REPUBLIC OF KENYA

MINISTRY OF HEALTH

DATA QUALITY ASSESMENT REPORT

NATIONAL TUBERCULOSIS, LEPROSY AND LUNG DISEASE PROGRAM

2022

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FOREWARD

The National Tuberculosis Programme, in collaboration with partners such as the Global Fund, USAID, JICA, World Bank and WHO, has invested significant resources towards TB control. To demonstrate the quality of data at all reporting levels is critical to show the public health gains achieved by the Country in terms of the quality of care. Previous Data quality improvements and overall performance scorecards have presented a gap that data quality has not met the desired standard in terms of completeness, accuracy, integrity, consistency, timeliness and validity.

ACKNOWLEDGEMENT

The 2021 Data Quality Assessment was done in the six previous Counties visited in 2020 to compare the data quality between 2021 and 2022. The Division of National Tuberculosis, Leprosy and Lung Disease Program would like to thank USAID through HealthIT for their financial, technical and logistical support in implementing DQA for 2021 possible, as well as the development of the report.

We are also grateful to the respective health management teams of counties visited led by the county directors of health for their support and facilitation.

Finally, we acknowledge the NTP program officers, HealthIT technical team who developed this report and the communication team for their editorial contribution.

ABBREVIATIONS

ACF - Active Case Finding

TB - Tuberculosis

HIV - Human Immunodeficiency Virus

WHO – World Health Organization

DS TB – Drug Susceptible TB

DR TB – Drug Resistant TB

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

NTP - National Tuberculosis Program

DQA – Data Quality Audit

SCTLCs - Sub County TB and Leprosy Coordinators

IPT - Isoniazid Preventive Therapy

TPT - Tuberculosis Preventive Therapy

CTLCs – County TB and Leprosy Coordinators

TC – Treatment completed

LTFU – Lost to Follow up

TO – Transfer out

USAID - United States Agency for International Development

JICA - Japan International Cooperation Agency

RR - Rifampicin Resistant

CHAPTER ONE: INTRODUCTION

1.1 Background

Tuberculosis (TB) is the leading cause of mortality as a single infectious agent globally, caused by a bacteria known as mycobacterium tuberculosis. It mainly affects the lungs (pulmonary tuberculosis) or other body parts except for hair and nails. According to the WHO report 2021, a significant drop in people notified with TB was primarily attributed to challenges of the covid-19 pandemic. Approximately 10 million people developed TB in 2020, with 1.3 million TB deaths reported (up from 1.2 million in 2019). In addition, 1.2 million children under 5 years and 0.32 million people in older age groups were initiated on TPT in 2021. There were 132 222 cases of MDR/RR-TB and 25 681 cases of pre-XDR-TB or XDR-TB that were detected, for a combined total of 157 903.

WHO estimated that TB incidence in Kenya was 140,000 in 2021. The country notified a total of 77,854 drug-sensitive Tuberculosis (DSTB) cases representing 56% of the incidence cases. This was a 6.7% increase compared to 2020 when the Country notified 72,943 DSTB patients. In addition, there were 5,644 children below 5 years that were initiated on TPT in 2021. During the same period, the country detected and notified 804 people with drug-resistant tuberculosis (DRTB), with an annual incidence of 2500. Leprosy remains a public health concern even though the country has been post-elimination since 1989. Leprosy endemic countries continue to record new cases, with 99 new leprosy cases reported in 2021.

There are slightly over 13000 health facilities in the country registered by the Ministry of Health (MOH-KMHFL). Tuberculosis treatment and diagnostic services are available in slightly over 4500 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 the Kenyan setting, the majority (80%) of TB cases are reported by public health facilities. It is also worth noting 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, 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 to bridge the gaps in routine data. The country's robust surveillance system collects data at all service delivery points and reports through the web-based electronic reporting system, TIBU. The quality of data generated is essential. There are various data quality assurance mechanisms, scorecards, data review meetings, supportive supervision, technical assistance to counties, data for decision making(D4D), periodic external reviews and annual data quality assessments. The program revised recording and reporting tools in 2020 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.
The diagram below shows the data flow from facilities to the national system

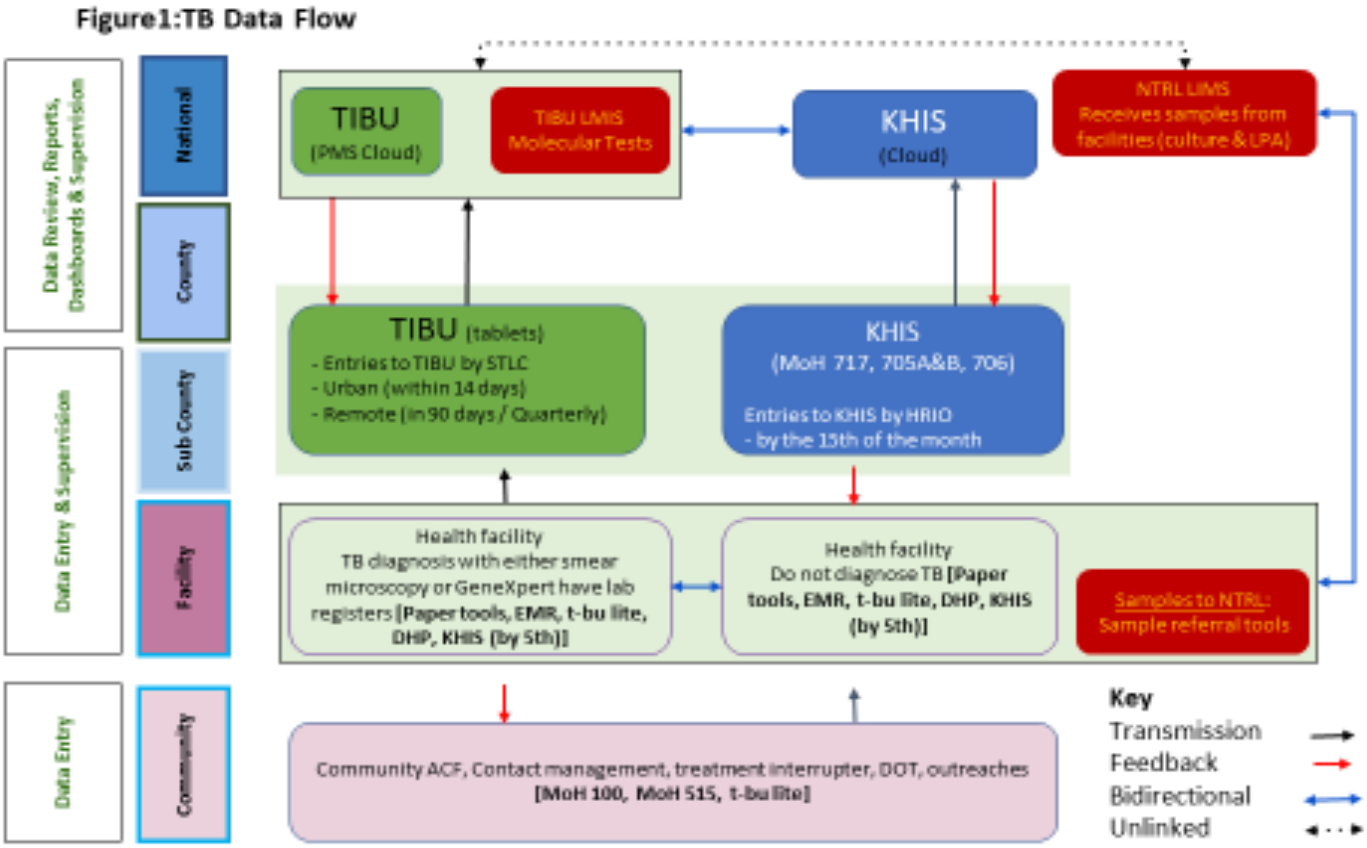

Figure 1: TB Data Flow diagram

Figure 2: Dimensions of Data quality

1.1.1 Dimension of Data Quality

Data quality assessment seeks to measure specific attributes of data quality. These attributes can be assessed, interpreted and continuously improved. The table below shows the most common attributes that TB and leprosy data quality can be evaluated against.

Table 1a: Dimensions of data quality

Dimension of Data Quality	
Accuracy	They are also known as validity. Accurate data are considered correct: they measure what they are intended to measure. Accurate data minimize errors (e.g., recording or interviewer bias, transcription error, sampling error) to the point of being negligible.
Completeness	Completeness means that an information system from which the results are derived is appropriately inclusive: it represents the complete list of eligible persons or units and not just a fraction of the list.
Confidentiality	Confidentiality means that clients are assured that their data will be maintained according to national and international standards for data. This means that personal data are not disclosed inappropriately, and that data in hard copy and electronic form are treated with appropriate levels of security (e.g., kept in locked cabinets and password-protected files).
Integrity	Data have integrity when the system used to generate them is protected from deliberate bias or manipulation for political or personal reasons.
Precision	This means that the data have sufficient detail. For example, an indicator requires the number of individuals who received testing for TB and their test results by sex of the individual.
Reliability	The data generated by a program's information system are based on protocols and procedures that do not change according to who is using them and when or how often they are used. The data are reliable because they are measured and collected consistently.
Timeliness	Data are times when they are up-to-date (current) and when the information is available on time. Timeliness is affected by: (1) the rate at which the program's information system is updated; (2) the rate of change in actual program activities; and (3) when the information is used or required.
Consistency	Consistency is achieved when data values do not conflict with other values within a record or across different data sets; data across all systems should reflect the same information and sync.

1.2 Problem statement

Health is a devolved function in the 47 autonomous counties with Over 4500 TB treatment sites and 300 TB control zones that report to the TB national program. In 2021 DQA, six (6) counties in which 12 sub-counties were randomly selected and a total of 150 health facilities were visited. The overall level of agreement between the facility registers (TB4) and the national surveillance system (TIBU) was 87%.

The reporting units in Kenya are varied administratively with geographical challenges. Adequate and skilled human resource is critical in recording and reporting TB services. With the rollout of various TB prevention and control interventions, there has been a commensurate increase in recording and reporting tools, especially in health facilities. These tools are paper-based, requiring health care workers simultaneously carry out patient reviews. This will likely result in gaps in certain data elements that may not be recorded or captured accurately. The Sub county coordinators are also expected to transcribe the same data into TIBU; To monitor data quality improvement among the facilities, there was a need to repeat the previously assessed health facilities to monitor and evaluate the progress on the overall indicators followed by the programme

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. One of the recommendations in the previous DQA (2021) was to revisit the earlier counties for the current DQA. Reporting of all indicators and details should likely be above 95% and not more than 105%.

1.4 General Objective

To assess data quality for TB and leprosy reported to the national TB program in 2021 and quarter 1 2022 in all TB facilities in selected sub-counties.

1.5. Specific Objectives

- To evaluate the dimensions of data quality for aggregate TB and leprosy data for the year 2021 and 1st Quarter of 2022
- To evaluate the dimensions of data quality for case-based DS TB and DR TB data for the year 2021
- To evaluate the dimensions of data quality for the 2020 and Quarters 1-3 2021 cohort for DR TB and DS TB, respectively
- To compare the data quality between 2021 and 2022
- To assess the availability and use of revised recording and reporting tools
-
-

Table 1b: Performance of Data Quality over time

Level of Agreement (Registers Vs TIBU)							
No	Indicator	2017	2018	2019	2020	2021	Quality Remarks
1	Number of DSTB Cases All Forms	96%	93%	94%	87%	96%	Met expectation
2	Number of Bacteriologically confirmed PTB Cases	96%	94%	97%	87%	96%	Met Expectation
3	Number of Bacteriologically confirmed who completed treatment	111%	112%	N/A	N/A	103%	Met Expectation
4	Number of TB Cases who have patient type correctly classified (Case-based)	N/A	93%	75%	94%		Below Expectation
5	Number of TB Cases with a Cured out-come	107%	102%	N/A	93%	109%	Below Expectation
6	Number of DRTB Cases Registered	116%	108%	107%	114%	21	Above expectation
7	Number of IPT Cases (under 5) regis-tered	74%	80%	89%	84%		Below Expectation
8	Number of IPT Cases (under 5) who completed therapy	91%	111%	N/A	84%		Below Expectation

Key

>105	Above Expectation
95 - 105	Met Expectation
< 95	Below Expectation

CHAPTER TWO: METHODOLOGY

2.1. Study Sites

The assessment was carried out in Seven (7) counties which were purposively sampled. These were Isiolo, Migori, Trans Nzoia, Kisumu, Bomet, Kakamega and Muranga counties, as shown in Figure 2.1.and table 2.1.

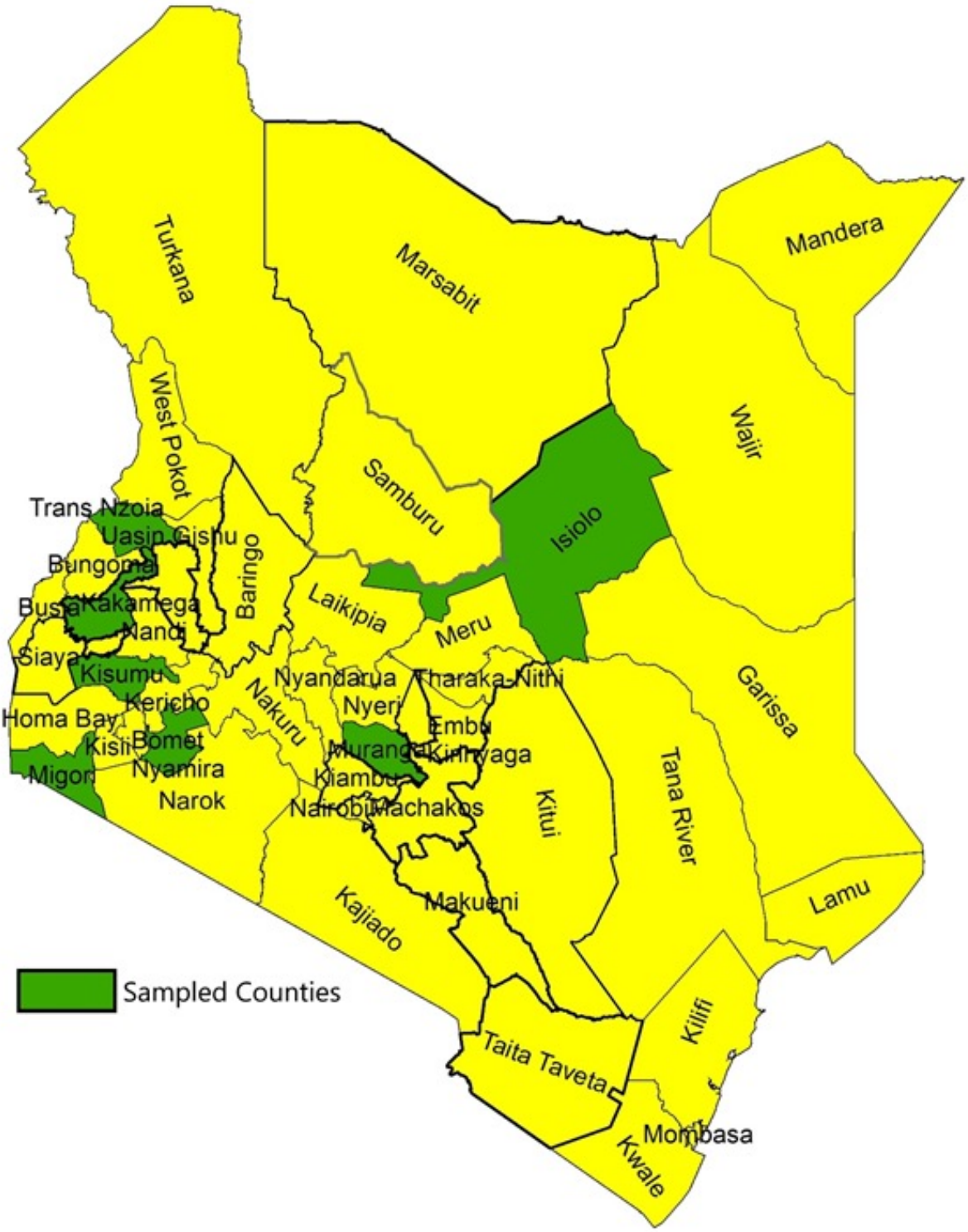

Figure 2.1 Map showing the sampled counties for DQA

The seven (7) counties were purposively selected to represent all regions in TB control zone with different Case Notification Rate (CNR). Nationally CNR were 154/100,000 in 2021 with following counties reporting high CNR above national target which include Bomet (183/100,000), Isiolo (198/100,000), Muranga (175/100,000), and Kisumu (161/100,000) while Kakamega (96/100,000), Migori (131/100,000) and Trans Nzoia (94/100,000) notified CNR below national target.

Table 2a: Sampled counties and sub counties

County	Sub Counties
Kisumu	Muhoroni
	Seme
Isiolo	Garbatula
	Merti
Migori	Kuria West
	Suna West
Transnzoia	Kiminini
	Kwanza
Bomet	Bomet East
	Chepalungu
Kakamega	Ikolomani
	Butere
Muranga	Gatanga
	Kahuro

2.2. Study Design

The assessment was carried out retrospectively where 7 counties and 14 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:

- DS TB cases
- DR TB cases
- Children under five (5) who were contacts of bacteriological confirmed (BC) TB and initiated on TPT
- 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 July 2022. The review covered the period January 2021 - December 2021 and quarter 1(Jan-March) of 2022 for case finding.

2.4. Sampling Procedure

Purposive sampling was applied to select seven (7) counties. In the selected counties, two sub-counties were also selected where all the facilities that notified cases with TB in 2021 and quarter one (Jan-March) 2022 were visited.

At the facility, records reviewed included; TB4 facility register, patient record cards, DR TB register, DR TB logbooks, TPT/Contact management registers, leprosy registers and TIBU. For case finding, a maximum of five (5) patients were systematically sampled and where the records were less than five (5) all were selected.

Aggregate data from the facility registers, patient record cards and TIBU for the period of interest were reviewed. For case finding data, five records were randomly sampled for 2021 (DS TB and DR TB).

2.5. Data Collection

2.5.1. Field Work Preparation

The DQA teams were constituted to include a multi-disciplinary team, that is, a clinician, laboratory personnel, monitoring and evaluation officer and a logistics person. The teams were sensitized on the data collection tool, DQA methodology and the objectives prior to the actual process.

An official letter by the Head of Program outlining the objectives of the process was sent prior to visiting the counties. The team leads then liaised with county TB coordinators to agree on the schedule and preparation of facilities.

2.5.2. Data Collection Procedure

A courtesy call was made to the County Health Management Team/CDH/CEC where the purpose of the DQA mission was explained and the facilities to be visited. The CTLC and the respective SCTLC(s) were accompanied by the team to the health facilities where a courtesy call was made to the facility in charge. TB and leprosy documents were reviewed and TB clinic staff were interviewed. Data was abstracted from TIBU and facility records.

2.5.3. Data Assessment Tool

A web-based data assessment tool was (with offline functionality) designed using Microsoft Excel forms XML with ODK syntax. This tool was customized to include core indicators being tracked by the program. Data was then relayed to the central cloud server.

2.5.3.1. Strengths of the Tool

The tool was compatible with various devices e.g. tablets, laptops, and android phones-This minimized challenges with power outages and enhanced flexibility of data collection. It ensured standardization of the data collection process Data was automatically synchronized hence minimizing the risk of losing data. The tool was used both online and off-line. It minimized transcription errors

2.5.3.2. Limitation of the Tool

Navigation between questions during data entry was a challenge.

2.5.4. Source of Data

The following were source documents for the data:

- Patient record cards (TB5) (Version March 2016, September 2016 and Sept 2020)
- TB facility registers (TB4) (Version March 2016, September 2016 and Sept 2020)
- DR TB registers (sept 2020)
- DR TB log books (sept 2020)
- TPT/Contact management registers (sept 2020)
- Leprosy register ((sept 2020)
- TPT record cards (sept 2020)
- Electronic surveillance system (TIBU)
- Active Case Finding Summaries

2.5.5. Indicators Assessed

- The assessment focused on the following across all the recording and reporting tools;
- Number of DS TB cases (all forms) registered
- Number of bacteriologically confirmed TB cases
- Number of clinically diagnosed TB cases
- Number of Extra pulmonary diagnosed TB cases
- Number of TB cases who completed treatment, cured and died
- Number of DR TB cases registered
- Number of DR TB cases who have been correctly classified (RR, MDR or mono Resistant)
- Number of TPT (under 5) cases registered
- Number of TPT (under 5) cases that completed treatment
- Number of leprosy cases (All forms) registered
- Under ACF cascade the following indicators were assessed;
- Number screened
- Number of presumptive
- Number investigated

2.6. Data Management and Analysis

Data was directly entered into the DQA data capture tool at the health facility. The teams re-checked these data for completeness and accuracy with the patient record cards, registers and TIBU before submission while at the health facilities.

Upon completion of the exercise, the entire data set was uploaded to a central server for storage, from where it was later downloaded and exported to Excel and STATA for cleaning and analysis. The data was backed up periodically in a secondary location.

Cleaning involved checking for duplicates and missing data. The data was then summarized in tables, bar graphs and box plots. The facility register was used as the basis for comparison. Acceptable levels of agreements were 95-100% however margin errors of + or -5 were included as perfect agreement. Kappa score (table below) was used to measure consistency of the data in the facility register and electronic surveillance system (TIBU).

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

Permission to carry out the exercise was obtained from the respective county health departments prior to the field visits. The data were stored in secured servers with regular backups. Confidentiality of information was maintained throughout the assessment by ensuring records were protected with password without disclosure to any non-interested parties.

CHAPTER THREE
RESULTS AND DISCUSSION

3.1: Drug Sensitive TB (DSTB) Aggregated data

The section describes the DQA level of agreement performance in 14 sub counties in the seven selected counties. The patients notified with clinical TB disease were compared among the TB tools namely TB patient record cards (TB5 Cards), TB patient register (TB4) and TIBU. The period under review was January - December 2021 and January - March 2022

3.1.1. All forms of Tuberculosis

Comparison between Patient Record Cards and TB Facility Register

Overly, the level of agreement between the facility registers (TB4) and record cards (TB5) was 82% for both years; this is an improvement from the previous assessments done, 72% (DQA Report, 2021) and 69% (DQA Report, 2020). The slight improvement could be attributed to robust printing and distribution of the record cards and continuous mentorship as well as sensitization to health care workers. Acceptable levels of agreement were reported in Isiolo (99%) and Muranga (95%) counties while Transnzoia had the least concordance at 56% (Table 3.1.1.); this is probably attributed to availability of patient record cards.

Table 3.1.1. Levels of agreement for aggregated data for all forms of TB in Patient record cards and TIBU data in comparison to TB4 facility registers

		2021	Agreement (TB5 Cards vs TB4 Reg)	Agreement (TIBU vs TB4 Reg)	2022 Q1	Agreement (TB5 Cards vs TB4 Reg)	Agreement (TIBU vs TB4 Reg)	Average (2021/2022)					
County	Sub Counties	TB5 Cards	TB4 Reg	TIBU			TB5 Cards	TB4 Reg	TIBU			Agreement (TB5 cards Vs TB4 Reg)	Agreement (TIBU vs TB4 Reg)
Bomet	Bomet East	348	402	404	87%	100%	112	119	117	94%	98%	90%	99%
	Chepalungu	201	211	210	95%	100%	51	55	49	93%	89%	94%	94%
Bomet Total		549	613	614	90%	100%	163	174	166	94%	95%	92%	98%
Isiolo	Garbatula	52	55	51	95%	93%	14	14	14	100%	100%	97%	96%
	Merti	27	26	26	104%	100%	9	9	9	100%	100%	102%	100%
Isiolo Total		79	81	77	98%	95%	23	23	23	100%	100%	99%	98%
Kakamega	Butere	113	164	164	69%	100%	28	34	32	82%	94%	76%	97%
	Ikolomani	173	171	178	101%	104%	40	47	43	85%	91%	93%	98%
Kakamega Total		286	335	342	85%	102%	68	81	75	84%	93%	85%	97%
Kisumu	Muhoroni	155	169	167	92%	99%	34	41	41	83%	100%	87%	99%
	Seme	146	163	159	90%	98%	25	33	31	76%	94%	83%	96%

Kisumu Total		301	332	326	91%	98%	59	74	72	80%	97%	85%	98%
Migori	Kuria East	53	50	48	106%	96%	14	12	12	117%	100%	111%	98%
	Suna West	172	206	208	83%	101%	84	98	95	86%	97%	85%	99%
Migori Total		225	256	256	88%	100%	98	110	107	89%	97%	88%	99%
Muranga	Gatanga	136	135	126	101%	93%	36	37	33	97%	89%	99%	91%
	Kahuro	166	172	154	97%	90%	49	55	49	89%	89%	93%	89%
Muranga Total		302	307	280	98%	91%	85	92	82	92%	89%	95%	90%
Trans Nzoia	Kiminini	202	445	388	45%	87%	59	122	108	48%	89%	47%	88%
	Kwanza	110	122	106	90%	87%	24	26	24	92%	92%	91%	90%
Trans Nzoia Total		312	567	494	55%	87%	83	148	132	56%	89%	56%	88%
Grand Total		2054	2491	2389	82%	96%	579	702	657	82%	94%	82%	95%

Comparison between TIBU and TB Facility Register

The overall level of agreement between the national surveillance system (TIBU) and facility register (TB4) was 95%, an improvement from 87% that was documented the previous year (DQA Report, 2021) and 94% (DQA Report, 2020). This could be due to the rescinding pandemic and return to normalcy for health facility functions. Whilst the level of agreement nationally is within the acceptable range, county variations still exist with Muranga and Transnzoia recording the least concordance at 90% and 88% respectively (Table 3.1.1.). Challenges with hardware have been isolated as a possible reason for some sub county variations.

3.1.2: Bacteriologically confirmed TB cases

The overall level of agreement between TB patient record cards and facility registers for bacteriologically confirmed TB was 83% while it was 96% between TIBU and the facility register. This is an increment for both levels of comparison from the previous year (DQA Report 2021) where the comparison between the facility register and TB patient record cards was 64% and TB4 register and TIBU was 87%.

Table 3.2: Levels of agreement for aggregated notified Bacteriologically confirmed TB cases in patient record cards and TIBU data in comparison to TB4 facility registers

		2021	Agreement (TB5 Cards vs TB4 Reg)	Agreement (TIBU vs TB4 Reg)	2022 Q1	Agreement (TB5 Cards vs TB4 Reg)	Agreement (TIBU vs TB4 Reg)	Average (2020/2021)					
County	**Sub Counties**	**TB5 Cards**	**TB4 Reg**	**TIBU**			**TB5 Cards**	**TB4 Reg**	**TIBU**			**Agreement (TB5 cards Vs TB4 Reg)**	**Agreement (TIBU vs TB4 Reg)**
Bomet	Bomet East	256	255	254	100%	100%	64	66	66	97%	100%	99%	100%
	Chepalungu	119	137	123	87%	90%	25	27	25	93%	93%	90%	91%
Bomet Total		375	392	377	96%	96%	89	93	91	96%	98%	96%	97%
Isiolo	Garbatula	19	15	11	127%	73%	8	7	8	114%	114%	120%	94%

	Merti	5	6	10	83%	167%	5	5	7	100%	140%	92%	153%
Isiolo Total		24	21	21	114%	100%	13	12	15	108%	125%	111%	113%
Kakamega	Butere	38	55	55	69%	100%	12	17	16	71%	94%	70%	97%
	Ikolomani	109	119	126	92%	106%	29	39	36	74%	92%	83%	99%
Kakamega Total		147	174	181	84%	104%	41	56	52	73%	93%	79%	98%
Kisumu	Muhoroni	105	110	111	95%	101%	19	26	26	73%	100%	84%	100%
	Seme	74	74	86	100%	116%	11	16	14	69%	88%	84%	102%
Kisumu Total		179	184	197	97%	107%	30	42	40	71%	95%	84%	101%
Migori	Kuria East	40	40	41	100%	103%	11	7	8	157%	114%	129%	108%
	Suna West	97	124	125	78%	101%	57	64	61	89%	95%	84%	98%
Migori Total		137	164	166	84%	101%	68	71	69	96%	97%	90%	99%
Muranga	Gatanga	81	82	76	99%	93%	24	23	20	104%	87%	102%	90%
	Kahuro	87	95	89	92%	94%	24	24	23	100%	96%	96%	95%
Muranga Total		168	177	165	95%	93%	48	47	43	102%	91%	99%	92%
Trans Nzoia	Kiminini	121	296	255	41%	86%	33	70	61	47%	87%	44%	87%
	Kwanza	87	84	74	104%	88%	16	16	16	100%	100%	102%	94%
Trans Nzoia Total		208	380	329	55%	87%	49	86	77	57%	90%	56%	88%
Grand Total		1238	1492	1436	83%	96%	338	407	387	83%	95%	83%	96%

Comparison between Patient Record Cards (TB5) and TB Facility Register

While comparing levels of agreement between TB5 cards and TB4 Reg across counties, Bomet and Muranga had proportions within the acceptable range of 96% and 99% respectively. Isiolo County had levels of agreement which was above the expected range (111%). Migori (90%), Kisumu (84%), Kakamega (79%) and Trans Nzoia (56%) counties had levels of agreement which were below the expected range. Among the sub counties visited, Bomet East, Kahuro and Kwanza had levels of agreement within the acceptable range at 99% and 96%.

Comparison between TIBU and TB Facility Register (TB4)

The level of agreement between TIBU and the TB4 Registers across the visited counties reveal that Bomet (97%), Kakamega (98%), Kisumu (101%) and Migori (99%) had proportions within the acceptable range. Isiolo County had proportions above the expected range at 113% while Muranga (92%) and Trans Nzoia (88%) had proportions below the expected range. Among the sub counties, a majority of them had proportions within the expected range; Bomet East (100%), Butere (97%), Ikolomani (99%), Muhoroni (100%), Seme (102%), Suna West (98%) and Kahuro (95%). Merti and Chepalungu sub counties had levels of agreement higher than the acceptable range at 153% and 108% respectively while Chepalungu (91%), Garbatula (94%), Gatanga (90%) Kiminini (87%) and Kwanza (94%) had proportions below the expected range. During the DQA, what could explain the disparity is lack of updating the source documents.

3.1.3. Clinically diagnosed TB patients

The overall performance in the level of agreement between TB5 cards Vs TB4 and TIBU Vs TB4 Register was 77% and 94% respectively in 2021. Agreement between TB5 cards and TB4 register improved to 80% in Q1 2022 however, the change was not significant between the TB4 register and TIBU (93%).

Only Migori county achieved an acceptable level of agreement between TB5 cards Vs TB4 and TIBU Vs TB4 register by scoring 97% and 95% in 2021 respectively, and 100% and 103% in Q1 2022. Despite good performance, Kuria East sub county scored poorly in 2021 with a score of 150% and 63% respectively though it improved (75% and 100%) in Q1 2022.

Agreement between patient record cards and TB facility register

In 2021, 21% of sub counties had a level of agreement between TB5 cards and TB4 register within the acceptable range (95%-105%). These include Gatanga (104%), Merit (100%) and Kahuro (98%). The worst performing included Bomet East(47%), Kiminini (58%) and Kuria East (150%). In 2022, there was improvement with 5 sub counties Bomet East (95%) and Garbatula, Kwanza, Merti and Suna West each scoring 100%.

Agreement between TB facility Register and TIBU

In 2021, the level of agreement between the TIBU and the TB4 Register in 5 sub counties were within the range with Chepalungu (104%), Suna West (99%), Kiminini (97%), Gatanga (96%) and Muhoroni (95%). Only Gatanga maintained the good performance in the two periods under review. In Q1 2022, the sub counties that maintained agreement between the acceptable range included Bomet East and Suna West each at 103%, and Muhoroni, Garbatula and Kuria East each at 100%.

Table 3.1.3: Levels of agreement for aggregated data for Clinically diagnosed TB in Patient record cards and TIBU data in comparison to TB4 facility registers

County	Sub Counties	2021	Agreement (TB5 Cards vs TB4 Reg)	Agreement (TIBU vs TB4 Reg)	2022 Q1	Agreement (TB5 Cards vs TB4 Reg)	Agreement (TIBU vs TB4 Reg)	Average (2020 /2021)					
		TB5 Cards	TB4 Reg	TIBU			TB5 Cards	TB4 Reg	TIBU			Agreement (TB5 cards Vs TB4 Reg)	Agreement (TIBU vs TB4 Reg)
Bomet	Bomet East	51	108	115	47%	106%	35	37	38	95%	103%	71%	105%
	Chepalungu	50	46	48	109%	104%	17	18	16	94%	89%	102%	97%
Bomet Total		101	154	163	66%	106%	52	55	54	95%	98%	80%	102%
Isiolo	Garbatula	29	34	31	85%	91%	5	5	5	100%	100%	93%	96%
	Merti	17	17	13	100%	76%	4	4	3	100%	75%	100%	76%
Isiolo Total		46	51	44	90%	86%	9	9	8	100%	89%	95%	88%
Kakamega	Butere	66	105	97	63%	92%	13	19	16	68%	84%	66%	88%
	Ikolomani	39	51	46	76%	90%	6	8	6	75%	75%	76%	83%
Kakamega Total		105	156	143	67%	92%	19	27	22	70%	81%	69%	87%
Kisumu	Muhoroni	47	59	56	80%	95%	14	15	15	93%	100%	86%	97%
	Seme	56	68	60	82%	88%	6	10	12	60%	120%	71%	104%
Kisumu Total		103	127	116	81%	91%	20	25	27	80%	108%	81%	100%
Migori	Kuria East	12	8	5	150%	63%	3	4	4	75%	100%	113%	81%
	Suna West	63	69	68	91%	99%	30	29	30	103%	103%	97%	101%
Migori Total		75	77	73	97%	95%	33	33	34	100%	103%	99%	99%
Muranga	Gatanga	51	49	47	104%	96%	9	11	9	82%	82%	93%	89%

	Kahuro	62	63	48	98%	76%	21	26	21	81%	81%	90%	78%
Muranga Total		113	112	95	101%	85%	30	37	30	81%	81%	91%	83%
Trans Nzoia	Kiminini	63	109	106	58%	97%	18	41	38	44%	93%	51%	95%
	Kwanza	17	28	25	61%	89%	7	7	5	100%	71%	80%	80%
Trans Nzoia Total		80	137	131	58%	96%	25	48	43	52%	90%	55%	93%
Grand Total		623	814	765	77%	94%	188	234	218	80%	93%	78%	94%

3.1.4. Extra Pulmonary TB

As indicated in the table 3.1.4, the overall level of agreement between the patient record card (TB5) Vs TB facility register (TB4) and TIBU Vs TB4 was at 69% and 97% respectively

Agreement level between TB patient record card (TB5) and treatment register

As indicated in table 3.1.4 the overall level of agreement between the patient record cards (TB5) and facility register was at 69% which was slightly lower than the 2021 performance of 71%.

Sub counties within Kakamega and Bomet had huge variations in levels of agreement; Butere & Ikolomani (38% and 100% respectively) and Bomet East & Chepalungu (62% and 104%). This indicates that there was underutilization of TB5 in Bomet East and Butere sub counties. There was notable good performance of 100% and above in; Ikolomani, Chepalungu, Gatanga and Kahuro sub counties. Transnzoia recorded the lowest level of agreement at 40%. This shows that most of the patients in the TB4 register were not updated in TB5 cards.

Agreement between TIBU vs TB4

From the findings total agreement level from the seven counties was at 97% which was a slight improvement from a performance of 96% in 2021. This shows that most of the patients with EPTB registered inTB4 were notified by TIBU.

All counties managed an agreement level of over 100% apart from Kisumu and Transnzoia which recorded 83% and 77% respectively.

Table 3.1.4: Levels of agreement for aggregated data for all forms EPTB in Patient record cards and TIBU data in comparison to TB4 facility registers

		2021	Agreement (TB5 Cards vs TB4 Reg)	Agreement (TIBU vs TB4 Reg)	2022 Q1	Agreement (TB5 Cards vs TB4 Reg)	Agreement (TIBU vs TB4 Reg)	Average (2020/2021)					
County	**Sub Counties**	**TB5 Cards**	**TB4 Reg**	**TIBU**			**TB5 Cards**	**TB4 Reg**	**TIBU**			**Agreement (TB5 cards Vs TB4 Reg)**	**Agreement (TIBU vs TB4 Reg)**
Bomet	Bomet East	24	39	35	62%	90%	13	15	11	87%	73%	74%	82%
	Chepalungu	29	28	35	104%	125%	10	10	10	100%	100%	102%	113%
Bomet Total		53	67	70	79%	104%	23	25	21	92%	84%	86%	94%
Isiolo	Garbatula	4	6	9	67%	150%	1	2	1	50%	50%	58%	100%
	Merti	2	3	3	67%	100%	0	0	0	-	-	-	-
Isiolo Total		6	9	12	67%	133%	1	2	1	50%	50%	58%	92%
Kakamega	Butere	5	13	13	38%	100%	3	1	0	300%	0%	169%	50%

	Ikolomani	5	5	6	100%	120%	0	0	0	-	-	-	-
Kakamega Total		10	18	19	56%	106%	3	1	0	300%	0%	178%	53%
Kisumu	Muhoroni	5	9	7	56%	78%	3	3	3	100%	100%	78%	89%
	Seme	11	14	12	79%	86%	5	6	3	83%	50%	81%	68%
Kisumu Total		16	23	19	70%	83%	8	9	6	89%	67%	79%	75%
Migori	Kuria East	1	2	1	50%	50%	0	1	0	0%	0%	25%	25%
	Suna West	10	12	14	83%	117%	2	5	4	40%	80%	62%	98%
Migori Total		11	14	15	79%	107%	2	6	4	33%	67%	56%	87%
Muranga	Gatanga	4	4	3	100%	75%	3	3	3	100%	100%	100%	88%
	Kahuro	17	14	17	121%	121%	4	5	5	80%	100%	101%	111%
Muranga Total		21	18	20	117%	111%	7	8	8	88%	100%	102%	106%
Trans Nzoia	Kiminini	13	37	29	35%	78%	4	11	9	36%	82%	36%	80%
	Kwanza	6	10	7	60%	70%	1	3	3	33%	100%	47%	85%
Trans Nzoia Total		19	47	36	40%	77%	5	14	12	36%	86%	38%	81%
Grand Total		136	196	191	69%	97%	49	65	52	75%	80%	72%	89%

3.1.5 Sector performance

The overall level of agreement between TB5 cards and TB4 registers was at 82% while the agreement between TIBU and TB4 registers was at 95% (Table 3.1.5a). **The private sector had the highest level of agreement of TIBU against the TB 4 register at 98% while the FBOs had the**

Table 3.1.5a Data quality levels of agreement across public, private and FBO facilities.

	2021	Agreement (TB5 Cards vs TB4 Reg)	Agreement (TIBU vs TB4 Reg)	2022 Q1	Agreement (TB5 Cards vs TB4 Reg)	Agreement (TIBU vs TB4 Reg)	Average (2021/2022)					
Sector	**TB5 Cards**	**TB4 Reg**	**TIBU**			**TB5 Cards**	**TB4 Reg**	**TIBU**			**Agreement (TB5 cards Vs TB4 Reg)**	**Agreement (TIBU vs TB4 Reg)**
Public	1767	2148	2045	82%	95%	468	577	542	81%	94%	82%	95%
Private	65	102	102	64%	100%	52	60	58	87%	97%	75%	98%
FBO	155	177	183	88%	103%	43	49	44	88%	90%	88%	97%
Not documented	67	64	59	105%	92%	16	16	13	100%	81%	102%	87%
	2054	2491	2389	82%	96%	579	702	657	82%	94%	82%	95%

Comparison of levels of agreement between DQA 2021 and 2022

Generally, there was improvement in levels of agreement within the sectors in DQA 2022 compared to 2021. However, the levels of agreement between TIBU and TB4 registers in the private and FBO declined at 5% and 6% respectively. Across all sectors there was improvement in the level of agreement between TB5 and TB4 with the greatest shift (40-75%) realized from the private sector. This could possibly be due to enhanced distribution and increased sensitization on the utility of patient record cards.

Table 3.1.5b. Comparison of levels of agreement by sector between DQA 2021 and DQA 2022

Sector	Agreement	Proportions	
		DQA 2021	DQA 2022
Public	Agreement TB5 cards Vs TB4 Registers	70%	82%
	Agreement TIBU vs TB4 Registers	87%	95%
Private	Agreement TB5 cards Vs TB4 Registers	40%	75%
	Agreement TIBU vs TB4 Registers	103%	98%
FBO	Agreement TB5 cards Vs TB4 Registers	66%	88%
	Agreement TIBU vs TB4 Registers	103%	97%

3.1.6: Treatment Outcomes

Generally, the level of agreement between TB5 cards and TB4 register was low with 64% for Cured and 61% for treatment completed outcomes whereas the level of agreement between TIBU and TB4 register is 109% which is slightly above the expected range for cured and 103% for treatment completed which was within the acceptable range

Cured

The level of agreement between the TB5 and TB4 is generally low in all counties (less than 95%) apart from Isiolo County which had 100% agreement level. Murangá and Bomet counties were within the acceptable level (95%- 105%) between TIBU and TB4 registerTreatment Completed

Level of agreement between the TB5 and TB4 was generally low across all counties (less than 95%) with Kakamega and Trans Nzoia performing below 40%. Murangá and Kisumu counties were within the acceptable level of agreement with Bomet having the lowest level of agreement at 89% (Table 3.1.6) between TIBU and TB4 register.

Table 3.1.6: Levels of agreement for aggregated data for Cured and Treatment Complete outcomes in Patient record cards and TIBU data in comparison to TB4 facility registers

County	Sub Counties	2021 (Q1 - Q3) - Cured	Agreement (TB5 Cards vs TB4 Reg)	Agreement (TIBU vs TB4 Reg)	2021 (Q1 - Q3) - TC	Agreement (TB5 Cards vs TB4 Reg)	Agreement (TIBU vs TB4 Reg)				
		TB5 Cards	TB4 Reg	TIBU			TB5 Cards	TB4 Reg	TIBU		
Bomet	Bomet East	119	141	143	84%	101%	87	131	130	66%	99%
	Chepalungu	36	88	82	41%	93%	54	51	32	106%	63%
Bomet Total		155	229	225	68%	98%	141	182	162	77%	89%
Isiolo	Garbatula	3	4	9	75%	225%	16	20	23	80%	115%
	Merti	4	3	6	133%	200%	15	14	15	107%	107%
Isiolo Total		7	7	15	100%	214%	31	34	38	91%	112%
Kakamega	Butere	6	22	31	27%	141%	19	60	69	32%	115%
	Ikolomani	18	58	59	31%	102%	11	49	52	22%	106%
Kakamega Total		24	80	90	30%	113%	30	109	121	28%	111%
Kisumu	Muhoroni	47	55	57	85%	104%	36	43	47	84%	109%
	Seme	15	37	63	41%	170%	38	51	48	75%	94%
Kisumu Total		62	92	120	67%	130%	74	94	95	79%	101%

Migori	Kuria East	13	8	19	163%	238%	15	13	13	115%	100%
	Suna West	62	77	77	81%	100%	25	54	59	46%	109%
Migori Total		75	85	96	88%	113%	40	67	72	60%	107%
Muranga	Gatanga	62	61	53	102%	87%	35	33	37	106%	112%
	Kahuro	22	54	52	41%	96%	24	45	42	53%	93%
Muranga Total		84	115	105	73%	91%	59	78	79	76%	101%
Trans Nzoia	Kiminini	59	122	142	48%	116%	37	116	128	32%	110%
	Kwanza	20	35	39	57%	111%	19	28	35	68%	125%
Transnzoia Total		79	157	181	50%	115%	56	144	163	39%	113%
Grand Total		486	765	832	64%	109%	431	708	730	61%	103%

3.1.7 Death Outcome

Documentation of death outcome in the TB5 cards, TB4 registers and TIBU for quarter 1-3 of 2021 was assessed for level of agreement. Among the seven sampled counties (table 3.1.7), the overall level of agreement between TB5 cards and TB4 registers was 46% while that between TB4 registers and TIBU was 90%. These two findings were not within the acceptable range of level of agreement (95% -105%). In comparison with the year 2020 there was a decline (53%) in the level of agreement between the TB5 cards and TB4 registers. Similarly, a decline in the level of agreement between TB4 register and TIBU from 96% to 90% (DQA-Report 2021).

Among the counties assessed in the 2021 DQA, Transnzoia and Kisumu had the lowest levels of agreement between TB5 and TB4 register of 21% and 52% respectively. In comparison Muranga had acceptable levels of agreement of 95%. Levels of agreement between the TB4 register and TIBU were best observed in Kisumu County with 100% agreement, while the rest of the six counties did not have acceptable levels of agreement.

Discrepancy of documented deaths between TB4 registers and TIBU was noted for both the years 2020 and 2021, with TIBU having less of the reported deaths.

Table 3.1.7: Levels of agreement for aggregated data for all forms of TB in Patient record cards and TIBU data in comparison to TB4 facility registers

		2021	Agreement (TB5 Cards vs TB4 Reg)	Agreement (TIBU vs TB4 Reg)		
County	**Sub Counties**	**TB5 Cards**	**TB4 Reg**	**TIBU**		
Bomet	Bomet East	14	16	14	88%	88%
	Chepalungu	5	5	3	100%	60%
Bomet Total		19	21	17	90%	81%
Isiolo	Garbatula	3	4	7	75%	175%
	Merti	0	0	0	-	-
Isiolo Total		3	4	7	75%	175%
Kakamega	Butere	6	20	14	30%	70%
	Ikolomani	3	13	12	23%	92%
Kakamega Total		9	33	26	27%	79%
Kisumu	Muhoroni	12	15	15	80%	100%

	Seme	1	10	10	10%	100%
Kisumu Total		13	25	25	52%	100%
Migori	Kuria East	4	4	3	100%	75%
	Suna West	15	17	16	88%	94%
Migori Total		19	21	19	90%	90%
Muranga	Gatanga	6	6	4	100%	67%
	Kahuro	15	16	15	94%	94%
Muranga Total		21	22	19	95%	86%
Trans Nzoia	Kiminini	4	17	16	24%	94%
	Kwanza	2	12	11	17%	92%
Trans Nzoia Total		6	29	27	21%	93%
Grand Total		71	155	140	46%	90%

3.1.8 Active Case Finding

Level of agreement for ACF reporting between the facility ACF summary tool and TIBU was assessed in the 7 sampled counties. In overall, the level of agreement between the facility ACF summary tool against TIBU was 165% indicating that there were higher numbers reported in TIBU as screened compared to the facility ACF summary tool (table 3.1.8). The level of agreement of those reported to have presumed TB between the facility ACF summary tool and TIBU was 205%, similarly another indication of over reporting in TIBU. Of those reported as investigated from the presumed TB, the level of agreement between the ACF summary tool and TIBU was 170%. From these findings it is observed that the numbers reported in TIBU are consistently higher than those reported in the facility ACF summary tool.

A few of the sampled counties had zero reporting of some of the TB care cascade indicators. In terms of number screened Kakamega (both sub-counties), Bomet (Chepalungu sub-county) and Kisumu (Muhoroni sub-county) had zero reporting in TIBU. The Kwanza sub-county in Trans Nzoia had zero reporting in the facility ACF summary tool. This observation of zero reporting may be attributable to inadequate and inconsistent mentorship for the facility HCWs on the use of the available ACF tools. In addition, inadequate distribution of the facility ACF summary tool may have contributed to this problem. Further, the discrepancy with TIBU could be partially explained by the community outreach data which may not be documented at the facility level.

Generally, the level of agreement between the facility ACF summary tool and TIBU in the sampled counties was not within acceptable range of 95% -105%. This trend was observed in the TB care cascade as demonstrated (table 3.1.8) in those reported to have presumed TB and also in those reported to have been investigated.

Table 3.1.8: DQA data on ACF cascade for sub counties by counties for Q1 2022

County	Sub County	Number screened (facility)	Number screened (TIBU)	Agreement (Screened)	Number presumed (facility)	Number presumed (TIBU)	Agreement (Presumed)	Number investigated (facility)	Number investigated (TIBU)	Agreement (Investigated)
Bomet	Bomet East	58526	39544	68%	377	1825	484%	377	331	88%
Bomet	Chepalungu	6239	0	0%	58	0	0%	54	0	0%
Bomet Total		64765	39544	61%	435	1825	420%	431	331	77%
Kakamega	Butere	8647	0	0%	82	0	0%	65	0	0%
Kakamega	Ikolomani	11059	0	0%	160	0	0%	55	0	0%
Kakamega Total		19706	0	0%	242	0	0%	120	0	0%
Kisumu	Muhoroni	6169	0	0%	47	0	0%	47	0	0%

Kisumu	Seme	35329	5995	17%	1473	307	21%	768	133	17%
Kisumu Total		41498	5995	14%	1520	307	20%	815	133	16%
Migori	Kuria East	1772	602	34%	41	14	34%	41	2	5%
Migori	Suna West	1566	20987	1340%	38	298	784%	38	280	737%
Migori Total		3338	21589	647%	79	312	395%	79	282	357%
Muranga	Gatanga	32500	29394	90%	318	241	76%	294	219	74%
Muranga	Kahuro	4623	5687	123%	739	96	13%	89	42	47%
Muranga Total		37123	35081	94%	1057	337	32%	383	261	68%
Trans Nzoia	Kiminini	8506	171961	2022%	60	2201	3668%	57	2121	3721%
Trans Nzoia	Kwanza	0	14565	0%	0	1964	0%	0	82	0%
Trans Nzoia Total		8506	186526	2193%	60	4165	6942%	57	2203	3865%
Grand Total		174936	288735	165%	3393	6946	205%	1885	3210	170%

3.1.9: Availability of TB tools

The DQA checked on the availability of patient record cards and TIBU data and compared to TB4 facility registers (case-based data). The table below provides the findings from selected sub counties (numbers and aggregates.

The overall availability of patients' record cards and a match of the record in the TB4 register was 90% with 6/14 (43%) of sub counties having a 100%. Some of the reasons that could be fronted for the sub counties that did not achieve a perfect match are; inadequate mentorship on recording and reporting on the use of the TB tools. The availability of the patient records in TB4 register was 99% with 10/14 (71%) of sub counties achieving 100%. Seme (93%) and Kiminini (94%) sub counties are least performing. This results in late notification in TIBU.

Table 3.1.9: Availability of Patient Record cards, TB4 Registers and TIBU sub county by County

County	Sub County	Numbers	Agreement			
		Patient Record cards	TB4 registers	TIBU	TB4 registers vs Record cards	TB4 registers vs TIBU
Bomet	Bomet East	47	47	47	100%	100%
	Chepalungu	53	53	53	100%	100%
Isiolo	Garbatula	16	16	16	100%	100%
	Merti	9	9	9	100%	100%
Kakamega	Butere	28	38	38	74%	100%
	Ikolomani	37	44	44	84%	100%
Kisumu	Muhoroni	68	72	71	94%	99%
	Seme	23	27	25	85%	93%
Migori	Kuria East	19	19	19	100%	100%
	Suna West	44	54	54	81%	100%
Muranga	Gatanga	50	51	49	98%	96%
	Kahuro	27	27	27	100%	100%
Trans Nzoia	Kiminini	32	49	46	65%	94%
	Kwanza	36	39	39	92%	100%
Kenya	489	545	537	90%	99%	

3.1.10: Sub County Registration number

Sub County registration number is automatically generated from TIBU by the Sub County TB and Leprosy Coordinator during patient notification. This is a unique number given to every patient and highlights the respective sub county, quarter and year the patient is registered.

Among all the records with sub county registration number, 88% of them matched between TB4 registers and TIBU. There were least matches between record cards versus TB4 registers at 79% and record cards versus TIBU at 69%; however, there is documented improvement in comparison to the previous assessment (DQA Report, 2021).

Kahuro sub county in Muranga had a perfect match (100%) across all the three records while Bomet East and Chepalungu maintained an almost perfect agreement (DQA Report, 2021)

Isiolo county had varied performance with Merti recording an improvement in agreement between TIBU versus TB4 register from 12% to 56% (DQA Report, 2021), however, inconsistent matches between patient record cards and TB4 registers were observed in Garbatula.

The least matches were documented in Seme sub county where there was suboptimal agreement across all the three records; record cards versus TB4 registers at 43%, record cards versus TIBU at 10% and TB4 register versus TIBU at 24%. This highlights the need for targeted supervision to isolate the root cause and possible mitigation measures to strengthen documentation.

Table 3.1.10: Levels of agreement on Sub County registration numbers in patient record cards and TB4 facility registers in comparison to TIBU data (case-based data)

County	Subcounty	Number	Matching						
		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	Record cards vs TIBU	TB4 registers vs TIBU
Bomet	Bomet East	46	47	46	47	45	100%	98%	98%
Bomet	Chepalungu	48	53	53	53	48	91%	91%	100%
Isiolo	Garbatula	15	16	13	16	14	115%	94%	81%
Isiolo	Merti	4	9	5	9	7	80%	44%	56%
Kakamega	Butere	21	38	35	38	22	60%	55%	92%
Kakamega	Ikolomani	17	44	43	44	18	40%	39%	98%
Kisumu	Muhoroni	66	71	71	72	67	93%	93%	100%
Kisumu	Seme	3	29	7	27	8	43%	10%	24%
Migori	Kuria East	14	19	13	19	12	108%	74%	68%
Migori	Suna West	29	54	51	54	31	57%	54%	94%
Muranga	Gatanga	35	49	35	51	48	100%	71%	71%
Muranga	Kahuro	27	27	27	27	27	100%	100%	100%
Trans Nzoia	Kiminini	21	48	44	49	23	48%	44%	92%
Trans Nzoia	Kwanza	31	39	35	39	33	89%	79%	90%
Kenya	377	543	478	545	403	79%	69%	88%	

3.1.11: Registration dates

The date of registration is assigned by the SCTLC when they are notifying the patient in the TIBU system. The overall agreement for the date of registration in the TB4 register and TIBU for all the counties was almost 100%, depicting that healthcare workers have stopped in-putting the registration dates in TB4 registers and have left it to the SCTLCs. However, Seme sub county had 107% which could be as a result of delay in notification in TIBU. In addition, there is no provision for recording the date of registration in the older version of TB5 which were in use in 2020. This indicates that most of the counties were still using the old version of the record cards in the period under review.

Table 3.1.11: Match of Registration dates in TB4 facility registers in comparison to TIBU data (case-based data)

County	Sub County	Numbers	Agreement	
		Matched TB4 registers with TIBU	Total available in TB4 registers	TIBU vs TB4 registers
Bomet	Bomet East	47	47	100.00%
Bomet	Chepalungu	53	53	100.00%
Isiolo	Garbatula	16	16	100.00%
Isiolo	Merti	9	9	100.00%
Kakamega	Butere	38	38	100.00%
Kakamega	Ikolomani	44	44	100.00%
Kisumu	Muhoroni	71	72	98.61%
Kisumu	Seme	29	27	107.41%
Migori	Kuria East	19	19	100.00%
Migori	Suna West	54	54	100.00%
Muranga	Gatanga	49	51	96.08%
Muranga	Kahuro	27	27	100.00%
Trans Nzoia	Kiminini	48	49	97.96%
Trans Nzoia	Kwanza	39	39	100.00%
Kenya	543	545	99.63%	

3.1.12: Type of patient

During the DQA, agreement on documentation of type of patient variable was compared between the patient record cards versus TB4 register and between the TIBU and the TB4 register

Table 3.1.12: Levels of agreement on Type of patient in patient record cards and TIBU data in comparison to TB4 facility registers (case-based data)

County	Sub County	Numbers		Agreement				
		Matched Patient Record cards with TB4 registers	Total Record cards available	Matched TIBU with TB4 registers	Total available in TB5	Total available in TB4 registers	TB4 registers vs Record card	TB4 registers vs TIBU
Bomet	Bomet East	11	47	46	11	47	100%	98%
Bomet	Chepalungu	11	53	52	12	53	92%	98%
Isiolo	Garbatula	4	16	16	4	16	100%	100%
Isiolo	Merti	3	9	7	3	9	100%	78%
Kakamega	Butere	4	38	36	5	38	80%	95%
Kakamega	Ikolomani	8	44	41	10	44	80%	93%
Kisumu	Muhoroni	16	71	70	17	72	94%	97%
Kisumu	Seme	14	29	23	14	27	100%	85%
Migori	Kuria East	4	19	19	4	19	100%	100%
Migori	Suna West	8	54	51	8	54	100%	94%
Muranga	Gatanga	7	49	45	8	51	88%	88%
Muranga	Kahuro	3	27	27	3	27	100%	100%
Trans Nzoia	Kiminini	14	48	45	14	49	100%	92%
Trans Nzoia	Kwanza	18	39	37	18	39	100%	95%
Kenya	125	543	515	131	545	95%	94%	

During the DQA, a total of 543 record cards were available for review. Among the record cards, 25% (131/543) had the type of patient variable for comparison. Ninety-five percent (125) of the patient record cards with the variable patient type, had their details matching in TIBU. A review of the sub counties indicates that nine of them (table 3.1.12) had a 100% match.

A review of the TB4 registers reveals that 545 records had the variable documented while 94% (515) had the variable matching with TIBU. However, contrary to the record cards, only 3 sub counties (Garbatula, Kuria East and Kahuro) had a 100% match as shown in table 3.1.12.

Challenges identified in relation to documentation of the variable on type of patient include the version of tool in use at the facility and documentation inadequacies, this only applies to the record cards.

3.1.13: Treatment start dates

Reporting on start of treatment was evaluated by assessing the matching between patient record cards against TIBU and between TB4 registers against TIBU. The 14 sub-counties within the 7 sampled counties had 74% of the records on start of treatment matching between the patient record cards and TIBU as a whole. While the match for the same between the TB4 register and TIBU was 87%.

Among the 14 sub-counties assessed, those with best matches for patient record card vs TIBU were Bomet East (98%), Muhoroni (94%) and Kahuro (93%). These same sub counties similarly had best matches for TB4 register vs TIBU with Bomet East (100%), Muhoroni (99%) and Kahuro (96%). Sub-counties with poor matching between patient record cards and TIBU were Merti (56%), Seme (59%), Suna West (54%), Garbatula (56%) and Kiminini (48%). The lowest matches between TB4 registers and TIBU were in Merti (67%), Kuria East (68%) and Kiminini (71%). Generally, the matching between TB4 registers and TIBU was better as compared to that between patient records and TIBU (table 3.1.13). This may be attributable to the possibility of health care workers not prioritizing the patient record card as a primary reporting tool for patient management. Also, patients starting treatment at county referral hospitals then later transferred to peripheral facilities

Table 3.1.13 (5e): Matching on Treatment start dates in patient record cards and TIBU data in comparison to TB4 facility registers (case-based data)

County	Subcounty	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 Records in TIBU	TB4 registers vs TIBU
Bomet	Bomet East	46	47	47	47	97.87%	100.00%
Bomet	Chepalungu	44	53	51	53	83.02%	96.23%
Isiolo	Garbatula	9	16	15	16	56.25%	93.75%
Isiolo	Merti	5	9	6	9	55.56%	66.67%
Kakamega	Butere	23	38	33	38	60.53%	86.84%
Kakamega	Ikolomani	33	44	41	44	75.00%	93.18%
Kisumu	Muhoroni	67	71	71	72	94.37%	98.61%
Kisumu	Seme	17	29	21	27	58.62%	77.78%
Migori	Kuria East	14	19	13	19	73.68%	68.42%
Migori	Suna West	29	54	44	54	53.70%	81.48%
Muranga	Gatanga	39	49	42	51	79.59%	82.35%

Muranga	Kahuro	25	27	26	27	92.59%	96.30%
Trans Nzoia	Kiminini	23	48	35	49	47.92%	71.43%
Trans Nzoia	Kwanza	27	39	31	39	69.23%	79.49%
Kenya	401	543	476	545	73.85%	87.34%	

3.1.14: GeneXpert results at all reporting levels.

Of the 545 records in TB4, 72% had the GeneXpert results correctly matched with the record cards. A total of 467 (86%) records matched between TIBU and TB4, registering a slight improvement from 85% during the previous assessment (DQA Report, 2021).

Table 3.1.14: Levels of agreement on GeneXpert results in patient record cards and TIBU data in comparison to TB4 facility registers (case-based data)

County	Subcounty	Matched Patient Record cards with TIBU	Total available in TIBU	Numbers	Matches				
				Matched Patient Record cards with TB4 registers	Total available in TB4	Matched TIBU with TB4 registers	Total available in TB4	Records vs TB4 Register	TIBU vs TB4 registers
Bomet	Bomet East	41	47	40	47	46	47	85%	98%
Bomet	Chepalungu	46	53	46	53	53	53	87%	100%
Isiolo	Garbatula	10	16	12	16	14	16	75%	88%
Isiolo	Merit	5	9	6	9	8	9	67%	89%
Kakamega	Butere	13	38	13	38	34	38	34%	89%
Kakamega	Ikolomani	24	44	29	44	33	44	66%	75%
Kisumu	Muhoroni	60	71	61	72	70	72	85%	97%
Kisumu	Seme	13	29	16	27	15	27	59%	56%
Migori	Kuria East	10	19	14	19	14	19	74%	74%
Migori	Suna West	26	54	34	54	41	54	63%	76%
Muranga	Gatanga	44	49	48	51	45	51	94%	88%
Muranga	Kahuro	22	27	22	27	25	27	81%	93%
Trans Nzoia	Kiminini	19	48	21	49	40	49	43%	82%
Trans Nzoia	Kwanza	22	39	30	39	29	39	77%	74%
Kenya	355	543	392	545	467	545	72%	86%	

In terms of sub county performance, only Chepalungu had the best match of 100% between TB4 registers and TIBU while Seme had the least proportion of matched records at 56%.

Comparing the record cards and TB4, five sub counties (Bomet East, Chepalungu, Muhoroni, Gatanga and Kahuro) had an almost perfect match (Table 3.1.14). The least matches were recorded in Butere and Kiminini at 43% and 34% respectively.

Documentation of GeneXpert results still remains suboptimal in the records cards probably pointing to a lack of prioritization among health care workers.

3.1.15: Month 0 smear results

Table 3.1.15: Levels of agreement on Month 0 follow-up smear results in patient record cards and TIBU data in comparison to TB4 facility registers (case-based data)

County	Subcounty	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
Bomet	Bomet East	46	47	47	47	97.87%	100.00%
Bomet	Chepalungu	48	53	52	53	90.57%	98.11%
Isiolo	Garbatula	15	16	13	16	93.75%	81.25%
Isiolo	Merit	9	9	9	9	100.00%	100.00%
Kakamega	Butere	25	38	30	38	65.79%	78.95%
Kakamega	Ikolomani	30	44	35	44	68.18%	79.55%
Kisumu	Muhoroni	68	72	70	71	94.44%	98.59%
Kisumu	Seme	19	27	13	29	70.37%	44.83%
Migori	Kuria East	16	19	16	19	84.21%	84.21%
Migori	Suna West	33	54	46	54	61.11%	85.19%
Muranga	Gatanga	46	51	42	49	90.20%	85.71%
Muranga	Kahuro	25	27	23	27	92.59%	85.19%
Trans Nzoia	Kiminini	22	49	36	48	44.90%	75.00%
Trans Nzoia	Kwanza	21	39	15	39	53.85%	38.46%
Kenya	423	545	447	543	77.61%	82.32%	

For Month 0 smear results, 82% of the records in TB4 were correctly matched with TIBU. A 100% concordance was reported from Bomet East and Merti Sub-Counties while Seme and Kwanza had the least matches at 44% and 38% respectively.

For patient record cards, 78% were correctly matched with facility registers. The Performance in sub counties varied from 100% in Merti to 45% in Kwanza. This disparity highlights the need for continued mentorship.

3.1.16: Month 0 smear results date

The overall match for Month 0 smear results date between records cards and TB4 was at 79%. Bomet East, Garbatula, and Merti sub-counties recorded a perfect match of 100%. The least matches were reported in Suna West (56%) and Kwanza (56%) sub-counties.

The overall match for Month 0 smear results date between TIBU and TB4 registers was at 82%.

Table 3.1.16: Levels of agreement on Month 0 smear results date in patient record cards and TIBU data in comparison to TB4 facility registers (case-based data)

County	Subcounty	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
Bomet	Bomet East	47	47	47	47	100.00%	100.00%
Bomet	Chepalungu	46	53	48	53	86.79%	90.57%
Isiolo	Garbatula	16	16	16	16	100.00%	100.00%
Isiolo	Merit	9	9	9	9	100.00%	100.00%
Kakamega	Butere	27	38	27	38	71.05%	71.05%
Kakamega	Ikolomani	29	44	31	44	65.91%	70.45%
Kisumu	Muhoroni	69	72	70	71	95.83%	98.59%
Kisumu	Seme	22	27	25	29	81.48%	86.21%
Migori	Kuria East	15	19	15	19	78.95%	78.95%
Migori	Suna West	30	54	44	54	55.56%	81.48%
Muranga	Gatanga	41	51	36	49	80.39%	73.47%
Muranga	Kahuro	23	27	22	27	85.19%	81.48%
Trans Nzoia	Kiminini	36	49	45	48	73.47%	93.75%
Trans Nzoia	Kwanza	22	39	11	39	56.41%	28.21%
Kenya	432	545	446	543	79.27%	82.14%	

3.1.17: Month 2 follow-up smear results

Month 2 smears are a key pointer to optimum quality of care for TB patients as they guide the decision to transition a patient from intensive to continuation phase. Proper documentation lays the basis for adequate patient follow-up and assigning the right outcomes later.

For month two smear results, 72% of the records were correctly matched with facility registers. In terms of sub county performance, 91.49 % were reported from Bomet East, 96% for Gatanga and 96% Kahuro. Kiminini and Butere had the least matches at 41% and 47% respectively.

The records that were correctly matched between TIBU and TB4 registers were 88%. A perfect match was reported from Bomet East Sub-County. Almost perfect matches were documented in Gatanga Muhoroni sub-counties at 98.11 and 97.18 respectively. Seme and Kwanza had the least matches at 55% and 69% respectively.

Table 3.1.17: Levels of agreement on Month 2 follow-up smear results in patient record cards and TIBU data in comparison to TB4 facility registers (case-based data)

County	Subcounty	Number	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
Bomet	Bomet East	43	47	47	47	91.49%	100.00%
Bomet	Chepalungu	45	53	52	53	84.91%	98.11%
Isiolo	Garbatula	12	16	12	16	75.00%	75.00%
Isiolo	Merit	8	9	8	9	88.89%	88.89%

Kakamega	Butere	18	38	35	38	47.37%	92.11%
Kakamega	Ikolomani	25	44	38	44	56.82%	86.36%
Kisumu	Muhoroni	66	72	69	71	91.67%	97.18%
Kisumu	Seme	13	27	16	29	48.15%	55.17%
Migori	Kuria East	11	19	17	19	57.89%	89.47%
Migori	Suna West	31	54	46	54	57.41%	85.19%
Muranga	Gatanga	49	51	47	49	96.08%	95.92%
Muranga	Kahuro	26	27	25	27	96.30%	92.59%
Trans Nzoia	Kiminini	20	49	40	48	40.82%	83.33%
Trans Nzoia	Kwanza	27	39	27	39	69.23%	69.23%
Kenya	394	545	479	543	72.29%	88.21%	

3.1.18: Treatment outcomes

Table 3.1.18: Levels of agreement on treatment outcomes in patient record cards and TIBU data in comparison to TB4 facility registers (case-based data)

County	Subcounty	Numbers	Matches				
		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
Bomet	Bomet East	42	47	46	47	89.36%	97.87%
Bomet	Chepalungu	38	53	49	53	71.70%	92.45%
Isiolo	Garbatula	12	16	14	16	75.00%	87.50%
Isiolo	Merti	6	9	6	9	66.67%	66.67%
Kakamega	Butere	19	38	35	38	50.00%	92.11%
Kakamega	Ikolomani	13	44	39	44	29.55%	88.64%
Kisumu	Muhoroni	65	72	71	71	90.28%	100.00%
Kisumu	Seme	12	27	14	29	44.44%	48.28%
Migori	Kuria East	14	19	16	19	73.68%	84.21%
Migori	Suna West	31	54	48	54	57.41%	88.89%
Muranga	Gatanga	47	51	45	49	92.16%	91.84%
Muranga	Kahuro	18	27	24	27	66.67%	88.89%
Trans Nzoia	Kiminini	13	49	40	48	26.53%	83.33%
Trans Nzoia	Kwanza	28	39	38	39	71.79%	97.44%
Kenya	358	545	485	543	65.69%	89.32%	

In this table, TB treatment outcomes in patient record cards and TIBU were compared with outcomes in Facility Registers on a case-by-case basis. On average, 66% of patient record cards had treatment outcomes similarly recorded as in facility registers, a decline from 71% during the previous assessment period. This varied from as low as 26% in Kiminini and 29% in Ikolomani sub-counties to 92% in Gatanga.

When compared with facility registers, 89% of outcomes in TIBU were similar. Perfect agreement was documented in Muhoroni. Least matches were from Seme at 48% and Merti at 67%.

The decline in documentation in the record cards points to inadequate mentorship and capacity building which underscores the need to improve on the same. In TIBU, the SCTLCs should ensure that treatment outcome data, from which national planning is based, is updated regularly.

3.1.19: Treatment outcomes date

Table 3.1.19 (a): Levels of agreement on treatment outcomes date in patient record cards and TIBU data in comparison to TB4 facility registers (case-based data)

County	Subcounty	Numbers	Matches				
		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	TB4 registers vs TIBU
Bomet	Bomet East	44	47	46	47	93.62%	97.87%
Bomet	Chepalungu	39	53	40	53	73.58%	75.47%
Isiolo	Garbatula	11	16	15	16	68.75%	93.75%
Isiolo	Merti	5	9	6	9	55.56%	66.67%
Kakamega	Butere	20	38	33	38	52.63%	86.84%
Kakamega	Ikolomani	12	44	35	44	27.27%	79.55%
Kisumu	Muhoroni	62	72	69	71	86.11%	95.83%
Kisumu	Seme	14	27	11	29	51.85%	40.74%
Migori	Kuria East	15	19	13	19	78.95%	68.42%
Migori	Suna West	28	54	48	54	51.85%	88.89%
Muranga	Gatanga	47	51	45	49	92.16%	88.24%
Muranga	Kahuro	21	27	24	27	77.78%	88.89%
Trans Nzoia	Kiminini	11	49	39	48	22.45%	79.59%
Trans Nzoia	Kwanza	21	39	33	39	53.85%	84.62%
Kenya	350	545	457	543	64.22%	83.85%	

On agreement in the date of treatment outcomes; 64% of patient record cards had dates correctly matched with the facility TB registers, a decline from 71% in the previous period of assessment. This was higher when TIBU data was compared to facility TB registers (84%).

Table 3.1.19 (b): Median time

Variable	Observetions	Centile	IQR	
			25th	75th
Time to notification within TB4	530	8	0	25
Time to notification within TIBU	533	12	2	29
Time from treatment start in register to notification in TIBU	530	13	2	31

Median time to registration from the date when treatment was started within the facility register (TB4) was 8 days. This period was a little longer compared to the 3 days of the previous DQA (2021 report). In TIBU the median time was found to be 12 days. This was a poor performance in the time to notification within TIBU as compared to the previous DQA reports of 8 days (2021 report).

Across the tools, comparison between facility register and TIBU showed that the median days was 13 days with almost similar interquartile range (IQR). These findings demonstrated a poor performance in time to notification within TIBU and between TB4 and TIBU, unlike the findings reported in the 2020 and 2021 DQA report. This could be explained by lack of or reduced monthly supervisions by the SCTLCS and partly by wrong documentation of date of registration as date of start of treatment.

The box plots above demonstrate that in the recording and reporting tools, there were some patients that were found to have been notified before start of treatment which could be a documentation error in the facility or during data collection for DQA.

Table 3.1.19 (c): Levels of agreement between TB4 Register and TIBU Using Kappa

Agreement between TB4 Register and TIBU			
Variable	Agreement	Kappa	Std. Err
Smear Month 0 Results	83.24%	0.6931	0.0296
GeneXpert Results	46.18%	0.2511	0.0207
Smear Month 2 Results	89.20%	0.8113	0.0352
Type of Patient	95.12%	0.7942	0.0350
Treatment Outcome	90.32%	0.8597	0.0261

Kappa score was calculated to assess the level of agreement in smear month 0 results, GeneXpert results, smear month 2 results, type of patient and treatment outcome variables between records documented in facility register and TIBU. Smear month 0 results, GeneXpert results, smear month 2 results and type of patient had kappa scores of 0.69, 0.25, 0.81 and 0.79 respectively indicating substantial agreement between the facility register and TIBU except for GeneXpert which showed a fair agreement. Treatment Outcome, however with a kappa score of 0.85 indicated an almost perfect level of agreement between the facility register and TIBU. The findings showed slight decline in agreement as compared to previous DQA at 0.85 (DQA 2021 report).

3.2: Drug Resistant Tuberculosis (DRTB) Results, Discussion and Recommendations

The analysis compared DRTB cases in three documents: logbooks, DRTB registers and TIBU for the period 2021 and quarter one of 2022. Out of the 14 sampled sub counties, 11 reported DRTB cases in 2021 and 2 DRTB in 2022.

3.2.1 Summary of all forms DR TB

The level of agreement for all forms of DR TB between the patient logbooks and registers was 112% while between TIBU and DRTB registers was 124% in 2021. There were more DR TB cases recorded in the log books and TIBU compared to those in the DR TB register. The discrepancies may be attributed to transcription errors, absence of patient log books or registers, or not using registers as primary source document.

Table 3.2a: Levels of agreement for aggregated data for all forms for Drug Resistant TB in Logbook and TIBU data in comparison to DRTB facility registers

		2021	Agreement (Log book vs Reg)	Agreement (TIBU vs Reg)	2022 Q1	Agreement (Log book vs Reg)	Agreement (TIBU vs Reg)	Average (2021/2022)					
County	Sub Counties	Log book	Reg	TIBU			Log book	Reg	TIBU			Agreement (Log book vs Reg)	Agreement (TIBU vs Reg)
Bomet	Bomet East	3	3	3	100%	100%	0	0	0	100%	100%	100%	100%
	Chepalungu	2	0	2	0%	0%	0	0	0	100%	100%	50%	50%
Bomet Total		5	3	5	167%	167%	0	0	0	100%	100%	133%	133%

Isiolo	Garbatula	0	0	0	100%	100%	0	0	0	100%	100%	100%	100%
	Merti	0	0	0	100%	100%	0	0	0	100%	100%	100%	100%
Isiolo Total		0	0	0	100%	100%	0	0	0	100%	100%	100%	100%
Kakamega	Butere	1	1	1	100%	100%	0	0	0	100%	100%	100%	100%
	Ikolomani	2	3	3	67%	100%	0	0	0	100%	100%	83%	100%
Kakamega Total		3	4	4	75%	100%	0	0	0	100%	100%	88%	100%
Kisumu	Muhoroni	0	1	1	0%	100%	1	1	1	100%	100%	50%	100%
	Seme	1	1	1	100%	100%	0	0	0	100%	100%	100%	100%
Kisumu Total		1	2	2	50%	100%	1	1	1	100%	100%	75%	100%
Migori	Kuria East	2	2	1	100%	50%	0	0	0	100%	100%	100%	75%
	Suna West	4	4	4	100%	100%	0	0	0	100%	100%	100%	100%
Migori Total		6	6	5	100%	83%	0	0	0	100%	100%	100%	92%
Muranga	Gatanga	1	1	1	100%	100%	0	0	0	100%	100%	100%	100%
	Kahuro	2	0	2	0%	0%	1	0	1	0%	0%	0%	0%
Muranga Total		3	1	3	300%	300%	1	0	1	0%	0%	150%	150%
Trans Nzoia	Kiminini	1	1	2	100%	200%	0	0	0	100%	100%	100%	150%
	Kwanza	0	0	0	100%	100%	0	0	0	100%	100%	100%	100%
Trans Nzoia Total		1	1	2	100%	200%	0	0	0	100%	100%	100%	150%
Grand Total		19	17	21	112%	124%	2	1	2	200%	200%	156%	162%

In 2021, there was complete agreement for cases in the logbook, register and TIBU in five control zones (Bomet East, Garbatula, Butere, Seme, and Gatanga). The level of agreement between the logbooks and the registers was 100% in Suna West, and Kiminini sub counties in Migori and Trans Nzoia counties respectively. Ikolomani, and Muhoroni sub counties had 100% level of agreement between TIBU and the DRTB registers. Kahuro and Chepalungu (Muranga and Bomet counties) had zero percent agreement between both TIBU and register as well Log book and Register.

In 2022 one control zone (Seme sub county) out of the two that reported DRTB cases had 100% level of agreement. Kahuro Subcounty had zero percent agreement between both Register and Log Book and Register and TIBU.

3.2.2 Rifampicin Resistant (RR) TB aggregate data

In 2021 the level of agreement for RR TB cases between the logbooks and the register was 91% and 100% between the register and the TIBU. Bomet East, Gatanga, Suna West and Seme sub counties had a perfect match. Ikolomani and Kuria East reported 50% levels of agreement across all recording and reporting tools. Chepalungu sub county had no record in the register.

One RR case was reported in 2022 with 100% level of agreement.

Table 3.2b: Levels of agreement for aggregated data for RR TB in Logbook and TIBU data in comparison to DRTB facility registers

		2021	Agreement (Log book vs Reg)	Agreement (TIBU vs Reg)	2022 Q1	Agreement (Log book vs Reg)	Agreement (TIBU vs Reg)	Average (2021/2022)					
County	**Sub Counties**	**Log book**	**Reg**	**TIBU**			**Log book**	**Reg**	**TIBU**			**Agreement (Log book vs Reg)**	**Agreement (TIBU vs Reg)**
Bomet	Bomet East	3	3	3	100%	100%	0	0	0	100%	100%	100%	100%
	Chepalungu	2	0	2	0%	0%	0	0	0	100%	100%	50%	50%
Bomet Total		5	3	5	167%	167%	0	0	0	100%	100%	133%	133%
Isiolo	Garbatula	0	0	0	100%	100%	0	0	0	100%	100%	100%	100%
	Merti	0	0	0	100%	100%	0	0	0	100%	100%	100%	100%
Isiolo Total		0	0	0	100%	100%	0	0	0	100%	100%	100%	100%
Kakamega	Butere	0	0	0	100%	100%	0	0	0	100%	100%	100%	100%
	Ikolomani	1	2	1	50%	50%	0	0	0	100%	100%	75%	75%
Kakamega Total		1	2	1	50%	50%	0	0	0	100%	100%	75%	75%
Kisumu	Muhoroni	0	1	1	0%	100%	1	1	1	100%	100%	50%	100%
	Seme	1	1	1	100%	100%	0	0	0	100%	100%	100%	100%
Kisumu Total		1	2	2	50%	100%	1	1	1	100%	100%	75%	100%
Migori	Kuria East	1	2	1	50%	50%	0	0	0	100%	100%	75%	75%
	Suna West	1	1	1	100%	100%	0	0	0	100%	100%	100%	100%
Migori Total		2	3	2	67%	67%	0	0	0	100%	100%	83%	83%
Muranga	Gatanga	1	1	1	100%	100%	0	0	0	100%	100%	100%	100%
	Kahuro	0	0	0	100%	100%	0	0	0	100%	100%	100%	100%
Muranga Total		1	1	1	100%	100%	0	0	0	100%	100%	100%	100%
Trans Nzoia	Kiminini	0	0	0	100%	100%	0	0	0	100%	100%	100%	100%
	Kwanza	0	0	0	100%	100%	0	0	0	100%	100%	100%	100%
Trans Nzoia Total		0	0	0	100%	100%	0	0	0	100%	100%	100%	100%
Grand Total		10	11	11	91%	100%	1	1	1	100%	100%	095%	100%

3.2.3 Multi Drug Resistant (MDR) TB aggregate data

In 2021, two sub counties Ikolomani and Kiminini reported MDR. However, the level of agreement between TIBU and the register was zero percent in Ikolomani and 200% in Kiminini. This could be due to poor documentation of the resistant pattern in the register, and SCTLC updating tibu using culture results.

Table 3.2c: Levels of agreement for aggregated data for MDR TB in Logbook and TIBU data in comparison to DRTB facility registers

		2021	Agreement (Log book vs Reg)	Agreement (TIBU vs Reg)	2022 Q1	Agreement (Log book vs Reg)	Agreement (TIBU vs Reg)	Average (2021/2022)					
County	**Sub Counties**	**Log book**	**Reg**	**TIBU**			**Log book**	**Reg**	**TIBU**			**Agreement (Log book vs Reg)**	Agreement (TIBU vs Reg)
Bomet	Bomet East	0	0	0	100%	100%	0	0	0	100%	100%	100%	100%
	Chepalungu	0	0	0	100%	100%	0	0	0	100%	100%	100%	100%
Bomet Total		0	0	0	100%	100%	0	0	0	100%	100%	100%	100%
Isiolo	Garbatula	0	0	0	100%	100%	0	0	0	100%	100%	100%	100%
	Merti	0	0	0	100%	100%	0	0	0	100%	100%	100%	100%
Isiolo Total		0	0	0	100%	100%	0	0	0	100%	100%	100%	100%
Kakamega	Butere	0	0	0	100%	100%	0	0	0	100%	100%	100%	100%
	Ikolomani	0	0	1	100%	0%	0	0	0	100%	100%	100%	50%
Kakamega Total		0	0	1	100%	0%	0	0	0	100%	100%	100%	50%
Kisumu	Muhoroni	0	0	0	100%	100%	0	0	0	100%	100%	100%	100%
	Seme	0	0	0	100%	100%	0	0	0	100%	100%	100%	100%
Kisumu Total		0	0	0	100%	100%	0	0	0	100%	100%	100%	100%
Migori	Kuria East	0	0	0	100%	100%	0	0	0	100%	100%	100%	100%
	Suna West	0	0	0	100%	100%	0	0	0	100%	100%	100%	100%
Migori Total		0	0	0	100%	100%	0	0	0	100%	100%	100%	100%
Muranga	Gatanga	0	0	0	100%	100%	0	0	0	100%	100%	100%	100%
	Kahuro	0	0	0	100%	100%	0	0	0	100%	100%	100%	100%
Muranga Total		0	0	0	100%	100%	0	0	0	100%	100%	100%	100%
Trans Nzoia	Kiminini	1	1	2	100%	200%	0	0	0	100%	100%	100%	150%
	Kwanza	0	0	0	100%	100%	0	0	0	100%	100%	100%	100%
Trans Nzoia Total		1	1	2	100%	200%	0	0	0	100%	100%	100%	150%
Grand Total		1	1	3	100%	300%	0	0	0	100%	100%	100%	200%

3.2.4 Mono Drug Resistant TB aggregate data

In 2021, Ikolomani, Kahuro and Suna West notified 1,2, and 3 mono resistant TB cases respectively. The level of agreement between the register and the logbook was perfectly matched in Ikolomani and 67% in Suna west. Since the rest of the counties didn't have a mono resistance client during the period under review, the level of agreement stood at 100%

3.2.5 Drug Resistant Tuberculosis Outcomes

For the period under review the outcome of the DRTB patients was not documented.

3.2.6 Case based DR TB data results and discussion

There were eighteen DR TB patients notified in TIBU and sixteen records both in logbooks and DRTB register which were matching. The data quality review in this section used the patient registration number in TIBU, counter checked if it matched that in the log book and DR TB register. There was 89% level of matching. The parameters of interest in this report on case based DRTB data were; patient registration number, treatment start date, gene xpert result and month 6 culture result as shown in Annex . Summary discussions are presented below.

Patient Registration Number: The average matching level between registration numbers in the DR TB registers and TIBU was 81%. This denoted an improvement from previous DQA at 63% while for Log books against TIBU was at 67%

Treatment start date: A concurrence of 46% was noted in the logbook and TIBU while 77% matched the DR TB registers and TIBU.

GeneXpert results: There was a 77% agreement between the DRTB logbook and the TIBU for gene Xpert results, while TIBU and the register had a perfect match.

Month 6 Culture result: Carrying out Month 6 (M6) culture follow up investigation for TB patients is critical in monitoring the treatment progress of the DRTB patients and determination of change of regimen phase of treatment outcomes. There was a 92% agreement between the DRTB logbook and the TIBU, while TIBU and the register had a 77% match.

3.3: TB Preventive Therapy (TPT)

3.3.1 TPT Aggregated Data

Aggregate data for children under five years' contacts of bacteriologically confirmed pulmonary TB patients who were initiated on Tuberculosis Preventive Therapy for the years 2021 and 2022 were collected.

In 2022, the overall level of agreement of ICF card data when compared to contact management register (CMR) registers was at 11%. This was an increase of 7% compared to 2021 (4%). Out of the 14 sub-counties that were visited, only one facility in Bomet East Sub County had ICF record cards in both 2021 and 2022, and Kwanza Sub- County had ICF record cards in 2022. There was a general observation made that the ICF record cards are not available in the facilities, this could be attributed to the change from the ICF record card to the newer TPT record card which has not been printed and distributed to all.

The overall level of agreement of TIBU data, when compared with CMR for the year 2022 was at 80%, a decline of 12% from 92% in 2021. This implies that there is a notification gap in TIBU for TPT data. In 2022, three sub-counties had more data in TIBU as compared to what was in the register; these are Seme (225%), Muhoroni (125%), and Kwanza (114%). Ikolomani and Kuria East Sub counties had clients in the TPT register but none had been notified in TIBU while Butere, Gatanga, and Kiminini had the highest level of discordance between the clients in the registers and those notified in TIBU at 14%, 50%, and 56% respectively.

Table 3.3a: Level of agreement or aggregated data or TPT in TPT record card and TIBU in comparison to Contact Management Registers

		2021	Agreement (ICF Card vs Reg)	Agreement (TIBU vs Reg)	2022 Q1	Agreement (ICF Card vs Reg)	Agreement (TIBU vs Reg)	Average (2021/2022)					
County	**Sub Counties**	**ICF Card**	**Reg**	**TIBU**			**ICF Card**	**Reg**	**TIBU**			**Agreement (ICF Card vs Reg)**	**Agreement (TIBU vs Reg)**
Bomet	Bomet East	5	43	42	12%	98%	4	38	34	11%	89%	11%	94%
	Chepalungu	0	22	27	0%	123%	0	10	6	0%	60%	0%	91%
Bomet Total		5	65	69	8%	106%	4	48	40	8%	83%	8%	95%
Kakamega	Butere	0	3	0	0%	0%	0	7	1	0%	14%	0%	7%
	Ikolomani	0	10	0	0%	0%	0	5	0	0%	0%	0%	0%
Kakamega Total		0	13	0	0%	0%	0	12	1	0%	8%	0%	4%
Kisumu	Muhoroni	0	27	14	0%	52%	0	4	5	0%	125%	0%	88%
	Seme	0	32	5	0%	16%	0	4	9	0%	225%	0%	120%
Kisumu Total		0	59	19	0%	32%	0	8	14	0%	175%	0%	104%
Migori	Kuria East	0	19	12	0%	63%	0	1	0	0%	0%	0%	32%
	Suna West	0	56	110	0%	196%	0	10	9	0%	90%	0%	143%
Migori Total		0	75	122	0%	163%	0	11	9	0%	82%	0%	122%
Muranga	Gatanga	0	3	4	0%	133%	0	2	1	0%	50%	0%	92%
	Kahuro	0	23	27	0%	117%	0	15	12	0%	80%	0%	99%
Muranga Total		0	26	31	0%	119%	0	17	13	0%	76%	0%	98%
Trans Nzoia	Kiminini	0	35	11	0%	31%	0	9	5	0%	56%	0%	43%
	Kwanza	0	4	4	0%	100%	2	7	8	29%	114%	14%	107%
Trans Nzoia Total		0	39	15	0%	38%	2	16	13	13%	81%	6%	60%
Grand Total		10	277	256	4%	92%	12	112	90	11%	80%	7%	86%

3.3.2: TPT Outcomes

Released from treatment Outcomes (RFT)

The overall level of agreement of those released from TPT between TIBU data and the contact management register (CMR) for the children who are under 5 years of age in quarter 1-3 2021 was 134%. From the TPT data it is observed that the TIBU system is more updated with outcomes than the TPT register in the facilities.

Eleven (11) Sub counties out of the 14 that were sampled had some outcome updated in either the register or TIBU while the other 3 sub counties did have any data in both TIBU and the registers. Only 2 sub-counties; Bomet East, and Gatanga reported a perfect match (100%) of the outcomes reported between TIBU and CMR.

Three (3) sub-counties; Suna West, Kahuro, and Kiminini had most records in TIBU compared to the CMR with their levels of agreement at 204%, 162%, and 183% respectively. Kisumu County reported more records in the register than those in TIBU (22%) with a level of agreement of 10% and 31% in Muhoroni and Seme sub-counties respectively. Kwanza sub county had 4 records in TIBU but none was found in the TPT register.

It was noted that in 2021, there were more numbers for contacts released from TPT in the register as compared to those updated in TIBU (85%), while in 2021 there were more records updated in TIBU than in the TPT registers (134%).

Table 3.3b: Levels of agreement for aggregated data for TPT released from treatment (LFT) outcomes in TIBU data comparing to Contact management registers

County/Sub County	2020	Agreement (TIBU vs Reg)	2021 Q1-Q3	Agreement (TIBU vs Reg)	Average (2020/2021)			
County	**Sub Counties**	**TPT Reg**	**TIBU**		**Register**	**TIBU**		**Agreement (TIBU vs Reg)**
Bomet	Bomet East	15	15	100%	26	26	100%	100%
	Chepalungu	20	21	105%	22	27	123%	114%
Bomet Total	35	36	103%	48	53	110%	106%	
Kakamega	Butere	0	0	100%	2	0	0%	50%
	Ikolomani	22	6	27%	0	0	100%	64%
Kakamega Total	22	6	27%	2	0	0%	14%	
Kisumu	Muhoroni	16	9	56%	10	1	10%	33%
	Seme	23	25	109%	13	4	31%	70%
Kisumu Total	39	34	87%	23	5	22%	55%	
Migori	Kuria East	32	9	28%	9	10	111%	70%
	Suna West	98	108	110%	46	94	204%	157%
Migori Total	130	117	90%	55	104	189%	140%	
Muranga	Gatanga	8	13	163%	1	1	100%	131%
	Kahuro	9	9	100%	13	21	162%	131%
Muranga Total	17	22	129%	14	22	157%	143%	
Trans Nzoia	Kiminini	64	38	59%	6	11	183%	121%
	Kwanza	24	29	121%	0	4	0%	60%
Trans Nzoia Total	88	67	76%	6	15	250%	163%	
Kenya		331	282	85%	148	199	134%	110%

Death treatment Outcomes

In the year 2022 DQA considered collecting TPT deaths outcomes from both the TPT register and TIBU. The overall level of agreement in reporting TPT death outcomes among under-fives was 0% between TIBU and the register. Among the 14 sub-counties visited, only 2 had death outcomes reported among children under five initiated on TPT.

Kiminini Sub County recorded 4 deaths in the register and none in TIBU, resulting in an agreement of 0% in Quarters 1 -3 of 2021. Gatanga Sub County reported 1 death in TIBU and none in the register. This indicator shall serve as a baseline for future DQAs to measure the improvement in consistency between the TB recording and reporting tools. Comparing those that were released from treatment and death outcomes, the TIBU system seems to have more records of those who completed but there is an under-reporting of death outcomes in the system.

Table 3.3c: Levels of the agreement for aggregated data for TPT death outcomes in TIBU data comparing to Contact management registers

County	Sub County	Register	TIBU	Agreement Quarters 1-3 (TIBU vs Reg)
Muranga	Gatanga	0	1	0%
Muranga Total		0	1	0%
Trans Nzoia	Kiminini	4	0	0%
Grand Total		4	1	0%

3.4: Leprosy Findings

Leprosy is a chronic bacterial disease that mainly affects the nerves. Kenya is still in the post-elimination stage as was declared in 1989. The Country continues to diagnose, notify and treat Leprosy patients; so far, there are still endemic Counties with cases. The main challenges experienced have been persistent physical disabilities mainly associated with late diagnosis.

In the DQA exercise carried out in July 2022, out of all 175 health facilities visited in 14 sub-counties, only St Akidiva Memorial Hospital in Suna West sub-county Migori county notified a Leprosy case in TIBU. The case was documented in TIBU only and no registers were available in the facility with this record. There was no cohort (2020) data to assess outcomes for all the Sub-counties visited.

3.5: M&E Recording and Reporting Tools

The exercise of DQA was checking at 175 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 3-month stock

3.5.1: Availability of DS TB recording and reporting tools

Majority of the facilities visited had TB5 cards, TB4 registers and sputum request forms. Fourteen percent of the facilities didn't have appointment cards and FCDRR as shown in table 3.5a

Table 3.5a: Availability of M&E recording and reporting tools

Tool	Response (n=175)
TB5 Cards (Patient Record cards)	174 (99%)
TB4 Registers	173 (99%)
TB3 Cards (Appointment cards)	150 (86%)
Sputum Request forms	171 (98%)
Commodity reporting tools	150 (86%)

3.5.2 Tools version

The most prevalent version of appointment cards was version 2016 at 44% whereas for TB patient record card was version 2020. The practice with these tools is for HCW to use same version considering NTP usually print and distribute same number of these two tools. Notably, a significant number of facilities 39% have TB record cards version 2016 in circulation.

Seventy eight percent of facilities were using 2020 versions of TB4 registers and 79% for sputum request forms. Three facilities were having register without versions indicated. This went higher in terms of sputum request forms with 32 facilities missing version.

For commodity reporting tools, 36% were missing version with 46% using 2020 version as shown in table 3.5b.Table 3.5b: Tools version

Year/Version	TB5 Record Cards n (%)	TB4 register n (%)	TB3 Appointment card n (%)	Sputum request form n (%)	Commodity reporting Tool n (%)
2016	69 (39%)	16 (9%)	77 (44%)	3 (2%)	11 (6%)
2017	2 (1%)	19 (11%)	4 (2%)	0 (0%)	19 (11%)
2019	5 (3%)	0 (0%)	0 (0%)	1 (1%)	1 (1%)
2020	96 (55%)	137 (78%)	62 (35%)	139 (79%)	81 (46%)
Missing	3 (2%)	3 (3%)	32 (18%)	32 (18%)	63 (36%)

3.5.3 Utilization of M&E recording and reporting tools

Usage of record cards, sputum request forms and commodity reporting tools are sub optimal in management of TB as shown by this assessment. Complete usage of assessed record cards was at 46% yet this is a primary patient document. Thirteen facilities reported not to be utilizing TB4 registers.

Table 3.5c: Utilization of M&E recording and reporting tools

Utilization	TB5 Record Cards	TB4 register	Sputum request form	Commodity reporting tool
No available	1 (1%)	2 (1%)	4 (2%)	25 (14%)
Not Applicable	12 (7%)	11 (6%)	10 (6%)	2 (1%)
Partly	81 (46%)	32 (18%)	59 (34%)	52 (3%)
Yes, completely	81 (46%)	130 (74%)	102 (58%)	96 (55%)

3.5.4 Stock sufficiency of M&E recording and reporting tools

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

Table 3.5d: Stock sufficiency of M&E recording and reporting tools

Sufficiency	TB5 Record Cards	TB4 register	TB3 Appointment card	Sputum request form
Sufficient	159 (91%)	170 (97%)	139 (79%)	164 (94%)
Insufficient	15 (9%)	3 (2%)	11 (6%)	7 (4%)
Not applicable	1 (1%)	2 (1%)	25 (14%)	4 (2%)

3.5.5 Facilities missing M&E recording and reporting tools

Table 3.5e: Facilities missing M&E recording and reporting tools

Patient record cards			
No	County	Sub County	Health Facility
1	Murang'a	Gatanga	Gatanga Dispensary

TB Registers			
No	County	Sub County	Health Facility
1	Murang'a	Gatanga	Gatanga Dispensary
2	Migori	Kuria East	Matare Mission Dispensary

TB Appointment Cards							
No	County	Sub County	Health Facility	No	County	Sub County	Health Facility
1	Kisumu	Seme	Dago Jonyo Dispensary	14	Trans Nzoia	Kwanza	Kwanza Health Centre
2	Trans Nzoia	Kwanza	Bidii Health Centre	15	Murang'a	Kahuro	Gatara Health Centre
3	Muranga	Gatanga	Gatanga Dispensary	16	Trans Nzoia	Kwanza	Kapsitwet Dispensary
4	Trans Nzoia	Kiminini	Crystal Medical Clinic	17	Trans Nzoia	Kwanza	Kobos Dispensary
5	Trans Nzoia	Kwanza	Namanjalala Dispensary	18	Trans Nzoia	Kiminini	St Fredas Cottage Hospital
6	Trans Nzoia	Kiminini	Kitale District Hospital	19	Trans Nzoia	Kiminini	Kiminini Health Centre
7	Trans Nzoia	Kwanza	Goseta Dispensary	20	Trans Nzoia	Kiminini	Kiminini Cottage Hospital
8	Trans Nzoia	Kwanza	Kaisagat Dispensary	21	Trans Nzoia	Kiminini	Matunda Dispensary
9	Trans Nzoia	Kiminini	Bikeke Health Centre	22	Trans Nzoia	Kiminini	St Ursula Dispensary
10	Trans Nzoia	Kwanza	Keiyo Dispensary	23	Trans Nzoia	Kiminini	Sikhendu Dispensary
11	Trans Nzoia	Kwanza	Kolongolo M Dispensary	24	Muranga	Gatanga	Gathanji Dispensary
12	Kisumu	Seme	Manyuanda Health Centre	25	Kakamega	Butere	Mabole Health Centre
13	Kakamega	Butere	Lukoye Health Centre				

Lab Request Forms			
No	County	Sub County	Health Facility
1	Muranga	Gatanga	Gatanga Dispensary
2	Trans Nzoia	Kiminini	Crystal Medical Clinic
3	Isiolo	Merti	Korbesa Dispensary
4	Isiolo	Garbatula	Gafarsa Health Centre

TB Commodity Tool (FCDRR)							
No	County	Sub County	Health Facility	No	County	Sub County	Health Facility
1	Muranga	Gatanga	Gatanga Dispensary	14	Migori	Suna West	Suna Nursing and Maternity Home
2	Trans Nzoia	Kiminini	Crystal Medical Clinic	15	Isiolo	Merti	Matar Arba Dispensary
3	Trans Nzoia	Kwanza	Keiyo Dispensary	16	Isiolo	Merti	Basa Dispensary
4	Isiolo	Garbatula	Sericho Health Centre	17	Isiolo	Garbatula	Gafarsa Health Centre
5	Isiolo	Garbatula	Muchuro Dispensary	18	Migori	Suna West	Oruba Nursing and Maternity Home

6	Isiolo	Garbatula	Modogashe Dispensary	19	Isiolo	Garbatula	Kula Mawe Dispensary
7	Isiolo	Garbatula	Malka Daka Dispensary	20	Migori	Kuria East	Kugitimo Health Centre
8	Isiolo	Garbatula	Barambate Dispensary	21	Migori	Kuria East	Chinato Dispensary
9	Isiolo	Merti	Malka Galla Dispensary	22	Migori	Kuria East	Getambwega Dispensary
10	Isiolo	Merti	Korbesa Dispensary	23	Migori	Kuria East	Tisinye Dispensary
11	Isiolo	Merti	Biliqo Marara	24	Trans Nzoia	Kiminini	Sikhendu Dispensary
12	Isiolo	Merti	Bulesa Dispensary	25	Migori	Kuria East	Matare Mission Dispensary
13	Isiolo	Merti	Bisan Biliqo Dispensary				

CHAPTER FOUR

COMPARISON OF DQAS CONDUCTED IN 2020, 2021 AND 2022

The DQA 2022 purposively visited the counties, sub counties and facilities that had been assessed before in 2020 and 2021. This was in line with the recommendation of the DQA 2021 where the need to determine the impact of DQA and other data quality improvement activities in the counties of interest was highlighted as a gap. The counties visited include;

- Bomet in 2021 and 2022,
- Isiolo in 2021 and 2022,
- Kakamega in 2020 and 2022,
- Kisumu in 2021 and 2022,
- Migori in 2021 and 2022,
- Muranga in 2020 and 2021,
- Trans Nzoia in 2021 and 2022

4.1 Bomet County Findings

4.1.1 DSTB

Bomet county improved its level concurrence for DSTB data all forms from 96.8% to 98.0% in the TB registers and TIBU. The sub counties sampled also had an improvement in the use of TB patient record cards. Classification of patients as bacteriologically confirmed, Extra pulmonary or clinically diagnosed also showed an improvement in concurrence across all the tools assessed. However, documentation of clinical diagnosis and extra pulmonary data was noted to be a challenge in the record cards.

Table 4.1.1 Bomet DSTB findings

DSTB All forms - DQA 2021	**DSTB All forms - DQA 2022**		
Agreement (TB5 cards Vs TB4 Reg)	Agreement (TIBU vs TB4 Reg)	Agreement (TB5 cards Vs TB4 Reg)	Agreement (TIBU vs TB4 Reg)
74.9%	96.8%	92.0%	98.0%
DSTB Bact Confirmed - DQA 2021	**DSTB Bact Confirmed - DQA 2022**		
Agreement (TB5 cards Vs TB4 Reg)	Agreement (TIBU vs TB4 Reg)	Agreement (TB5 cards Vs TB4 Reg)	Agreement (TIBU vs TB4 Reg)
72.6%	94.9%	96.0%	97.0%
DSTB Clinically DX - DQA 2021	**DSTB Clinically DX - DQA 2022**		
Agreement (TB5 cards Vs TB4 Reg)	Agreement (TIBU vs TB4 Reg)	Agreement (TB5 cards Vs TB4 Reg)	Agreement (TIBU vs TB4 Reg)
55.3%	99.9%	80.0%	102.0%
DSTB EP - DQA 2021	**DSTB EP - DQA 2022**		
Agreement (TB5 cards Vs TB4 Reg)	Agreement (TIBU vs TB4 Reg)	Agreement (TB5 cards Vs TB4 Reg)	Agreement (TIBU vs TB4 Reg)
63.1%	100.3%	86.0%	94.0%

4.1.2 DRTB Findings

DRTB Data in Bomet county showed inconsistency between TIBU and facility registers in the two DQAs. TIBU had an over reporting of 33% as compared to the register and the DRTB log books also had an over reporting of 33% as compared to the register. This points to a possibility of only the log books and TIBU being used for reporting and the register not being utilized.

Table 4.1.2 Bomet DRTB Findings

DRTB All forms DQA - 2021	**DRTB All forms DQA - 2022**		
Agreement (Logbook Vs Reg)	Agreement (TIBU vs Reg)	Agreement (Logbook Vs Reg)	Agreement (TIBU vs Reg)
131.3%	131.3%	133.0%	133.0%
DRTB RR - DQA 2021	**DRTB RR - DQA 2022**		
Agreement (Logbook Vs Reg)	Agreement (TIBU vs Reg)	Agreement (Logbook Vs Reg)	Agreement (TIBU vs Reg)
207.1%	207.1%	133.0%	133.0%
DRTB MDR - DQA 2021	**DRTB MDR - DQA 2022**		
Agreement (Logbook Vs Reg)	Agreement (TIBU vs Reg)	Agreement (Logbook Vs Reg)	Agreement (TIBU vs Reg)
100.0%	100.0%	100.0%	100.0%

4.1.3 TPT

TPT data showed a decline in the level of agreement for the two DQAs conducted in Bomet. A decline of 5% was noted with the ICF cards also showing a decline of 1.2%.

Table 4.1.3 Bomet TPT Findings

TPT - DQA 2021	**TPT - DQA 2022**		
Agreement (TPT Card Vs TPT Reg)	Agreement (TIBU vs TPT Reg)	Agreement (TPT Card Vs TPT Reg)	Agreement (TIBU vs TPT Reg)
9.2%	100.0%	8.0%	95.0%

4.2 Isiolo County Findings

4.2.1 DSTB Findings

Isiolo county had a general decline in the level agreement for the two DQAs however still remained within the acceptable range of 95% - 105%. The county showed a general improvement in the use of the patient record cards. Classification of patients however showed a low level of agreement across all the tools assessed. Inconsistencies in classification of patients was noted to be out of the acceptable range for TIBU and facility registers where bacteriological confirmation had an agreement of 113%, clinically diagnosed had 88% and extra pulmonary had 92%. As compared to the previous DQA, the county reported lower level of agreements in patient classification.

Table4.2.1 Isiolo DSTB Findings

DSTB All forms - DQA 2021	**DSTB All forms - DQA 2022**		
Agreement (TB5 cards Vs TB4 Reg)	Agreement (TIBU vs TB4 Reg)	Agreement (TB5 cards Vs TB4 Reg)	Agreement (TIBU vs TB4 Reg)
82.4%	100.7%	99.0%	98.0%
DSTB Bact Confirmed - DQA 2021	**DSTB Bact Confirmed - DQA 2022**		
Agreement (TB5 cards Vs TB4 Reg)	Agreement (TIBU vs TB4 Reg)	Agreement (TB5 cards Vs TB4 Reg)	Agreement (TIBU vs TB4 Reg)
76.3%	100.0%	111.0%	113.0%
DSTB Clinically DX - DQA 2021	**DSTB Clinically DX - DQA 2022**		
Agreement (TB5 cards Vs TB4 Reg)	Agreement (TIBU vs TB4 Reg)	Agreement (TB5 cards Vs TB4 Reg)	Agreement (TIBU vs TB4 Reg)
77.7%	100.0%	95.0%	88.0%
DSTB EP - DQA 2021	**DSTB EP - DQA 2022**		
Agreement (TB5 cards Vs TB4 Reg)	Agreement (TIBU vs TB4 Reg)	Agreement (TB5 cards Vs TB4 Reg)	Agreement (TIBU vs TB4 Reg)
58.3%	100.0%	58.0%	92.0%

4.2.2 DRTB Findings

The county had a consistent level of agreement for DRTB at 100%. The county also has a low case finding for DRTB in the periods when the two DQAs were conducted.

Table 4.2.2 Isiolo DRTB Findings

DRTB All forms DQA - 2021	**DRTB All forms DQA - 2022**		
100.0%	**100.0%**	**100.0%**	**100.0%**
Agreement (Logbook Vs Reg)	Agreement (TIBU vs Reg)	Agreement (Logbook Vs Reg)	Agreement (TIBU vs Reg)
100.0%	100.0%	100.0%	100.0%
DRTB RR - DQA 2021	**DRTB RR - DQA 2022**		
Agreement (Logbook Vs Reg)	Agreement (TIBU vs Reg)	Agreement (Logbook Vs Reg)	Agreement (TIBU vs Reg)
100.0%	100.0%	100.0%	100.0%
DRTB MDR - DQA 2021	**DRTB MDR - DQA 2022**		
Agreement (Logbook Vs Reg)	Agreement (TIBU vs Reg)	Agreement (Logbook Vs Reg)	Agreement (TIBU vs Reg)

4.3 Kakamega County Findings

4.3.1 DSTB Findings

The overall level agreement in Kakamega for the DQA increased from 89.7% to 97%. Utilization of the record cards also improved hence an increased level of agreement from 55.2% to 85%. Classification of patients was however noted to be a challenge across all tools. The record cards had missing indication of the patient classification based diagnostic tests that were done. For Extra pulmonary cases, miss classification of patients resulted in a 78% level of mismatch. TIBU also had a low level of agreement as compared with registers for patients classified as extra pulmonary cases.

Table 4.3.1 Kakamega DSTB Findings

DSTB All forms - DQA 2020	DSTB All forms - DQA 2022		
Agreement (TB5 cards Vs TB4 Reg)	Agreement (TIBU vs TB4 Reg)	Agreement (TB5 cards Vs TB4 Reg)	Agreement (TIBU vs TB4 Reg)
55.2%	89.7%	85.0%	97.0%
DSTB Bact Confirmed - DQA 2020	**DSTB Bact Confirmed - DQA 2022**		
Agreement (TB5 cards Vs TB4 Reg)	Agreement (TIBU vs TB4 Reg)	Agreement (TB5 cards Vs TB4 Reg)	Agreement (TIBU vs TB4 Reg)
54.1%	88.9%	79.0%	98.0%
DSTB Clinically DX - DQA 2020	**DSTB Clinically DX - DQA 2022**		
Agreement (TB5 cards Vs TB4 Reg)	Agreement (TIBU vs TB4 Reg)	Agreement (TB5 cards Vs TB4 Reg)	Agreement (TIBU vs TB4 Reg)
55.8%	89.8%	69.0%	87.0%
DSTB EP - DQA 2020	**DSTB EP - DQA 2022**		
Agreement (TB5 cards Vs TB4 Reg)	Agreement (TIBU vs TB4 Reg)	Agreement (TB5 cards Vs TB4 Reg)	Agreement (TIBU vs TB4 Reg)
44.8%	79.7%	178.0%	53.0%

4.3.2 DRTB Findings

The level of agreement for DRTB all forms improved in Kakamega between the two DQAs conducted. Classification of resistance pattern was still noted to be a challenge specifically for Rifampicin resistance and Multi-drug resistance. Unlike Bomet, Kakamega county had a higher level of agreement between the logbooks and the registers indicating consistent use of the DRTB register.

Table4.3.2 Kakamega DRTB Findings

DRTB All forms- DQA 2020	DRTB All forms DQA - 2022		
Agreement (Logbook Vs Reg)	Agreement (TIBU vs Reg)	Agreement (Logbook Vs Reg)	Agreement (TIBU vs Reg)
150.0%	150.0%	88.0%	100.0%
DRTB RR -DQA 2020	**DRTB RR - DQA 2022**		
Agreement (Logbook Vs Reg)	Agreement (TIBU vs Reg)	Agreement (Logbook Vs Reg)	Agreement (TIBU vs Reg)
100.0%	150.0%	75.0%	75.0%
DRTB MDR - DQA 2020	**DRTB MDR - DQA 2022**		
Agreement (Logbook Vs Reg)	Agreement (TIBU vs Reg)	Agreement (Logbook Vs Reg)	Agreement (TIBU vs Reg)
100.0%	100.0%	100.0%	50.0%

4.3.3 TPT Findings

Kakamega county reported lack of the ICF cards for the two DQAs conducted (in 2020 and 2022). The level of agreement between TIBU and the contact management registers was also low, at 4%. Documentation in this section could have been affected by availability of the new tools, training and roll out within the county.

Table 4.3.3 Kakamega TPT Findings

TPT - DQA 2020	TPT - DQA 2022		
Agreement (TPT Card Vs TPT Reg)	Agreement (TIBU vs TPT Reg)	Agreement (TPT Card Vs TPT Reg)	Agreement (TIBU vs TPT Reg)
0.0%	95.0%	0.0%	4.0%

4.4 Kisumu County Findings

4.4.1 DSTB Findings

Kisumu county showed and overall improvement in the level of agreement for DSTB data from 92.8% to 98% for the two DQAs. Classification based on diagnosis was within acceptable level for bacteriological confirmation and clinical diagnosis in TIBU and the facility registers. However extra pulmonary classification still shows a low level of agreement across all the tools. Utilization of the patient record cards in the county dropped for all areas assessed for the DQA.

Table 4.4.1 Kisumu DSTB Findings

DSTB All forms - DQA 2021	DSTB All forms - DQA 2022		
Agreement (TB5 cards Vs TB4 Reg)	Agreement (TIBU vs TB4 Reg)	Agreement (TB5 cards Vs TB4 Reg)	Agreement (TIBU vs TB4 Reg)
92.5%	92.8%	85.0%	98.0%
DSTB Bact Confirmed - DQA 2021	**DSTB Bact Confirmed - DQA 2022**		
Agreement (TB5 cards Vs TB4 Reg)	Agreement (TIBU vs TB4 Reg)	Agreement (TB5 cards Vs TB4 Reg)	Agreement (TIBU vs TB4 Reg)
93.1%	102.2%	84.0%	101.0%
DSTB Clinically DX - DQA 2021	**DSTB Clinically DX - DQA 2022**		
Agreement (TB5 cards Vs TB4 Reg)	Agreement (TIBU vs TB4 Reg)	Agreement (TB5 cards Vs TB4 Reg)	Agreement (TIBU vs TB4 Reg)
92.3%	79.2%	81.0%	100.0%
DSTB EP - DQA 2021	**DSTB EP - DQA 2022**		
Agreement (TB5 cards Vs TB4 Reg)	Agreement (TIBU vs TB4 Reg)	Agreement (TB5 cards Vs TB4 Reg)	Agreement (TIBU vs TB4 Reg)
104.6%	75.0%	79.0%	75.0%

4.4.2 DRTB Findings

Kisumu county posted a perfect level agreement in the overall DRTB data which is consistent with the findings in the previous DQA. However, utilization of log books dropped from 100% to 75%.

Table 4.4.2 Kisumu DRTB Findings

DRTB All forms DQA - 2021	DRTB All forms DQA - 2022		
Agreement (Logbook Vs Reg)	Agreement (TIBU vs Reg)	Agreement (Logbook Vs Reg)	Agreement (TIBU vs Reg)
100.0%	100.0%	75.0%	100.0%
DRTB RR - DQA 2021	**DRTB RR - DQA 2022**		
Agreement (Logbook Vs Reg)	Agreement (TIBU vs Reg)	Agreement (Logbook Vs Reg)	Agreement (TIBU vs Reg)
100.0%	100.0%	75.0%	100.0%

DRTB MDR - DQA 2021	DRTB MDR - DQA 2022		
Agreement (Logbook Vs Reg)	Agreement (TIBU vs Reg)	Agreement (Logbook Vs Reg)	Agreement (TIBU vs Reg)
100.0%	100.0%	100.0%	100.0%

4.4.3 TPT Findings

The county improved in the level of agreement for TPT records in the two DQAs from 112.3% to 104%. The current level of agreement is within acceptable limit. However, the ICF cards were missing during both assessments an indication of distribution challenges from the program and counties.

Table 4.4.3 Kisumu TPT Findings

TPT - DQA 2021	TPT - DQA 2022		
Agreement (TPT Card Vs TPT Reg)	Agreement (TIBU vs TPT Reg)	Agreement (TPT Card Vs TPT Reg)	Agreement (TIBU vs TPT Reg)
0.0%	112.3%	0.0%	104.0%

4.5 Migori

4.5.1 DSTB Findings

Migori county improved the overall level of agreement for DSTB data in the DQA 2022 as compared to the DQA 2021 from 105.1% to 99%. Patient classification based on diagnosis also improved for bacteriologically confirmed cases from 90% to 99%. Documentation of extra pulmonary TB remains a challenge in the record cards with level of agreement noted to be at 56%. The county also had a general improvement in documentation of bacteriological confirmation and clinical diagnosis in the record cards for the two periods assessed.

Table 4.5.1 Migori DSTB Findings

DSTB All forms - DQA 2021	DSTB All forms - DQA 2022		
Agreement (TB5 cards Vs TB4 Reg)	Agreement (TIBU vs TB4 Reg)	Agreement (TB5 cards Vs TB4 Reg)	Agreement (TIBU vs TB4 Reg)
77.3%	105.1%	88.0%	99.0%
DSTB Bact Confirmed - DQA 2021	**DSTB Bact Confirmed - DQA 2022**		
Agreement (TB5 cards Vs TB4 Reg)	Agreement (TIBU vs TB4 Reg)	Agreement (TB5 cards Vs TB4 Reg)	Agreement (TIBU vs TB4 Reg)
71.2%	108.5%	90.0%	99.0%
DSTB Clinically DX - DQA 2021	**DSTB Clinically DX - DQA 2022**		
Agreement (TB5 cards Vs TB4 Reg)	Agreement (TIBU vs TB4 Reg)	Agreement (TB5 cards Vs TB4 Reg)	Agreement (TIBU vs TB4 Reg)
66.7%	98.1%	99.0%	99.0%
DSTB EP - DQA 2021	**DSTB EP - DQA 2022**		
Agreement (TB5 cards Vs TB4 Reg)	Agreement (TIBU vs TB4 Reg)	Agreement (TB5 cards Vs TB4 Reg)	Agreement (TIBU vs TB4 Reg)
103.6%	150.0%	56.0%	87.0%

4.5.2 DRTB Findings

The county dropped the level of agreement for DRTB data in the two periods assessed. Worth noting is that for both assessments, the DRTB level of agreement was not within the acceptable limits. Classification by resistance pattern was noted as a gap for the Rifampicin resistant patients while for MDR the level of agreement was 100%.

Table 4.5.2 Migori DRTB Findings

DRTB All forms DQA - 2021	DRTB All forms DQA - 2022		
Agreement (Logbook Vs Reg)	Agreement (TIBU vs Reg)	Agreement (Logbook Vs Reg)	Agreement (TIBU vs Reg)
100.0%	110.0%	100.0%	92.0%
DRTB RR - DQA 2021	**DRTB RR - DQA 2022**		
Agreement (Logbook Vs Reg)	Agreement (TIBU vs Reg)	Agreement (Logbook Vs Reg)	Agreement (TIBU vs Reg)
150.0%	100.0%	83.0%	83.0%
DRTB MDR - DQA 2021	**DRTB MDR - DQA 2022**		
Agreement (Logbook Vs Reg)	Agreement (TIBU v Reg)	Agreement (Logbook Vs Reg)	Agreement (TIBU vs Reg)
100.0%	150.0%	100.0%	100.0%

4.5.3 TPT Findings

The level of agreement in TPT for Migori was not within the acceptable for the two periods assessed. In 2021, an underreporting was noted, while in 2022 TIBU data was noted to be more than facility data in the Contact/ TPT register. ICF / TPT cards were missing in the facilities for both periods of assessment therefore could be reviewed.

Table 4.5.3 Migori TPT Findings

TPT - DQA 2021	TPT - DQA 2022		
Agreement (TPT Card Vs TPT Reg)	Agreement (TIBU vs TPT Reg)	Agreement (TPT Card Vs TPT Reg)	Agreement (TIBU vs TPT Reg)
0.0%	88.1%	0.0%	122.0%

4.6 Muranga

4.6.1 DSTB Findings

The assessment in Muranga showed a drop in the level of agreement in the two DQAs from 92.3% to 90%. Worth noting is that for both periods, the level of agreement was not within the acceptable range of 95% - 105%. Classification based on diagnosis also dropped in the two periods between TIBU and the facility registers. Utilization of the patient record cards improved hence an increased level of agreement from 92.3% to 95%. However, the level of agreement of the record cards and treatment register for the clinically diagnosed was noted to be off the acceptable range.

Table 4.6.1 Muranga DSTB Findings

DSTB All forms - DQA 2021	DSTB All forms - DQA 2022		
Agreement (TB5 cards Vs TB4 Reg)	Agreement (TIBU vs TB4 Reg)	Agreement (TB5 cards Vs TB4 Reg)	Agreement (TIBU vs TB4 Reg)
91.9%	92.3%	95.0%	90.0%
DSTB Bact Confirmed - DQA 2021	**DSTB Bact Confirmed - DQA 2022**		
Agreement (TB5 cards Vs TB4 Reg)	Agreement (TIBU vs TB4 Reg)	Agreement (TB5 cards Vs TB4 Reg)	Agreement (TIBU vs TB4 Reg)

90.4%	93.8%	99.0%	92.0%
DSTB Clinically DX - DQA 2021	**DSTB Clinically DX - DQA 2022**		
Agreement (TB5 cards Vs TB4 Reg)	Agreement (TIBU vs TB4 Reg)	Agreement (TB5 cards Vs TB4 Reg)	Agreement (TIBU vs TB4 Reg)
82.9%	84.8%	91.0%	83.0%
DSTB EP - DQA 2021	**DSTB EP - DQA 2022**		
Agreement (TB5 cards Vs TB4 Reg)	Agreement (TIBU vs TB4 Reg)	Agreement (TB5 cards Vs TB4 Reg)	Agreement (TIBU vs TB4 Reg)
126.3%	102.6%	102.0%	106.0%

4.6.2 DRTB Findings

Muranga county assessment showed an over reporting in TIBU as compared to the facility registers for DRTB at 150% as compared to the under-reporting noted in the previous DQA at 83.5%. Despite the over reporting, the level of agreement in patient classification by resistance pattern improved between the two periods to 100%.

Table 4.6.2 Muranga DRTB Findings

DRTB All forms DQA - 2021	**DRTB All forms DQA - 2022**		
Agreement (Logbook Vs Reg)	Agreement (TIBU vs Reg)	Agreement (Logbook Vs Reg)	Agreement (TIBU vs Reg)
100.0%	83.5%	150.0%	150.0%
DRTB RR - DQA 2021	**DRTB RR - DQA 2022**		
Agreement (Logbook Vs Reg)	Agreement (TIBU vs Reg)	Agreement (Logbook Vs Reg)	Agreement (TIBU vs Reg)
75.0%	75.0%	100.0%	100.0%
DRTB MDR - DQA 2021	**DRTB MDR - DQA 2022**		
Agreement (Logbook Vs Reg)	Agreement (TIBU vs Reg)	Agreement (Logbook Vs Reg)	Agreement (TIBU vs Reg)
100.0%	100.0%	100.0%	100.0%

4.6.3 TPT Findings

The TPT findings point to an improvement in the level of agreement between the two periods to an acceptable level of 98%. However, just like the other counties, Muranga lacked the TPT/ ICF cards.

Table 4.6.2 Muranga TPT Findings

TPT - DQA 2021	**TPT - DQA 2022**		
Agreement (TPT Card Vs TPT Reg)	Agreement (TIBU vs TPT Reg)	Agreement (TPT Card Vs TPT Reg)	Agreement (TIBU vs TPT Reg)
0.0%	82.0%	0.0%	98.0%

4.7 Trans Nzoia

4.7.1 DSTB Findings

Trans Nzoia county had an improvement in the overall level of agreement for DSTB from 59% to 88%. The 88% noted in the DQA 2022 is still not within the acceptable range of 95% - 105%. Documentation of classification of patients also improved for bacteriologically confirmed, clinically diagnosed and extra pulmonary. Despite this improvement, the level of agreement by patient classification is still not within the acceptable range. The current DQA shows gradual improvement in utilization of the patient record cards.

Table 4.7.1 Trans Nzoia DSTB Findings

DSTB All forms - DQA 2021	DSTB All forms - DQA 2022		
Agreement (TB5 cards Vs TB4 Reg)	Agreement (TIBU vs TB4 Reg)	Agreement (TB5 cards Vs TB4 Reg)	Agreement (TIBU vs TB4 Reg)
34.1%	59.0%	56.0%	88.0%
DSTB Bact Confirmed - DQA 2021	**DSTB Bact Confirmed - DQA 2022**		
Agreement (TB5 cards Vs TB4 Reg)	Agreement (TIBU vs TB4 Reg)	Agreement (TB5 cards Vs TB4 Reg)	Agreement (TIBU vs TB4 Reg)
30.8%	59.7%	56.0%	88.0%
DSTB Clinically DX - DQA 2021	**DSTB Clinically DX - DQA 2022**		
Agreement (TB5 cards Vs TB4 Reg)	Agreement (TIBU vs TB4 Reg)	Agreement (TB5 cards Vs TB4 Reg)	Agreement (TIBU vs TB4 Reg)
25.5%	52.8%	55.0%	93.0%
DSTB EP - DQA 2021	**DSTB EP - DQA 2022**		
Agreement (TB5 cards Vs TB4 Reg)	Agreement (TIBU vs TB4 Reg)	Agreement (TB5 cards Vs TB4 Reg)	Agreement (TIBU vs TB4 Reg)
29.9%	81.9%	38.0%	81.0%

4.7.2 DRTB Findings

The DQA 2022 shows over reporting in the TIBU DRTB records by 50% as compared to the DRTB register. Classification by resistance pattern for RR had a perfect level of agreement while MDR showed an over reporting of 50%. The county also had a perfect level of agreement for DRTB log books as compared to the DRTB register overall and also in classification by resistance pattern.

Table 4.7.2 Trans Nzoia DRTB Findings

DRTB All forms DQA - 2021	DRTB All forms DQA - 2022		
Agreement (Logbook Vs Reg)	Agreement (TIBU vs Reg)	Agreement (Logbook Vs Reg)	Agreement (TIBU vs Reg)
150.0%	150.0%	100.0%	150.0%
DRTB RR - DQA 2021	**DRTB RR - DQA 2022**		
Agreement (Logbook Vs Reg)	Agreement (TIBU vs Reg)	Agreement (Logbook Vs Reg)	Agreement (TIBU vs Reg)
150.0%	100.0%	100.0%	100.0%
DRTB MDR - DQA 2021	**DRTB MDR - DQA 2022**		
Agreement (Logbook Vs Reg)	Agreement (TIBU vs Reg)	Agreement (Logbook Vs Reg)	Agreement (TIBU vs Reg)
100.0%	100.0%	100.0%	150.0%

4.7.3 TPT Findings

TPT assessment shows an improvement in the level agreement in the DQA 2022 from 45% to 60%. Utilization of the TPT/ ICF cards was noted to have moved from 0% to 6%. Despite the slight improvement, the level of agreement results of the DQA 2022 are still not within the acceptable ranges which points to under reporting of TPT. Trans Nzoia is however the only county that had ICF/TPT record cards availed for the assessment.

Table 5.7.3 Trans Nzoia TPT Findings

TPT - DQA 2021	TPT - DQA 2022		
Agreement (TPT Card Vs TPT Reg)	Agreement (TIBU vs TPT Reg)	Agreement (TPT Card Vs TPT Reg)	Agreement (TIBU vs TPT Reg)
0.0%	45.0%	6.0%	60.0%

CHAPTER FIVE

CONCLUSION & RECOMMENDATIONS

5.1 Conclusions

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

5.2 Recommendations

	Recommendations	Level of Priority	Responsible Person(s) / Organization (s)
1	Assess the quality of recording and reporting tools in upcoming DQAs	Medium	NTP
2	Strengthen completeness of the patient record cards	High	National/County/Sub County
3	Print and distribute TPT record cards	High	National/Implementing partners
4	Expand the DQA tool to include the entire contact management cascade	Medium	National
5	Harmonize reporting for ACF data along the care cascade	High	National/County/Sub County
6	Prioritize leprosy endemic counties for future DQA	Medium	NTP
7	Strengthen utilization of DRTB register	High	County/Sub County
8	Consider support for County, Sub County and partners in future DQA budgets	Medium	National

ANNEXES

Annex 1a: List of contributors in report writing

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Annex 1b: List of contributors during data collection

No	Name	Organization	Designation	DQA visited Counties
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40	Nkirote Mwirigi	NTP	Program Officer	Migori
41	Valerian Karani	NTP/FELTP	Program Officer	Migori
42	Mark Otieno	UON-HealthIT	Health IT Rep	Migori
43	Robert Timase	Sub county	SCTLC Kuria East	Migori
44	Peter Omware	Sub county	SCTLC Suna West	Migori
45	David Nyamohanga	County	CTLC	Migori

46	Winnie Mogusu	KCCB	Program Officer	Migori
47	Dr Kisia Jacqueline	NTP	Head of Program	Muranga
48	Joyce Kiarie	NTP	Program Officer (Team Lead)	Muranga
49	Rhodah Pola	NTP	Program Officer	Muranga
50	Mary Nyagah	NTP	Program Officer	Muranga
51	Lydia Kamau	NTP	Program Officer	Muranga
52	Simion Ndemo	NTP	Program Officer	Muranga
53	Eugene Murunga	UON-HealthIT	Health IT Rep	Muranga
54	Rosemary Kiige	Sub county	SCTLC Gatanga	Muranga
55	David Waweru	Sub county	SCTLC Kahuro	Muranga
56	Lucy Irungu	County	CTLC	Muranga
57	Timothy Kandie	NTP	Program Officer (Team Lead)	Transnzoia
58	Wesley Tomno	NTP	Program Officer	Transnzoia
59	John Mueke	NTP	Program Officer	Transnzoia
60	Dennis Oira	CHS	Monitoring and Evaluation	Transnzoia
61	Polycarp Odoyo	UON-HealthIT	Health IT Rep	Transnzoia
62	Henry Omao	Sub county	SCTLC Kiminini	Transnzoia
63	Rahab Gichere	Sub county	SCTLC Kwanza	Transnzoia

Annex 2: DRTB Cased-based summary

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
Bomet	Bomet East	100%	100%	100%	100%	67%	100%	100%	100%	67%	67%
Bomet	Chepalungu	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%
Kakamega	Ikolomani	33%	100%	33%	100%	33%	100%	0%	100%	33%	67%
Migori	Kuria East	100%	100%	100%	100%	0%	0%	0%	100%	0%	100%
Migori	Suna West	100%	100%	75%	100%	50%	50%	100%	100%	100%	50%
Muranga	Gatanga	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%
Muranga	Kahuro	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Trans Nzoia	Kiminini	100%	100%	100%	100%	0%	50%	100%	50%	100%	100%
Kenya	89%	89%	63%	81%	46%	77%	77%	100%	92%	77%	

Annex 3: List of health facilities

No	County	Sub County	Health Facility	No	County	Sub County	Health Facility
1	Bomet	Bomet East	Chemaner Dispensary (Bomet)	89	Kisumu	Seme	Dago Jonyo Dispensary
2	Bomet	Bomet East	Irwaga Health Centre	90	Kisumu	Seme	Kolenyo Dispensary
3	Bomet	Bomet East	Kapkimolwa Dispensary	91	Kisumu	Seme	Kombewa District Hospital
4	Bomet	Bomet East	Kembu Dispensary	92	Kisumu	Seme	Kuoyo Kaila Dispensary
5	Bomet	Bomet East	Kimunjul Dispensary	93	Kisumu	Seme	Langi Kawino Dispensary
6	Bomet	Bomet East	Kiplobotwa Dispensary	94	Kisumu	Seme	Lolwe Dispensary
7	Bomet	Bomet East	Kiromwok Dispensary	95	Kisumu	Seme	Manyuanda Health Centre
8	Bomet	Bomet East	Longisa Distrioct Hospital	96	Kisumu	Seme	Miranga Sub District Hospital
9	Bomet	Bomet East	Menet Dispensary	97	Kisumu	Seme	Nduru Kadero Dispensary
10	Bomet	Bomet East	Merigi Dispensary	98	Kisumu	Seme	Onyinjo Dispensary
11	Bomet	Bomet East	Mulot Dispensary	99	Kisumu	Seme	Opapla Dispensary
12	Bomet	Bomet East	Olokyin Health Centre	100	Kisumu	Seme	Oriang Alwala Dispensary
13	Bomet	Bomet East	Tegat Health Centre	101	Kisumu	Seme	Oriang Kanyadwera Dispensary
14	Bomet	Chepalungu	Cheboyo Dispensary	102	Kisumu	Seme	Ratta Health Centre
15	Bomet	Chepalungu	Chebunyo Dispensary	103	Kisumu	Seme	Rodi Dispensary
16	Bomet	Chepalungu	Itembe Dispensary	104	Migori	Kuria East	Chinato Dispensary
17	Bomet	Chepalungu	Kaboson Health Centre	105	Migori	Kuria East	Getambwega Dispensary
18	Bomet	Chepalungu	Kapisimba Dispensary	106	Migori	Kuria East	Gwitembe Dispensary
19	Bomet	Chepalungu	Kapkesosio Dispensary	107	Migori	Kuria East	Kegonga District Hospital
20	Bomet	Chepalungu	Kipsuter Dispensary	108	Migori	Kuria East	Kugitimo Health Centre
21	Bomet	Chepalungu	Lugumek Dispensary	109	Migori	Kuria East	Matare Mission Dispensary
22	Bomet	Chepalungu	Makimeny Dispensary	110	Migori	Kuria East	Ntimaru Sub-District Hospital
23	Bomet	Chepalungu	Olbutyo Health Centre	111	Migori	Kuria East	Tisinye Dispensary
24	Bomet	Chepalungu	Sigor Sub-District Hospital	112	Migori	Suna West	Arombe Dispensary
25	Bomet	Chepalungu	Siongiroi Health Centre	113	Migori	Suna West	Giribe Dispensary
26	Isiolo	Garbatula	Barambate Dispensary	114	Migori	Suna West	God Kwer Dispensary
27	Isiolo	Garbatula	Gafarsa Health Centre	115	Migori	Suna West	Mama Nursing Home
28	Isiolo	Garbatula	Garbatulla District Hospital	116	Migori	Suna West	Nyamaraga Dispensary
29	Isiolo	Garbatula	Kinna Health Centre	117	Migori	Suna West	Ojele Memorial Hospital
30	Isiolo	Garbatula	Kula Mawe Dispensary	118	Migori	Suna West	Oruba Dispensary

31	Isiolo	Garbatula	Malka Daka Dispensary	119	Migori	Suna West	Oruba Nursing And Maternity Home
32	Isiolo	Garbatula	Modogashe Dispensary	120	Migori	Suna West	Pastor Machage Memorial Hospital
33	Isiolo	Garbatula	Muchuro Dispensary	121	Migori	Suna West	St Akidiva Memorial Hospital
34	Isiolo	Garbatula	Sericho Health Centre	122	Migori	Suna West	St Barnabas Dispensary
35	Isiolo	Merti	Basa Dispensary	123	Migori	Suna West	Suna Nursing And Maternity Home
36	Isiolo	Merti	Biliqo Marara	124	Migori	Suna West	Suna Ragana Dispensary
37	Isiolo	Merti	Bisan Biliqo Dispensary	125	Muranga	Gatanga	Del Monte Dispensary
38	Isiolo	Merti	Bulesa Dispensary	126	Muranga	Gatanga	Gatanga Dispensary
39	Isiolo	Merti	Korbesa Dispensary	127	Muranga	Gatanga	Gathanji Dispensary
40	Isiolo	Merti	Malka Galla Dispensary	128	Muranga	Gatanga	Gatunyu Dispensary
41	Isiolo	Merti	Matar Arba Dispensary	129	Muranga	Gatanga	Gatura Healh Centre
42	Isiolo	Merti	Merti Health Centre	130	Muranga	Gatanga	Giathanini Disp
43	Kakamega	Butere	Butere District Hospital	131	Muranga	Gatanga	Giatutu Dispensary
44	Kakamega	Butere	Imanga Health Centre	132	Muranga	Gatanga	Gitiri Community Dispensary
45	Kakamega	Butere	Lukoye Health Centre	133	Muranga	Gatanga	Gituamba (Aipca) Dispensary
46	Kakamega	Butere	Mabole Health Centre	134	Muranga	Gatanga	Karangi Dispensary
47	Kakamega	Butere	Manyala Sub-District Hospital	135	Muranga	Gatanga	Kiarutara Dispensary
48	Kakamega	Butere	Shikunga Health Centre	136	Muranga	Gatanga	Kigoro Dispensary
49	Kakamega	Butere	Shimkoko Dispensary	137	Muranga	Gatanga	Kihumbu-Ini Community Dispensary
50	Kakamega	Butere	Shiraha Health Centre	138	Muranga	Gatanga	Kiunyu Dispensary
51	Kakamega	Butere	Shisaba Dispensary	139	Muranga	Gatanga	Mbugiti Dispensary
52	Kakamega	Butere	Shitsitswi Health Centre	140	Muranga	Gatanga	Mitumbiri Dispensary
53	Kakamega	Ikolomani	Eregi Mission Health Centre	141	Muranga	Gatanga	Mukarara Community Dispensary
54	Kakamega	Ikolomani	Iguhu District Hospital	142	Muranga	Gatanga	Mukurwe Dispensary
55	Kakamega	Ikolomani	Imalaba Dispensary	143	Muranga	Gatanga	Ndunyu Chege Dispensary
56	Kakamega	Ikolomani	Imulama Dispensary	144	Muranga	Gatanga	Wanyaga Community Dispensary
57	Kakamega	Ikolomani	Kilingili Health Centre	145	Muranga	Kahuro	Gatara Health Centre
58	Kakamega	Ikolomani	Murudef Clinic	146	Muranga	Kahuro	Gatheru Dispensary
59	Kakamega	Ikolomani	Savane Dispensary	147	Muranga	Kahuro	Gitaro Dispensary
60	Kakamega	Ikolomani	Shibwe Sub-District Hospital	148	Muranga	Kahuro	Githagara Health Centre
61	Kakamega	Ikolomani	Shihalia Dispensary	149	Muranga	Kahuro	Jamii Medical Clinic (Muranga North)
62	Kakamega	Ikolomani	Shiseso Health Centre	150	Muranga	Kahuro	Kiria Health Centre
63	Kakamega	Ikolomani	St Pius Musoli Health Centre	151	Muranga	Kahuro	Kirogo Health Centre

64	Kisumu	Muhoroni	Chemelil Gok Dispensary	152	Muranga	Kahuro	Muriranjas Sub-District Hospital
65	Kisumu	Muhoroni	Chemelil Sugar Health Centre	153	Muranga	Kahuro	Wanjengi Dispensary
66	Kisumu	Muhoroni	Kandege Dispensary	154	Trans Nzoia	Kiminini	Bikeke Health Centre
67	Kisumu	Muhoroni	Kasongo Dispensary	155	Trans Nzoia	Kiminini	Crystal Medical Clinic
68	Kisumu	Muhoroni	Kibigori Dispensary	156	Trans Nzoia	Kiminini	Kiminini Cottage Hospital
69	Kisumu	Muhoroni	Koru Dispesanry	157	Trans Nzoia	Kiminini	Kiminini Health Centre
70	Kisumu	Muhoroni	Koru Mission Health Centre	158	Trans Nzoia	Kiminini	Kitale District Hospital
71	Kisumu	Muhoroni	Makindu Dispensary	159	Trans Nzoia	Kiminini	Maili Saba Dispensary
72	Kisumu	Muhoroni	Mama Plister Blair Health Centre	160	Trans Nzoia	Kiminini	Matunda Dispensary
73	Kisumu	Muhoroni	Mashambani Dispensary	161	Trans Nzoia	Kiminini	Sikhendu Dispensary
74	Kisumu	Muhoroni	Masogo Sub District Hospital	162	Trans Nzoia	Kiminini	St Fredas Cottage Hospital
75	Kisumu	Muhoroni	Miwani Dispensary	163	Trans Nzoia	Kiminini	St Ursula Dispensary
76	Kisumu	Muhoroni	Mnara Dispensary	164	Trans Nzoia	Kiminini	Tulwet Health Centre
77	Kisumu	Muhoroni	Muhoroni Sub-District Hospital	165	Trans Nzoia	Kiminini	Weonia Dispensary
78	Kisumu	Muhoroni	Muhoroni Sugar Company (Musco) Dispensary	166	Trans Nzoia	Kwanza	Bidii Health Centre
79	Kisumu	Muhoroni	Nyangoma Health Centre	167	Trans Nzoia	Kwanza	Goseta Dispensary
80	Kisumu	Muhoroni	Obumba Dispensary	168	Trans Nzoia	Kwanza	Kaisagat Dispensary
81	Kisumu	Muhoroni	Ogen Dispensary	169	Trans Nzoia	Kwanza	Kapkoi Dispensary
82	Kisumu	Muhoroni	Ogra Health Centre	170	Trans Nzoia	Kwanza	Kapsitwet Dispensary
83	Kisumu	Muhoroni	Rachar Sugar Belt Hospital	171	Trans Nzoia	Kwanza	Keiyo Dispensary
84	Kisumu	Muhoroni	St Vincents De Paul Health Centre	172	Trans Nzoia	Kwanza	Kobos Dispensary
85	Kisumu	Muhoroni	Tamu Health Centre	173	Trans Nzoia	Kwanza	Kolongolo M Dispensary
86	Kisumu	Seme	Arito Langi Dispensary	174	Trans Nzoia	Kwanza	Kwanza Health Centre
87	Kisumu	Seme	Asat Beach Dispensary	175	Trans Nzoia	Kwanza	Namanjalala Dispensary
88	Kisumu	Seme	Bar Korwa Dispensary				

NATIONAL TUBERCULOSIS, LEPROSY AND LUNG DISEASE PROGRAM