DATA QUALITY ASSESSMENT REPORT
2023

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MINISTRY OF HEALTH

REPUBLIC OF KENYA

NATIONAL TUBERCULOSIS, LEPROSY AND LUNG DISEASE PROGRAM

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Abstract

Background: Tuberculosis (TB) remains a global and national epidemic of public health importance. It was estimated that about 10.6 million fell ill with TB in 2021 according to a WHO report. Significant proportion of people with TB are still missed from diagnosis and treatment where only 6.4 million people were notified to the national programs during the same period. Drug resistant tuberculosis remains a challenge with a 3% increase in 2021 compared to 2020. A total of 450000 people with drug resistant TB were notified globally in 2021. Global treatment success rate average was 86% for all forms of TB. Kenya is among 25 high burden countries for TB and TB/HIV that contribute over 80% of global TB burden. DR TB remains a challenge even though the country was transitioned out of the DR TB high burden list. WHO estimated that TB incidence in Kenya was 140,000 in 2021. The country reported a total of 90,841 drug-sensitive Tuberculosis (DSTB) cases in 2022, a significant increase from 77,854 in 2021. There was a 7.5% decline for DR TB notifications from 804 in 2021 to 752 in 2022.

Even though Kenya has been in leprosy post elimination state since 1989, Leprosy remains a challenge especially in endemic counties in the west and coastal regions of the country. There was an increase in leprosy cases detected from 107 in 2021 to 111 in 2022.

The country has been scaling up TPT among all eligible groups that include; PLHIV and TB contacts for bacteriologically confirmed TB cases. A total of 18,834 contacts started on TPT especially new short regimen.

The National tuberculosis program has a comprehensive M&E plan that defines well defined data collection system and quality improvement initiatives that include; data review meetings, performance review meetings, routines supervision and regular data quality assessments (DQA). DQA are scheduled to take place at least once in two years. Data quality assessment seeks to measure the following data quality attributes; accuracy, completeness, consistency, timeliness, integrity and validity.

Methodology: A retrospective assessment was conducted in 5 purposely sampled counties namely; Nakuru, Kisumu, Mombasa Siaya and Laikipia for 2 weeks in May 2023. In each county 2 sub counties were chosen to be reviewed for data quality. Quantitative approach was used to compare the number of TB cases across a1l the recording and reporting M&E tools to assess the level of agreement. This is a proxy for under or over reporting of TB notifications or certain data elements. The same was done for leprosy where applicable.

Data was directly captured into an electronic DQA tool and later downloaded into Excel and STATA for data cleaning and analysis. KAPPA score was used to measure consistency.

Results: There was an overall improvement on the level of agreement between facility register and TIBU from 95% in 2021 to 98.3% in 2022 for DS TB (All forms) data. Use of patient record cards continues to improve, where the level of agreement between TB facility registers and the cards was 96.6% in 2023 compared to 89.6% in 2022. Mostly recording and reporting tools were available except in less than 10% of the instances.

Recommendations: In order to sustain high levels of data quality, health care workers should be sensitized especially on recording and reporting where new diagnostic and treatment technologies have been rolled out. Adoption and expansion of digitization should be prioritized to cover areas such as TPT in order to generate high quality data. Targeted supportive supervision should be strengthened in areas where data quality has not improved or has been on a downward trend.

FOREWORD

The National Tuberculosis Leprosy and Lung Disease Program In partnership with Global Fund, USAID, JICA, World Bank, and WHO, has dedicated substantial resources to tuberculosis (TB) control. It is crucial to showcase the public health progress achieved by the country in terms of the quality of care, which necessitates demonstrating the reliability of data across all reporting levels. Previous efforts to enhance data quality and overall performance have revealed a deficiency in meeting the desired standards of completeness, accuracy, integrity, consistency, timeliness, and validity.

ACKNOWLEDGEMENT

ABBREVIATIONS

ACF: Active Case Finding

CTLCs: County TB and Leprosy Coordinators

COVID-19: Coronavirus Disease 19

DQA: Data Quality Assessment

DSTB: Drug Susceptible TB

DRTB: Drug Resistant TB

HIV: Human Immunodeficiency Virus

JICA: Japan International Cooperation Agency

NTLD-P : National Tuberculosis, Leprosy & Lung Disease Program

NTP: National Tuberculosis Program

RR :   Rifampicin Resistant

SCTLCs : Sub County TB and Leprosy Coordinators

TPT: Tuberculosis Preventive Therapy

TC : Treatment Completed

LTFU: Lost to Follow up

TO : Transfer out

USAID: United States Agency for International Development

WHO: World Health Organization

INTRODUCTION

1

1.1 Background

Tuberculosis (TB) remains one of the top infectious killers in the world. In 2021, an estimated 10.6 million people (95% ui: 9.9–11 million) fell ill with TB. Twenty five percent of the global burden of TB was in the World Health Organization (WHO) African Region (AFRO). However, according to the Global TB Report 2022, 6.4 million TB patients were diagnosed and reported to the national programs. Additionally, 2021 saw the burden of drug-resistant TB increase by 3% from 2020, with 450,000 cases of multidrug- or rifampicin-resistant (MDR/RR)-TB reported. The success rate for people treated for TB in 2020 was 86% globally, the same level in 2019, suggesting that the quality of care was maintained in the first year of the COVID-19 pandemic. Kenya is among the three high TB burden countries that have managed to reduce TB incidence and mortality.

According to the WHO global list for high burden countries for TB, HIV associated TB and drug resistant TB (DR TB) 2021-2025 published in 2021, Kenya remains among the 30 high burden countries for TB and HIV associated TB. These are countries that together contribute approximately 90% of the estimated global TB burden. Kenya was transitioned out of the list of 30 countries with the highest burden of DR TB, however, it remains a public health threat and thus it's a priority area of focus for the country.

According to the WHO Global TB Report, 2021 Kenya was one of the high TB burden countries that achieved WHO's End TB Strategy milestone for 2020 with a 32% reduction in TB incidence compared to 2015, against a target of 20%. Further, the country also achieved a 44% reduction in the number of TB deaths compared to 2015, against a target of 35%.

Despite these significant achievements, the country's treatment coverage gap remains wide at nearly 50% of unreached people with TB in 2020. Notably, there has been a downward trend with the estimated TB treatment coverage declining from 63% in 2018 to 52% in 2020 according to the WHO Global Report 2021.. WHO estimated that TB incidence in Kenya was 140,000 in 2021. The country reported a total of 90,841 drug-sensitive Tuberculosis (DSTB) cases in 2022, a significant increase from 77,854 in 2021.

Drug resistant TB remains a significant public health scourge in Kenya as demonstrated by the increase in the number of DR TB patients notified over the years. In 2022 a total of 752 DR TB cases were notified, showing a 7.5% (804) reduction as compared to 2021.

Leprosy remains a public health concern even though the country has been on post-elimination since 1989. The country experienced an insignificant increase in leprosy cases from 107 in 2021 to 111 in 2022 in both endemic and non-endemic counties (Annual Report Kenya, 2022).

Kenya started TPT scale-up and adopted the shorter treatment regimen in 2020. The country has committed to provide TPT to nearly 900,000 individuals by 2023. The target population includes PLHIV and all household contacts of pulmonary bacteriologically confirmed TB patients. In 2021, there were 5,644 children below 5 years that were initiated on TPT. In 2022 there were 18,834 contacts who were initiated on TPT.

TB National Reporting System

The National Tuberculosis, Leprosy & Lung Disease Program has a robust reporting system for monitoring and reporting outputs of interventions from the facility to the national level. Kenya has two electronic health systems namely TIBU and Kenya Health Information System 2 (KHIS2). TIBU is a case-based electronic system with over 600 users (347 TB coordinators) and covers about 4,500 health facilities. It has various modules on DS-TB, DR-TB, Laboratory, pharmacovigilance, supervision and payment system. KHIS2 is based on the District Health Information System 2 (DHIS2) platform coll

ecting and storing aggregated data. The monitoring and reporting system is updated regularly to conform to international minimum standards as guided by WHO. Figure 1.1. below shows the data flow from the community to the national level. The system supports data quality through routine supervision, technical assistants, review meetings, and periodic data quality assessments. The program revised recording and reporting tools in 2022 to capture new data elements and ensure that our reporting aligns with WHO recommendations. Routine data is expected to be reviewed, and feedback given to the respective reporting levels.

There are over 13,000 health facilities in the country registered by the Ministry of Health (MOH-KMHFL). Tuberculosis treatment and diagnostic services are available in over 4,500 public, private, faith-based and prison facilities (PPA 2017). According to the national TB guidelines and public health act, TB is a notifiable disease; all cases of TB detected should be reported to the TIBU surveillance system. In Kenya, the majority (80%) of TB cases are reported by public health facilities. Over 50% of health facilities are private, with studies conducted, including patient pathway analysis showing that 48% of people first seek health services in private facilities despite about 20% of TB cases contribution from the private sector, suggesting under-detection of TB patients among these facilities. Monitoring and evaluating TB interventions such as diagnosis, treatment and reporting are critical for effective programming. Evidence-based interventions have become the norm in TB control. The program generates data for decision-making through a routine reporting system and research data. The figure below shows the data flow from facilities to the national system.

Figure 1.1:TB data flow
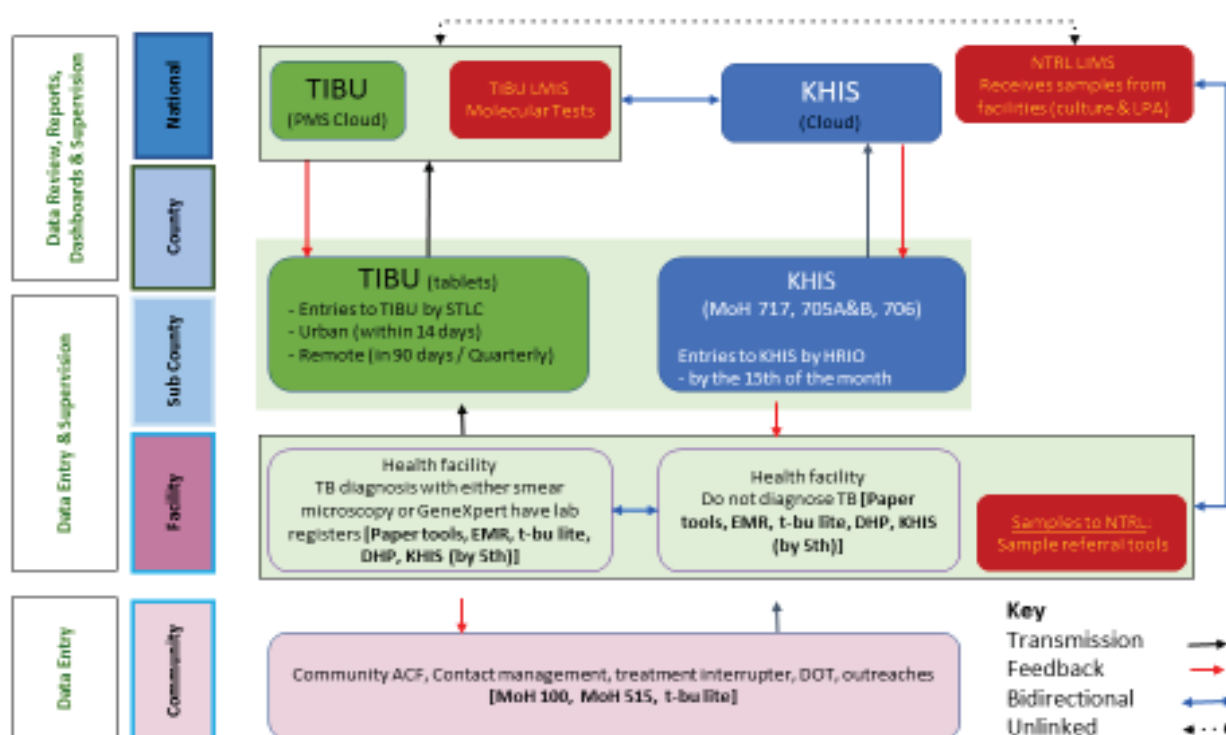
Dimension of Data Quality

Data quality assessment seeks to measure specific attributes of data quality. These attributes can be assessed, interpreted and continuously improved.

Dimensions of data quality are:

1. **Accuracy** – Data that measures the internal validity of the collected information.

2. **Completeness** – Data that has sufficient details.

3. **Consistency** – Repeatability and replicability.

4. **Uniqueness** – Same data represented multiple times with the same information.

5. **Timeliness** – Available within the stipulated period

6. **Validity** - The extent to which a measurement is well-founded and corresponds accurately to the real world.

7. **Currency** - Data should reflect a real current state.

8. **Conformity**- Data values of the same attribute must be represented in a uniform format.

9. **Integrity** – No deliberate bias or manipulation

10. **Precision** - There must be a degree to which data is aggregated.

source: https://icedq.com/6-data-quality-dimensions

1.2 Problem statement

Kenya has a devolved governance system consisting of the National Government and 47 County Governments that are autonomous and responsible for managing health facilities. In addition, it has about 300 TB control zones across the 47 counties. Each county has its own administrative and geographical challenges with varied health system challenges including a low number of healthcare workers. At the National level, the program monitors a number of indicators; number of TB cases notified, treatment success rate and the number of leprosy cases detected. Considering the number of cases and facility

workload, gaps in accurate recording and reporting are anticipated. Since TIBU was rolled out, the need for manual routine summaries was eliminated, but transcription errors remain a data quality issue. TB treatment takes a minimum of 6 months while DR TB and leprosy even a longer period of time this poses a challenge of consistent recording and reporting. The problem is confounded by the number of patients who are transferred or are on transit and may not be well documented at both ends of the treatment sites. From routine data, patient follow-up has been identified as a challenge with significant proportions of LTFU and transfer outs not assigned correct treatment outcomes.

1.3 Justification

Periodic data quality assessment is critical to ensure continuous improvement in the quality of routine program data since a lot of effort and resources have been deployed at all levels to collect data that is expected to meet high standards. In a bid to control TB, the country in collaboration with its partners such as Global Fund, USAID, World Bank and WHO has invested significant resources. Therefore, there is a need to show the results of the efforts in terms of public health gains that include; improved case notification, treatment outcomes and overall quality of care. This is heavily dependent on the quality of data reported. Previous DQA reports have shown that the data quality has not met the desired standard in terms of completeness, accuracy, integrity, consistency, timeliness and validity. Resources have been allocated to improve data quality in the program, but this has been hampered by lack of capacity to manage and analyze data, especially at sub-national level.

1.4 General Objective

To assess data quality for TB and leprosy reported to the National TB program in 2022 and quarter 1 2023 in all TB facilities in selected sub-counties.

1.5. Specific Objectives

a) To evaluate the dimensions of data quality for aggregate TB and leprosy data for the year 2022 and 1st Quarter of 2023

b) To evaluate the dimensions of data quality for case-based DS TB and DR TB data for the year 2022

c) To evaluate the dimensions of data quality for the 2022 and Quarters 1-3 2022 cohort for DR TB and DS TB, respectively

d) To compare the data quality between 2022 and 2023

e) To assess the availability and use of revised recording and reporting tools

METHODOLOGY

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2.1: Study Sites

The assessment was carried out in five (5) counties with two(2) Sub-Counties in each county purposively sampled. These were Nakuru, Mombasa, Kisumu, Siaya and Laikipia counties. The counties were purposively selected to represent all regions in the country, with different Case Notification Rates (CNR). Nationally, the CNR was 179/100,000 in 2022. The following counties reported high CNRs: Siaya (291/100,000) and Mombasa (347/100,000). On the other hand, Nakuru (159/100,000), Kisumu (177/100,000), and Laikipia (162/100,000) notified CNRs below the national figure. as shown in Figure 2.1.

Figure 2.1: Sampled counties for DQA, 2023

Sampled Counties for DQA,2023

KEY
Sampled Counties
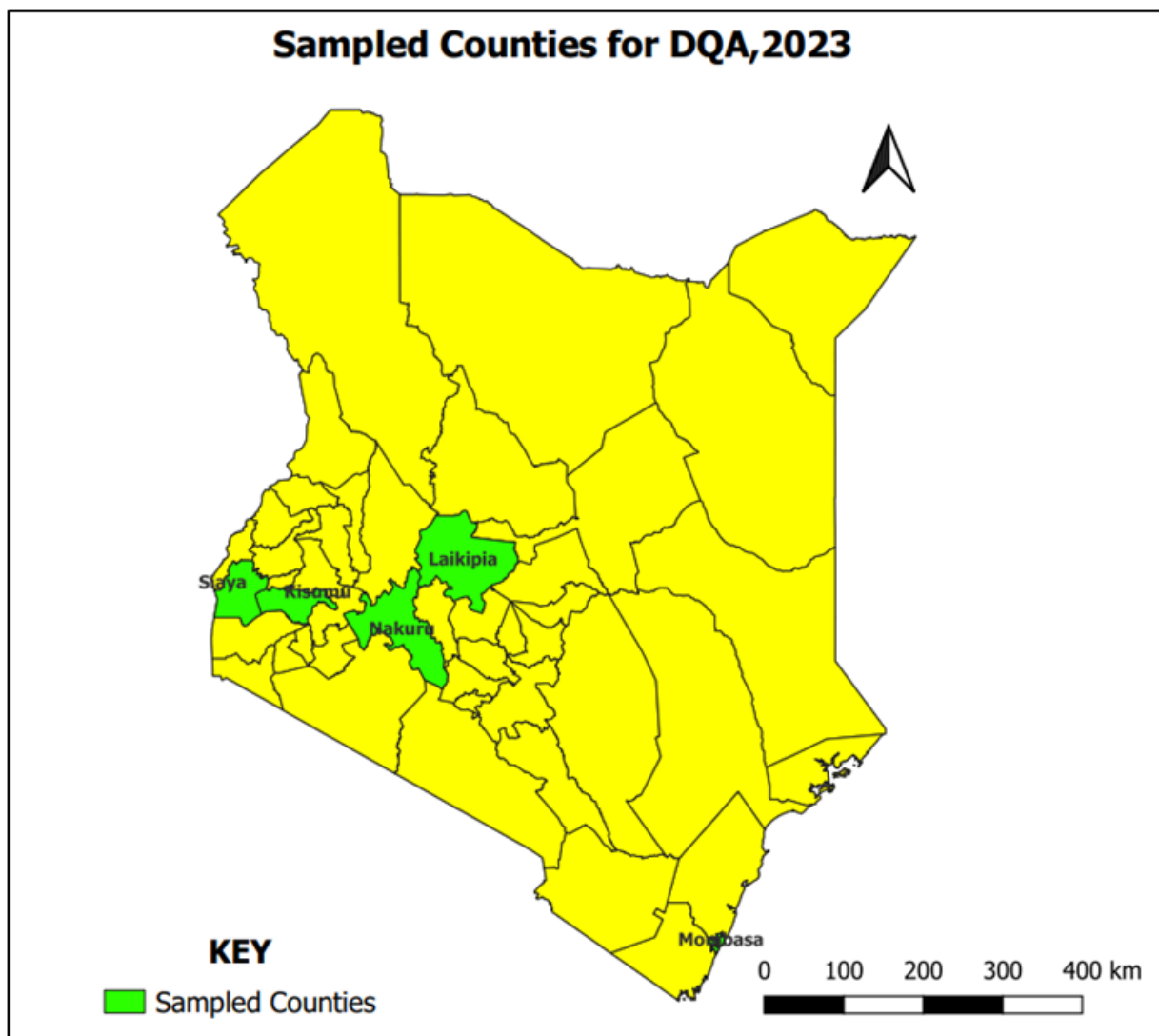
Table 2.1: Sampled counties and sub counties

County	Sub County
Kisumu	Kisumu East
	Nyakach
Nakuru	Nakuru East
	Kuresoi North
Mombasa	Mvita
	Jomvu
Siaya	Alego Usonga A
	Rarieda
Laikipia	Laikipia North
	Laikipia East

2.2 Study Design

The assessment was carried out retrospectively where 5 counties and 10 sub-counties were purposively selected. The DQA approach was a quantitative comparison of recorded and reported data on the facility's TB and leprosy records. The study population were records of all people with TB and leprosy within the period of interest in the sampled sub-counties in Kenya. All TB treatment health facilities within the sampled sub-counties in Kenya that notified or reported any of the following in the period of interest were included:

1. DS TB cases

2. DR TB cases

3. Contacts of bacteriological confirmed (BC) TB who were initiated on TPT

4. Leprosy cases

Note: Records of patients documented as Transferred in (TI) in the visited health facilities were excluded.

2.3 Study Period

The assessment was conducted for two weeks in the month of May 2023. The review covered the period January 2022 - December 2022 and quarter 1 (January - March) of 2023 for case finding.

2.4 Sampling Procedure

A purposive sampling technique was employed to select five counties. Within these counties, two sub-counties were further chosen, and all the facilities that reported TB cases in 2022 and the first quarter of 2023 (January to March) were visited. During the facility visits, various records were thoroughly reviewed, including the TB4 facility register, patient record cards, DR TB register, DR TB logbooks, TPT/Contact management registers, leprosy registers, and TIBU.

To identify cases, a maximum of five patients were systematically sampled from each facility. In cases where the number of records was fewer than five, all the available records were selected for review. Aggregate data from the facility registers, patient record cards, and TIBU for the specified period were thoroughly examined. Additionally, for case-finding data, five records were randomly sampled for both DS TB and DR TB cases in 2022.

2.5 Data Collection

2.5.1 Field Work

The DQA teams were formed to comprise a multi-disciplinary team, consisting of a clinician, laboratory personnel, monitoring and evaluation officer, and a logistics person. Prior to the actual DQA process, the teams were provided with training on the data collection tool, DQA methodology, and objectives. Subsequently, the team leads collaborated with county TB coordinators to establish a schedule and ensure that the facilities were adequately prepared.

2.5.2 Data Collection Procedure

A courtesy call was conducted with the County Health Management Team/CDH/CEC to explain the purpose of the DQA mission and identify the facilities to be visited. The CTLC and respective SCTLC(s) accompanied the team to the health facilities, where a courtesy call was made to the facility in charge. During these visits, the team reviewed TB and leprosy documents and conducted interviews with the TB clinic staff. Data was abstracted from both the TIBU system and facility records.

2.5.3 Data Assessment Tool

A web-based data assessment tool was designed using Microsoft Excel forms XML with ODK syntax, ensuring offline functionality. The tool was customized to incorporate the core indicators tracked by the program. Subsequently, the data was transmitted to the central cloud server.

2.5.4 Source of Data

The following were source documents for the data:

1. Patient record cards (TB5)
2. TB facility registers (TB4)
3. DR TB registers
4. DR TB log books
5. TPT/Contact management registers
6. Leprosy register
7. TPT record cards
8. Electronic surveillance system (TIBU)
9. Active Case Finding Facility Summaries

2.5.5 Indicators Assessed

The assessment focused on the following across all the recording and reporting tools;

1. Number of DS TB cases (all forms) registered
2. Number of bacteriologically confirmed TB cases
3. Number of clinically diagnosed TB cases
4. Number of Extra pulmonary diagnosed TB cases
5. Number of TB cases who completed treatment, cured and died

6. Number of DR TB cases registered

7. Number of DR TB cases who have been correctly classified (RR, MDR or mono Resistant)

8. Number of TPT cases registered

9. Number of TPT cases that completed treatment

10. Number of leprosy cases (All forms) registered

11. Under ACF cascade the following indicators were assessed;

12. Number screened

13. Number of presumptive

14. Number investigated

2.6 Data Management and Analysis

The data was directly entered into the DQA data capture tool at the health facility. The teams meticulously cross-checked the data for completeness and accuracy, comparing it with patient record cards, registers, and TIBU before submission. This verification process took place on-site at the health facilities.

The entire dataset was uploaded to a central server for storage and later downloaded and exported to Excel and STATA for further cleaning and analysis. To ensure data security, periodic backups were made in a secondary location. During the cleaning stage, duplicates and missing data were identified and addressed.

The cleaned data was then summarized using tables and box plots. The facility register served as the basis for comparison. The acceptable level of agreement was set at 95-100%, with a margin of error of +/- 5% considered as perfect agreement. To measure the consistency of the data between the facility register and the electronic surveillance system (TIBU), the Kappa score (as shown in table 2.2 below) was utilized.

Table 2.2: Kappa Score

Kappa Score	Interpretation
< 0	Less than chance Agreement
0.01 – 0.20	Slight Agreement
0.21 – 0.40	Fair Agreement
0.41 – 0.60	Moderate Agreement
0.61 – 0.80	Substantial Agreement
0.81 – 0.99	Almost perfect Agreement

2.7 Ethical Considerations

Prior to the field visits, permission was obtained from the respective county health departments to conduct the exercise. The data were securely stored on servers with regular backups to ensure data integrity. Confidentiality of information was strictly upheld during the assessment by implementing password protection on records and refraining from disclosing any information to non-interested parties.

RESULTS AND DISCUSSION

3

3.1: Drug Sensitive TB (DSTB) Aggregated data

The section describes the DQA level of agreement performance in 10 sub counties, records of patients notified with TB disease were compared across the three main recording and reporting tools namely TB patient record cards (TB5 Cards), TB patient register (TB4) and National surveillance system TIBU. The period under review was January - December 2022 and January – March 2023.

3.1.1: DSTB Aggregated Data,2022/2023 Q1

Levels of agreement for aggregated data for all forms of TB in Patient record cards and TIBU data in comparison to TB4 facility registers,2022/2023														
		2022					**2023 Q1**					**Average (2022/2023)**	
County	Sub Counties	TB5 Cards	TB4 Reg	TIBU	Agreement (TB5 Cards vs TB4 Reg)	Agreement (TIBU vs TB4 Reg)	TB5 Cards	TB4 Reg	TIBU	Agreement (TB5 Cards vs TB4 Reg)	Agreement (TIBU vs TB4 Reg)	Agreement (TB5 cards Vs TB4 Reg)	Agreement (TIBU vs TB4 Reg)
Kisumu	Kisumu East	189	205	182	92.2%	88.8%	62	62	56	100.0%	90.3%	96.1%	89.6%
Kisumu	Nyakach	168	188	174	89.4%	92.6%	28	45	53	62.2%	117.8%	75.8%	105.2%
Laikipia	Laikipia East	294	298	294	98.7%	98.7%	76	78	79	97.4%	101.3%	98.0%	100. 0%
Laikipia	Laikipia North	55	62	60	88.7%	96.8%	23	25	24	92.0%	96.0%	90.4%	96.4%
Mombasa	Jomvu	291	397	378	73.3%	95.2%	114	102	118	111.8%	115.7%	92.5%	105.5%
Mombasa	Mvita	788	979	950	80.5%	97.0%	276	302	277	91.4%	91.7%	85.9%	94.4%
Nakuru	Kuresoi North	53	56	62	94.6%	110.7%	28	32	28	87.5%	87.5%	91.1%	99.1%
Nakuru	Nakuru East	376	405	431	92.8%	106.4%	104	102	100	102.0%	98.0%	97.4%	102.2%
Siaya	Alego Usonga A	553	555	531	99.6%	95.7%	196	194	192	101.0%	99.0%	100.3%	97.3%
Siaya	Rarieda	481	482	478	99.8%	99.2%	150	152	155	98.7%	102.0%	99.2%	100.6%
Kenya		3248	3627	3540	89.6%	97.6%	1057	1094	1082	96.6%	98.9%	93.1%	98.3%

Patient record cards and TB facility register:The overall level of agreement between patient record cards and TB facility register was 93.1% for the period 2022/2023. In 2022 and 2023 quarter one the level of agreement between patient record cards and the TB facility register was 89.6% and 96.6% respectively. In comparison to the previous assessment period, there is a positive deviation of 82% in the DQA report of 2022. Utilization of the record cards has continued to improve in recent years particularly due to continuous mentorship and availability of record cards at the point of care. Five sub counties were within acceptable levels of agreement (Kisumu East, Laikipia East, Nakuru East, Alego Usonga A and Rarieda). Nyakach (75.8%) and Mvita (85.9%) recorded the least level of concordance at 75.8% and 85.9%. This points to the need to sustain the sensitization efforts while ensuring an uninterrupted supply of the source documents across all the TB treatment facilities.

TIBU and TB Facility Register: The overall level of agreement between the National surveillance system (TIBU) and facility register was 98.3%, an improvement from 95% that was documented in the previous DQA report (2022) and 87% from the DQA report of 2021. This could be due to sustained efforts to enhance notification of TB cases including set timelines. Siaya and Laikipia counties were within the acceptable levels of agreement while Mombasa, Kisumu and Nakuru had varied performance across the years. Targeted and customized mentorship per TB treatment facilities will be key to minimize the inconsistencies observed across the reporting tools.

Table 3.2: Levels of agreement for aggregated notified Bacteriologically confirmed TB cases,2022/2023 Q1

County	Sub Counties	2022			Agreement (TB5 Cards vs TB4 Reg)	Agreement (TIBU vs TB4 Reg)	2023 Q1			Agreement (TB5 Cards vs TB4 Reg)	Agreement (TIBU vs TB4 Reg)	Average (2022/2023)	
		TB5 Cards	TB4 Reg	TIBU			TB5 Cards	TB4 Reg	TIBU			Agreement (TB5 cards Vs TB4 Reg)	Agreement (TIBU vs TB4 Reg)
Kisumu	Kisumu East	84	87	77	96.6%	88.5%	27	26	29	103.80%	111.50%	100.2%	100.0%
Kisumu	Nyakach	93	110	89	84.5%	80.9%	20	25	23	80.00%	92.00%	82.3%	86.5%
Laikipia	Laikipia East	176	180	175	97.8%	97.2%	35	37	35	94.60%	94.60%	96.2%	95.9%
Laikipia	Laikipia North	33	35	37	94.3%	105.7%	16	18	16	88.90%	88.90%	91.6%	97.3%
Mombasa	Jomvu	172	220	207	78.2%	94.1%	63	61	77	103.30%	126.20%	90.7%	110.2%
Mombasa	Mvita	438	553	527	79.2%	95.3%	158	161	145	98.10%	90.10%	88.7%	92.7%
Nakuru	Kuresoi North	36	40	46	90.0%	115.0%	14	20	19	70.00%	95.00%	80.0%	105.0%
Nakuru	Nakuru East	222	230	244	96.5%	106.1%	63	59	57	106.80%	96.60%	101.7%	101.3%
Siaya	Alego Usonga A	174	161	139	108.1%	86.3%	57	40	37	142.50%	92.50%	125.3%	89.4%
Siaya	Rarieda	96	99	96	97.0%	97.0%	28	29	33	96.60%	113.80%	96.8%	105.4%
Kenya		3248	3627	3540	89.6%	97.6%	481	476	471	101.10%	98.90%	95.3%	98.3%

Patient record cards and TB facility register: The overall level of agreement between TB record cards and facility register for bacteriologically confirmed TB cases was 95.3% for the period 2022/2023. The level of agreement for 2022 and 2023 Quarter one between TB patient record cards and facility registers for bacteriologically confirmed TB cases was 89.6% and 101.1%. This was an improvement in comparison from the previous DQA Report, 2022 where the facility register and TB patient record cards was 83%. In 2022, the levels of agreement between record card and TB4 register across all counties visited shows that Kisumu East (96.6%), Laikipia East (97.8%), Nakuru East (96.5%) and Rarieda (97%) were within the acceptable ranges. Nyakach (84.5%), Laikipia North (94.3%), Jomvu (78.2%), Mvita (79.2%) and Kuresoi North (90%) had an acceptable level of agreement. This could be attributed to improper classification of patients in the record cards. Only Alego Usonga A (108.1%) was above the acceptable level.

TIBU and TB Facility Register: The overall level of performance agreement between the National surveillance system (TIBU) and facility register for the bacteriologically confirmed cases was 98.3% for the period 2022/2023. This is within the acceptable level of agreement. In 2022 and 2023 Q1, the level of agreement between the facility register and the TIBU for the bacteriologically confirmed patients was 97.6% and 98.9% improvement as compared to the previous DQA report of 2022 at 96%. In the Sub-Counties visited, Laikipia East (97.2%), Laikipia North (105%), Mvita (95.3%) and Rarieda (97%) had proportions within the acceptable ranges. Kuresoi North (115%) and Nakuru East (106%) had agreement levels above acceptable ranges. In 2023 Q1, the level of agreement between TB5 and TB4 in Kisumu East (103.8%), Jomvu (103.30%), Mvita (98.10%) and Rarieda (96.60%) were within the acceptable levels. Nyakach, Kuresoi North had below acceptable levels of agreement. Siaya(113%) and Jomvu(126%) had above level of agreement for the bacteriologically confirmed TB cases, suggesting that some patients are notified later after starting treatment.

Table 3.1.3:Levels of agreement for aggregate notified Clinically Diagnosed TB Patients for 2022/2023 Q1

County	Sub Counties	2022			Agreement (TB5 Cards vs TB4 Reg)	Agreement (TIBU vs TB4 Reg)	2023 Q1			Agreement (TB5 Cards vs TB4 Reg)	Agreement (TIBU vs TB4 Reg)	Average (2022/2023)	
		TB5 Cards	TB4 Reg	TIBU			TB5 Cards	TB4 Reg	TIBU			Agreement (TB5 cards Vs TB4 Reg)	Agreement (TIBU vs TB4 Reg)
Kisumu	Kisumu East	84	89	89	94.4%	100.0%	27	28	31	96.4%	110.7%	95.4%	105.4%
Kisumu	Nyakach	42	59	66	71.2%	111.9%	7	16	26	43.8%	162.5%	57.5%	137.2%
Laikipia	Laikipia East	77	82	74	93.9%	90.2%	25	31	33	80.6%	106.5%	87.3%	98.3%
Laikipia	Laikipia North	14	19	15	73.7%	78.9%	5	5	6	100.0%	120.0%	86.8%	99.5%
Mombasa	Jomvu	106	163	172	65.0%	105.5%	32	38	39	84.2%	102.6%	74.6%	104.1%
Mombasa	Mvita	178	221	209	80.5%	94.6%	71	81	79	87.7%	97.5%	84.1%	96.1%
Nakuru	Kuresoi North	14	15	12	93.3%	80.0%	13	11	9	118.2%	81.8%	105.8%	80.9%
Nakuru	Nakuru East	97	116	122	83.6%	105.2%	19	31	30	61.3%	96.8%	72.5%	101.0%
Siaya	Alego Usonga A	237	276	248	85.9%	89.9%	89	116	106	76.7%	91.4%	81.3%	90.6%
Siaya	Rarieda	317	317	307	100.0%	96.8%	98	104	91	94.2%	87.5%	97.1%	92.2%
Kenya		1166	1357	1314	85.9%	96.8%	386	461	450	83.7%	97.6%	84.8%	97.2%

Patient record cards and TB facility register: The overall level of performance agreement between TB record cards and facility register for clinically TB diagnosed patients was 84.8% for the period 2022/2023. In 2022, the agreement performance level between TB5 cards and TB4 was 85.9%. This was an improvement from the previous DQA report of 2022 at 77%. Rarieda and Kisumu East Sub Counties achieved an acceptable level of agreement between patient record cards and facility register at 100% and 95% respectively. Nyakach sub-county had below the acceptable level of performance at 71%.

TIBU and TB Facility Register: The overall level of performance agreement between the National surveillance system (TIBU) and facility register (TB4) for the TB clinically confirmed cases was 97.2% for the period 2022/2023. In 2022 the level of performance agreement between the facility register and the TIBU system was 96.8% compared with the DQA report,2022 at 97%. Laikipia North and Kuresoi North had below acceptable levels of performance agreement at 80% and 90% respectively.

Table 3.1.4:Levels of agreement for aggregate notified Extra Pulmonary TB Patients for 2022/2023 Q1

County	Sub Counties	2022			Agreement (TB5 Cards vs TB4 Reg)	Agreement (TIBU vs TB4 Reg)	2023 Q1			Agreement (TB5 Cards vs TB4 Reg)	Agreement (TIBU vs TB4 Reg)	Average (2022/2023)	
		TB5 Cards	TB4 Reg	TIBU			TB5 Cards	TB4 Reg	TIBU			Agreement (TB5 cards Vs TB4 Reg)	Agreement (TIBU vs TB4 Reg)
Kisumu	Kisumu East	21	29	15	72.4%	51.7%	7	7	5	100.0%	71.4%	86.2%	61.6%
Kisumu	Nyakach	23	17	20	135.3%	117.6%	1	5	4	20.0%	80.0%	77.6%	98.8%
Laikipia	Laikipia East	38	35	45	108.6%	128.6%	15	11	11	136.4%	100.0%	122.5%	114.3%
Laikipia	Laikipia North	7	8	8	87.5%	100.0%	2	2	2	100.0%	100.0%	93.8%	100.0%
Mombasa	Jomvu	12	23	15	52.2%	65.2%	3	3	2	100.0%	66.7%	76.1%	65.9%

Mombasa	Mvita	167	207	214	80.7%	103.4%	47	60	53	78.3%	88.3%	79.5%	95.9%
Nakuru	Kuresoi North	3	2	4	150.0%	200.0%	0	0	0	100.0%	100.0%	125.0%	150.0%
Nakuru	Nakuru East	57	72	65	79.2%	90.3%	20	19	16	105.3%	84.2%	92.2%	87.2%
Siaya	Alego Usonga A	95	114	143	83.3%	125.4%	26	37	49	70.3%	132.4%	76.8%	128.9%
Siaya	Rarieda	61	68	74	89.7%	108.8%	19	19	34	100.0%	178.9%	94.9%	143.9%
Grand Total		484	575	603	84.2%	104.9%	140	163	176	85.9%	108.0%	85.0%	106.4%

TB patient record card and treatment register: The overall level of performance agreement between TB record cards and facility register for Extra pulmonary TB diagnosed patients was 85.0% for the period 2022/2023.In 2022. The agreement performance level between the patient record cards and the facility register was 84.2%. Kuresoi North, Nyakach had performance agreement above acceptable levels at 150%, and 135%. 2023 Q1, Nyakach had below acceptable level of performance agreement at 20% suggesting that more patients were recorded on the facility register as compared to the TB record cards.

TIBU and facility register The total level of performance agreement for extrapulmonary TB between the facility register and TIBU for 2022/2023 QI was 106.4%.In 2022, the performance agreement level was 104.9% suggesting that, patients with extra-pulmonary tuberculosis are first documented in the TIBU rather than the TB4 register. Laikipia North recorded a 100% data agreement between the TIBU and facility registers. Nyakach, Laikipia East, Kuresoi North, Alego Usonga and Raried sub-counties had a score of more than 105%, indicating that more patients are registered in TIBU than in the TB4 register which is the source document. Rarieda Sub-County recorded the above acceptable levels of performance agreement at 134%. There is a need to ensure that patients are correctly categorized in the facility register since it's the primary source reporting tool.

Table 3.1.5:Levels of agreement for aggregated notified TB cases per Sector,2022/2023 Q1

	2022			Agree-ment (TB5 Cards vs TB4 Reg)	Agreement (TIBU vs TB4 Reg)	2023 Q1			Agreement (TB5 Cards vs TB4 Reg)	Agreement (TIBU vs TB4 Reg)	Average (2022/2023)	
Sector	TB5 Cards	TB4 Reg	TIBU			TB5 Cards	TB4 Reg	TIBU			Agree-ment (TB5 cards Vs TB4 Reg)	Agree-ment (TIBU vs TB4 Reg)
FBO	276	280	272	98.60%	97.10%	100	103	94	97.10%	91.30%	97.80%	94.20%
Prison	22	22	20	100.00%	90.90%	11	10	10	110.00%	100.00%	105.00%	95.50%
Private	421	503	481	83.70%	95.60%	101	118	116	85.60%	98.30%	84.60%	97.00%
Public	2529	2822	2767	89.60%	98.10%	845	863	862	97.90%	99.90%	93.80%	99.00%

Patient Record Cards and TB Facility Register: The overall level of agreement between patient record cards and facility registers within the sectors was within the acceptable range for the FBOs (97.8%) and prisons (105%) for 2022/2023Q1.In 2022, the private and public sector had below the acceptable levels of agreement at 84.6% and 93.8%. In comparison to the previous DQA report,2022 there was improvement across all sectors; FBOs, private and public at 88%, 75% and 82% respectively.

TIBU and TB Facility Register: The overall level of agreement between TIBU and facility registers across all the sectors was within the acceptable range. Similar performance agreement was reported during the previous DQA report,2022. This could be attributed to the introduction and rollout of the t-bu lite application within the private sector. It was also observed that 24.4% of all the facilities visited using t-bu lite were from the private sector.

3.2: Treatment Outcomes

During the assessment, patient records for quarter 1 - quarter 3, 2022 were reviewed for the following treatment outcomes; cured, treatment complete and died.

Table 3.2.1a: Levels of agreement for aggregated data for DSTB treatment outcomes,2022

County	Sub Counties	2022 (Q1 - Q3)			Agreement (TB5 Cards vs TB4 Reg)	Agreement (TIBU vs TB4 Reg)
		TB5 Cards	TB4 Reg	TIBU		
Kisumu	Kisumu East	55	48	49	115%	102%
Kisumu	Nyakach	28	62	61	45%	98%
Laikipia	Laikipia East	112	117	125	96%	107%
Laikipia	Laikipia North	8	19	17	42%	89%
Mombasa	Jomvu	61	101	97	60%	96%
Mombasa	Mvita	137	261	249	52%	95%
Nakuru	Kuresoi North	13	16	16	81%	100%
Nakuru	Nakuru East	96	106	93	91%	88%
Siaya	Alego Usonga A	105	101	89	104%	88%
Siaya	Rarieda	69	70	73	99%	104%
Kenya		**684**	**901**	**869**	**76%**	**96%**

Patient Record Cards and TB Facility Register: The general level of agreement between patients record cards and facility register was below acceptable levels at 76%. Laikipia East (96%), Alego Usonga A (104%) and Rarieda (99%) were within the acceptable agreement levels. Kisumu East (115%) had levels of agreement above acceptable level. Nyakach, Laikipia North, Jomvu, Mvita, Kuresoi North and Nakuru East had levels of agreement below the acceptable range and this could be attributed by the clinicians not updating the outcomes in the record card.

TIBU and TB Facility Register: The agreement levels for TIBU and the facility register were within the acceptable range at 96%. Kuresoi North had 100% data concordance.Kisumu East, Nyakach, Jomvu, Mvita, and Rarieda were within the acceptable levels of agreement. Laikipia East (107%) was above the acceptable level of agreement. Laikipia North, Nakuru East, and Alego Usonga A were below the acceptable levels of agreement, possibly attributed to the treatment outcome incorrectly assigned in the facility register. Further, challenges with documentation of outcomes for patients who are transferred out could contribute to the variations between TIBU and the register since SCTLCs may follow up on these patients and only update TIBU.

Table 3.2.1b: Levels of agreement for aggregated data for DSTB treatment outcome of Treatment Completed

County	Sub Counties	2022 (Q1 - Q3)			Agreement (TB5 Cards vs TB4 Reg)	Agreement (TIBU vs TB4 Reg)
		TB5 Cards	TB4 Reg	TIBU		
Kisumu	Kisumu East	50	64	62	78%	97%
Kisumu	Nyakach	18	54	20	33%	37%
Laikipia	Laikipia East	62	75	80	83%	107%
Laikipia	Laikipia North	7	18	18	39%	100%
Mombasa	Jomvu	70	159	153	44%	96%
Mombasa	Mvita	96	217	192	44%	88%
Nakuru	Kuresoi North	17	22	22	77%	100%
Nakuru	Nakuru East	109	124	160	88%	129%
Siaya	Alego Usonga A	186	192	185	97%	96%
Siaya	Rarieda	215	220	220	98%	100%
Kenya		**830**	**1145**	**1112**	72%	97%

Patient Record Cards and TB Facility Register: The overall level of agreement between the patient record cards and the facility register is below acceptable range at 72%.Alego Usonga and Raried Sub-County had levels of agreement within the acceptable range at 96% and 100% respectively. Nyakach (33%), Laikipia North (39%), Jomvu (44%) and Mvita (44%) reported below acceptable levels of agreement. This could be attributed to the health care workers not updating the patient outcomes data information in the record cards pointing to the need for continuous sensitization and mentorship on the importance of data recording on the source documents.

TIBU and TB Facility Register: The agreement levels between TIBU and facility register in Laikipia North was at 100%. Kisumu East, Nyakach, Jomvu, Mvita and Rarieda were within the acceptable level of agreement. Laikipia North, Nakuru East, and Alego Usonga A were below acceptable levels of agreement.

Table 3.2.1c: Levels of agreement for aggregated data for DSTB treatment outcome of Died,2022

County	Sub Counties	2022 (Q1 - Q3)			Agreement (TB5 Cards vs TB4 Reg)	Agreement (TIBU vs TB4 Reg)
		TB5 Cards	TB4 Reg	TIBU		
Kisumu	Kisumu East	11	10	9	110%	90%
Kisumu	Nyakach	13	17	7	76%	41%
Laikipia	Laikipia East	12	13	10	92%	77%
Laikipia	Laikipia North	1	1	1	100%	100%
Mombasa	Jomvu	5	12	13	42%	108%
Mombasa	Mvita	10	60	52	17%	87%
Nakuru	Kuresoi North	4	3	3	133%	100%
Nakuru	Nakuru East	18	19	17	95%	89%
Siaya	Alego Usonga A	53	50	46	106%	92%
Siaya	Rarieda	10	11	11	91%	100%
Kenya		**137**	**196**	**169**	**70%**	**86%**

Patient Record Cards and TB facility Register: The level of agreement between patient records cards and facility registers was at 70% across the counties, this was an improvement from 46% during the previous DQA Report, 2022. Mvita and Jomvo sub-Counties had below-range levels of agreement at 17% and 42%. Laikipia North had 100% data concordance while Kuresoi North, Kisumu East and Alego Usonga A reported above the acceptable range at 133%, 110% and 106% respectively.

TIBU and TB Facility Register: The levels of agreement between facility registers and TIBU was 86%. Laikipia North, Kuresoi North, and Rarieda had 100% data concordance between TIBU and the TB4 register.Nyakach had the lowest level of agreement at 41%. These findings suggest underreporting in TIBU, emphasizing the need to continuously mentor the coordinators to improve timely reporting.

3.3: DSTB Case Based Data

This section involved sampling and evaluation of individual patient records variables to determine their availability and agreement. We compared the availability of the selected variables which include: sub-county registration numbers, the registration dates among others between the patient record card, treatment register and TIBU. Matching between the patient record card and facility register, facility register and TIBU were analyzed and were compared with the facility register as the denominator. The Kappa Score was utilized to assess the case-based data, ensuring data variables concordance across all three reporting tools. This process aimed to verify the accuracy and consistency among the recording and reporting tools for TB.

Table 3.3.1a: Availability of Patient record cards

| County | Sub County | Numbers | | | Agreement | |
		Patient Record cards	TB4 registers	TIBU	TB4 registers vs Record cards	TB4 registers vs TIBU
Kisumu	Kisumu East	75	82	77	91%	94%
Kisumu	Nyakach	53	62	61	85%	98%
Laikipia	Laikipia East	56	56	56	92%	100%
Laikipia	Laikipia North	34	37	37		
Mombasa	Mvita	43	54	54	80%	100%
Nakuru	Kuresoi North	23	25	24	92%	96%
Nakuru	Nakuru East	69	74	73	93%	99%
Siaya	Alego Usonga A	102	102	96	100%	94%
Siaya	Rarieda	122	123	120	99%	98%
Kenya		577	615	598	94%	97%

Availability facility registers and Record cards in Laikipia East(92%), Nyakach(85%), Kuresoi(North(92%), Nakuru East(93%) had patient records cards below the acceptable levels of agreement. This could be attributed to some patients not being allocated record cards at the start of treatment. The agreement between TB4 and TIBU in Laikipia East, North, and Mvita had a match of 100% and the rest of the sub-counties had almost perfect agreement. All the records in the facility register and TIBU were with acceptable levels of agreement in all the Sub-Counties except at Kisumu East(94%) and Alego Usonga(94%).

Table 3.3.1b: Levels of agreement on Sub-County registration numbers,2022

| County | Sub County | Number | | | | | Agreement | | |
		Matched Patient Record cards with TIBU	Total Records available in TIBU	Matched TB4 registers with TIBU	Total available in TB4 registers	Matched TB4 registers with record cards	Record card vs TB4 registers	TIBU vs Record cards	TIBU vs TB4 registers
Kisumu	Kisumu East	64	82	60	82	62	103%	78%	73%
Kisumu	Nyakach	26	62	52	61	30	87%	42%	84%
Laikipia	Laikipia East	42	56	47	56	47	89%	75%	84%
Laikipia	Laikipia North	13	37	17	37	29	45%	35%	46%
Mombasa	Mvita	34	54	50	54	34	100%	63%	93%
Nakuru	Kuresoi North	19	25	21	25	17	112%	76%	84%
Nakuru	Nakuru East	61	74	72	73	61	100%	82%	97%
Siaya	Alego Usonga A	13	102	18	102	90	14%	13%	18%
Siaya	Rarieda	85	123	87	123	100	85%	69%	71%
Kenya		357	615	424	613	470	76%	58%	69%

The date of registration is assigned by the SCTLC when they are notifying the patient in TIBU. The overall agreement for the date of registration in the facility register and TIBU was 69%, suggesting that SCTLCs generate the sub-county registration numbers but the same is not recorded in the facility registers.

Alego Usonga A sub-county had below level of agreement between patient record cards and facility registers at 18% while 13% between TIBU and patients Record cards. This explains the fact that patients would be registered in one facility in the facility register and be registered in another facility in TIBU. This calls for continued mentorship and guidance on the registration of patients by the SCTLCs. No sub-county had acceptable levels of agreement in TIBU compared to record cards

Table 3.3.1c: Levels of agreement on Registration dates,2022

| County | Sub-county | Numbers | | | | Agreement | |
		Matched TB4 registers with TIBU	Total available in TB4 registers	Matched Record cards with TIBU	Total available in TIBU	Matched TB4 registers with TIBU	Matched Record cards with TIBU
Kisumu	Kisumu East	63	82	55	82	77%	67%
Kisumu	Nyakach	29	60	13	62	47%	21%
Laikipia	Laikipia East	42	51	11	56	75%	20%
Laikipia	Laikipia North	6	32	2	37	16%	5%
Mombasa	Mvita	41	52	20	54	76%	37%
Nakuru	Kuresoi North	9	22	1	25	36%	4%
Nakuru	Nakuru East	55	70	38	74	74%	51%
Siaya	Alego Usonga A	61	102	60	102	60%	59%
Siaya	Rarieda	86	118	70	123	70%	57%
Kenya		392	589	270	615	64%	44%

Generally, the SCTLC assigns the date of registration when notifying the patient in TIBU. The level of agreement for the date of registration in the facility register and TIBU was 64%.suggesting that there are patient records in the facility register that do not have a sub county date of registration, which is entirely the responsibility of the SCTLCs.In comparison with the previous DQA report,2022. There was a sharp decrease in the level of agreement from 99.6%. Laikipia North had the lowest level of agreement at 16%.

Only 44% of the patient entries on the record cards perfectly matched in TIBU.

Table 3.3.1d: Levels of agreement on Type of patient,2022

| County | Sub County | Numbers | | | | | Agreement | |
		Matched Patient Record cards with TB4 registers	Total Record cards available	Matched TIBU with TB4 registers	Total available in TB4	Total available TIBU	TB4 registers vs Record card	TB4 registers vs TIBU
Kisumu	Kisumu East	62	62	76	82	77	76%	93%
Kisumu	Nyakach	40	40	53	60	60	67%	88%
Laikipia	Laikipia East	24	24	56	56	56	43%	100%
Laikipia	Laikipia North	17	17	35	35	37	49%	100%
Mombasa	Mvita	31	31	53	54	53	57%	98%
Nakuru	Kuresoi North	2	3	20	24	24	8%	83%
Nakuru	Nakuru East	35	38	69	71	73	49%	97%
Siaya	Alego Usonga A	84	95	90	100	96	84%	90%
Siaya	Rarieda	100	100	118	122	120	82%	97%
Kenya		**395**	**410**	**570**	**604**	**596**	**65%**	**94%**

During the DQA, agreement on documentation of type of patient variable was compared between the patient record cards and the facility register, the TIBU and the facility register.A total of 577 record cards were reviewed with 71% of them having the type of patient variable correctly documented, an improvement of 25% as reported from the previous DQA Report, 2022. Of the 71% record cards, 65% had the variable correctly matching in the facility register. A comparison between TIBU and facility register showed 94% concordance with 100% data agreement observed in Laikipia North and East. However, the use of old versions tolls for the patient record cards with missing variables at the facility still poses a challenge.

Table 3.3.1e: Levels of agreement for treatment start dates,2022

County	Sub County	Numbers				Agreement	
		Matched Patient Record cards with TB4 registers	Total Records available in TIBU	Matched TIBU with TB4 registers	Total available in TB4	Record cards vs TB4 Register	TIBU vs TB4 registers
Kisumu	Kisumu East	75	77	75	81	93%	93%
Kisumu	Nyakach	45	60	50	60	75%	83%
Laikipia	Laikipia East	54	56	53	56	96%	95%
Laikipia	Laikipia North	30	37	32	36	83%	89%
Mombasa	Mvita	35	53	49	53	66%	92%
Nakuru	Kuresoi North	21	24	23	25	84%	92%
Nakuru	Nakuru East	63	73	62	73	86%	85%
Siaya	Alego Usonga A	77	99	63	86	90%	73%
Siaya	Rarieda	113	120	102	122	93%	84%
Kenya		**513**	**599**	**509**	**592**	**87%**	**86%**

The overall level of agreement between patient records and TIBU was 87%, Whereas the agreement between facility registers and TIBU was 86%. Nyakach (75%), and Mvita (66.04%), Kisumu East (93%), Laikipia East (96%), Laikipia North(83%), Kuresoi North(84%), Nakuru East(86%, Alego Usonga A (90%) and Rarieda(93%) had below level of agreement between the patient record cards and the facility registers.The agreement levels between facility register and TIBU in Alego Usonga A (73%). Nyakach (75%), Mvita(66%, Alego Usonga A(90%), Kisumu East (93%), Laikipia East(96%), Laikipia North(83%), Kuresoi North(84%), Nakuru East(86%) and Rarieda(93%) had the below acceptable range for the facility register and the TIBU.

Table 3.3.1f: Levels of agreement for GeneXpert Results,2022

County	Sub-county	Numbers						Agreement	
		Matched Patient Record cards with TIBU	Total available in TIBU	Matched Patient Record cards with TB4 registers	Total available in TB4	Matched TIBU with TB4 registers	Total available in TB4	TB4 registers vs Record cards	TB4 registers vs TIBU
Kisumu	Kisumu East	67	76	69	78	72	78	88%	92%
Kisumu	Nyakach	41	58	45	56	54	56	80%	96%
Laikipia	Laikipia East	52	54	52	42	52	42	124%	124%
Laikipia	Laikipia North	17	34	17	22	24	22	77%	109%
Mombasa	Mvita	39	53	39	54	51	54	72%	94%
Nakuru	Kuresoi North	12	23	15	24	20	24	63%	83%
Nakuru	Nakuru East	59	72	62	73	69	73	85%	95%
Siaya	Alego Uson-ga A	34	95	36	63	30	63	57%	48%
Siaya	Rarieda	57	120	77	98	64	98	79%	65%
Kenya		378	585	412	510	436	510	81%	85%

The accuracy of gene xpert results was compared for patient record cards, TIBU with the facility register. Among the 615 entries in the facility register 83% had the genexpert results populated of the 510 records in the facility register 81% had the GeneXpert results correctly matched in the record cards. A total of 436 records matched between TIBU and facility register, A drop from 86% during the previous DQA Report, 2022. Overreporting for gene xpert results was observed in Laikipia East at 124% probably attributed to inconsistencies in documentation across the three records.

Table 3.3.1g: Levels of agreement on Month 2 follow-up smear results,2022

County	Sub County	Numbers					Agreement	
		Matched Patient Record cards with TB4 registers	Total available Record cards	Total available in TB4	Matched TIBU with TB4 registers	Total available in TIBU	Record cards vs TB4 registers	TIBU vs TB4 registers
Kisumu	Kisumu East	30	30	33	30	33	90.91%	90.91%
Kisumu	Nyakach	14	15	23	18	20	60.87%	78.26%
Laikipia	Laikipia East	33	33	35	34	34	94.29%	97.14%
Laikipia	Laikipia North	17	17	21	21	22	80.95%	100.00%
Mombasa	Mvita	23	24	34	31	33	67.65%	91.18%
Nakuru	Kuresoi North	5	5	8	6	7	62.50%	75.00%
Nakuru	Nakuru East	17	17	27	24	24	62.96%	88.89%
Siaya	Alego Usonga A	26	27	29	26	29	89.66%	89.66%
Siaya	Rarieda	29	29	30	21	23	96.67%	70.00%
Kenya		**194**	**197**	**240**	**211**	**225**	**80.83%**	**87.92%**

Month 2 smear follow ups are a key pointer to quality of care for TB patients as they guide the clinical decision to transition a patient from intensive to the continuation phase of treatment. 80.8% of the patient records cards were correctly matched with facility registers, an improvement from 72% during the previous DQA Report, 2022. Rarieda Sub-County had the acceptable level of agreement at 96.7%. Nyakach had below acceptable levels at 60.9% between TIBU and facility registers; the agreement levels were at 87.9%. Laikipia North had 100% concordance. Rarieda (70%), Kuresoi North (75%) and Nyakach (78.3%) sub-counties had below acceptable levels of agreement.

Table 3.3.1h: Levels of agreement on Month 2 follow-up smear results date

County	Sub-County	Numbers					Agreement	
		Matched Patient Record cards with TB4 registers	Total available in TB4	Total available in Record cards	Matched TIBU with TB4 registers	Total available in TIBU	TB4 registers vs Record cards	TB4 registers vs TIBU
Kisumu	Kisumu East	29	32	32	30	32	90.63%	93.75%
Kisumu	Nyakach	11	23	17	14	17	47.83%	82.35%
Laikipia	Laikipia East	33	35	34	32	34	94.29%	94.12%
Laikipia	Laikipia North	14	21	22	19	22	66.67%	86.36%
Mombasa	Mvita	22	34	33	29	33	64.71%	87.88%
Nakuru	Kuresoi North	4	8	7	5	7	50.00%	71.43%
Nakuru	Nakuru East	14	25	22	20	22	56.00%	90.91%
Siaya	Alego Usonga A	22	28	29	14	29	78.57%	48.28%
Siaya	Rarieda	26	28	19	12	19	92.86%	63.16%

Kenya		**175**	**234**	**215**	**175**	**215**	74.79%	**81.40%**

Documentation of dates for month 2 smear results is key in evaluating the quality of care among TB patients. The level of agreement between the patient record cards and facility register were below acceptable range at 74.8%. The agreement levels for facility register and the TIBU had also below acceptable levels at 81.4%.

Table 3.3.1k: Levels of agreement on Month 2 follow-up smear results Serial number

County	Sub County	Numbers				Agreement	
		Matched Patient Record cards with TB4 registers	Total available in TB4	Matched TIBU with TB4 registers	Total available in TIBU	TB4 registers vs Record cards	TB4 registers vs TIBU
Kisumu	Kisumu East	25	29	28	29	86.21%	96.55%
Kisumu	Nyakach	9	12	9	9	75.00%	100.00%
Laikipia	Laikipia East	30	34	33	33	88.24%	100.00%
Laikipia	Laikipia North	16	20	20	22	80.00%	90.91%
Mombasa	Mvita	23	33	30	31	69.70%	96.77%
Nakuru	Kuresoi North	3	5	4	6	60.00%	66.67%
Nakuru	Nakuru East	14	22	19	20	63.64%	95.00%
Siaya	Alego Usonga A	18	21	20	23	85.71%	86.96%
Siaya	Rarieda	17	19	13	14	89.47%	92.86%
Kenya		**155**	**195**	**176**	**187**	79.49%	**94.12%**

Documentation of serial numbers for the laboratory results is important for verifying the accuracy of results documented in the source documents. The agreement levels between the patient record cards and the facility registers were below acceptable levels at 79.49%. Between the facility register and TIBU, the agreement levels were also below the acceptable range at 94%. Continuous mentorship and sensitization are key for the regular updating of this variable.

Table 3.3.1 l: Levels of agreement on Treatment Outcome

County	Sub County	Numbers				Agreement	
		Matched Patient Record cards with TB4 registers	Total available in TB4	Matched TIBU with TB4 registers	Total available in TIBU	Record cards vs TB4 registers	TIBU vs TB4 registers
Kisumu	Kisumu East	73	81	75	76	90.12%	92.59%
Kisumu	Nyakach	27	56	50	59	48.21%	89.29%
Laikipia	Laikipia East	50	56	55	56	89.29%	98.21%
Laikipia	Laikipia North	29	37	37	37	78.38%	100.00%
Mombasa	Mvita	31	52	46	50	59.62%	88.46%
Nakuru	Kuresoi North	15	23	21	24	65.22%	91.30%
Nakuru	Nakuru East	52	64	57	69	81.25%	89.06%
Siaya	Alego Usonga A	92	99	82	96	92.93%	82.83%
Siaya	Rarieda	115	121	108	118	95.04%	89.26%
Kenya		484	589	531	585	82.17%	90.15%

The overall agreement between patient record card and facility register with matched records of treatment outcome was 82.17%. This was a drop from 89.32% as recorded in the previous DQA report 2022.The agreement levels between facility and the TIBU was below acceptable levels at 90.15%.

Table 3.3.1 m: Levels of agreement on Treatment Outcome Dates

County	Sub County	Numbers				Agreement	
		Matched Patient Record cards with TB4 registers	Total available in TB4	Matched TIBU with TB4 registers	Total available in TIBU	Record cards vs TB4 registers	TIBU vs TB4 registers
Kisumu	Kisumu East	61	69	61	64	88.41%	88.41%
Kisumu	Nyakach	10	43	32	42	23.26%	74.42%
Laikipia	Laikipia East	52	56	54	56	92.86%	96.43%
Laikipia	Laikipia North	25	36	33	37	69.44%	91.67%
Mombasa	Mvita	27	52	45	50	51.92%	86.54%
Nakuru	Kuresoi North	14	23	18	24	60.87%	78.26%
Nakuru	Nakuru East	45	59	52	56	76.27%	88.14%
Siaya	Alego Usonga A	75	87	57	78	86.21%	65.52%
Siaya	Rarieda	105	112	92	100	93.75%	82.14%
Kenya		414	537	444	507	77.09%	82.68%

Overall, the level of agreement in the date of treatment outcomes was 77.09% between the patient record cards and the facility register, a decrease from 83.85 % in the previous DQA report 2022. Between TIBU and the facility register the agreement level was 82.68%.

Table 3.3.1n: Median time to patient notification within facility register, TIBU and between facility register and TIBU

Variable	n=number of records	Median time (days)	IQR		
			LQ	UQ	99% of the records
Time to registration within facility register	567	6	0	23	121
Time to registration within TIBU	595	12	3	29	134
Time to registration between facility register and TIBU	573	12	2	30	128

Median time to notification from the date when treatment was started within the facility register was 6 days. This improved from the previous DQA report,2022 at 8 days. In TIBU the median time was found to be 12 days. This was an improvement in the time of notification within TIBU compared to the previous DQA reports,2019 and 2020 at 14 and 13 days respectively. Across the tools, comparison between facility register and TIBU showed that the median days was also 12 days with almost similar confidence level. This could be explained by the fact that registration in TIBU happens concurrently with the facility register.

Figure 3.3.1p: Box Plots

The box plots above demonstrate that in the recording and reporting tools, there were some patients that were found to have been notified before the start of treatment or way after the start of treatment (outliers). These could be documentation errors in the facility or during data collection for DQA. There were similar findings within TIBU reporting and across TB4 register and TIB

Difference in days between date of registration and Date of Start of Treatment within TB4 facility register

Difference in days between Treatment start date in Register and Registration date in TIBU

Difference in days between date of registration and Treatment start date within TIBU
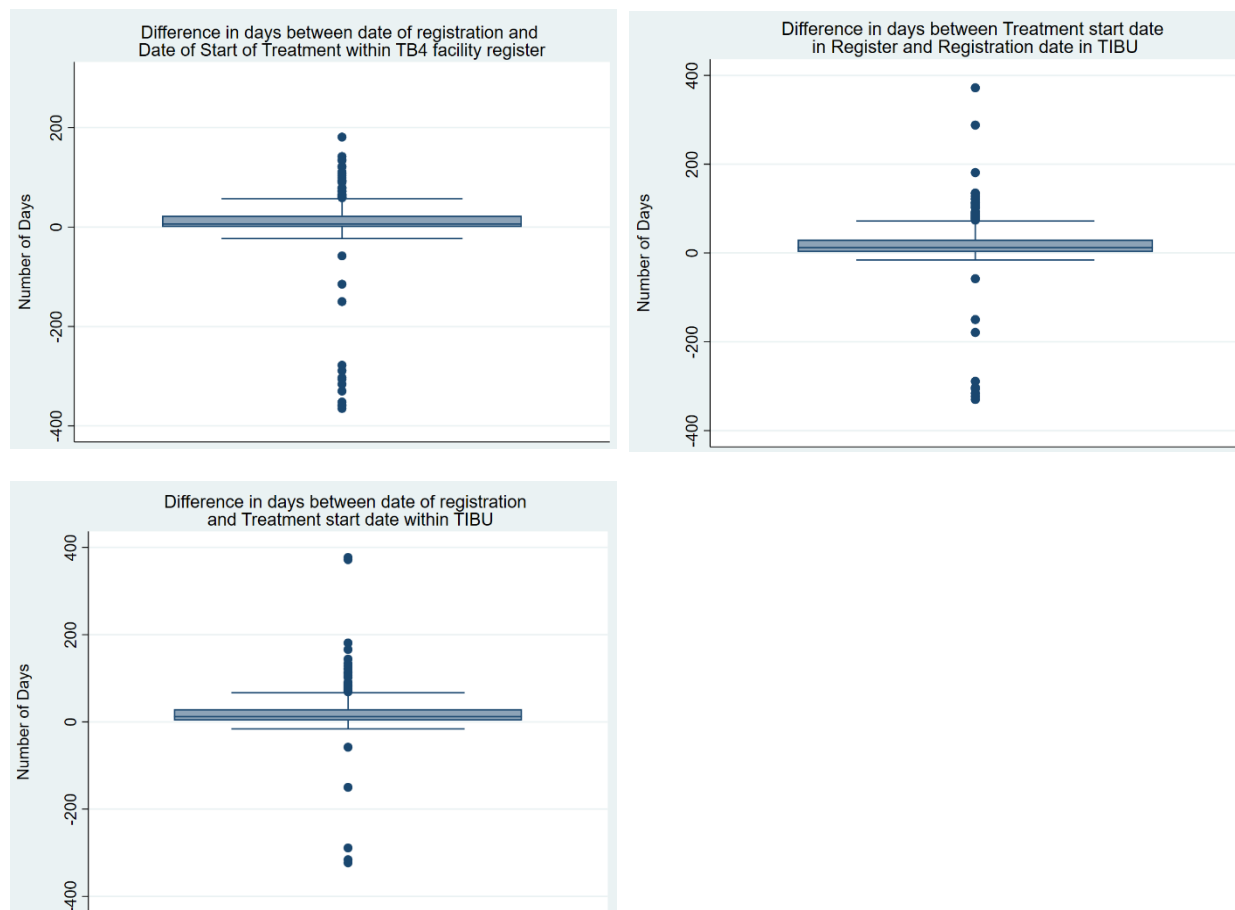
Table 3.3.1q: Kappa score Between Facility Register and TIBU

Agreement between TB4 Register and TIBU			
Variable	Agreement	Kappa	Std. Err
Smear Month 0 Results	78.76%	0.6794	0.0249
GeneXpert Results	74.25%	0.6364	0.0239
Smear Month 2 Results	78.76%	0.6709	0.0270
Type of Patient	95.57%	0.7617	0.0316
Treatment Outcome	79.10%	0.7060	0.0221

Kappa score was calculated to assess the level of agreement between the variables collected in the facility register and TIBU. The agreement level for smear results at month 2 was 0.6709 compared with the previous DQA report with a kappa score of 0.836. The patient variable, the level of agreement was at 0.7617 kappa score, an improvement from the last DQA report,2022 at 0.631. The level of agreement for GeneXpert results at 0.6364.An improvement as compared with the previous DQA report,2022, at 0.1833 kappa score similar improvement in documentation of treatment outcome with a kappa score of 0.7060 as compared to 0.27 in the previous DQA report,2022. This could point to proper documentation improvement in both TIBU and facility register after dissemination of the DQA findings.

3.4.1a: DRTB Aggregated data,2022/2023 Q1

Levels of agreement for aggregated data for all forms of DRTB in Log book and TIBU data in comparison to DRTB facility registers,2022/2023 Q1						
		2022			Agreement (Logbook vs Reg)	Agreement (TIBU vs Reg)
County	Sub Counties	Logbook	Reg	TIBU		
Kisumu	Nyakach	1	1	1	100.0%	100.0%
Laikipia	Laikipia East	2	2	2	100.0%	100.0%
Laikipia	Laikipia North	1	1	1	100.0%	100.0%
Mombasa	Mvita	5	0	5	0.0%	100.0%
Nakuru	Nakuru East	2	1	2	50.0%	100.0%
Siaya	Alego Usonga A	1	1	1	100.0%	100.0%
Siaya	Rarieda	3	3	3	100.0%	100.0%
Grand Total		**15**	**9**	**15**	60.0%	100.0%

This analysis compared DRTB cases across three main DRTB reporting and recording tools which are; DRTB Register, Logbook and TIBU for the period 2022 and 2023 Quarter 1. The total average level of performance for all forms of DRTB between Logbook and DRTB Register was 60% while TIBU and DRTB Register was 100% in 2022. Despite the acceptable levels of agreement between the Logbook and TIBU, there were discrepancies of 50% and 0% in Nakuru East and Mvita Sub County recorded below acceptable levels of agreement at 50% and 0%respectively between the Register and Logbook. This may be attributed to the absence of a DRTB patient register and the use of one register for the entire sub-county.

Table 3.4.1b: DRTB Rifampicin Resistant

Levels of agreement for aggregated data for DRTB-RR in Log book and TIBU data in comparison to DRTB facility registers											
		2022			Agreement (Log book vs Reg)	Agreement (TIBU vs Reg)	**2023 Q1**			Agreement (Log book vs Reg)	Agreement (TIBU vs Reg)
County	Sub Counties	Log book	Reg	TIBU			Log book	Reg	TIBU		
Kisumu	Nyakach	1	1	1	100.00%	100.00%	0	0	0	100.00%	100.00%
Laikipia	Laikipia East	2	2	2	100.00%	100.00%	1	1	1	100.00%	100.00%
Laikipia	Laikipia North	1	1	1	100.00%	100.00%	0	0	0	100.00%	100.00%
Mombasa	Mvita	2	0	3	0.00%	150.00%	1	1	1	100.00%	100.00%
Nakuru	Nakuru East	1	0	1	0.00%	100.00%	0	0	0	100.00%	100.00%
Siaya	Alego Usonga A	1	1	1	100.00%	100.00%	0	0	0	100.00%	100.00%
Siaya	Rarieda	2	2	2	100.00%	100.00%	0	0	0	100.00%	100.00%
Kenya		10	7	11	70.00%	110.00%	1	1	1	100.00%	100.00%

On average, in 2022 the level of agreement for the aggregate data for DRTB RR cases between the logbooks and the register, the register and the TIBU was 70% and 110%. Nakuru East and Mvita had 0% levels of agreement, this may be attributed to either lack of DRTB registers, lack of awareness on the use of the register by the health care workers, inadequate support supervision from the SCTLC on DRTB, non-functional Clinical review meetings by the County teams and possibly non-existent county-based data review meetings.

Table 3.4.1c: Levels of agreement for aggregated data for DRTB-MDR in Log book and TIBU data in comparison to DRTB facility registers

County	Sub Counties	2022			Agreement (Log book vs Reg)	Agreement (TIBU vs Reg)
		Log book	Reg	TIBU		
Mombasa	Mvita	2	0	2	0.00%	100.00%
Nakuru	Nakuru East	1	1	1	100.00%	100.00%
Siaya	Rarieda	3	3	3	100.00%	100.00%
Kenya		**6**	**4**	**6**	66.67%	100.00%

Six(6) MDR TB patients were reported in 2022. The level of agreement between the register and Logbook, register and TIBU was 67% and 100% respectively. Mvita Sub-county patients were not recorded in both the register and TIBU. This may be attributed to the stockout of DRTB registers, lack of awareness on the use of the register by the health care workers, or inadequate support supervision from the SCTLC on DRTB.

Table 3.4.1d: Table 3.4.1d: Levels of agreement for aggregated data for DRTB-Mono resistant in Log book and TIBU data in comparison to DRTB facility registers

County	Sub Counties	2022			Agreement (Logbook vs Reg)	Agreement (TIBU vs Reg)
		Log book	Reg	TIBU		
Kisumu	Nyakach	1	1	1	100.00%	100.00%
Mombasa	Mvita	1	0	1	0.00%	100.00%
Kenya		**2**	**1**	**2**	50.00%	100.00%

In 2022, Nyakach and Mvita sub-counties notified 1 mono-resistant TB case. Inconsistent use of the DR TB register in Mvita sub-county was observed where the TIBU is updated using the Logbook.

Table 3.4.1e: Levels of agreement for aggregated data for DRTB-Cured outcome in Log book and TIBU data in comparison to DRTB facility registers

County	Sub Counties	2020			Agreement (Log book vs Reg)	Agreement (TIBU vs Reg)
		Log book	Reg	TIBU		
Laikipia	Laikipia East	2	2	2	100%	100%
Mombasa	Mvita	1	0	1	0%	100%
Siaya	Alego Usonga A	1	1	1	100%	100%
Siaya	Rarieda	1	1	1	100%	100%
Kenya		5	4	5	80%	100%

The overall agreement levels for aggregate data in the DRTB register with logbook, register and TIBU was 80% and 100%. All the sub-counties had a 100% level of performance agreement except Mvita.

3.5: DRTB Case based data

The data quality review in this section used the patient registration number, treatment start date, GeneXpert results and month 6 culture results in TIBU, where data concordance was checked for the three reporting and recording tools. Eighteen DRTB patients were notified in TIBU, 89% level of agreement was observed where sixteen patient records correctly matched in the logbooks and DRTB registers.

3.5.1a: DR TB case-based summary on levels of agreement

County	Sub County	Availability		Registration no.		Treatment start date		Gene Xpert result		Month 6 Culture result	
		Log book vs TIBU	TB4 registers vs TIBU	Log book VS DRTB Register	Matching in TIBU vs Register	Log book VS DRTB Register	TIBU Vs Register	Log book VS DRTB Register	TIBU Vs Register	Log book VS DRTB Register	TIBU Vs Register
Laikipia	Laikipia East	100%	100%	100%	0%	100%	100%	0%	0%	0%	0%
Laikipia	Laikipia North	100%	100%	100%	100%	100%	0%	0%	0%	100%	100%
Mombasa	Mvita	100%	100%	100%	33%	100%	50%	100%	100%	100%	100%
Nakuru	Nakuru East	100%	200%	0%	100%	50%	50%	50%	50%	50%	50%
Siaya	Alego Usonga A	100%	100%	100%	100%	100%	100%	100%	100%	0%	0%
Siaya	Rarieda	100%	100%	100%	100%	100%	67%	67%	100%	100%	100%
Kenya		**100%**	**109%**	**91%**	**73%**	**91%**	**55%**	**71%**	**86%**	**86%**	**86%**

Patient Registration Number: The agreement levels for the registration numbers between DRTB registers and TIBU was 118%. The Logbooks against Register was at 67%. Nakuru East, Laikipia East and Mvita sub counties had below acceptable levels of agreement, This could have been due to the registration of patients who end up dead in TIBU before the same is done in the logbook and register.

Treatment start date: Data concurrence of 91 % and 55% was noted in the logbook and the DRTB register, TIBU and DRTB register. The observed discrepancies were contributed by Laikipia North, Mvita (0%) and Rarieda (33%) sub-counties. This could be due to delay of patient registration in TIBU by SCTLC and Inadequate clinical supervision.

GeneXpert results: The agreement levels for the DRTB logbook and the TIBU, TIBU and the gene Xpert at 71% and 86% respectively.Pointing to the failure/delay by SCTLCs to visit some facilities to notify the patients.

Month 6 Culture result: Carrying out Monthly culture follow up investigation for DRTB patients is critical in monitoring the treatment progress and determination of change of treatment regimen from intensive to continuation. Month 6 culture results were randomly picked and checked for concurrence in TIBU, Logbook and the DRTB register. There was an 86% agreement between the DRTB logbook, the register and TIBU.

Table 3.5.1b: Levels of agreement on Sub County registration numbers

County	Sub County	Numbers						Agreement	
		Log books in facility	Records in Register	Records in TIBU	Reg number in logbook matching that in register	Reg number in register matching that in TIBU	Reg number in log book matching that in TIBU	Log book VS TIBU	Matching in TIBU vs Register
Laikipia	Laikipia East	1	1	1	0	0	1	100%	0%
Laikipia	Laikipia North	2	2	2	2	2	2	100%	100%
Mombasa	Mvita	3	2	3	1	1	3	100%	33%
Nakuru	Nakuru East	1	2	1	1	1	0	0%	100%
Siaya	Alego Usonga A	1	1	1	1	1	1	100%	100%
Siaya	Rarieda	3	3	3	3	3	3	100%	100%
Kenya		11	11	11	8	8	10	91%	73%

The overall level of agreement on sub-county registration numbers between the log book and TIBU, TIBU and register was 91% and 73%. Laikipia East, Mvita and Nakuru East had agreement below acceptable levels. This might be attributed to the SCTLC not providing adequate clinical reviews and as well some patients die before treatment initiation.

Table 3.5.1c: Levels of agreement on DRTB treatment start dates

County	Sub County	Numbers					Matching	
		Log books in facility	Records in TIBU	Records in Register	Reg number in logbook matching that in register	Reg number in register matching that in TIBU	Log book VS DRTB Register	TIBU Vs Register
Laikipia	Laikipia East	1	1	1	1	1	100%	100%
Laikipia	Laikipia North	2	2	2	2	0	100%	0%
Mombasa	Mvita	3	3	2	2	1	100%	50%
Nakuru	Nakuru East	1	1	2	1	1	50%	50%
Siaya	Alego Usonga A	1	1	1	1	1	100%	100%
Siaya	Rarieda	3	3	3	3	2	100%	67%
Kenya		11	11	11	10	6	91%	55%

The agreement levels between logbook and the DRTB register on the treatment start date was 91%. DRTB register and TIBU was at 55%. Mvita, Laikipia North, Nakuru East, and Rarieda had agreement performance below acceptable levels between the TIBU and the register. This may point to the suboptimal use of TB registers to monitor patients' treatment and care.

Table 3.5.1d: Levels of agreement on GeneXpert results

County	Sub County	Numbers					Matching	
		Log books in facility	Records in TIBU	Records in Register	GeneXpert result in logbook matching that in register	GeneXpert result in register matching that in TIBU	Log book VS DRTB Register	TIBU Vs Register
Laikipia	Laikipia East	1	1	0	0	0	0%	0%
Laikipia	Laikipia North	2	2	0	0	0	0%	0%
Mombasa	Mvita	3	3	1	1	1	100%	100%
Nakuru	Nakuru East	1	1	2	1	1	50%	50%
Siaya	Alego Usonga A	1	1	1	1	1	100%	100%
Siaya	Rarieda	3	3	3	2	3	67%	100%
Kenya		11	11	7	5	6	71%	86%

The number of records on gene xpert results in Logbook and TIBU were 11 compared to 7 in the registers. The overall agreement of the records between the logbook and DRTB register, TIBU and the DRTB register was at 71%% and 86%% respectively. Laikipia East, Laikipia North, Mvita, and Rarieda sub-counties had below acceptable levels of agreement of the records between Logbook and DRTB register, TIBU and DRTB register except Alego Usonga A sub-county. This shows the failure to update the gene xpert results in the DRTB register which may result from suboptimal use of the DRTB registers in the facilities by both SCTLC and frontline Health care workers.

Table 3.5.1e: Levels of agreement on month 6 culture result

County	Sub County	Numbers					Matching	
		Log books in facility	Records in TIBU	Records in Register	Month 6 culture done r in logbook matching that in register	Month 6 Culture done in register matching that in TIBU	Log book VS DRTB Register	TIBU Vs Register
Laikipia	Laikipia East	0	0	0	0	0	NA	NA
Laikipia	Laikipia North	2	2	2	2	2	100%	100%
Mombasa	Mvita	2	2	1	1	1	100%	50%
Nakuru	Nakuru East	1	1	2	1	1	50%	50%
Siaya	Alego Usonga A	0	0	0	0	0	NA	NA
Siaya	Rarieda	2	2	2	2	2	100%	100%
Kenya		**7**	**7**	**7**	**6**	**6**	**86%**	**86%**

The number of records in Logbook, TIBU and DRTB register with the month 6 culture result correctly matched in all sub-counties except Mvita and Nakuru East . Registration number correctly matched in all sub-counties between the Logbook and the DRTB register, DRTB register and the logbook. The overall level of agreement between the three main tools for recording and reporting was 86%. This may be attributed to transcription errors in the tools or patients dying before the due date of the follow-up investigation.

Table 3.5.1f: Levels of agreement for registration date

County	Sub County	Numbers					Agreement	
		Log books in facility	Records in Register	Reg date in logbook matching that in register	Reg date in register matching that in TIBU	Reg date in log book matching that in TIBU	Log book VS TIBU	Matching in TIBU vs Register
Laikipia	Laikipia East	1	1	1	0	1	100%	0%
Laikipia	Laikipia North	2	2	2	2	2	100%	100%
Mombasa	Mvita	1	1	1	1	1	100%	100%
Nakuru	Nakuru East	1	2	1	1	0	0%	50%
Siaya	Alego Usonga A	0	0	0	0	0	NA	NA
Siaya	Rarieda	1	1	1	1	1	100%	100%
Kenya		**6**	**7**	**6**	**5**	**5**	**120%**	**71%**

The registration date was reviewed in the Logbook and DRTB register and compared with TIBU, the number of records that match the DRTB register matched the logbooks in all the sub counties except Nakuru East where they had more records in the DRTB register compared to the logbook.Overall levels of agreement for registration date did not match between the logbook and TIBU,TIBU and DRTB register at 120% and 71% respectively.This could be attributed to SCTLCs delay in case notification.

Table 3.5.1g:Levels of agreement for availability of other DST tests

| County | Sub County | Numbers | | | | | Matching | |
		Log books in facility	Records in TIBU	Records in Register	Other DST tests in logbook matching that in register	Other DST tests in register matching that in TIBU	Log book VS DRTB Register	TIBU Vs Register
Laikipia	Laikipia East	1	1	0	0	0	0%	0%
Laikipia	Laikipia North	2	2	2	2	2	100%	100%
Mombasa	Mvita	3	3	2	2	2	100%	100%
Nakuru	Nakuru East	1	1	2	1	1	50%	50%
Siaya	Alego Usonga A	1	1	1	1	1	100%	100%
Siaya	Rarieda	3	2	3	3	2	100%	67%
Kenya		11	10	10	9	8	90%	80%

The overall availability of DST test shows less numbers of patient records in the register and TIBU,logbook and register at 90% and 80% respectively.This was observed in Laikipia East, Mvita and Rarieda.This may be attributed to errors or inconsistencies in recording and updating the information across the different tools.

Table 3.5.1h:Levels of agreement for type of patient in logbook

| County | Sub County | Numbers | | | | | Matching | |
		Log books in facility	Records in TIBU	Records in Register	Type of patient in logbook matching that in register	Type of patient in TIBU matching that in Register	Log book VS DRTB Register	TIBU Vs Register
Laikipia	Laikipia East	0	0	0	0	0	NA	NA
Laikipia	Laikipia North	0	0	0	0	0	NA	NA
Mombasa	Mvita	2	2	1	1	1	100%	100%
Nakuru	Nakuru East	1	1	2	1	1	50%	50%
Siaya	Alego Usonga A	1	1	1	1	1	100%	100%
Siaya	Rarieda	1	1	1	1	1	100%	100%
Kenya		5	5	5	5	4	100%	80%

The level of agreement between logbook and Register was 100%. TIBU and the register was at 80%. The records had below acceptable levels of agreement in all the sub-Counties except for Rarieda and Alego Usonga. This could be due to incomplete documentation.

Table 3.5.1k:Levels of agreement for regimen documentation

County	Sub County	Numbers					Matching	
		Log books in facility	Records in TIBU	Records in Register	Regimen in logbook matching that in register	Regimen in TIBU matching that in Register	Log book VS DRTB Register	TIBU Vs Register
Laikipia	Laikipia East	1	1	1	1	1	100%	100%
Laikipia	Laikipia North	2	2	2	2	2	100%	100%
Mombasa	Mvita	3	2	3	1	1	33%	33%
Nakuru	Nakuru East	1	2	1	1	1	100%	100%
Siaya	Alego Usonga A	1	1	1	0	0	0%	0%
Siaya	Rarieda	3	3	3	3	2	100%	67%
Kenya		11	11	11	8	7	73%	64%

The overall agreement for regimen documentation was below the acceptable range.where the agreement levels between the DRTB regimement on TIBU and logbook, DRTB register and logbook at 64% and 73%. This indicates that there were inconsistencies in documenting the DRTB regimen across the different tools.

Table 3.5.1l:Levels of agreement for resistant pattern documentation

County	Sub County	Numbers					Matching	
		Log books in facility	Records in TIBU	Records in Register	Resistant Pattern in logbook matching that in register	Resistant Pattern in register matching that in TIBU	Log book VS DRTB Register	TIBU Vs Register
Laikipia	Laikipia East	1	1	1	1	1	100%	100%
Laikipia	Laikipia North	2	2	2	2	2	100%	100%
Mombasa	Mvita	0	0	0	1	1	0%	0%
Nakuru	Nakuru East	1	0	1	1	1	100%	100%
Siaya	Alego Usonga A	0	1	1	0	1	0%	100%
Siaya	Rarieda	2	2	2	2	2	100%	100%
Kenya		6	6	7	8	9	114%	129%

There were discrepancies in recording resistance patterns in different sub-counties. The overall concordance for resistance pattern was 129%, In TIBU compared to the Log book at 114%. In Alego Usonga A Sub-county resistance pattern was not documented in the Log book. Nakuru East Sub- County, resistance pattern was documented in the register but not in TIBU.

Table 3.5.1m: Levels of agreement for outcomes documentation in logbook, TIBU and in comparison to DRTB register (case-based data)

County	Sub County	Numbers					Matching	
		Log books in facility	Records in TIBU	Records in Register	Outcome in logbook matching that in register	Outcome in register matching that in TIBU	Log book VS DRTB Register	TIBU Vs Register
Laikipia	Laikipia East	1	1	1	1	1	100%	100%
Laikipia	Laikipia North	2	2	2	2	2	100%	100%
Mombasa	Mvita	2	2	1	1	1	100%	100%
Nakuru	Nakuru East	1	1	2	1	1	50%	50%
Siaya	Alego Usonga A	1	1	1	0	1	0%	100%
Siaya	Rarieda	2	3	3	3	3	100%	100%
Kenya		9	10	10	8	9	80%	90%

The level of agreement between the logbook and DRTB register, TIBU and the DRTB register was 80% and 90% respectively. However, there were discrepancies in the number of records in TIBU compared to the DRTB register, particularly in Nakuru East (50%). Outcomes were documented in all tools in all sub-counties except Rarieda sub-county where the logbook had fewer records compared to TIBU and DRTB registers. Nakuru East sub-county had a concordance of 50% which contributed to the low overall performance. This may be attributed to inadequate mentorship in the use of the DRTB register and delay in updating of outcomes in TB register among other reasons.

Table 3.5.1n: Levels of agreement for outcomes date

County	Sub-county	Numbers					Matching	
		Log books in the facility	Records in TIBU	Records in Register	Outcome date in logbook matching that in register	Outcome date in register matching that in TIBU	Log book VS DRTB Register	TIBU Vs Register
Laikipia	Laikipia East	0	0	0	0	0	N/A	N/A
Laikipia	Laikipia North	2	2	2	2	2	100%	100%
Mombasa	Mvita	0	0	0	0	0	N/A	N/A
Nakuru	Nakuru East	1	1	0	1	0	0%	0%
Siaya	Alego Usonga A	0	0	0	0	0	N/A	N/A
Siaya	Rarieda	2	2	2	2	2	100%	100%
Kenya		5	5	4	5	4	125%	100%

The level of agreement on dates of treatment outcome in logbook and TIBU was compared with the DRTB register. The records in all the tools matched in all sub counties except in Nakuru East sub county. The overall concordance matches the logbook and the register, TIBU and the register at 125% and 100% respectively. Only two sub counties (Laikipia North and Rarieda) had a concordance of 100% in all the tools.

3.6: Tuberculosis Preventive Therapy

Table3.6.1a:Levels of agreement for aggregated data for TPT

County	Sub Counties	2022			Agree-ment (TPT Card vs Reg)	Agreement (TIBU vs Reg)	2023 Q1			Agreement (TPT Card vs Reg)	Agreement (TIBU vs Reg)	Average (2022/2023)	
		TPT Cards	Reg	TIBU			TPT Card	Reg	TIBU			Agreement (TPT Card vs Reg)	Agreement (TIBU vs Reg)
Kisumu	Kisumu East	88	132	111	66.70%	84.10%	83	94	106	88.30%	112.80%	77.50%	98.40%
Kisumu	Nyakach	5	109	0	4.60%	0.00%	0	32	0	0.00%	0.00%	2.30%	0.00%
Laikipia	Laikipia East	0	95	83	0.00%	87.40%	0	143	75	0.00%	52.40%	0.00%	69.90%
Laikipia	Laikipia North	0	22	14	0.00%	63.60%	0	10	5	0.00%	50.00%	0.00%	56.80%
Mombasa	Jomvu	0	95	95	0.00%	100.00%	0	0	0	100.00%	100.00%	50.00%	100.00%
Mombasa	Mvita	0	258	228	0.00%	88.40%	0	107	104	0.00%	97.20%	0.00%	92.80%
Nakuru	Kuresoi North	0	11	22	0.00%	200.00%	0	37	27	0.00%	73.00%	0.00%	136.50%
Nakuru	Nakuru East	0	54	54	0.00%	100.00%	0	13	13	0.00%	100.00%	0.00%	100.00%
Siaya	Alego Usonga A	33	59	45	55.90%	76.30%	22	37	30	59.50%	81.10%	57.70%	78.70%
Siaya	Rarieda	166	208	185	79.80%	88.90%	82	100	111	82.00%	111.00%	80.90%	100.00%
Kenya		297	1043	837	28.50%	80.20%	187	573	471	32.60%	82.20%	30.60%	81.20%

The Aggregate data for household contacts of bacteriologically confirmed pulmonary TB patients who were initiated on Tuberculosis Preventive Therapy for the years 2022 and 2023 quarter one were collected from all the facilities that were visited (186).In 2023, the overall level of agreement for TPT record cards data when compared to the TPT register was at 32.6%. This was an improvement compared to the previous findings from the DQA report of 2022, at 11%. The level of agreement between the register and TIBU was 82.2%. This was a drop as compared to the previous findings of the DQA report of 2022, at 85%. Suggesting a low notification of clients initiated on TPT in TIBU(471) compared to the TPT register (573). Nyakach(0%). There was no TPT data in TIBU), Laikipia North (50%), Laikipia East (52.4%), Kuresoi North (73%) and Alego Usonga A (81%),had the below the acceptable levels of agreement between TPT register and TIBU.This could be attributed to unavailability of the record cards. However, there were four sub counties that had the record cards that were printed and distributed by their county level implementing partners. Despite the fact the cards were available in these four sub-counties, the teams observed that not all clients on the registers were assigned a record card. There was a variation of the data in the TPT registers as compared to what was notified in TIBU. This could have been attributed to lack of prioritization and notification of TPT data by the TB Coordinators. In the review of 2022 data, the level of agreement between the TPT record cards and TPT register was 28.5%, while between the TPT register and TIBU was 80.2%. There were 2 sub-counties (Nakuru East and Jomvu) that had 100% data concordance between the TPT register and TIBU. This means that the TB coordinators notified all contacts that were initiated on TPT. Nyakach (0%) There was no TPT data in TIBU, Laikipia North 64%, Alego Usonga A 76% and Kisumu East(84%) had below acceptable levels of data agreement between the TPT register and TIBU. In conclusion, there were fewer clients that were notified in TIBU in 2022 as compared to those that were documented in the TPT register.

Table 3.6.1b: Levels of the agreement for aggregated data for TPT outcome "RFT"

| County | Sub Counties | 2022 | | Agreement (TIBU vs Reg) |
		Reg	TIBU	
Kisumu	Kisumu East	63	70	111%
Kisumu	Nyakach	129	3	2%
Laikipia	Laikipia East	59	0	0%
Laikipia	Laikipia North	17	0	0%
Mombasa	Jomvu	0	0	NA
Mombasa	Mvita	136	211	155%
Nakuru	Kuresoi North	11	5	45%
Nakuru	Nakuru East	6	9	150%
Siaya	Alego Usonga A	44	9	20%
Siaya	Rarieda	101	117	116%

The National TB Program monitors the outcomes of the clients that are initiated on TPT. The outcomes include being released from treatment, lost to follow up, discontinued and died. The outcomes that were reviewed in this DQA exercise were released from treatment and died (Quarter 1- Quarter 3, 2022). The overall level of agreement of those released from TPT between TIBU and the TPT register was at 116% as compared with the previous DQA findings report of 2022, at 134%. This suggests some clients' outcomes were not updated in TIBU.Mvita (155%) and Nakuru East (150%) had more outcomes in TIBU as compared to the registers. On the other hand, there were 3 sub counties that (Laikipia East and Laikipia North 0%, Nyakach 2% had below acceptable levels of outcomes in TIBU as compared to the registers

In conclusion, it was noted that not all clients initiated on TPT were assigned an outcome, a case in point of Jomvu which had 95 clients initiated on TPT and none had an assigned outcome in both the register and in TIBU.

Levels of agreement for aggregated data for TPT outcome "Died"

There were no deaths that were recorded for clients initiated on TPT in all facilities that were visited.

3.7: Active Case Finding Cascade

The DQA exercise reviewed records on the Active Case Finding (ACF) cascade for Quarter 1 2023 where data from the ACF facility summary tool was compared with TIBU. The variables of interest were those Total screened for TB, those with presumed TB and those investigated for TB.

County	Sub County	Screened in Facility Summary tool	Screened in TIBU	Level of Agreement	Presumed in Facility Summary tool	Presumed in TIBU	Level of Agreement	Investigated in Facility Summary tool	Investigated in TIBU	Level of Agreement
Kisumu	Kisumu East	74889	68131	91.00%	1018	956	93.90%	969	843	87.00%
Kisumu	Nyakach	18584	0	0.00%	124	0	0.00%	116	0	0.00%
Laikipia	Laikipia East	59317	74313	125.30%	3244	3373	104.00%	864	787	91.10%
Laikipia	Laikipia North	12390	4968	40.10%	1167	181	15.50%	269	111	41.30%
Mombasa	Jomvu	6167	6167	100.00%	47	47	100.00%	47	47	100.00%

Mombasa	Mvita	48369	48660	100.60%	1361	1261	92.70%	685	599	87.40%
Nakuru	Kuresoi North	11214	10004	89.20%	83	71	85.50%	80	46	57.50%
Nakuru	Nakuru East	64717	44745	69.10%	1597	1471	92.10%	951	807	84.90%
Siaya	Alego Usonga A	169059	71305	42.20%	1799	758	42.10%	1627	758	46.60%
Siaya	Rarieda	88574	56628	63.90%	2607	1190	45.60%	1400	1190	85.00%
Kenya		553280	384921	69.60%	13047	9308	71.30%	7008	5188	74.00%

The overall level of agreement between the facility ACF summary tool against TIBU for those screened was 69.6%. Those presumed with TB the agreement levels between the facility ACF summary tool and TIBU was 71.3%. Those investigated with TB between the ACF summary tool and TIBU was at 74% from these findings, it is observed that there was underreporting in TIBU along the ACF cascade contrary to the over-reporting in TIBU as documented in the previous DQA report,2022 at 165% for those screened, 205% among presumed TB cases and 170% for the investigated.I n conclusion, validation of t-bu lite data is essential to ensure concurrence. In some facilities, the ACF summary tools were missing.

3.8: Leprosy Findings

Leprosy is a chronic bacterial infectious disease caused by the bacillus Mycobacterium leprae, which causes anesthetic skin lesions, enlarged peripheral nerves, and acid-fast bacilli in skin smear as typical clinical signs. Since 1989, Kenya has maintained a global leprosy elimination target at the national level, adhering to the WHO elimination target of less than one Case per 10,000 people. In this DQA exercise, the period under review was 2022 and 2023 Q1. There were no leprosy cases reported in 2023 from all facilities that were visited. In 2022 there was one facility in Alego Usonga A (Siaya County referral Hospital) in Siaya County that notified one case of PB type of leprosy in TIBU and one case in the leprosy register. This case was released from treatment and documented in the register and in TIBU.

3.9: M&E recording and reporting tools

The DQA excercise for the year, 2022 was conducted across 186 facilities (Annex 3) visited for availability of key tracer recording and reporting tools. The indicators/areas reviewed within the tools were on availability, version of tools, utilization and sufficiency stock lasting 3 months. The Program reviewed and distributed all recording and reporting tools that had version 2020.

Table 3.9.1a: Availability of DSTB recording and reporting tools

M&E tool type	Response (n=186)
TB5 Patient Record card	169 (91%)
TB4 register	183 (98%)
Lab request form	165 (89%)
Commodity reporting tool	170 (91%)

Majority of the facilities visited had TB5 cards, TB4 registers and facility commodity reporting tools. Eleven percent of the facilities didn't have sputum request forms as shown in Table 3.9a.

Table 3.9.1b: Tools version

Version	Record Card n (%)	TB4 Register n (%)	TB Appointment cards n (%)	Lab request form n (%)	Commodity reporting tool n (%)
2016	16 (9%)	23 (12%)	76 (41%)	3 (2%)	6 (3%)
2017	0 (0%)	13 (7%)	1 (1%)	0 (0%)	19 (10%)
2018	0 (0%)	0 (0%)	0 (0%)	1 (1%)	0 (0%)
2020	152 (89%)	147 (79%)	55 (30%)	155 (83%)	134 (72%)
Missing	1 (1%)	0 (0%)	52 (28%)	24 (13%)	26 (14%)
None of the Above	17 (10%)	3 (2%)	2 (1%)	3 (2%)	1 (1%)

The most prevalent version of appointment cards was version 2016 at 41%. TB patient record cards was version 2020. 11% of the facilities were using TB record cards without the version indicated 79% of facilities were using 2020 versions of TB4 registers 1% improvement from the previous DQA report, 2022 at 78% 83% of facilities were using the 2020 version for sputum request forms. 2% of the visited facilities had registers without versions indicated. 24 facilities had sputum request forms with missing versions. 14% of commodity tools had missing versions with 72% using the 2020 version as shown in Table 3.9b.

Table 3.9.1c: Utilization of M&E recording and reporting tools

Utilization	Record Card Version n (%)	TB4 Register n (%)	Lab request form n (%)	Commodity reporting tool n (%)
Yes	80 (43%)	110 (59%)	103 (55%)	99 (53%)
Partly	85 (46%)	70 (38%)	59 (32%)	69 (37%)
Not Applicable	4 (2%)	3 (2%)	3 (2)	2 (1%)
Missing	17 (9%)	3 (2%)	21 (11%)	16 (9%)

In the section, the assessment was reviewing completion/documentation of key variables within the tools to ascertain usage. Utilization of record cards, Lab request forms and commodity reporting tools was suboptimal as shown by this assessment. Complete utilization of assessed record cards was at 43% (a drop from the previous assessment of 46%) yet this is a primary patient document. Six facilities reported not to be utilizing TB4 registers.

Table 3.9.1d: Stock sufficiency of M&E recording and reporting tools

Stock Sufficiency	Record Card Version n (%)	TB4 Register n (%)	Lab request form n (%)
No tools	17 (9%)	3 (2%)	21 (11%)
Insufficient	46 (25%)	33 (18%)	38 (20%)
Sufficient	123 (66%)	150 (81%)	127 (68%)

Most of the facilities had sufficient stocks for all the recording tools except the TB appointment cards. However, 14% of the facilities indicated TB appointment cards are not applicable to the.

Table 3.9.1e: Facilities missing M&E recording and reporting tools

TB4 facility register			
No	County	Sub County	Health Facility
1	Mombasa	Mvita	Alliance Medical Centre (Mombasa)
2	Mombasa	Mvita	Pandya Memorial Hospital

Table 3.9.1f: These facilities had a TB register provided by RESOK for private facilities.

Patient record cards							
No	County	Sub County	Health Facility	No	County	Sub County	Health Facility
1	Kisumu	Kisumu East	Kuoyo Health Centre	10	Nakuru	Nakuru East	Bondeni Dispensary (Nakuru Central)
2	Kisumu	Kisumu East	Simba Opepo Dispensary	11	Nakuru	Nakuru East	Lanet Health Centre
3	Mombasa	Mvita	Aga Khan Hospital (Mombasa)	12	Nakuru	Nakuru East	Langa Langa Health Centre
4	Mombasa	Mvita	Al Farooq Hospital	13	Nakuru	Nakuru East	Mercy Mission Hospital - Annex Nakuru
5	Mombasa	Mvita	Alliance Medical Centre (Mombasa)	14	Nakuru	Nakuru East	Mirugi Kariuki Dispensary
6	Mombasa	Mvita	Mvita Dispensary	15	Nakuru	Nakuru East	Nairobi Women's Hospital
7	Mombasa	Mvita	Pandya Memorial Hospital	16	Siaya	Alego Usonga A	Oasis Health Siaya
8	Mombasa	Mvita	Reachout Center Medical Clinic	17	Siaya	Rarieda	Wagoro Dispensary (Rarieda)
9	Mombasa	Mvita	Tudor District Hospital (Mombasa)				

Laboratory Register							
No	County	Sub County	Health Facility	No	County	Sub County	Health Facility
1	Kisumu	Kisumu East	Kisumu Specialist Hospital	12	Mombasa	Mvita	Mewa Hospital
2	Mombasa	Jomvu	Mikindani Hospital	13	Mombasa	Mvita	Mvita Dispensary
3	Mombasa	Jomvu	Mikindani Medical Clinic	14	Mombasa	Mvita	Mwembe Tayari Staff Clinic
4	Mombasa	Jomvu	St. Patricks Dispensary	15	Mombasa	Mvita	Pandya Memorial Hospital
5	Mombasa	Mvita	Aga Khan Hospital (Mombasa)	16	Mombasa	Mvita	Railway Dispensary
6	Mombasa	Mvita	Alliance Medical Centre (Mombasa)	17	Mombasa	Mvita	Reachout Center Medical Clinic
7	Mombasa	Mvita	Ganjoni Hospital	18	Mombasa	Mvita	Tudor District Hospital (Mombasa)
8	Mombasa	Mvita	Jaffery Medical Clinic	19	Nakuru	Kuresoi North	Chepkinoiyo Dispensary
9	Mombasa	Mvita	Kaderboy Medical Clinic (Old Town)	20	Nakuru	Nakuru East	Langa Langa Health Centre
10	Mombasa	Mvita	Kenya Ports Authority Staff Clinic	21	Siaya	Rarieda	Wagoro Dispensary (Rarieda)
11	Mombasa	Mvita	Majengo Dispensary (Mombasa)				

Commodity Register (FCDRR)								
No	County	Sub County	Health Facility		No	County	Sub County	Health Facility
1	Kisumu	Kisumu East	Nyalunya Dispensary		9	Nakuru	Kuresoi North	Murindoku Dispensary
2	Kisumu	Nyakach	Sondu Health Centre		10	Nakuru	Kuresoi North	Total Dispensary
3	Mombasa	Mvita	Aga Khan Hospital (Mombasa)		11	Siaya	Alego Usonga A	Barding Dispensary
4	Mombasa	Mvita	Alliance Medical Centre (Mombasa)		12	Siaya	Alego Usonga A	Bliss GVS Health Care Limited-Siaya
5	Mombasa	Mvita	Pandya Memorial Hospital		13	Siaya	Alego Usonga A	GEDMED MEDICAL CENTER AND NURSING HOME
6	Mombasa	Mvita	Seaside Nursing Home		14	Siaya	Alego Usonga A	Oasis Health Siaya
7	Nakuru	Kuresoi North	Chepkinoiyo Dispensary		15	Siaya	Alego Usonga A	Pemah Nursing and Maternity Home
8	Nakuru	Kuresoi North	Mau Summit Medical Clinic		16	Siaya	Alego Usonga A	Ulafu Dispensary

CONCLUSION AND RECOMMENDATIONS

4

4.1: Conclusions

- The DQA analysis demonstrates an overall improvement in the level of agreement in DSTB data, reaching 98.7% compared to 95% in the DQA report of 2022.

- The analysis further indicates an improvement in utilization of the patient record cards from 82% in the 2022 DQA report to 93.1% .

- There was a decrease in the level of agreement for treatment outcomes between TIBU and the TB4 register, dropping to 82.2% from 89.3% in the DQA report of 2022. This could be attributed to outcomes of Transferred out cases being updated in TIBU but not in the facility registers.

- The level of agreement between TIBU and the TB 4 register for clinically diagnosed cases remained constant at 97%, as reported in the DQA report of 2022.

- DRTB analysis still indicates over-reporting in TIBU, with a rate of 166% compared to 164% in the DQA report of 2022. This over-reporting was mainly attributed to the lack of DRTB registers at the facility level. However, the level of agreement between TIBU and the DRTB Logbooks was 100%.

- The level of agreement in TPT documentation dropped from 86% in the DQA of 2022 to 82%. It was noted, however, that two counties (Siaya and Kisumu) visited had ICF cards, while the other counties lacked this tool.

- Only one leprosy case record was reviewed for the sampled counties, and there was a 100% level of agreement between the register and TIBU.

- Lack of clear guidance on handover procedures in the current program operations manual and onboarding of new coordinators affected data quality in some of the visited sub counties

- Some of the visited facilities reported stock outs of certain recording and reporting tools

4.2 Recommendations

	Recommendation	Level of Priority	Responsible Person (s) / Organizations
1	The DQA tool should focus on DRTB data for a full calendar year only	Medium	DNTLD - P
2	The program should evaluate the need of the DRTB register at facility level considering the level of agreement between TIBU and the DRTB Log books was at 100%	High	DNTLD - P
3	The program and counties should provide for sensitization of HCWs on classification of patients considering the roll out of new diagnostic tools (Truenat, TB LAM, TB Lamp, CAD4TB)	High	DNTLD - P
4	Enhance documentation of TPT records in t-bu lite for workload share between the facility staff and the SCTLCs	Medium	DNTLD – P & County
5	The program should conduct a follow-up TA to collect information on the areas that have shown improvement or a drop compared to previous DQA.	High	DNTLD-P and county
6	The program should review the operations manual to guide the handover and onboarding of new CTLCs/ SCTLCs	High	DNTLD - P
7	The program and county teams should conduct periodic data quality sensitization to the coordinators and facility staff engaged in TB management	Medium	DNTLD - P and County Teams
8	Sustain the engagement of County and Sub County coordinators in development, training and roll out of updated recording and reporting tools	Medium	DNTLD - P and County Teams

ANNEXES

5

Annex 5.1a: List of contributors in report writing

| No	Name	Organization	No	Name	Organization
1	Aiban Ronoh	DNTLD-P	17	Joyce Kiarie	DNTLD-P
2	Carolyne Kiplagat	Nakuru	18	Lilian Kerubo	DNTLD-P
3	David Mureithi	Laikipia	19	Linda Mcodongo	CHS-TBARC II
4	Dennis Oira	CHS-TBARC II	20	Lutta Maero	CHS-TBARC II
5	Dr. Abdullahi Omar	DNTLD-P	21	Martin Githiomi	DNTLD-P
6	Dr. Boru Okotu	DNTLD-P	22	Mary Nyagah	DNTLD-P
7	Dr. Immaculate Kathure	DNTLD-P	23	Mary Wambura	Siaya
8	Dr. Judith Barasa	Nakuru	24	Nduta Waweru	DNTLD-P
9	Dr. Stephen Macharia	DNTLD-P	25	Nkirote Mwirigi	DNTLD-P
10	Drusilla Nyaboke	DNTLD-P	26	Pricilla Laibon	DNTLD-P
11	Elvis Muriithi	DNTLD-P	27	Rhoda Pola	DNTLD-P
12	Felix Mbetera	DNTLD-P	28	Silas Kamuren	DNTLD-P
13	Frida Kageni	DNTLD-P	29	Timothy Kiprotich	DNTLD-P
14	Godana Adano	DNTLD-P	30	Timothy Malika	Kisumu
15	Jacqueline Limo	DNTLD-P	31	Vallerian Karani	DNTLD-P/FELTP
16	Joshua Ojowi	DNTLD-P	32	Zacchaeus Muiruri	KCCB

Annex 5.1b: List of contributors during data collection

No	Name	Organization	County	No	Name	Organization	County
1	Silas Kamuren	DNTLD-P	Kisumu	23	Dr. Immaculate Kathure	DNTLD-P	Mombasa
2	Kadondi Kasera	MOH - HQ	Kisumu	24	Abdille Farah	DNTLD-P	Mombasa
3	Jacqueline Limo	DNTLD-P	Kisumu	25	Steven Kabuoro	Mombasa	Mombasa
4	Joyce Kiarie	DNTLD-P	Kisumu	26	Godana Adano	DNTLD-P	Mombasa
5	Catherine Githinji	DNTLD-P	Kisumu	27	Geoffrey Kiprotich	DNTLD-P	Nakuru
6	Timothy Malika	Kisumu County	Kisumu	28	Carolyne Kiplagat	DNTLD-P	Nakuru
7	Aiban Ronoh	DNTLD-P	Kisumu	29	Felix Mbetera	DNTLD-P	Nakuru
8	Delphine Rose	Kisumu County	Kisumu	30	Martin Githiomi	DNTLD-P	Nakuru
9	Vallerian Karani	DNTLD-P/FELTP	Laikipia	31	Nkirote Mwirigi	DNTLD-P	Nakuru
10	Patrick Kimani	Laikipia County	Laikipia	32	Moses Kigen	DNTLD-P	Nakuru
11	David Mureithi	Laikipia County	Laikipia	33	Dr. Judith Barasa	DNTLD-P	Nakurud
12	Timothy Kiprotich	DNTLD-P	Laikipia	34	Lilian Kerubo	DNTLD-P	Nakuru
13	John Kimengich	Laikipia County	Laikipia	35	Laura Onzere	DNTLD-P	Siaya
14	Mary Nyagah	DNTLD-P	Laikipia	36	Margaret Atieno	Siaya County	Siaya
15	John Mutisya	DNTLD-P	Laikipia	37	MAUREEN RAPONDI	Siaya County	Siaya
16	Henry Wanje	DNTLD-P	Laikipia	38	Drusilla Nyaboke	DNTLD-P	Siaya
17	Salome Nzioka	DNTLD-P	Laikipia	39	Rhoda Pola	DNTLD-P	Siaya
18	Galmo Dulacha	DNTLD-P	Laikipia	40	Mary Wambura	Siaya County	Siaya
19	Ahmed Omar	Mombasa	Mombasa	41	Nduta Waweru	DNTLD-P	Siaya
20	Dr. Boru Okotu	DNTLD-P	Mombasa	42	Dr. Joseph Lenai	MOH - HQ	Siaya
21	Elvis Muriithi	DNTLD-P	Mombasa	43	Dr. Andrew Mulwa	MOH - HQ	Siaya
22	Cosmas Mwamburi	Mombasa	Mombasa	44	Mary Okello	Kisumu County	Kisumu

Annex 5.1c: List of health facilities

NO	County	Sub County	Health Facility	No	County	Sub County	Health Facility
1	Kisumu	Kisumu East	Angola Community Dispensary	94	Mombasa	Mvita	Pandya Memorial Hospital
2	Kisumu	Kisumu East	Chiga Dispensary	95	Mombasa	Mvita	Railway Dispensary
3	Kisumu	Kisumu East	Disciples of Mercy Clinic	96	Mombasa	Mvita	Reachout Center Medical Clinic
4	Kisumu	Kisumu East	GK Prisons Dispensary (Kibos)	97	Mombasa	Mvita	Seaside Nursing Home
5	Kisumu	Kisumu East	Got Nyabondo Dispensary	98	Mombasa	Mvita	Tononoka Administration Police Dispensary & VCT
6	Kisumu	Kisumu East	Kajulu/Gita Dispensary	99	Mombasa	Mvita	Tudor District Hospital (Mombasa)
7	Kisumu	Kisumu East	Kibos Sugar Research Dispensary	100	Mombasa	Mvita	Tudor Health Care
8	Kisumu	Kisumu East	Kisumu Specialist Hospital	101	Nakuru	Kuresoi North	Chepkinoiyo Dispensary
9	Kisumu	Kisumu East	Kotunga Dispensary	102	Nakuru	Kuresoi North	Ikumbi Health Centre
10	Kisumu	Kisumu East	Kowino Dispensary	103	Nakuru	Kuresoi North	Kamara Dispensary
11	Kisumu	Kisumu East	Kuoyo Health Centre	104	Nakuru	Kuresoi North	Kewamoi Dispensary
12	Kisumu	Kisumu East	Nyalunya Dispensary	105	Nakuru	Kuresoi North	Kiptororo Dispensary (CDF)
13	Kisumu	Kisumu East	OLPS Clinic	106	Nakuru	Kuresoi North	Kuresoi Health Centre
14	Kisumu	Kisumu East	Orongo Dispensary	107	Nakuru	Kuresoi North	Mau Summit Medical Clinic
15	Kisumu	Kisumu East	Simba Opepo Dispensary	108	Nakuru	Kuresoi North	Murindoku Dispensary
16	Kisumu	Kisumu East	St Consolata Clinic	109	Nakuru	Kuresoi North	Neema Medical Home Limited
17	Kisumu	Kisumu East	St Elizabeth Chiga Health Centre	110	Nakuru	Kuresoi North	Seguton Dispensary
18	Kisumu	Kisumu East	St Monica Hospital	111	Nakuru	Kuresoi North	Sirikwa Peace Dispensary
19	Kisumu	Kisumu East	St. Lucia Medical Centre	112	Nakuru	Kuresoi North	St Joseph Nursing home
20	Kisumu	Kisumu East	Star Hospital Annex-Kisumu	113	Nakuru	Kuresoi North	St Martin De Porres (Static)
21	Kisumu	Nyakach	Andingo Opanga Dispensary	114	Nakuru	Kuresoi North	Total Dispensary
22	Kisumu	Nyakach	Bonde Dispensary	115	Nakuru	Nakuru East	3KR Health Centre
23	Kisumu	Nyakach	Katito Health Centre	116	Nakuru	Nakuru East	Afraha Maternity and Nursing Home
24	Kisumu	Nyakach	Kibogo Dispensary	117	Nakuru	Nakuru East	Algadir medical clinic
25	Kisumu	Nyakach	Nyabondo Mission Hospital	118	Nakuru	Nakuru East	Baraka Maternity Home
26	Kisumu	Nyakach	Nyakach (AIC) Dispensary	119	Nakuru	Nakuru East	Bondeni Dispensary (Nakuru Central)
27	Kisumu	Nyakach	Nyamarimba Dispensary	120	Nakuru	Nakuru East	Bondeni Maternity
28	Kisumu	Nyakach	Nyando District Hospital	121	Nakuru	Nakuru East	Family health options kenya (Nakuru)
29	Kisumu	Nyakach	Oboch Dispensary	122	Nakuru	Nakuru East	Fountain Medical clinic
30	Kisumu	Nyakach	Onyuongo Dispensary	123	Nakuru	Nakuru East	Lanet Health Centre
31	Kisumu	Nyakach	Pedo Dispensary	124	Nakuru	Nakuru East	Langa Langa Health Centre
32	Kisumu	Nyakach	Radienya Dispensary	125	Nakuru	Nakuru East	Mediheal Hospital Nakuru
33	Kisumu	Nyakach	Rae Dispensary	126	Nakuru	Nakuru East	Menengai Health Centre
34	Kisumu	Nyakach	Sango Rota Dispensary	127	Nakuru	Nakuru East	Mercy Mission Hospital - Annex Nakuru
35	Kisumu	Nyakach	Sigoti Health Centre	128	Nakuru	Nakuru East	Mirugi Kariuki Dispensary

36	Kisumu	Nyakach	Sondu Health Centre		129	Nakuru	Nakuru East	Nairobi Women's Hospital
37	Kisumu	Nyakach	St Clare Bolo Health Centre		130	Nakuru	Nakuru East	Nakuru Nursing Home
38	Laikipia	Laikipia East	GK Prisons Dispensary (Laikipia East)		131	Nakuru	Nakuru East	St Elizabeth Nursing Home
39	Laikipia	Laikipia East	Huruma Health Centre (Laikipia East)		132	Nakuru	Nakuru East	The Nakuru Specialist Hospital
40	Laikipia	Laikipia East	Kalalu Dispensary		133	Nakuru	Nakuru East	Valley Hospital
41	Laikipia	Laikipia East	Kariguini Dispensary		134	Siaya	Alego Usonga A	Ashburn Ohuru Clinic
42	Laikipia	Laikipia East	Kihato Dispensary		135	Siaya	Alego Usonga A	Bama Hospital
43	Laikipia	Laikipia East	Lamuria Dispensary (Laikipia East)		136	Siaya	Alego Usonga A	Bar Agulu Dispensary
44	Laikipia	Laikipia East	Likii Dispensary		137	Siaya	Alego Usonga A	Bar Olengo Dispensary
45	Laikipia	Laikipia East	Matanya Dispensary		138	Siaya	Alego Usonga A	Barding Dispensary
46	Laikipia	Laikipia East	Mugumo Dispensary		139	Siaya	Alego Usonga A	Bliss GVS Health Care Limited-Siaya
47	Laikipia	Laikipia East	Nanyuki Cottage Hospital		140	Siaya	Alego Usonga A	Future life Dispensary
48	Laikipia	Laikipia East	Nanyuki District Hospital		141	Siaya	Alego Usonga A	GEDMED MEDICAL CENTER AND NURSING HOME
49	Laikipia	Laikipia East	Ngobit Dispensary		142	Siaya	Alego Usonga A	GOK Prison Siaya
50	Laikipia	Laikipia East	Solio Dispensary		143	Siaya	Alego Usonga A	Kaluo Dispensary
51	Laikipia	Laikipia East	St Joseph Catholic Dispensary (Laikipia East)		144	Siaya	Alego Usonga A	Kogelo Dispensary
52	Laikipia	Laikipia East	Sweet Waters Dispensary		145	Siaya	Alego Usonga A	Mbaga Health Centre
53	Laikipia	Laikipia East	Wiyumiririe Dispensary		146	Siaya	Alego Usonga A	Mulaha Dispensary
54	Laikipia	Laikipia North	Arjijo Dispensary		147	Siaya	Alego Usonga A	Mur Malanga Dispensary
55	Laikipia	Laikipia North	Chumvi Dispensary		148	Siaya	Alego Usonga A	Nduru Dispensary
56	Laikipia	Laikipia North	Doldol Health Centre		149	Siaya	Alego Usonga A	Ngiya Health Centre
57	Laikipia	Laikipia North	East Laikipia Dispensary		150	Siaya	Alego Usonga A	Nyathengo Dispensary
58	Laikipia	Laikipia North	Kimanjo Dispensary		151	Siaya	Alego Usonga A	Oasis Health Siaya
59	Laikipia	Laikipia North	Lokusero Dispensary		152	Siaya	Alego Usonga A	Pemah Nursing and Maternity Home
60	Laikipia	Laikipia North	Muramati Dispensary		153	Siaya	Alego Usonga A	Randago Dispensary
61	Laikipia	Laikipia North	Naibor Dispensary		154	Siaya	Alego Usonga A	Siaya District Hospital
62	Laikipia	Laikipia North	Ngenia Dispesary		155	Siaya	Alego Usonga A	Siaya Medical Centre

63	Laikipia	Laikipia North	Powys Dispensary		156	Siaya	Alego Usonga A	Tingwangi Health Centre
64	Laikipia	Laikipia North	Segera Mission Dispensary		157	Siaya	Alego Usonga A	TUMAINI DISC-SIAYA
65	Mombasa	Jomvu	Dinome Medical Centre		158	Siaya	Alego Usonga A	Ulafu Dispensary
66	Mombasa	Jomvu	Jomvu Kuu (MCM) Dispensary		159	Siaya	Alego Usonga A	Umala Dispensary
67	Mombasa	Jomvu	Jomvu Model Health Centre		160	Siaya	Rarieda	Abidha Health Centre
68	Mombasa	Jomvu	Joy Medical Clinic (Changamwe)		161	Siaya	Rarieda	Bar Aluru Dispensary (Rarieda)
69	Mombasa	Jomvu	Mikindani (MCM) Dispensary		162	Siaya	Rarieda	Chianda Dispensary (Rarieda)
70	Mombasa	Jomvu	Mikindani Catholic Dispensary		163	Siaya	Rarieda	Kagwa Health Centre
71	Mombasa	Jomvu	Mikindani Hospital		164	Siaya	Rarieda	Kopiata Beach Dispensary (Rarieda)
72	Mombasa	Jomvu	Mikindani Medical Clinic		165	Siaya	Rarieda	Kunya Dispensary
73	Mombasa	Jomvu	Miritini (MCM) Dispensary		166	Siaya	Rarieda	Lieta Health Centre (Rarieda)
74	Mombasa	Jomvu	Miritini CDF Dispensary		167	Siaya	Rarieda	Madiany Sub District Hospital
75	Mombasa	Jomvu	Miritini Treatment and Rehabilitation Center		168	Siaya	Rarieda	Mahaya Health Centre (Rarieda)
76	Mombasa	Jomvu	Mother Amadea Health Centre		169	Siaya	Rarieda	Mama Anns Odede Community Health Centre
77	Mombasa	Jomvu	Roadside Wellness (Jomvu)		170	Siaya	Rarieda	Manyuanda Health Centre (Rarieda)
78	Mombasa	Jomvu	St. Patricks Dispensary		171	Siaya	Rarieda	Masala Dispensary
79	Mombasa	Mvita	Aga Khan Hospital (Mombasa)		172	Siaya	Rarieda	Medijav Medical Services
80	Mombasa	Mvita	Al Farooq Hospital		173	Siaya	Rarieda	Misori Dispensary
81	Mombasa	Mvita	Alliance Medical Centre (Mombasa)		174	Siaya	Rarieda	Naya Health Centre
82	Mombasa	Mvita	Bomu Medical Center -Old Town		175	Siaya	Rarieda	Ndori Health Centre
83	Mombasa	Mvita	CDC Ganjoni Dispensary		176	Siaya	Rarieda	Nyagoko Dispensary
84	Mombasa	Mvita	Coast Province General Hospital		177	Siaya	Rarieda	Ongielo Health Centre
85	Mombasa	Mvita	Ganjoni Hospital		178	Siaya	Rarieda	Pap Kodero Health Centre
86	Mombasa	Mvita	Jaffery Medical Clinic		179	Siaya	Rarieda	Ragengni Dispensary
87	Mombasa	Mvita	Kaderboy Medical Clinic (Old Town)		180	Siaya	Rarieda	Rambugu Dispensary (Rarieda)
88	Mombasa	Mvita	Kenya Ports Authority Staff Clinic		181	Siaya	Rarieda	Ruma Ubuntu Afya Medical Clinic
89	Mombasa	Mvita	Majengo Dispensary (Mombasa)		182	Siaya	Rarieda	Saradidi Dispensary
90	Mombasa	Mvita	Memon Medical Centre		183	Siaya	Rarieda	St Elizabeth Lwak Mission Health Centre
91	Mombasa	Mvita	Mewa Hospital		184	Siaya	Rarieda	St Josephs Obaga Dispensary
92	Mombasa	Mvita	Mvita Dispensary		185	Siaya	Rarieda	St Mathews Kandaria Dispensary
93	Mombasa	Mvita	Mwembe Tayari Staff Clinic		186	Siaya	Rarieda	Wagoro Dispensary (Rarieda)
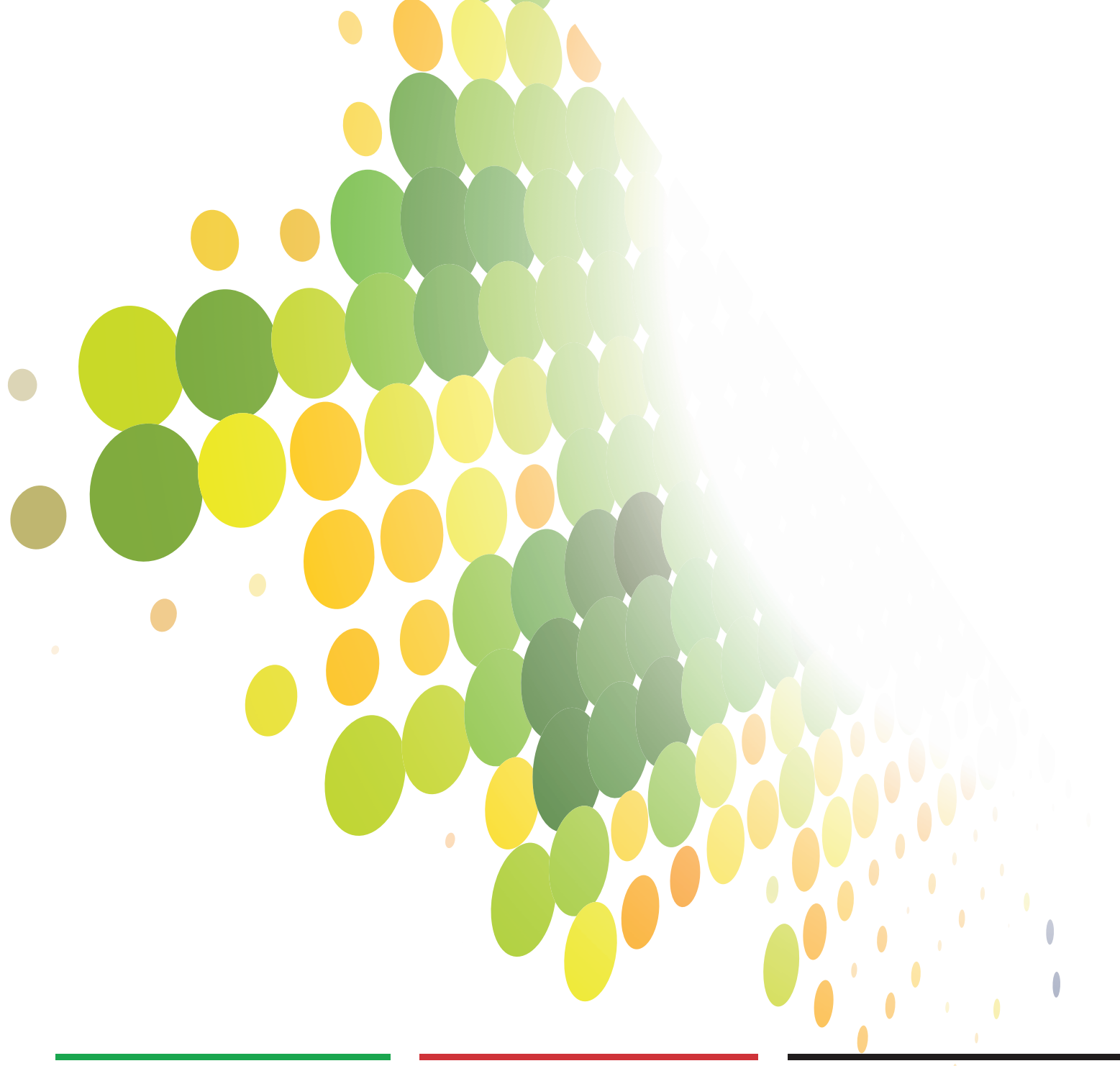
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