. This aims to strengthen the forecasting of TB medicines, laboratory consumables, and other related commodities at the national level.

To guarantee the consistent availability of medicines and commodities, a stock monitoring and early warning system have been implemented to detect and respond to potential shortages and excess stocks.

These indicators remain constant across the four expanded management structures within the division, namely:

1. The Commodities Security Committee
2. The National Order Management Team
3. The Procurement, Forecasting, and Quantification Team
4. The Pharmacovigilance and ADSM (Adverse Drug Side Effects Monitoring) Team

The sectional indicators are the result of collaborative efforts from the above-mentioned management structures. DNLTD-P indicators and targets are 100% reporting rates, 100% data quality and reliability, 100% order fill rate, 6 months' turnaround time in procurement and supply cycle, 100% pharmacovigilance reporting and interventions, 100% ADSM sentinel sites surveillance, 1-month turnaround time for distribution and ordering cycle for 1st line commodities while 72 hours for 2nd line commodities; 0% expiries rate, 0% stock out rates and 0% understock rates rate in the national strategic stock at the central warehouse

5.2 Commodity Security Committee

At the National Level, there is a functional TB commodity security committee in place. This committee plays an important role in overseeing the implementation of TB commodities management activities, such as monthly stock monitoring, forecasting, and procurement planning. It also facilitates coordination between different sections and agencies within the Ministry of Health, as well as other national agencies and counties, to ensure TB commodities security and safety.

5.3 NTLD-Program Forecasting, Quantification and Procurement

An annual forecasting and quantification process was carried out to determine the country's commodity requirements, with biannual reviews conducted to address emerging issues. This exercise played a crucial role in ensuring commodity security in the country. To facilitate this, the Quan TB software was utilized for quantifying the NTLD program's medicine and laboratory commodity needs from 2021 to 2022.

5.4 Quality and Safety Assurance for TB Medicines (PV, PMS & ADSM)

The NTLD-Program carried out Joint Post Market Surveillance in collaboration with the Pharmacy and Poisons Board (PPB), NASCOP and the Malaria Control Program through RSSH GF support in 2022.

Pharmacovigilance sensitization for sentinel sites was carried out in Garissa, Embu, Meru, Kisii, Kisumu, Migori, Vihiga, Bungoma, Nairobi, Machakos, Kiambu, Kitui, Mombasa, Kilifi, Murang'a, Nyeri, Baringo and Eldoret through RSSH GF support in 2022.

5.5 Order Management Team

This handles the distribution chain and facilities ordering and requisition to ensure a smooth good distribution practice (GDP), 100% quality and reliability of reports, and starting point of ensuring successful and reliable Forecasting and quantification, and procurement in the program. The team met every month in 2022 at the Program boardroom supported by GF and CHAI.

5.6 Commodity Reporting

There has been a slight drop in the country reporting rates from 92.6% in January 2021 to 91.5% in January 2022 and this can be associated with staff turnover in 2022.

5.7 Storage and Distribution Achievements

The country successfully transitioned the distribution of IFR- for DR-TB patient treatment packs from the NTL-D-P to KEMSA, while maintaining the 72-hour turnaround time from notification of a new Patient to delivery of the required medicines to any part of Kenya. For the 1st line, it maintains a 1-month turnaround time from ordering and receiving in the facilities.

5.8 Stock Management and Procurement

The online TB medicine ordering and reporting module of the KHIS platform and county allocation platform is now up and running. Facilities can now submit medicine reports directly to KHIS, the report can be pulled by the Allocation tool and allow the sub county pharmacists do allocation, County pharmacist approval and Order Management Team (OMT) to review and take appropriate action. Below is the distribution list for tracer first line TB commodities to the regions year 2022.

Table 5.8: Distribution of commodities, 2022

DISTRIBUTION OF TB COMMODITIES 2022															
			line drugs Tracer commodi												
No	Commodity Name	UOI	January	February	March	April	May	June	July	August	September	October	November	December	
1	Patient packs	1s	4990	6624	7131	8461	10397	11469	12575	4192	5015	6969	10725	10276	27970
2	RHZ 75/50/150 mg	84s	1114	514	83	1931	2343	1919	1535	1037	858	824	1604	1253	3681
3	RH 50/75	84s	2526	1184	689	2156	2569	2084	2168	1513	1740	2079	3540	2558	8177
4	Ethambutol 100mg	100s	791	562	770	909	842	769	898	1,064	765	796	1044	1095	2935
5	Pyridoxin 50mg	100s	16754	3568	7724	13710	5747	17,508	23,778	5,196	6399	15618	6865	8097	30580

Distribution of second line tracer commodities

Distribution of Tracer 2-line TB commodities 2022														
No	UOI	January	February	March	April	May	June	July	August	September	October	November	December	Totals
Bedaquiline 100mg	188 pcs	42	44	41	53	59	22	38	35	29	48	43	26	117
Linezolid 600 mg	Packs of 100s	68	83	68	76	85	50	64	39	39	78	94	50	222
Levofloxacin 500mg	Packs of 100s	453	470	380	503	468	306	532	262	361	528	451	20	999
Cycloserine 250mg	Tins of 100s	435	427	393	480	498	233	365	247	349	464	368	296	1128
Clofazimine 100mg	Packs of 100s	169	170	159	197	213	100	170	99	132	218	156	129	503

5.9 Integration of TB/COVID commodities in the KHIS TB reporting tool

The program through the supply chain management and pharmacovigilance section offered technical support for the piloting of the tool in 5 counties and the rollout of the TB/COVID-19 integrated commodity reporting tool in 19 counties through funding from GF and CHAI in 2022.

Table 5.10: Performance in 2022 against the target

Indicator	Baseline	Target	Achievements (as of 2022)
Priority intervention 1: Strengthen supply for TB commodities			
Strengthen supervision/ supply chain audits to prevent stockouts and expiries	70% expiries rate	0% expiries rate	0% expiries in facilities
	80% stock-out rate	0% stock outs rate	10 % average stock outs rate in pediatrics,
	20% data quality and reliability audits.	100% data quality and reliability audits.	50% data quality and reliability audits.
Counties and sub-counties to increase reporting rate through DHIS2 and increase order fill rate	45% reporting rate.	100% Reporting rate	91.5% reporting rate
Strengthen DHIS to include LMIS data for TB commodities	40 % uptake rate in the systems.	100% uptake rate for all the key programmatic commodities	80% cumulative rate (because lab commodities uptake is about 10% and Nutrition has not been included)
Strengthen coverage of the supply chain by enhancing the maximum molecules and commodities available to the patient.	50 % order fill rate	100% order fill rate	85% cumulative order fill rate for therapeutic commodities, diagnostic and nutritional supplementation.
Strengthen forecasting & quantification (F&Q)	100% F&Q annual and annual review workshops.	100% F&Q annual and annual review workshops.	50% F&Q annual and review workshops. A drop in funding.
	0% National order monthly two (NOMT) workshops on a quarterly basis.	100% NOMT workshops on a quarterly basis.	0% NOMT workshops on a quarterly basis.
Priority intervention 2: Strengthen active drug safety monitoring and management (aDSM)			
Train Health care workers on aDSM for patients on second-line treatment	All the sub-county pharmacists and county pharmacists at the COE counties.	100 % trained sub-county pharmacists and county pharmacists at the COE counties.	18 sentinel Counties were sensitized on Pharmacovigilance.
	All the pharmacists in the county referrals in non-COE counties.	100% trained pharmacists in the county referrals in non-COE counties.	0% trained pharmacists in the county referrals in non-COE counties.
Reporting of ADR in PPB	<10%	100%	Low (10%)
Link TIBU & County allocation tool with the PPB platform	0%	100%	Not done

PREVENTION, HEALTH PROMOTION AND COMMUNITY ENGAGEMENT

The response to TB infection prevention and control extends beyond healthcare facilities. The National TB Program has provided guidance, structures and tools to efficiently deliver interventions such as health education, community engagement, advocacy and communication, gender and human rights empowerment, and multisectoral engagement.

Community Engagement Community-based TB activities take place outside formal health facilities, targeting existing community-based structures like schools, places of worship, congregate settings, and households. TB disproportionately affects vulnerable populations such as children, migrants, people who use or inject drugs, individuals with mental health issues, the homeless, and those in poor-quality housing. Meaningful engagement of key community members is crucial for sustainable implementation.

Advocacy and communication play a crucial role in TB management in Kenya and it is conducted through raising awareness, mobilizing resources, and promoting policy changes. Through advocacy, there is increased political goodwill and prioritization of resources for TB prevention, diagnosis, and treatment. Communication efforts aim to improve access to accurate TB information, promote awareness about available services, and encourage community engagement. By involving diverse communities in decision-making processes, advocacy and communication efforts foster a patient-centered approach and address human rights and gender barriers. Ultimately, these initiatives enhance demand for TB services, encourage innovation, and contribute to achieving the goal of ending TB in Kenya.

Addressing human rights and gender barriers in TB programming has raised awareness and promoted a patient-centered care approach. Community-based care that is accessible and accepted by patients is prioritized, with a focus on meeting the needs of men who are

most affected, as well as women and children who face disproportionate discrimination. Strengthening community systems is crucial for monitoring and responding to human rights and gender concerns.

A multi-sectoral approach facilitates collaboration with diverse stakeholders, fostering accountability and progress monitoring and is in line with the vision of 2030 and the “End TB Strategy 2035.” Clear steps have been defined through the development of a multi-sectoral framework to guide this engagement.

6.1 Community Engagement

In Kenya, the involvement of Community Health Promoters (CHPs) is vital in delivering essential healthcare services within the community, including promotion, prevention, basic curative, and rehabilitative services. In addition, the TB program has involved other community health actors including Civil society organizations and people infected or affected by TB in the community through the Network of TB champions. The National TB Program, in collaboration with partners, successfully implemented several key aspects of community interventions, which have proven effective in addressing TB-related challenges. These interventions aimed to improve TB awareness, enhance access to screening and treatment services, and foster community engagement and support. The key interventions in 2022 include;

6.1.1 Targeted Community Outreaches

In the year under review, NTP and County Health Teams, in collaboration with implementing partners (LVCT, AMREF Health Africa, CHS- USAID TB ARC II KCCB Komesha TB) conducted targeted community outreaches in selected counties. The objective was to enhance efforts of finding persons with TB in the targeted communities. The communities targeted were urban informal settlements, prisons, drug dens, mining settings, institutions of learning among others. In addition to the existing four mobile X-Ray units at national level and the GeneXpert machines in the various counties, the new diagnostic tools under introducing New Tools Project (iNTP) (artificial intelligence enabled digital chest x-ray and Truenat) were utilized during the outreaches. A draft targeted outreach package to guide outreach implementation in the field was also developed.

a. Community TB targeted Outreaches

In 2022, with support from Amref Global Fund TB Project, a total of 16 counties were visited and 22,949 people were screened for TB. Of these, 11,540 were presumed to have TB and were subjected to X-ray. Consequently, 791 people were diagnosed with TB, of whom 357 were bacteriologically confirmed through GeneXpert, TrueNat or microscopy. A total of 780 people were initiated to TB treatment as per the followin table:

Table 6.1 Community TB targeted outreach data for 2022 per county

County	Number screened	Number presumptives	Sent for X-Ray	Total suggestive	Total tested	Total diagnosed with TB	Bacteriologically Confirmed	Clinically diagnosed	Total TB Cases initiated on Tx
Garissa	1159	740	845	29	144	20	13	7	18
Kakamega	570	59	436	24	59	15	10	5	15
Kiambu	2316	578	161	42	350	27	17	10	28
Kisumu	1050	461	380	39	218	23	13	10	23
Lamu	551	183	183	59	183	43	5	38	43
Marsabit	767	446	446	74	52	57	5	52	57
Meru	2275	941	734	36	143	24	13	11	23
Migori	740	439	439	75	166	62	32	30	62
Mombasa	3793	2582	3332	461	907	160	84	76	159
Nakuru	3008	1926	1770	339	608	140	57	83	139
Samburu	387	186	46	14	173	13	13	0	13
Tana River	1016	734	585	67	196	52	22	30	51
Turkana	2188	1347	1294	327	212	99	36	63	99
Uasin Gishu	1404	282	282	42	184	29	16	13	23
West Pokot	1725	636	595	42	285	27	21	6	27
Grand Total	22949	11540	11528	1670	3880	791	357	434	780

Table 6.2: Community TB targeted outreach data for 2022 per the various targeted key and vulnerable populations

Settings	Screened	Number Presumptive	X-Rays done	Number tested	Number diagnosed with TB	Number initiated on Tx
Drug Dens	1,987	1,681	1,516	327	53	53
Hard to reach population	6,634	3,532	3,149	1,101	291	290
Informal Urban Settlements	11,578	5,260	5,995	2,148	364	354
Prisons	746	70	69	10	4	4
Schools	667	291	197	16	0	0
Selected work places	1,145	514	439	241	65	65
Street families	192	192	163	37	14	14
Grand Total	22,949	11,540	11,528	3,880	791	780

Sourced from outreach reports



Fig 6.1 Targeted TB outreach in the remote setting of Samburu County

b. Prisons Outreach Data for 2022

In 2022, 4,695 inmates and staff were reached during outreaches targeting this population. About 30.5% (1434) were symptomatically presumed TB cases and were further subjected to digital CXR. About 5% (71) were identified as highly suggestive and 319 (22%) being suggestive. Subsequently, 390 sputum samples were collected for GeneXpert with 52 MTB detected with an overall of 127 started on TB treatment.

Table 6.3 Data collected from prison outreach reports

Total Inmates Screened	Presumed	Highly Suggestive	Suggestive	GeneXpert Done	Started TB Treatment
4695	1434	71	390	375	127

What worked so well for outreaches

1. Provision of differentiated care services in hard-to-reach areas through outreaches has helped in finding missing people with TB.
2. Good partnership between the National TB program, Kenya prisons service, Counties, implementing partners and beneficiary communities.

6.1.2 Community system strengthening

The National TB Program endeavors to engage civil society organizations (CSOs) as sub-recipients (SRs) to support implementation of community and facility-based TB activities and strategic initiatives across the 47 counties. Through Amref Health Africa in Kenya, 34 SRs were engaged under the Global Fund TB Project 2021 - 2024. The SRs supported various activities including household contact screening for index patients (bacteriologically confirmed TB patients and children under 5 years with any form of TB), tracing TB treatment interrupters,

targeted TB screening outreaches using mobile x-ray, active case finding activities at public, private and faith-based health facilities and awareness creation on TB and TB Preventive Therapy through mass media and support to TB champions and CHVs. In addition, the SRs helped amplify the voices of communities, including TB affected communities, by empowering them to engage in various community systems strengthening interventions. Below are updates on key achievements by CHVs on household contact screening and tracing of TB treatment interrupters:

a. Screening contacts of TB patients

The SRs supported CHVs to visit households of TB index patients for health education and contact tracing, across the 47 counties. The CHVs were sensitized on TB Preventive Therapy, to create awareness among household contacts and other community members. In addition, at select health facilities in 31 counties, index patients received transport reimbursement for their contacts, following contact invitations by healthcare workers (HCWs). Below is the quantitative achievement for contact tracing for the year 2022.

Table 6.4: Index of TB contacts

Contact screening	Number	%
Number of households of index cases visited by CHVs	33,319	
Number of contacts screened	115,222	
Number of contacts referred	58,857	51.1%
Number of contacts identified with TB	1,251	1.1%
Number of contacts initiated on TPT	14,184	12.3%

b. Tracing of TB treatment interrupters

This activity entailed reaching out to TB patients who failed to show up at the clinic for more than 24 hours after the clinic appointment. This ensured that the patients adhered to treatment with the aim of reducing loss to follow up thus improving treatment outcomes. A total of 1,046 health facilities were supported with airtime to call any patients who missed their appointments, while CHVs were supported to physically trace those who could not be reached through phone calls as shown in the table below:

Table 6.5: Number of Treatment Interrupters

Treatment interrupters	Target	Number	%
Number of treatment interrupters traced physically by CHPs	3,287	3,536	108%
Number of treatment interrupters found and referred back to treatment by CHPs	90% of number traced (3,183)	2,807	88%
Number of treatment interrupters restarted on treatment	100%	2,478	88%

6.2 Advocacy in TB response

During the reporting period, Community health actors (250) were trained on Domestic Resource Mobilization in 10 counties and were supported to participate in the County Integrated Development Plan (CIDP) in 10 counties. Their role was to advocate for allocation of resources towards implementation of TB, HIV and Malaria interventions which will allow the country to accelerate efforts towards ending these epidemics. In addition, other key trainings offered to the community health actors; including 608 people trained on Community Led Advocacy and research in 21 counties and 409 trained peer monitors on Community Led monitoring in 15 counties. Community Led monitoring tool in use is Imonitor + ATM covering HIV, TB, Malaria and Human rights. As at December 2022, 10000 issues were raised by the communities. To ensure the Issues are resolved, 75 superusers were trained and engaged including (CTLCS, CASCOs, County Malaria Coordinators and peer monitors). The project will work towards ensuring National and sub county superusers are increased to improve the turnaround time of providing solutions and ensuring social accountability which is the ultimate goal of Community Led Monitoring.

Consequently, the Global Fund project under Amref engaged community health actors to conduct community led research that will contribute to evidence-based advocacy. Among the 23 researches selected 2 were on TB.

6.2.1 TB Community and Champions meaningful engagement

TB communities are critical in ensuring that the TB response is patient-centered. Hence, actively involving the TB communities is paramount. NTP in collaboration with partners (USAID TB ARC II, StopTB Partnership - Kenya and Amref Health Africa) supported and guided the Network of TB Champions in Kenya on a regular basis, to enhance the Network's internal structures for effective and efficient meaningful engagements and collaborations at the county, national, and international levels in areas of TB advocacy, TB awareness and demand creation.

The Global Fund TB Project through SRs continued to support TB survivors engaged as TB champions in the 47 counties to undertake advocacy and awareness creation activities in the community. Further, the TB champions encouraged people on TB treatment to adhere to their medication and also facilitated TB patient support groups alongside healthcare workers manning the TB clinics. All 47 champions were linked to the National Network of TB champions. In addition, peers to the key and vulnerable populations were supported to create awareness on TPT in counties.,

In addition, NTP in collaboration with the partners implementing the new innovation programs mobilized members of the Network of TB Champions and CSOs in Kenya for a sensitization forum on the introducing New Tools Project (iNTP). This emphasized the need to strengthen patient-centered approaches in TB response at County and National levels.

- A. Engagement of the Diverse Political Platforms and Stakeholders in Resource Mobilization:** Three (3) dialogue forums were held online by the National TB Program in partnership with County Health Teams in TB advocacy, USAID TB ARC II, Stop TB Partnership-Kenya. The engagement targeted political leadership and representative offices at the National and County levels. This targeted 11 priority counties for TB prioritization in resource allocation and governance with special focus on MTEF

processes. NTP has continued to engage the Council of Governors' Secretariat and the Ministry of Devolution in a bid to pursue TB resource prioritization through enhanced political goodwill.

- B. Regulations, Gender and Human Rights in TB Response:** NTP in collaboration with the key stakeholders contributed to the draft legislative framework, highlighting policy and legal gaps in the enforcement of TB control. The review process provided recommendations on the policy areas to facilitate non-legal enforcement. NTP in collaboration with the implementing partners and TB communities initiated the dialogue and the process of addressing TB related stigma and discrimination as a barrier to accessing TB services. This was through the development study protocol for the National TB Program aimed at conducting the first national TB Stigma Index Assessment.

6.2.2 Kenya MAF TB Development

In the reporting period, NTP and implementing partners were at the forefront of strengthening the Multisectoral Approach (MSA) in TB response with an aim of accelerating the achievements of Kenya's UNHLM (2018) political commitment. In addition, the National TB Program and partners, finalized and designed the Kenya Multisectoral Accountability Framework (MAF) for TB document. It is expected that this will strengthen the accountability and coordination of diverse stakeholders in TB.

6.3 Communication

The Program in collaboration with counties and partners continued to raise awareness and create demand for TB services, and treatment completion in the country. The following milestones were attained in 2022:

6.3.1 Mass Media Campaign

The Program undertook a mass media campaign in the month of March to create public awareness of TB and demand for TB services. The campaign which was part of the World TB Day Commemoration ran on six (6) TV stations and twelve (12) radio stations for four (4) weeks. The stations included Radio Jambo, Radio Ramogi, Radio Citizen, Muuga FM, Mulembe FM, Radio Maisha, Kass FM, Kameme FM, Musyi FM, Angaaf FM, Hope FM, Classic FM, KBC TV, Inooro TV, NTV, KTN News, KTN Home and Citizen TV. In addition, the media houses offered talk shows and brand mentions/placements on primetime local shows that have high viewership and/or listenership. It is estimated, according to the media monitoring report during the campaign, that a total of 10,247,000 persons were reached during the campaign.

In the month of September, the Program engaged two wide-reaching national TV stations, Citizen and NTV and five (5) radio stations (three national and two vernacular) targeting high TB burden regions of Nyanza and Upper Eastern. The campaign was supported by CHS - USAID TB ARC II,



Fig 6.2: A screenshot of a section of the TB television infomercial aired on five TV stations in 2022

6.3.2 Implementation of TB Digital Media Campaign

The National TB Program in collaboration with USAID TB ARC II ran a digital media campaign in the months of March, April and December 2022. Standard Media Group and Citizen TV, which have a wide reach of audiences, were engaged to disseminate TB messages through their digital media platforms - Website, Facebook, and Twitter accounts. The messages were shared on NTP and partners' social media platforms. The estimated reach of the digital media campaign was 5,180,895 million social media users in Kenya.



Fig 6.3 Screenshots of sponsored tweets by the Standard Media Group and Citizen TV educating the public on the symptoms of TB and urging them to seek and complete treatment

Part of the digital media campaign was the engagement of Content Creators in TB Awareness Creation. They created entertaining, educational content intended for a wide reach of young men aged 24-35 years and the general population-key target audience, in raising TB awareness through the development of short videos and feature stories. The Program through USAID TB ARC II engaged Jaymoh Ule Msee, Awinja, and Abel Mutua. The content creators produced creative entertaining and educational TB short videos targeting the youth and shared on their social media platforms - Facebook, Twitter, Instagram and YouTube.

Table 6.6: Content Creator Engagement, Links and Posts

Content Creator	Link
Jaymo Yule Msee	https://fb.watch/cEDSh47Vto/
Jaymo Yule Msee	https://www.youtube.com/watch?v=v3kYWOi8fwA&t=3s https://www.youtube.com/watch?v=16Dy_BQPCDA&t=109s https://fb.watch/cEDSh47Vto/
Biko Zulu	https://bit.ly/38rlyJ2 https://bit.ly/3Kjo5fp https://bikozulu.co.ke/vanishing
Jackline Awinja	https://www.youtube.com/watch?v=Mq8jsXUHAZ0&t=182s
Abel Mutua	https://www.youtube.com/watch?v=uPFRMFI2I28

6.3.3 Publishing of TiBa Newsletter

The Program published three editions of TiBa newsletter and supported in the design and laying out of information, education and communication materials including policy documents. USAID TB ARC II supported the printing of the newsletter.



Fig 6.4: Editions of TiBa newsletters

6.3.4 2022 World TB Day

Commemoration of World TB Day is crucial for raising awareness, advocating for government action, mobilizing communities, addressing stigma, and monitoring progress in TB control. It plays a pivotal role in the fight against TB, ultimately contributing to improved prevention, diagnosis, treatment, and support for individuals affected by the disease. The program in collaboration with partners organized the national world TB Day which was held in Kenyatta stadium-Machakos County Machakos county and supported county commemorations. The national event brought together key development partners including USAID, key high level political leaders like the then Governor of Machakos county His Excellency Alfred Mutua, representatives from the private sector, Civil Society, infected and affected community's media among others.



Fig 6.5: John Kuehnle, USAID Kenya Health Population and Nutrition Office Director joins Dr. Maurice Maina-USAID, Alfred Mutua - Former Machakos County Governor USAID and other TB implementing partners in a walk during World TB Day 2022, March 24 commemoration in Machakos town

6.3.5 Launch of iNTP

The communication section played a vital role in the launch of key TB innovations and initiatives by creating awareness, generating interest, mobilizing stakeholders, disseminating information and providing advocacy and support. The strategic communication efforts are instrumental in driving the success and adoption of introducing New Tool Projects, ultimately leading to improved TB prevention, diagnosis, and treatment outcomes.

6.3.6 Revamping of NLT-P Website

The National TB Program revamped the NLT-P website which was crucial for improving user experience, disseminating accurate information, raising awareness, engaging stakeholders, facilitating collaboration, collecting data, and advocating for TB control efforts. The website serves as a powerful tool to support the overall goals of the National TB Program and contribute to reduction of TB incidence. The revamping of the website was supported by USAID HealthIT

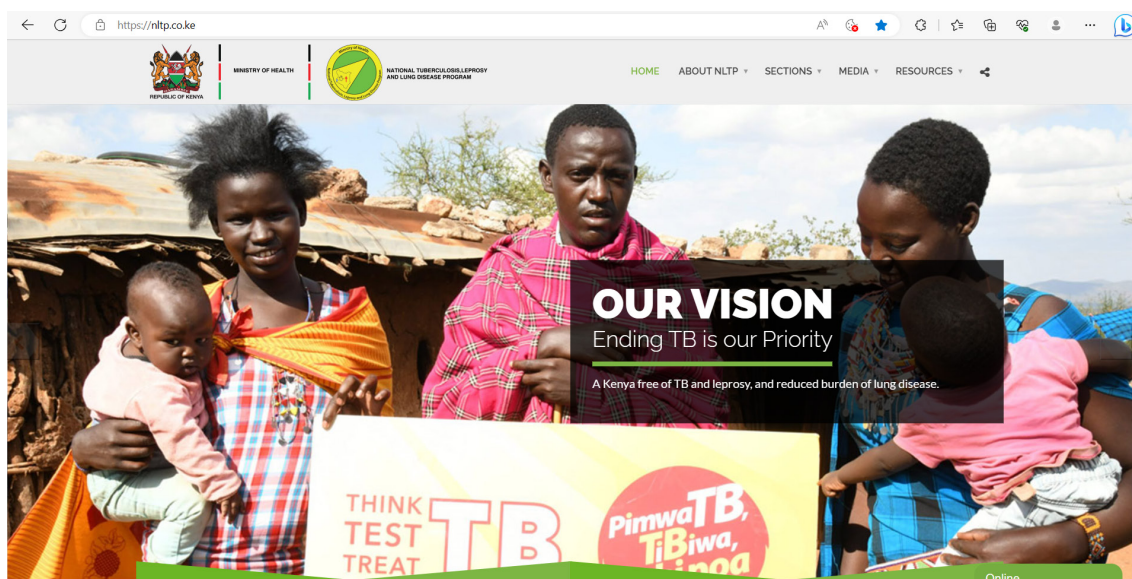


Fig 6.6: Screenshot of revamped National TB Program website

6.4.7 Documentation and Dissemination of success stories

The National TB Program in collaboration with USAID TB ARC II documented and disseminated TB best practices and impact stories through various national and local media stations. The documentation engaged health journalists from selected TV and Radio stations to feature stories from selected counties.

The feature stories highlighted among others, the status of TB response in the country, and the impact of the National TB Program and implementing partners work in reducing TB incidence and related morbidity and mortality in Kenya. The engagement also aimed to create TB awareness and demand for TB services through feature stories on radio, TV and newspapers. According to Geopol ratings, 6,526,657 people watched/read/listened to the feature stories as shown below:

Table 6.7 List of feature stories and estimated reach

Station	Dissemination Date	Link	Estimated People Reached
Citizen TV	13/12/2022	https://fb.watch/ho4sObLXOv/	2,598,543
Bahari FM	13 - 15/12/2022	shorturl.at/lpw17	435,800
NTV	5/11/2022	https://youtu.be/fCTgW9SRt1c	1,398,564
NTV	15/12/2022	https://youtu.be/3drEQnApR2g	1,003,765
Standard	20/12/2022	shorturl.at/prtzi	1,089,985
		Total	6,526,657

Station	Link to the Story
Radio Citizen	https://bit.ly/3cmxuYd https://bit.ly/3TN8rOw
Citizen TV	https://bit.ly/3oz8sln https://youtu.be/ZjdLhbsYZYw https://youtu.be/zNY3R1vbqP0
KTN	https://youtu.be/ZhoPOtMIMbM https://youtu.be/IR9ztJEe9_A
NTV	https://youtu.be/fCTgW9SRt1c https://youtu.be/fCTgW9SRt1
Milele FM	https://bit.ly/3CVU17K https://bit.ly/3z6745p
Daily Nation	https://bit.ly/3D2MBzN

Additionally, the Program in collaboration with various partners also documented human interest as well as success and impact stories while covering a number of activities. This was aimed at creating awareness on the Program's and partners interventions and achievements. The stories were posted on the NLTP and partners websites and published on TiBa, NLTP's quarterly newsletter.

6.3.8 Design and Printing of TB Information, Education, and Communication (IEC) Materials

A variety of IEC materials for various target audiences were developed and disseminated by the program in collaboration with the partners.

MONITORING, EVALUATION AND RESEARCH

Monitoring Evaluation and Research (MER) section is mandated to provide a robust and responsive M&E system that promotes evidence-based decision making for quality TB, Leprosy and Lung disease programming. The section ensures there is effective flow of strategic information on implementation, monitors performance of key strategic plan activities and indicators to inform service delivery, areas of improvement and necessary corrective action. It also deals with optimizing the generation and use of TB, Leprosy and Lung Disease program data. This is done by improving quality of data through conducting routine data quality assessments (DQA), sub-national data quality improvements and performance review meetings. Further, it is mandated to provide leadership in development, distribution and revision of recording and reporting tools to be in tandem with the current guidelines. A critical component of the section is to coordinate surveys, program reviews and impact assessments to improve TB, Leprosy and lung disease programming.

7.1 End Term Review for the 2019 - 2023 National Strategic Plan

7.1.1 Background Information

One of the key National strategic plan processes is the mid-term and the end-term review to take stock of the implementation progress, areas of improvement and recommendations for the next NSP development process. The End Term Review for the 2019-2023 NSP was conducted in March / April 2022 by a multidisciplinary team of external and internal experts drawn from national and international stakeholders and partners. The planning

process involved rigorous weekly meetings conducted by the secretariat and taskforce teams. DNLT-D-P spearheaded both the secretariat and taskforce teams, which consisted of representatives from counties, parastatals, and implementing and developmental partners. The program review was a nationwide exercise that encompassed both levels of government, namely the National and County Governments

7.1.2 Findings

1. **Well-structured TB programme** with impressive capacity and excellent **collaboration with technical partners**, and willing, supportive and engaged **private sector players**, and a pacesetter for innovation in the region.
2. The **2019-2023 NSP is comprehensive** and includes interventions for human rights, social protection, vulnerable populations, and multisectoral engagement, and service integration (*but sub-optimal implementation*).
3. Significant funding gap and limited government allocation at national and county levels; key decision makers believe that TB is well funded by donors (and national government). But there is high level recognition on the **need to transition to domestic financing**.
4. The **TB programme is perceived to be siloed**, with room for more streamlining and **structured engagement in government planning and budgeting processes**, and with other MOH departments, partners, and sectors at national and subnational levels, to optimize synergies and promote people centered services. *All sectors engaged during the review requested to be involved in the planning process from the start.*
5. Significant challenges with the **procurement system**, and **coordination challenges between NTLD and the National TB Reference Laboratory** for which staffing is heavily donor-dependent (current funding ends in June 2022).

7.2 NSP 2023-2028

7.2.1 Background Information

The National TB Program Strategic Plan (NSP) for TB, Leprosy and Lung Disease 2019-2023 was envisioned to end in June 2023. The program relies on the NSP as a guiding policy and technical document for TB, leprosy and lung disease response in Kenya. An external review led by WHO was conducted in March/April 2022 where the status of implementation and outcomes were documented. The comprehensive report described the key findings and best practices, gaps and challenges and key recommendations and opportunities in TB programming. This exercise was preceded by an in-depth epidemiological review of TB disease distribution, patterns and trends in the country over time. These detailed findings provided the country and the globe, with current updates on the TB landscape in the country to inform planning and reprogramming.

Following the findings of the NSP 2019-2023 end term review coupled with other new developments such as emergence of new pandemics, new global guidelines for TB by WHO, the country commitment to several global and regional commitments including End TB strategy, UNHLM and others, there was need to revise, align and tailor recent global reviews to the country context towards achieving the set milestones and targets. In view of the above, there was thus a need to develop a people's centered evidence-based planning

and prioritization, that would take into account the development and implementation of bold policies, engagement of stakeholders, UHC agenda and research and innovation, at the country level and cascading further to the county level. The new NSP 2023-2028 process would be guided by the most recently launched WHO guidelines for TB strategic plans development as summarized in the figure below:

7.2.2 Progress made by December 2022

Process for developing the National Strategic plan

Government-led process, with stakeholders engagement and participation					
PHASE 1- Planning and preparation	PHASE 2- Conducting the situational analysis	PHASE 3- Formulating goal(s), objectives, interventions and activities	PHASE 4- Developing the metrics and activities for monitoring, evaluation and review	PHASE 5- Costing	PHASE 6- Consensus and endorsement dissemination and resource mobilization
Establishing a core organizing team	Review of epidemiology and determinants of TB	Formulating goal(s) and objectives	Formulating indicators and targets for activities and subactivities	Producing cost estimates	Consensus and endorsement
Developing a costing road map	TB programme review	Identifying priority interventions	Outlining activities for monitoring evaluation	Identifying projected funding and sources	Dissemination and advocacy
Confirming and mobilizing resource	Data and evidence consolidation	Determining epidemiological (coverage) targets			Resource mobilization
	Synthesis by stakeholders	Formulating activities and subactivities			
		Contingency planning			

7-12 months

Fig 7.1: Process of developing the NSP

7.2.3 Next Steps

The next steps towards finalization will include: Step 4: Development of the monitoring, evaluation and review framework; Step 5: Costing and Step 6: Consensus, dissemination and finally a launch in June 2023.

7.3 UNHLM

Following the UN General Assembly High Level Meeting on Tuberculosis (UNHLM), the country set targets for a five-year period (2018 - 2022) and the performance is as shown in Table 7.1. During the period, 73% of the Drug Sensitive TB patients were notified, 61% of Paediatrics TB cases were reported. In the same period, 58.5% of the target DRTB patients were notified. The goal for TB prevention therapy was 722,160 people, A coverage of 67.7% was reached during the period under review.

Table 7.1: UNHLM Performance Summary

UNHLM PERFORMANCE SUMMARY - KENYA		
Program Area	Target (2018 - 2022)	Performance (2018 - 2022)
TB Diagnosis & Treatment	585,100	424,620
MDR-TB diagnosis and treatment	6,644	3,889
Childhood TB diagnosis and treatment	68,800	41,962
Total Preventative Therapy (PT)	722,160	489,137
Preventative Therapy (PT) targets in PLHIV	385,798	438,038
Preventative Therapy (PT) targets for under-five Child Contacts	130,850	34,136
Preventative Therapy (PT) targets in contacts more than 5 years of age	205,516	16,963
Resource Needs for TB Prevention and Care (US\$)	787,148,402	181,306,668

7.4 Data Quality Improvement Plan

7.4.1 Introduction

Quality data from all levels of healthcare is needed to inform the design of interventions, monitor and evaluate plans, measure progress towards TB treatment and prevention targets. Attention to data quality ensures that target-setting and results reporting are informed by accurate and reliable information, ensuring reporting units (facilities and communities) are collecting and organizing this information in a consistent manner.

7.4.2 Dissemination of Data Quality Improvement Plan

After the NTP and Implementing team updated the DQI Plan (2021-2026), the document was disseminated to the county team for review and adoption, allowing them to customize it to their specific context. The DQI Plan serves as a valuable tool in enhancing data quality improvement efforts across various levels, including national, county, sub-county, and facility levels. Additionally, it identifies potential TB data quality issues and offers suggestions on how to effectively address them.

7.5 Annual Data quality improvement forums

The National TB Program utilizes an annual Data Quality Improvement Forum as a strategy to enhance data quality at both the national and county levels. This forum is conducted on a yearly basis, with counties grouped based on their epidemiological zones and a consideration of their strengths and challenges. Data quality is improved through straightforward processes such as data cleaning, validation, and the sharing of key interventions in patient management. This activity holds great importance as it serves as a platform for reviewing individual performance, providing solutions, and facilitating benchmarking between counties. Additionally, it offers quarterly updates on the national program, fostering collaboration and knowledge sharing.

The desired impact of the Data Quality Improvement Forums is twofold. Firstly, it aims to provide timely and TB-specific information on key indicators, guiding TB leaders and innovators in the development of future interventions and programs. Ultimately, this will lead to a decrease in the burden of TB nationwide. These indicators also highlight successful public health interventions and draw attention to areas in the TB care spectrum that require further support and attention.

In 2022, the National Program, along with implementing partners, organized annual data quality improvement forums for 37 counties.

7.6 Performance Review Meeting

7.6.1 Background Information

The 2022 Performance Review Meeting (PRM) served as a platform to assess the performance of key TB indicators for the previous year (2021), identify gaps and challenges, and develop evidence-based and data-driven action plans for counties to adopt in order to reduce TB incidence.

Logistical and technical support for the PRM, held from 26th February to 3rd March, 2023 in Nakuru County, was provided by UNES Health IT. The meeting brought together County TB Coordinators, County Pharmacists, County Medical Laboratory Coordinators, County Directors for Health, TB implementing partners, and D-NTLP program officers.

The theme for the 2022 performance review meeting was “Data for Action! Yes, we can end TB in Kenya.” This theme aimed to engage stakeholders from both the public and private sectors in a collective effort towards TB control, emphasizing the importance of multisectoral engagement.

The main objectives of the performance review meeting were:

- Review annual TB program performance against the agreed targets for 2021
- Develop action plans for correcting shortcomings during the period under review
- Provide stakeholders consultative forum in TB control
- Share any lessons learnt during the implementation period
- Share the TB program updates and developments
- Recognize and award counties with outstanding performance

The national TB targets were shared as shown in the table 7.2.

Table 7.2: National Targets

Theme: Data for Action! Yes, we can end TB in Kenya	
Indicators	Targets
Case notification	Increase case detection by 20% among adults Children: 15% of cases notified
Treatment success rate	<ul style="list-style-type: none"> Cure rate - 90% TSR - DS TB - 90%, DR TB - 80%
GeneXpert utilization rate	<ul style="list-style-type: none"> Children: 1:3 80% of all PLW HIV
Drug resistant TB surveillance	<ul style="list-style-type: none"> 50% new cases 100% among all previously treated
HIV testing & ART uptake	100%
Health care workers screening	50%
Time to treatment initiation	Sample collection to treatment initiation - target 2 days.

7.6.2 A Snapshot of the Country Performance in 2022

The country experienced an overall 16.6% increase in case finding for the year 2020, and a 11.8% increase pediatric case finding compared to 2021

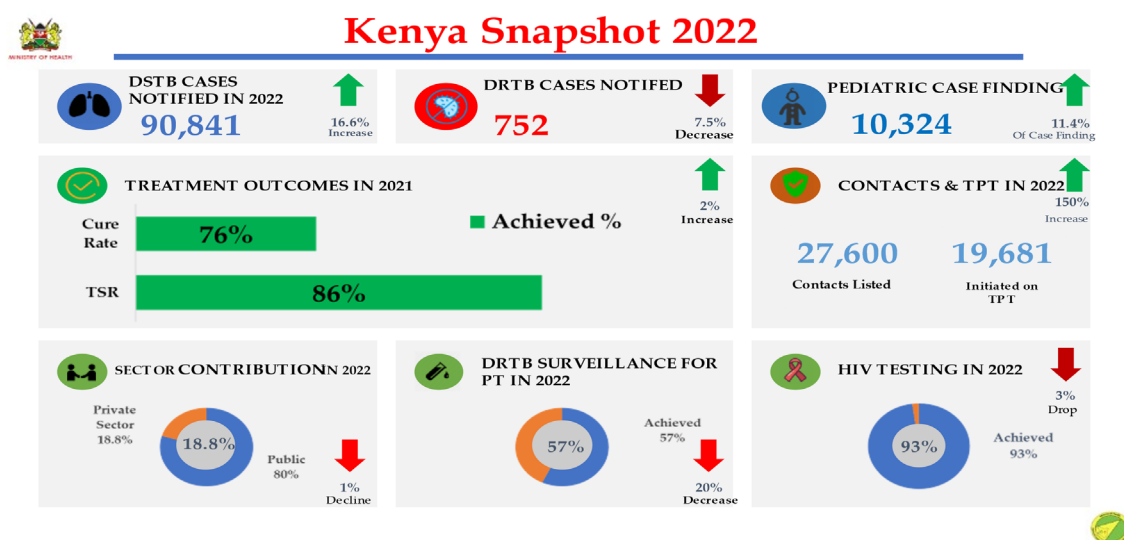


Figure 7.2: Kenya Performance 2022

7.6.3 County Performance Scorecard

County performance was ranked for various indicators using an innovative/objective scorecard developed jointly by the DNTLD-P M&E officers. Homa Bay County was awarded the best performing county, with Mandera and Nyamira counties being 1st and 2nd runners up respectively. Merti Sub County in Isiolo county was ranked the best sub county.

7.7 TB Diagnostic data connectivity solution (TIBULIMS)

7.7.1 Introduction

The NTLD program has implemented the use of GeneXpert for TB diagnosis as the initial DST test for presumptive cases. In order to provide case-based data and reports, the program developed GXLIms in 2013, which was fully rolled out in 2014. Currently, there are 209 GeneXpert sites equipped with 222 GeneXpert Machines that can report data through this system.

In 2021, the World Health Organization (WHO) recommended TrueNat, a new medium-complexity compact PCR test, for the molecular diagnosis of tuberculosis. Kenya introduced TrueNat as an alternative to GeneXpert for TB diagnosis, with support from the USAID-funded Introducing New Tools Project (iNTP) and the Global Fund. Alongside TrueNat, other diagnostic instruments such as CAD4TB have also been introduced.

These tools enhance the screening and diagnostic network of the program, ensuring that the majority of presumptive TB cases have access to diagnostic testing. GXLIms was upgraded to TIBULIMS which integrates GeneXpert, Truenat and CXR-CAD. TIBULIMS focuses on the connectivity of all TB testing instruments, facilitating seamless data exchange with the NTP server. It serves as an All-in-One system where users at different levels can easily access relevant device information. To achieve this, integration processes were implemented by developing various API endpoints for each of these instruments.

The diagram below gives a general outlay of the linkages and data exchange.

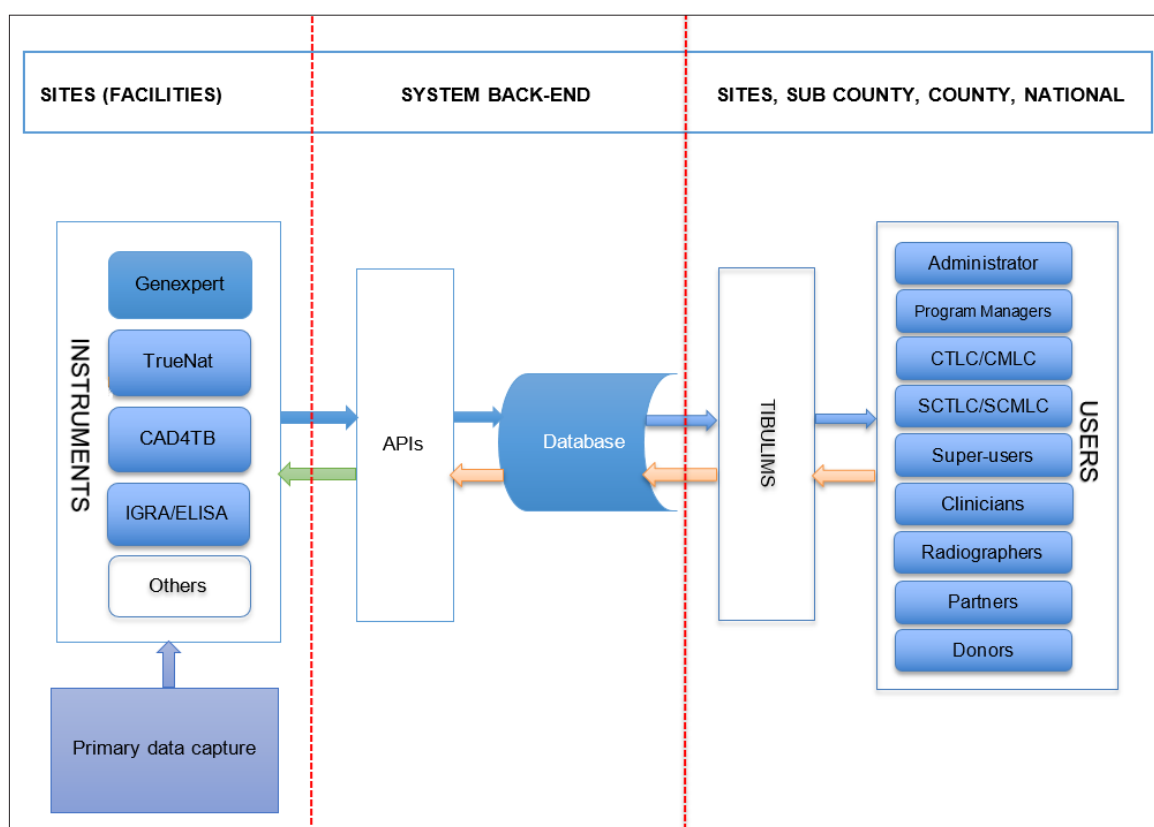


Figure 7.3: General outlay of the linkages and data exchange

7.7.2 TIBULIMS Key objectives are:-

- i. Availability of accurate test data. From the various APIs, any test done is automatically uploaded into TIBULIMS where the application users within and away from the lab can access. In this regard, we are able to get accurate data that will assist in getting the actual facility/device workload and this data is used for reporting purposes and aid in decision making.
- ii. Increased efficiency and effectiveness through automation of some processes: This increases efficiency and effectiveness in terms of data management and retrieval of these data in the form of analytics and reports. This means lab registers, reports, performance statistics can be got at a click on a button.
- iii. Result dispatch- The system also dispatches results in form of SMS and Emails sent to the clinicians and Sub/county TB coordinators which has helped reduce turn-around-time from when a clinician requests for a GeneXpert/TrueNat test to when a result is released from the lab. For CAD4TB, Images should be available for interpretation as soon as the images are taken at the facility level.
- iv. Better commodity management to address the issue of stock outs and aid in accurate forecasting and quantification. Program managers can track the usage of these commodities countrywide and make resupply plans whenever there is need.
- v. Increase visibility to the program managers for better monitoring and running of the TB program, on tests done, outcomes/errors, commodity inventory, Service Level Agreement (SLA) for the various devices. This has been achieved through interactive dashboards.

7.7.4 GeneXpert

GeneXpert data specifically for ULTRA which is the current Assay in use is now visible in TIBULims. An update was done to the existing MTB RIF data Upload API and key configurations were done in each device within the GeneXpert sites. This has facilitated timely result upload for all sites with SMS & Email being sent to the clinician and county coordinators.

Minimum instrument performance-related data is now available to the National program and other relevant stakeholders such as Donors/partners, sub county & county coordinator which include:

- Instrument sites actively connected.
- Instruments not operational.
- Number of days during which instruments/modules were not operational.
- Instruments due and overdue for calibration.
- Daily numbers of tests performed by test type.
- Daily numbers/% of errors by test type.
- Daily numbers/% of specimens testing positive by test type.
- Stockouts by test type.

7.7.5 TrueNat

Preliminary engagement with the Molbio team who are the manufacturers of the above-mentioned TB diagnostic device has facilitated real-time data upload through the API and dashboards and downloadable reports are now available. Indicator monitors are similar to the GeneXpert ones.

7.7.6 CAD4TB

After engagement with the DELFT Imaging team, CAD4TB machines are now pushing data to NTP Servers through an API created in collaboration with the NTP ICT team. The data is processed for front-end interpretation where the various reports can be generated. In addition to the reports, the Clinicians, Radiographers and the Radiologist are able to access DICOM-images, do interpretation of these images with the aid of the AI module that comes with the CAD4TB (CAD Score).

These reports include but not limited to the following;

- Total number of people screened in a specified period and site (County/sub-county/National).
- Number of cases flagged as suggestive of TB according to the heat-map and scores.
- Gender and age distribution from the screened target group and suggestive of TB.
- Various images will be accessible to radiologists and National program officers.

7.7.7 IGRA

The Country adopted an ELISA-based platform for LTBI testing using IGRA. As part of integration, connectivity of TIBULIMS with ELISA machines was explored but unfortunately data push from these devices met a technological hitch-the devices didn't have an end-to-end integration point. As a stop gap measure, an online reporting portal for summary data was developed to facilitate data visualization through the TIBULIMS system in the form of dashboards.

The indicators that were visualized include;

- Total IGRA devices connected.
- Total tests conducted.
- Results (Positive, Negative, No results, Indeterminate).

7.8 Public-Private Mix

7.8.1 Introduction

The National Strategic Plan 2019 - 2023 envisioned a bold strategy to network all care providers into a cohesive web of support for people with TB, Leprosy and Lung Diseases. Recognizing the variability of private providers across the country, the NSP pushes for creation of a business case to woo the private sector providers into the web of support. It further reinforces efforts to identify TB among key populations that may be accessing care in specialized facilities and are missed for TB Care. After consideration of that key recommendation to find more people with TB, the program in collaboration with its stakeholders developed a solution to mitigate it. The project focused on providing options for documentation in screening & treatment, linkage to facilities for diagnostic investigations and self-training for focus groups in the private sector and community. This solution was welcomed not only by the private sector but everyone in the health sector set-up. The solution provides a contact-less option to ensure documentation of screening data, notification of TB patients.

7.8.2 Update on T-bu Lite Implementation

During the review period, 765 health facilities (206 being private) drawn from 45 counties were using t-bu lite. At facility level, a total of 6,082 healthcare workers were using t-bu lite and 8,338 cases had been screened through the app.

7.9 Digital Adherence Technology (DAT)

7.9.1 Background Information

NITLD-P, in collaboration with CHS, implemented Digital Adherence Technology (DAT) in Nairobi and Mombasa counties to promote adherence to drug-susceptible tuberculosis (DSTB) treatment. Nakuru and Kisumu were chosen as control counties for this implementation because they are similar to Nairobi and Mombasa in terms of population psychographics, number of facilities, TB burden, and treatment outcomes. The primary goals of the project are; To enhance adherence, adopt a more patient centered approach to care and improve treatment outcomes among Drug susceptible TB patients in Nairobi and Mombasa Counties.

To monitor adherence, the implementation uses cell phones and customized medication sleeves. The digital adherence technology module was successfully integrated into t-bu lite, an existing local digital solution. This solution acts as a data collection tool that feeds data into the National Tuberculosis Surveillance System (TIBU), easing information flow to TIBU. The system serves a variety of tasks, including patient enrollment, issuance of patient packs, updating contact information, monitoring of digital adherence of patients.

7.9.2 Activities Undertaken

1. County entry meetings.
2. TOT Training for County/ Sub-County Coordinators and Pharmacists in both counties ON T-bu lite and DAT.
3. Capacity building for Healthcare/ Community Healthcare Workers on t-bu lite and DAT.
4. Customized Medication sleeves testing and supply to the sub county Pharmacist stores.

5. System testing was conducted in a few selected high volume and low volume facilities to assess the performance and compatibility of the digital adherence technology system in different environments then rolled out to all facilities in both Nairobi and Mombasa counties and recurrent On Job Training.

7.10 Data Quality Assessment 2022

The TB program generates data for decision-making by utilizing a routine reporting system as well as research data to fill gaps in routine data. With the implementation of various TB prevention and control interventions, the number of recording and reporting tools in TB reporting facilities increased proportionally. These tools are paper-based, requiring healthcare workers to conduct patient reviews at the same time. This will almost certainly result in gaps in certain data elements that are not accurately recorded or captured. In 2022, the DQA purposively targeted the 7 counties, 14 sub-counties, and 150 facilities that had previously been assessed in 2020 and 2021 to monitor data quality improvement. This was consistent with the recommendations from the previous DQA which identified a gap in determining the impact of data quality improvement activities in the counties of interest. The overall goal was to evaluate the quality of data for tuberculosis and leprosy reported to the national TB program in 2021 and quarter 1 of 2022 in all TB facilities in selected sub-counties.

In summary, for the notified DSTB cases, there was an improvement in the level of agreement between the TIBU and TB facility register from 87% to 95%. Between patient record cards and TB facility register from 69% to 82%. DRTB cases, there was over-reporting in TIBU as compared to the TB facility register at 162% from the previous 115%. Slight improvement in TPT documentation between the register and TIBU from 83% to 86%, however, TPT record cards were missing in most of the health facilities. One health facility reported a leprosy case amongst the sampled sub-counties. On ACF, there was over-reporting in TIBU compared to the ACF Facility summary tool across all the care cascade (numbers screened, presumptive, presumptive cases investigated at 165%, 205%, 170% respectively).

7.11 KHIS/TIBU Training

7.11.1 Introduction

The TIBU system is in use in all counties in the country where CTLCs, SCTLCS and Community Health Volunteers report on various TB metrics regularly. USAID HealthIT continued to support sensitization and capacity strengthening of the county and sub-county TB and lung disease coordinators across the country to ensure maximum utilization of the TIBU system. In FY22, the activity supported training workshops for Elgeyo Marakwet, Nandi, Kisumu, Homa Bay, Migori, Laikipia, Samburu, Kisii, and Uasin Gishu counties. The training covered ACF, Pharmacovigilance, Contact Management, and facility-based modules of TIBU. The t-bu lite mobile application was also piloted during the trainings. A total of 80 TB coordinators were trained.

7.11.2 TIBU Data Bundle Support

The use of TIBU in case management is critical to NTP strategy to make sure all identified TB cases are put on care and treatment. In FY22 USAID HealthIT supported the provision of monthly data bundles worth KES 500 to each of the 359 clinicians identified by the program to ensure consistent reporting of TB cases identified and managed at the facility.

7.11.3 TB Program Laptop Support

Infrastructure Support - Procurement of equipment for the program, 15 laptops for the program staff and 100 modems for the upgrade of the GeneXpert machines connectivity at the labs to enhance system and data use at the national TB Program by equipping national officers with these necessary equipment

7.12 MOH Virtual Academy

7.12.1 Introduction

ICT has improved efficiency in everyday activity which led to the necessity of adopting ICT in healthcare. The Ministry of Health has made this a top priority, leading to the development and deployment of the MOH Virtual Academy MOH VA. MOH VA is the Ministry of Health's online learning platform. USAID HealthIT provides technical assistance to MOH in the management and enhancement of the Virtual Academy for wide reach and coverage in terms of content. It is a platform for the dissemination of knowledge, skills as well as guidelines in course formats in various domains in health and is a powerful resource for policymakers, health managers, health providers at facility and community levels, partners, and stakeholders that support service delivery, implementation of programmes and Universal Health Coverage in the health sector. Learners who fulfill all the requirements for certification in a course on MOH VA are awarded a certificate. Courses on MOH VA are accredited by various regulatory bodies where learners can present their certificates to their respective Board/Council to redeem CPD points. The TB program courses are as below

7.12.2 Integrated TB, Leprosy and Lung Diseases Courses

The National TB program supported by USAID HealthIT digitized the integrated TB, Leprosy, and lung diseases course which consists of a set of 12 short courses that will equip learners with competencies in prevention, diagnosis, management, infection control and active case finding of TB, Leprosy and Lung Diseases.

RESOURCE MOBILIZATION

The National TB, Leprosy and Lung Disease Program in the fight against Tuberculosis also received additional financial support from USAID under the projects Introduction to New Tools Project(iNTP), Infectious Disease Detection and Surveillance (IDDS) and Health Systems for TB (HS4TB) .This additional funding in 2022 supported procurement and installation of the diagnostic tools (Digital X ray with CAD software, Digital Adherence Technology (DAT), interferon gamma release assay (IGRA), TRUENAT), trainings, review meetings and site visit costs. Management Sciences for Health (MSH) supported resource mobilization efforts and health systems strengthening in the counties.

In addition, USAID through TB ARC II CHS also supported Diagnostic Network Assessment (DNA), and Diagnostic Network Optimization (DNO). The total funding received from various projects during the year amounted to \$ 2,039,360.

Table 8.1: Additional Funding for TB projects in Kenya, 2022

Source of Funding	Project	Amount (USD)
USAID	i-NTP Project	
	TIBULIMS	883,664
	DAT (Digital Adherence Technology)	162,318
	Other costs	650,000

USAID	ISSD Project	
	DNA	300,000
	DNO	35,715
USAID	MSH -HS4TB	7,663
	TOTAL	2,039,360

Intense efforts are continuing in 2023 to secure the resources needed to achieve the 2023-2028 NSP Strategy. The focus will be on working with bilateral donors to ensure renewed or increased funding from existing donors, reaching out to new national donors and intensifying interactions with the private sector whose focus areas align with NTP's objectives.

FINANCE ADMINISTRATION AND HUMAN RESOURCES

9.1 Funding Summary and Performance

During the year 2022, the cumulative expected funding anticipated was USD 46,517,435 for implementation of TB control activities against the costed NSP country requirement of USD 60,072,511. During the year the country received funding from the Government contribution, Global Fund, USAID, Clinton Health Foundation and CDC amounting to USD 27,174,266. This funding was utilized to fund various thematic areas as illustrated below.

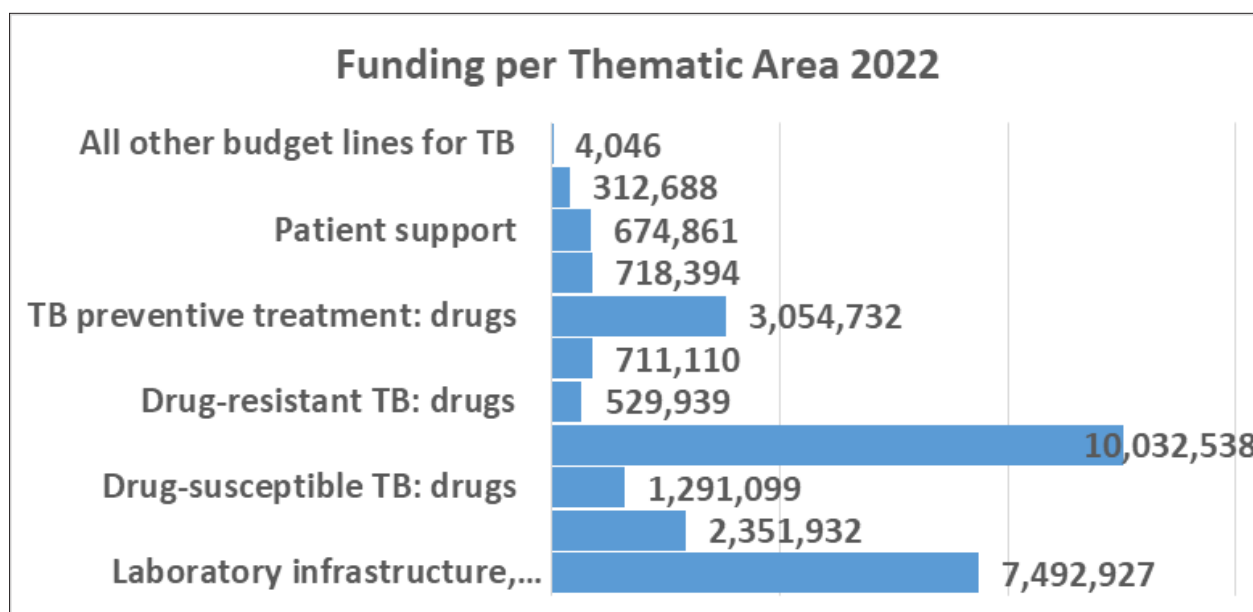
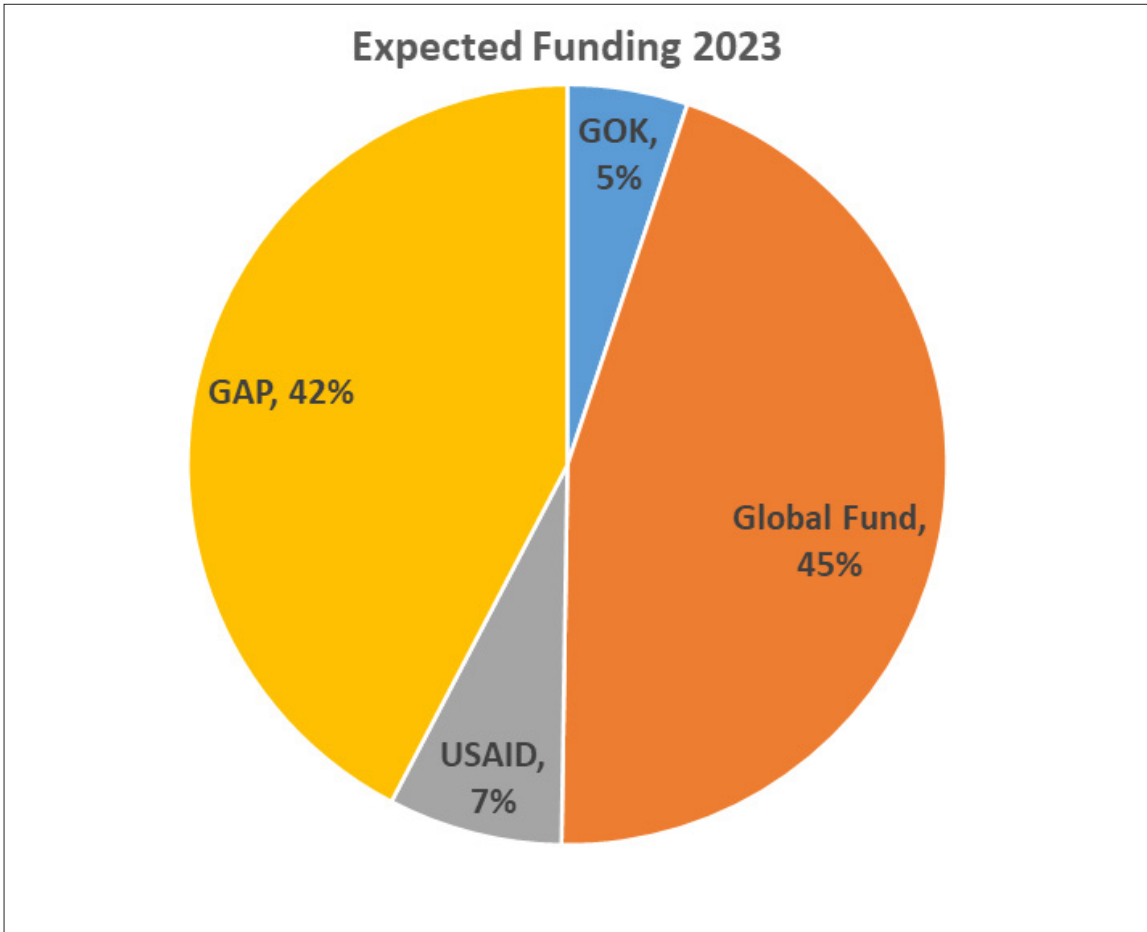


Table 9.1: Funding summary

Funding Received 2022 - by source	Amount (USD)	Percentage
GOK	1,778,124	7%
Global Fund	19,734,444	73%
USAID	4,911,453	18%
CHAI	750,245	3%
Total	27,174,266	100%

The forecasted expected funding for 2023 is USD 32,159,642 against an estimated requirement of USD 55,757,504. This leaves an unfunded gap of USD 21,679,254.



9.2 COVID - 19 Funding

The country received additional funding from Global Fund under the Covid-19 mitigation mechanism to enable the country sustain the gains in the fight against TB made over the years. This funding was earmarked to support procurement of COVID-19 testing equipment, reagents and consumables, community advocacy and personal protective equipment, COVID-19 and TB GeneXpert cartridges, Xray Machines and support for county staff up to December 2023;

Below is a summary of funding under COVID-19 for the year 2022-2023;

Implementer	Cumulative Budget (USD)	Cumulative Expenditure (USD)
GF - TNT	26,522,040	16,787,013
GF - AMREF	7,851,096	6,475,891
Total	34,373,136	23,262,904

Additional support under COVID through the CDC funded grant, CHS supported the NTP to (i) develop a TB-COVID-19 guideline and reporting framework, (ii) scaling up uptake of the COVID-19 vaccine in supported Counties in central Kenya and (iii) Health worker training on TB and COVID-19.

9.3 Human Resources and Administration

9.3.1 Human Resources

The Division of National Tuberculosis Leprosy and Lung Disease Program (DNTLD-P) has a total staff establishment of 76, where 31 are supported under GoK, 18 GFATM supported, 8 FELPT, 11 volunteers/Interns, 3 seconded by USAID and 2 by CDC. The GFATM TB grant continued to support a total of 114 Clinical officers and Laboratory Technologist based at the counties.

National Staff Distribution

Section\Funding	GoK	FELTP	GF	USAID	CDC	CHAI	AMREF	Volunteer	Grand Total
Ag Head of Program	1								1
Care & Support	6	2	1			1		2	12
Policy & Planning	2		1	1				1	5
M&E	2	1	3	2				1	8
Commodity	3	2							5
PHP	2	1							3
Communication			1					3	4
Fin\Admin	11		1		1			5	18
Laboratory	2	2		1					5
Head NTRL	1								1
NTRL	1		11		1		1		14
Grand Total	31	7	18	4	2	1	1	12	76

Fleet Management

The TB program has a fleet of vehicles totaling 29 supported by partners and GFATM, out of which 19 are used to support the Ministry of Health and National TB Program implementation at National level and 10 vehicles have been issued to various counties as tabulated below.

Location/County	No
Kwale County	1
Busia County	1
Embu County	1
Uasin Gishu	1
Garissa County	1
Isiolo County	1
Kisii County	1
Nairobi County	1
Marsabit County	1
Nyeri County	1
National Program	19
Grand Total	29

ANNEXES

Annex 1: Distribution of TB Commodities - 2022

		1st Line drugs Tracer commodities													
No	Commodity Name	UOI	January	February	March	April	May	June	July	August	September	October	November	December	
1	Patient packs	1s	4990	6624	7131	8461	10397	11469	12575	4192	5015	6969	10725	10276	27970
2	RHZ 75/50/150 mg	84s	1114	514	83	1931	2343	1919	1535	1037	858	824	1604	1253	3681
3	RH 50/75	84s	2526	1184	689	2156	2569	2084	2168	1513	1740	2079	3540	2558	8177
4	Ethambutol 100mg	100s	791	562	770	909	842	769	898	1,064	765	796	1044	1095	2935
5	Pyridoxin 50mg	100s	16754	3568	7724	13710	5747	17,508	23,778	5,196	6399	15618	6865	8097	30580
			2nd Line Drugs												
No	Commodity Name	UOM	January	February	March	April	May	June	July	August	September	October	November	December	
1	Amikacin Injection 500mg/2ml.	Packs of 10 vials	0	0	0	0	0	0	0	0	0	11	0	0	11
2	Bedaquiline Tablets 100mg	188 PCS	42	44	41	53	59	22	38	35	29	48	43	26	117
3	Bedaquiline Tablets 20mg	60 Tablets	0	0	0	0	0	0	0	0	0	3	0	0	3
4	Clofazimine capsules 100mg	Packs of 100S	169	170	159	197	213	100	170	99	132	218	156	129	503
5	Clofazimine capsules 100mg	Packs of 100S	1	17	6	9	5	0	0	0	0	0	0	0	0
6	Cycloserine 125mg	Blister pack of 100's	4	12	3	3	21	34	90	14	13	28	16	5	49
7	Cycloserine 250mg	Tins of 100S	435	427	393	480	498	233	365	247	349	464	368	296	1128
8	Delamanid Tablets 50mg	Packs of 672S	0	0	2	6	7	4	6	8	7	3	7	8	18
9	Ethambutol HCL Tablets 400mg	Packs of 672s	511	394	371	428	448	436	889	548	0	351	480	543	1374
10	Ethambutol HCL Tablets 400mg	Packs of 28S	0	0	0	0	0	0	0	0	2	0	0	0	0
11	Levofloxacin Tablets 250mg	Packs of 100S	16	16	27	21	19	17	24	13	38	116	6	302	424
12	Levofloxacin Tablets 500mg	Packs of 100S	453	470	380	503	468	306	532	262	361	528	451	20	999
13	Linezolid tablets 600mg	Packs of 100S	69	83	68	76	85	50	64	39	39	78	94	50	222
14	Moxifloxacin 100mg Dispersable	Packs of 100S	6	16	1	7	20	2	5	2	1	8	13	7	28
15	Moxifloxacin 400mg Dispersable	Packs of 100S	0	0	2	0	5	0	1	2	2	6	8	0	14
16	Pretonamid 200mg	26 Tab Jar	0	0	0	0	0	0	0	0	0	5	0	0	5
17	Pyrazinamide 500mg	Packs of 672S	504	44	73	214	57	45	74	71	50	51	43	32	126
18	Pyrazinamide 150mg Dispersable	Packs of 100s	0	2	3	34	8	0	0	0	0	0	0	0	0
19	Rifampicin 150mg	Packs of 100S	2	17	12	18	9	8	10	4	11	11	125	91	227
20	Rifampicin 300mg	Packs of 100S	78	59	75	100	82	83	161	77	96	70	0	0	70



**NATIONAL TUBERCULOSIS, LEPROSY
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