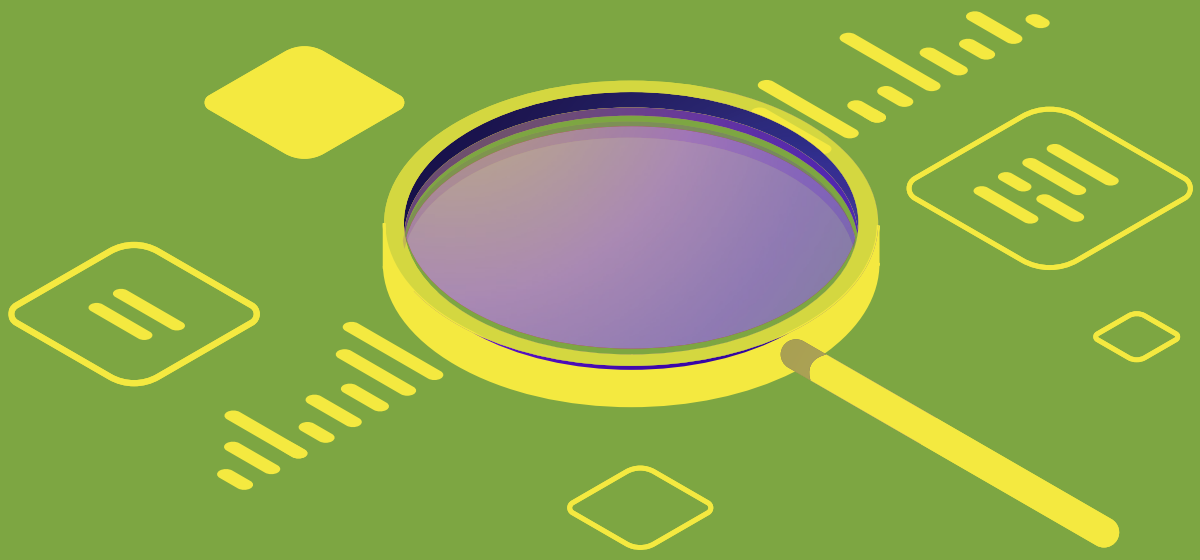
REPUBLIC OF KENYA

MINISTRY OF HEALTH

Data Quality Assessment Report 2021



NATIONAL TUBERCULOSIS, LEPROSY AND LUNG DISEASE PROGRAM

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CONTENTS

Abstract

Introduction: Tuberculosis (TB) remains a global public health concern and among the top 10 causes of death by a single disease-causing agent. TB is caused by bacteria known as Mycobacterium tuberculosis. Eighty percent of the global disease burden is contributed by 30 countries including Kenya. In the recent past, Drug resistant TB (DR TB) has emerged as a new challenge especially among high burden countries. Finding missing people with TB remains a challenge globally with a significant proportion not being initiated on treatment.

The estimated TB incidence in Kenya was 140,000 in 2020, which translates to a rate of 294 per 100,000 populations. During the year under review, the country notified 72,943 Drug sensitive TB (DS TB) and 961 DR TB cases. HIV testing rate was 98% with a co-infection rate of 24% and 93% of those who were HIV positive started or on ART during TB treatment.

Monitoring and evaluation of interventions is critical for effective programming. The program also carries out an annual targeted data quality assessment (DQA) where findings are addressed during various technical missions. This years' DQA was carried out in 6 counties.

Methodology: A retrospective assessment was conducted in 6 randomly-selected counties in which 12 sub counties were randomly selected and a total of 150 health facilities visited. The DQA involved a quantitative comparison of recorded and reported facility data on TB, TPT and leprosy targeting the population of cases registered between January 2020 and March 2021. The facility registers were used for comparison. Data collection was through a digital tool (open data kit).

Data was uploaded into a central server and then exported to EXCEL and STATA for cleaning and analysis. Analysis involved comparing aggregate and case-based data across three data sources (TIBU, Facility TB Register and Patient Record Card/Log book) to show the level of agreement. Kappa score was used to measure consistency and completeness of the data in the facility register and electronic surveillance system (TIBU). Kappa score was included to measure the statistical significance of the level of agreement for consistency and completeness in the facility register and TIBU.

Results: The overall level of agreement between facility register (TB4) and the national surveillance system (TIBU) was 87%, a decline from 94% documented the previous year. In sector performance, both private and FBO facilities had a 103% level of agreement while public sector facilities averaged 87%. Level of agreement for the same source documents according to level of facilities showed that level 2 facilities were at 100% while the least level of agreement was observed among level 5 hospitals at 42%.

Reporting and recording tools were available in almost all the facilities that were visited, however the revised tools were not available in all facilities.

Recommendations: In order to monitor data quality improvement among counties, the next DQA should target counties previously visited. The program should issue a circular to counties for withdrawal of obsolete tools and capacity building of health care workers on new tools should be continued.

ACKNOWLEDGEMENT

The Division of National Tuberculosis, Leprosy and Lung Disease Program would like to thank USAID through TB ARC II for their financial, technical and logistical support that made implementation of 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, TB ARC II technical team who developed this report and the communication team for their editorial contribution.

Abbreviations

ACF - Active Case Finding

CTLCs – County TB and Leprosy Coordinators

DR TB – Drug Resistant TB

DS TB – Drug Susceptible TB

DQA – Data Quality Audit

HIV - Human Immunodeficiency Virus

IPT - Isoniazid Preventive Therapy

LTFU – Lost to Follow up

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

NTP - National Tuberculosis Program

JICA - Japan International Cooperation Agency

RR - Rifampicin Resistant

SCTLCs - Sub County TB and Leprosy Coordinators

TB - Tuberculosis

TC – Treatment completed

TO – Transfer out

TPT - Tuberculosis Preventive Therapy

USAID - United States Agency for International Development

WHO – World Health Organization


Ministry of Health

1.0 INTRODUCTION

1.1 Background

Tuberculosis (TB) remains a global public health concern and among the top 10 causes of death by a single disease causing agent. It is caused by a bacteria known as Mycobacterium tuberculosis. It is estimated that about a quarter of the world population are infected by M. tuberculosis and are at risk of developing active TB disease (WHO report 2020). According to the World Health Organization (WHO) Global Tuberculosis report 2020, about 10 million people fell ill with TB in 2019. Eighty percent of the global disease burden is contributed by 30 countries including Kenya. In the recent past, Drug resistant TB (DR TB) has emerged as a new challenge especially among high burden countries. Finding missing people with TB remains a challenge globally with a significant proportion not being started on treatment.

The estimated TB incidence in Kenya was 140,000 in 2020 which translates to a rate of 294 persons per 100,000 population. During the year under review (2020) the country notified 72,943 DS TB and 961 DR TB cases. HIV testing rate was 98% with a co-infection rate of 24% and 93% of those who were HIV positive started or on ART during TB treatment. The treatment success rate for all forms of TB was 85% (annual report 2020)

Monitoring and evaluation of interventions (case detection and treatment) is critical for effective programming. In 2017, the program rolled out active case finding (ACF) in facilities to find missing people with TB. This was expected to increase case notification and hence quality of data generated is important. Resources have been dedicated to quality data improvement that includes but not limited to; routine support supervisions at all levels, periodic performance reviews and capacity building. The program also carries out targeted data quality assessment annually where findings are incorporated into data quality improvement initiatives.

Table 1.1 Dimensions of data quality

Dimensions of Data Quality	Operational Definitions
Accuracy	Also known as validity. Accurate data are considered correct: the data measure what they are intended to measure. Accurate data minimize errors (e.g., recording or interviewer bias, transcription error, sampling error) to a 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/or 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 in 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 received 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 timely 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 of actual program activities; and (3) when the information is actually used or required.

1.2 Problem statement

There are over 300 TB sub counties across the 47 counties in the country. Each county has its own administrative and geographical challenges with varied health system challenges including varied number of health care workers. For program effectiveness, the program monitors a number of indicators including number of TB cases notified, treatment success rate and number of leprosy cases detected. Considering the number of cases and facility work load, gaps in accurate recording and reporting are anticipated. Since TIBU was rolled out in 2012, the need for manual routine summaries was eliminated, but transcription errors remain a data quality issue. TB treatment takes a minimum of 6 months and for DR TB and leprosy even a longer period of time up to 24 months

- this poses a challenge of inconsistent recording and reporting. The problem is confounded by number of patients who are transferred or are on transit and may not be well documented at both ends of the treatment sites. From routine data, patient diagnostic and clinical follow up has been identified as a challenge with significant proportions of patients who are lost to treatment follow up (LTFU) or transfer outs not assigned correct treatment outcomes.

With the emergence of COVID-19, health facilities were constrained with containment measures and staff reassignment where some health care workers were allocated duties related to the pandemic responses. This could have had an impact on recording and reporting of TB cases.

1.3 Justification for DQA

NTP in collaboration with partners such as The Global Fund, USAID, JICA, World Bank and WHO among others has invested significant resources in TB control efforts. To demonstrate the public health gains that include improved case notification, treatment outcomes and overall quality of care, the quality of reported data at all reporting levels is critical. Findings from performance scorecards as presented in the last County Performance Review 2020 and technical assistance missions have shown that the quality of data has not met the desired standard in terms of completeness, accuracy, integrity, consistency, timeliness and validity.

1.4 General Objective

To assess data quality for DS TB, DR TB, leprosy and TPT case finding data for the period of interest depending on the indicator.

1.5. Specific Objectives

1. To evaluate the dimensions of data quality for aggregate DS TB, DR TB, TPT and leprosy data for the year 2020 and 1st Quarter 2021
2. To evaluate the dimensions of data quality for case-based DS TB and DR TB data for the year 2020
3. To evaluate the dimensions of data quality for 2018 and 2020 cohort for DR TB and DS TB respectively
4. To assess the availability of recording and reporting tools

Table 1.2: Performance on Data Quality over time

		Level of Agreement (Registers Vs TIBU)				
No	**Indicator**	**2017**	**2018**	**2019**	**2020**	**Quality Remarks**
1	Number of DSTB Cases All Forms	96%	93%	94%	87%	Below Expectation
2	Number of Bacteriologically confirmed PTB Cases	96%	94%	97%	87%	Below Expectation
3	Number of Bacteriologically confirmed who completed treatment	111%	112%	N/A	N/A	
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 outcome	107%	102%	N/A	93%	Below Expectation
6	Number of DRTB Cases Registered	116%	108%	107%	114%	Above expectation
7	Number of IPT Cases (under 5) registered	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

2.0 Methodology

2.1. Study Sites

Six counties were sampled randomly for the exercise. These were Isiolo, Migori, Trans Nzoia, Kisumu, Bomet and Nyandarua counties, as shown in Figure 2.1.

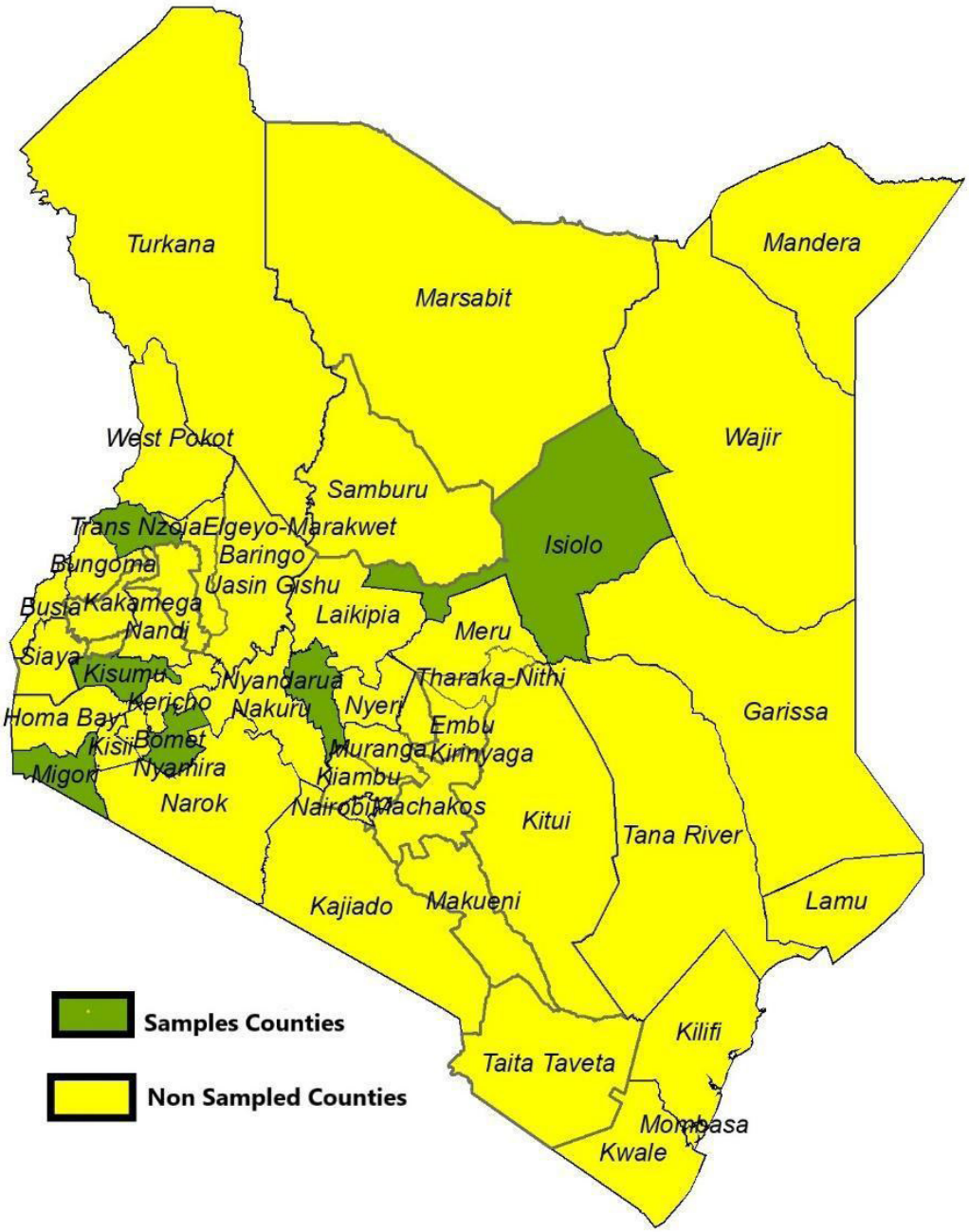


Figure 2.1 Map showing the sampled counties for DQA

2.2. Study Design

A retrospective assessment was conducted in 6 counties where 12 sub counties were randomly selected. The DQA approach was a quantitative comparison of recorded and reported data on the facility TB and leprosy records targeting the population of cases registered during the period of interest. 150 health facilities with notified case(s) of DS TB, DR TB, leprosy and/or TPT (under five) during the period of interest were visited.

2.3. Study Period

The assessment was conducted for two weeks in the month of July 2021. The review covered the periods January 2020 - March 2021. Aggregate data from the facility registers, patient record cards and TIBU for the period of interest were reviewed. For case-based data, five records were randomly sampled for 2020 (DS TB and DR TB).

2.4. Sampling Procedure

Simple random sampling was applied to select 6 counties (excluding counties that were assessed in the 2020 data quality assessment). In the selected counties, two sub counties were also selected where all the facilities that notified people with TB in 2020 and quarter one 2021 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-based records, a maximum of five (5) patients were systematically sampled and where the records were less than five (5) all were selected.

2.5. Study Population

The study population were records of all people with TB and Leprosy within the period of interest in the sampled sub counties in Kenya.

2.5.1. Inclusion Criteria

All TB treatment health facilities within the sampled sub counties (Table 2.1) in Kenya that notified or reported any of the following in the period of interest were included:

1. DS TB cases
2. DR TB cases
3. Children under five (5) who were contacts of bacteriological confirmed (BC) TB and initiated on TPT
4. Leprosy cases

Table 2.1 Counties and sub counties visited

County	Sub Counties	
Kisumu	Muhoroni	Seme
Isiolo	Garbatula	Merti
Migori	Kuria East	Suna West
Trans Nzoia	Kiminini	Kwanza
Nyandarua	Kinangop	Olkalou
Bomet	Bomet East	Chepalungu

2.5.2. Patient Records

Records of patients (patient record cards, log books, treatment registers) who were notified for DS TB, DR TB and leprosy in the period of interest; TPT for children under 5 years who are contacts of Bacteriologically confirmed TB were included.

2.5.3. Exclusion Criteria

Records of patients documented as Transferred in (TI) in the visited health facilities

2.6. Operational Definitions

Cured

The outcome cured is given to pulmonary TB cases that were bacteriologically confirmed either through a smear microscopy test or through GeneXpert. However, the outcome is determined by two or more negative follow up smears taken at least 30 days apart.

Treatment Completion

Refers to the treatment completion as recommended by the national policy without evidence of failure but no record that three or more consecutive negative cultures/smears taken at least 30 days apart after intensive phase

Died

Refers to a patient who dies for any reason during the course of treatment

2.7. Data Collection

2.7.1. Field Work Preparation

The DQA teams were constituted to include a skill-mix in the 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 the counties. The team leads then liaised with county TB coordinators to agree on the schedule and preparation of facilities.

2.7.2. Data Collection

Teams made a courtesy call to the County Health Management Team/CDH/CEC where the purpose of the DQA mission was explained and the facilities to be visited. The team was accompanied by the CTLC(s) and respective SCTLC(s) to the health facilities where a courtesy call was done to the facility in charges. TB and leprosy documents were reviewed and TB clinic staff were interviewed. Data was abstracted from TIBU and facility records. The DQA tool generated a summary which acted as a guide during feedback highlighting strengths, best practices and areas of improvement.

2.7.3. Data Assessment Tool

The data assessment tool was a web-based tool (with offline functionality) designed using Microsoft Excel forms with ODK syntax with data being relayed to the central server at NTLD-P. This tool was customized to include core indicators being tracked by the TB program.

2.7.3.1. Strengths of the Data Assessment Tool

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

2.7.3.2. Limitations of the Data Assessment Tool

Internet connection is required for initial installation and submission of data

2.7.4. Source of Data

The source documents for the data were:

- Patient record cards (TB5)
- TB facility registers (TB4)
- DR TB registers
- DR TB log books
- TPT/Contact management registers
- ICF cards
- Leprosy register
- IPT record cards
- Electronic surveillance system (TIBU)

2.7.5. Indicators Assessed

The assessment focused on the following TB, leprosy, and TPT indicators 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
- Number of TPT (under 5) cases registered
- Number of TPT (under 5) cases that completed treatment
- Number of leprosy cases (All forms) registered

2.8. Data Management and Analysis

Data was directly entered into the online 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 95-105. 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

2.9. Challenges

- 2 facilities were not accessible due to insecurity
- Time allocated for field activities was not adequate due to vast distances to cover; some facilities closed early
- COVID-19 containment measures including some counties having curfews starting at 1900 hrs necessitated early stoppage of field exercise in some counties
- Implementation of the policy on notification at the point of diagnosis increased patient exchange between diagnosis and treatment facilities

2.10. Ethical Considerations

Permission for the assessment was obtained from the respective county health departments prior to the field visits. Confidentiality was adhered to during the assessment as records were reviewed. Similarly, there was no contact with the patients, nor were identifiers to link them with the information collected. The data were stored in secured servers with regular backups.

3.0 RESULTS AND DISCUSSION

3.1: Drug Sensitive TB aggregated data

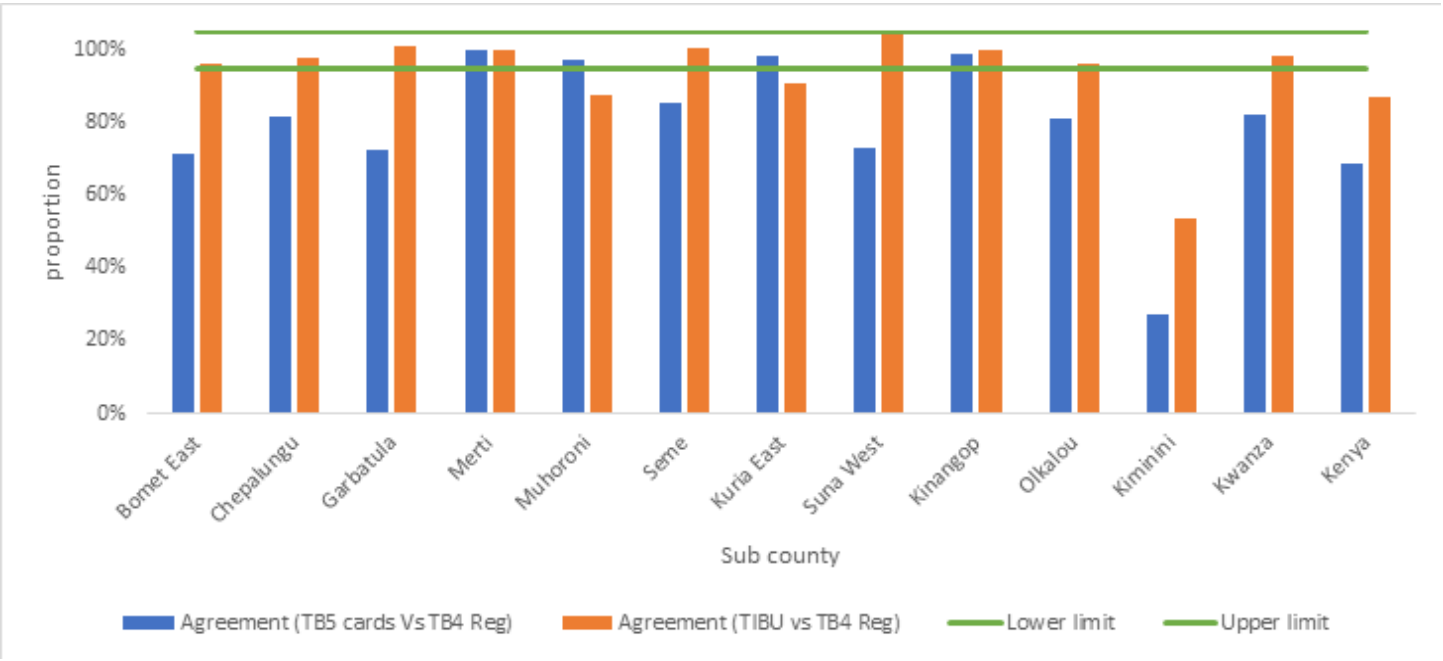


Figure 3.1: Levels of agreement for all forms of TB

Agreement between TIBU and TB facility Register

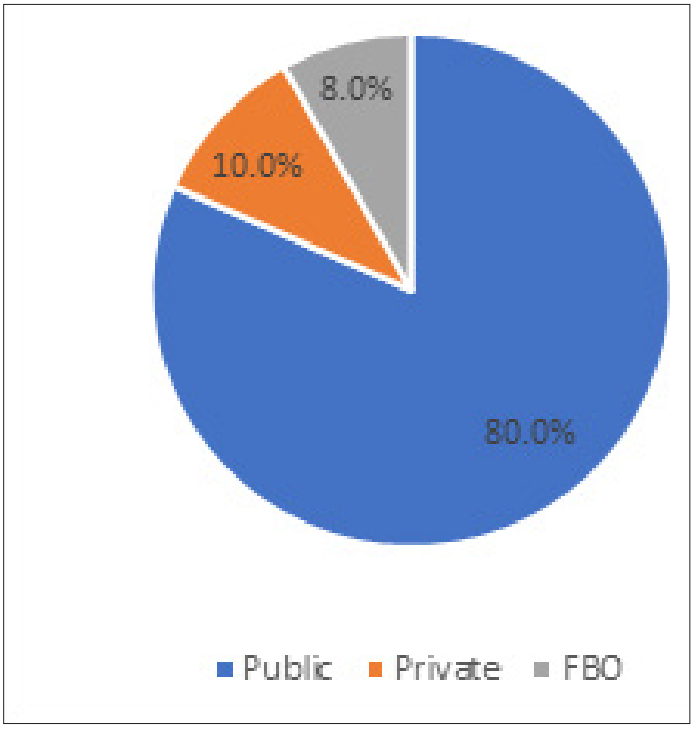
The overall level of agreement between the national surveillance system (TIBU) and facility register (TB4) was 87%, a decline from 94% that was documented the previous year (DQA Report, 2020). Whilst this could be largely attributed to challenges due to the pandemic, further interrogation of other attendant salient factors will be necessary to determine key actions. Between 2020 and 2021, there was a slight decrease from 88% to 85%, this meant that there were more records in the facility register than in TIBU, which could be attributed to delayed or missed notification of TB patients.

Out of the twelve sub counties visited, eight (67%) were within the acceptable reporting range. These were Bomet East, Chepalungu, Garbatula, Merti, Seme, Kinangop, Olkalou and Kwanza. Suna West's TIBU data had more records in both 2021 (112%) and 2020 (105%) pointing to over-reporting. Kiminini's TIBU data had less records in both 2020 (59%) and 2021 (48%) indicating under-reporting with a possibility of missed notifications (Annex 1). Documentation challenges were also experienced in Muhoroni and Kuria East sub counties where in 2021 only 78% and 82% of records respectively could be traced to TIBU.

Agreement between patient record cards and TB facility register

The overall level of agreement between the patient record cards (TB5) and facility register was at 69%, a slight decline from 72% that was reported in the previous year (DQA Report, 2020). Merti and Kinangop sub counties posted acceptable levels of agreement between the patient record cards and TB facility register during both years. The sub counties with the lowest levels of agreement between the patient record cards and TB facility register were Kiminini (27%), Bomet East (71%), Garbatula (73%) and Suna West (73%). Generally, the underutilization of record cards may be attributed to printing & distribution challenges and knowledge gap among HCWs on the use and importance of the tool as the primary source document of TB data.

Contributions by sector visited



Private sector is key in TB control activities since 42% of all people with TB symptoms initially seek care in a private health facility (Patient Pathway Analysis 2017). Therefore, adequate engagement of the private sector in all TB services remain integral in the strategic vision of the TB program.

Among all the facilities visited, 80%, 10% and 8% were from the public, private and FBO sectors respectively.

Table 3.1 Agreement based on sector and level of facility

Sector	Agreement	Proportion
Public	TB5 Cards vs TB4 Register	70%
	TIBU vs TB4 Register	87%
Private	TB5 Cards vs TB4 Register	40%
	TIBU vs TB4 Register	103%
FBO	TB5 Cards vs TB4 Register	66%
	TIBU vs TB4 Register	103%

Level	Agreement	Proportion
Level 2	TB5 Cards vs TB4 Register	81%
	TIBU vs TB4 Register	100%
Level 3	TB5 Cards vs TB4 Register	84%
	TIBU vs TB4 Register	98%
Level 4	TB5 Cards vs TB4 Register	73%
	TIBU vs TB4 Register	97%
Level 5 (one facility)	TB5 Cards vs TB4 Register	16%
	TIBU vs TB4 Register	42%

Table 3.1 describes the finding as based on the sectors and level of facilities visited. In terms of sector, the level of agreement between TIBU and facility registers met expectations at 103% in private and other faith based facilities (FBO). This means that notification within the private and FBO sector is good. This report also shows that utilization of patients' record cards in all the sectors was still low.

For facility level, it shows that TIBU and facility registers met expectations in levels 2, 3 and 4.. Level five facility (only one was visited under this category) had an agreement of 16% and 42% for patient cards and TIBU with register, respectively.

Table 3.2a: Levels of agreement for aggregated data for Pulmonary Bacteriological Confirmed TB in Patient record cards and TIBU data in comparison to TB4 facility registers

		2020			Agreement (TB5 Cards vs TB4 Reg)	Agreement (TIBU vs TB4 Reg)	2021 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	207	304	280	68%	92%	53	79	78	67%	99%	68%	95%
	Chepalungu	121	153	146	79%	95%	35	41	38	85%	93%	82%	94%
Bomet County		**328**	**457**	**426**	**72%**	**93%**	**88**	**120**	**116**	**73%**	**97%**	**73%**	**95%**
Isiolo	Garbatula	25	23	23	109%	100%	2	7	7	29%	100%	69%	100%
	Merti	15	16	16	94%	100%	2	1	1	200%	100%	147%	100%
Isiolo County		**40**	**39**	**39**	**103%**	**100%**	**4**	**8**	**8**	**50%**	**100%**	**76%**	**100%**
Kisumu	Muhoroni	65	77	73	84%	95%	39	37	30	105%	81%	95%	88%
	Seme	68	74	90	92%	122%	16	19	24	84%	126%	88%	124%
Kisumu County		**133**	**151**	**163**	**88%**	**108%**	**55**	**56**	**54**	**98%**	**96%**	**93%**	**102%**
Migori	Kuria East	28	30	31	93%	103%	8	8	8	100%	100%	97%	102%
	Suna West	76	144	150	53%	104%	30	38	44	79%	116%	66%	110%
Migori County		**104**	**174**	**181**	**60%**	**104%**	**38**	**46**	**52**	**83%**	**113%**	**71%**	**109%**
Nyandarua	Kinangop	99	113	110	88%	97%	40	40	40	100%	100%	94%	99%
	Olkalou	67	84	78	80%	93%	11	19	18	58%	95%	69%	94%
Nyandarua County		**166**	**197**	**188**	**84%**	**95%**	**51**	**59**	**58**	**86%**	**98%**	**85%**	**97%**
Trans Nzoia	Kiminini	87	373	215	23%	58%	31	114	55	27%	48%	25%	53%
	Kwanza	52	89	89	58%	100%	9	13	13	69%	100%	64%	100%
Trans Nzoia County		**139**	**462**	**304**	30%	66%	**40**	**127**	**68**	31%	54%	31%	60%
Kenya		**910**	**1480**	**1301**	**61%**	**88%**	**276**	**416**	**356**	**66%**	**86%**	**64%**	**87%**

The overall level of agreement between TB patient record cards and facility registers for bacteriologically confirmed TB was 64% while it was 87% between TIBU and the facility register. Both of these levels of agreement were lower than was documented in the previous year (76% and 97% respectively).

Regarding patient record cards and facility registers, Merti had the highest proportion at 147% denoting that the positive laboratory results were documented in the record cards but missing in the facility register. Performance varied across the other sub counties with Kiminini recording the least at 25% followed by Kwanza at 64% and Suna West with 66%. For 2021 Q1 data, the sub counties with the least records were Kiminini (27%), Garbatula (29%) and Olkalou (58%). This points

to discrepant documentation and brings to the forefront the need to sensitize staff to ensure that the source document is well updated with laboratory results.

In comparison to 2020, there is marginal improvement in level of agreement in 2021 between patient record cards and facility registers from 61% to 66%. On the other hand, there was a 2% drop in level of agreement between TIBU and facility register for the two years. Only Isiolo and Nyandarua counties were within the acceptable level of agreement between TIBU and facility register for bacteriologically confirmed TB in both years.

Table 3.1c: Levels of agreement for aggregated data for Clinically Diagnosed TB in Patient record cards and TIBU data in comparison to TB4 facility registers

		2020					2021 Q1					Average (2020/2021)	
County	Sub Counties	TB5 Cards	TB4 Reg	TIBU	Agreement (TB5 Cards vs TB4 Reg)	Agreement (TIBU vs TB4 Reg)	TB5 Cards	TB4 Reg	TIBU	Agreement (TB5 Cards vs TB4 Reg)	Agreement (TIBU vs TB4 Reg)	Agreement (TB5 cards Vs TB4 Reg)	Agreement (TIBU vs TB4 Reg)
Bomet	Bomet East	105	157	157	67%	100%	13	40	38	33%	95%	50%	98%
	Chepalungu	33	48	51	69%	106%	13	20	21	65%	105%	67%	106%
Bomet County		**138**	**205**	**208**	**67%**	**101%**	**26**	**60**	**59**	**43%**	**98%**	**55%**	**100%**
Isiolo	Garbatula	11	17	17	65%	100%	6	9	9	67%	100%	66%	100%
	Merti	12	14	14	86%	100%	7	7	7	100%	100%	93%	100%
Isiolo County		**23**	**31**	**31**	**74%**	**100%**	**13**	**16**	**16**	**81%**	**100%**	**78%**	**100%**
Kisumu	Muhoroni	45	48	47	94%	98%	14	13	10	108%	77%	101%	87%
	Seme	41	49	33	84%	67%	10	12	9	83%	75%	84%	71%
Kisumu County		**86**	**97**	**80**	**89%**	**82%**	**24**	**25**	**19**	**96%**	**76%**	**92%**	**79%**
Migori	Kuria East	10	15	15	67%	100%	3	2	2	150%	100%	108%	100%
	Suna West	38	57	59	67%	104%	7	13	12	54%	92%	60%	98%
Migori County		**48**	**72**	**74**	**67%**	**103%**	**10**	**15**	**14**	**67%**	**93%**	**67%**	**98%**
Nyandarua	Kinangop	84	107	109	79%	102%	19	22	22	86%	100%	82%	101%
	Olkalou	54	67	68	81%	101%	16	24	24	67%	100%	74%	101%
Nyandarua County		**138**	**174**	**177**	**79%**	**102%**	**35**	**46**	**46**	**76%**	**100%**	**78%**	**101%**
Trans Nzoia	Kiminini	32	172	94	19%	55%	13	46	22	28%	48%	23%	51%
	Kwanza	3	6	5	50%	83%	2	2	2	100%	100%	75%	92%
Trans Nzoia County		**35**	**178**	**99**	20%	56%	**15**	**48**	**24**	31%	50%	25%	53%
Kenya		**468**	**757**	**669**	**62%**	**88%**	**123**	**210**	**178**	**59%**	**85%**	**60%**	**87%**

Agreement between TB facility Register and TIBU

The overall level of agreement between TIBU and TB4 register was 87%, an improvement from 82% recorded in the previous review period (DQA Report, 2020). Out of the twelve sub counties visited, seven performed within the acceptable reporting range.

In comparison to 2020, Seme and Kwanza were the most improved while Muhoroni, Suna West and Kiminini reported a drop in level of agreement. Trans Nzoia and Kisumu had the least level of agreement among the counties visited.

Agreement between patient record cards and TB facility register

The overall level of agreement between the patient record card and facility register was at 60%, a drop from 64% in the previous assessment period (DQA Report, 2020). Only Muhoroni sub county was able to report a level of agreement that was within the acceptable range (101%). In comparison to 2020, Merti (86% to 100%) and Kwanza (50% to 100%) were the most improved while Suna West (67% to 54%), Olkalou (81% to 67%) and Bomet East (67% to 33%) had the highest drop.

Generally, data gaps still exist when comparing the patient record cards and facility registers (62% in 2020 and 59% in 2021), hence points to the need for frequent internal data quality checks at the facility/ sub county level.

Table 3.1d: Levels of agreement for aggregated data for Extra Pulmonary TB in Patient record cards and TIBU data in comparison to TB4 facility registers

		2020					2021 Q1					Average (2020/2021)	
County	Sub Counties	TB5 Cards	TB4 Reg	TIBU	Agreement (TB5 Cards vs TB4 Reg)	Agreement (TIBU vs TB4 Reg)	TB5 Cards	TB4 Reg	TIBU	Agreement (TB5 Cards vs TB4 Reg)	Agreement (TIBU vs TB4 Reg)	Agreement (TB5 cards Vs TB4 Reg)	Agreement (TIBU vs TB4 Reg)
Bomet	Bomet East	30	54	51	56%	94%	5	10	9	50%	90%	53%	92%
	Chepalungu	29	35	34	83%	97%	7	10	12	70%	120%	76%	109%
Bomet County		**59**	**89**	**85**	**66%**	**96%**	**12**	**20**	**21**	60%	105%	**63%**	**100%**
Isiolo	Garbatula	1	1	1	100%	100%	0	4	4	0%	100%	50%	100%
	Merti	2	2	2	100%	100%	1	2	2	50%	100%	75%	100%
Isiolo County		**3**	**3**	**3**	**100%**	**100%**	**1**	**6**	**6**	17%	100%	**58%**	**100%**
Kisumu	Muhoroni	9	15	16	60%	107%	3	1	0	300%	0%	180%	53%
	Seme	7	12	11	58%	92%	3	3	2	100%	67%	79%	79%
Kisumu County		**16**	**27**	**27**	**59%**	**100%**	**6**	**4**	**2**	150%	50%	**105%**	**75%**
Migori	Kuria East	2	2	0	100%	0%	0	0	0	100%	100%	100%	50%
	Suna West	13	12	14	108%	117%	1	1	2	100%	200%	104%	158%
Migori County		**15**	**14**	**14**	**107%**	**100%**	**1**	**1**	**2**	100%	200%	**104%**	**150%**
Nyandarua	Kinangop	39	32	32	122%	100%	7	6	5	117%	83%	119%	92%
	Olkalou	20	33	24	61%	73%	6	11	11	55%	100%	58%	86%
Nyandarua County		**59**	**65**	**56**	**91%**	**86%**	**13**	**17**	**16**	76%	94%	**84%**	**90%**
Trans Nzoia	Kiminini	6	18	22	33%	122%	1	11	5	9%	45%	21%	84%
	Kwanza	5	12	11	42%	92%	2	2	2	100%	100%	71%	96%
Trans Nzoia County		**11**	**30**	**33**	37%	110%	**3**	**13**	**7**	23%	54%	30%	82%
Kenya		**163**	**228**	**218**	**71%**	**96%**	**36**	**61**	**54**	**59%**	**89%**	**65%**	**92%**

Agreement between TB facility Register and TIBU

Classification of TB by anatomical area guides in understanding the location of TB among the patients and subsequently their planning and management. The agreement in EPTB cases reported between TIBU and facility register averaged 92%, which was slightly below the acceptable range. Garbatula and Merti were the only sub counties with acceptable level of agreement for EPTB cases in both years.

The findings in Suna West sub county at 158% and Chepalungu at 109% implies that there were more EPTB cases in TIBU than in the facility register. In Muhoroni, Seme, Kuria East, Olkalou and Kiminini sub counties, there were less EPTB cases in facility register than in TIBU.

In comparison to 2020, there was a huge drop in levels of agreement for four sub counties {Muhoroni (107% to 0%), Seme (92% to 67%), Kinangop (100% to 83%) and Kiminini (122% to 45%)}.

Agreement between patient record cards and TB facility register

There was a low level of agreement in documentation of EPTB cases between facility register and patient record cards at 65%, a slight improvement from 56% in the previous period of assessment (DQA Report, 2020). Only Kuria East at 100% and Suna West at 104% were within the acceptable reporting range. In 2021, the level of agreement for Muhoroni was 300% depicting a huge discrepancy in documenting EPTB in the patient record cards and facility register. For both years, the level of agreement has been consistently low in Bomet East, Olkalou and Kiminini sub counties.

The findings demonstrated 8% discrepancy between TIBU and facility register, an indication of possible under reporting of EPTB to the national surveillance system.

Table 3.1e: Levels of agreement for aggregated data for treatment outcomes in Patient record cards and TIBU data in comparison to TB4 facility registers

County	Sub Counties	Cured			Agreement (TB5 Cards vs TB4 Reg)	Agreement (TIBU vs TB4 Reg)	Treatment Completed			Agreement (TB5 Cards vs TB4 Reg)	Agreement (TIBU vs TB4 Reg)
		TB5 Cards	TB4 Reg	TIBU			TB5 Cards	TB4 Reg	TIBU		
Bomet	Bomet East	94	119	101	79%	85%	77	101	100	76%	99%
	Chepalungu	21	118	103	18%	87%	21	78	76	27%	97%
Bomet County		**115**	**237**	**204**	**49%**	**86%**	**98**	**179**	**176**	**55%**	**98%**
Isiolo	Garbatula	7	19	18	37%	95%	9	13	14	69%	108%
	Merti	13	13	15	100%	115%	14	17	15	82%	88%
Isiolo County		**20**	**32**	**33**	**63%**	**103%**	**23**	**30**	**29**	**77%**	**97%**
Kisumu	Muhoroni	43	52	51	83%	98%	40	41	45	98%	110%
	Seme	24	44	43	55%	98%	26	39	36	67%	92%
Kisumu County		**67**	**96**	**94**	**70%**	**98%**	**66**	**80**	**81**	**83%**	**101%**
Migori	Kuria East	5	9	12	56%	133%	11	20	19	55%	95%
	Suna West	18	96	92	19%	96%	11	97	92	11%	95%
Migori County		**23**	**105**	**104**	**22%**	**99%**	**22**	**117**	**111**	**19%**	**95%**
Nyandarua	Kinangop	95	95	96	100%	101%	68	90	90	76%	100%
	Olkalou	40	66	61	61%	92%	71	61	67	116%	110%
Nyandarua County		**135**	**161**	**157**	**84%**	**98%**	**139**	**151**	**157**	**92%**	**104%**
Trans Nzoia	Kiminini	34	136	114	25%	84%	27	149	134	18%	90%
	Kwanza	15	52	57	29%	110%	5	27	26	19%	96%
Trans Nzoia County		**49**	**188**	**171**	**26%**	**91%**	**32**	**176**	**160**	**18%**	**91%**
Kenya		**409**	**819**	**763**	**50%**	**93%**	**380**	**733**	**714**	**52%**	**97%**

In 2020, the average level of agreement for cured outcome between the TB5 cards and TB4 register was 50%. This means only half of the patients assigned the outcome cured on the TB4 register had the same outcome recorded on their TB5 cards. Out of a total sampled 12 sub counties, only Merti

and Kinangop sub counties registered a 100% level of agreement on recording of cured outcome between TB5 cards and TB4 register. Merti, Kuria East, Kinangop and Kwanza sub counties recorded more cured outcomes in TIBU as compared to the TB4 registers. The average level of agreement was 93% when TIBU was compared to TB4 register for the outcome cured. Only five sub counties were within acceptable limits.

The average level of agreement for treatment completed outcome between the TB5 cards and TB4 register was 52%. This is a clear indication that outcomes in the TB5 cards were not being updated as much as they were in the TB4 registers. The average for outcome treatment completed was 97% when TIBU was compared to TB4 register. Kinangop was the only sub county that recorded a 100% level of agreement for treatment-completed outcome (TC) between the TB4 register and TIBU.

Table 3.1f: Levels of agreement for aggregated data for outcome died in Patient record cards and TIBU data in comparison to TB4 facility registers

		Died			Agreement (TB5 Cards vs TB4 Reg)	Agreement (TIBU vs TB4 Reg)
County	**Sub Counties**	**TB5 Cards**	**TB4 Reg**	**TIBU**		
Bomet	Bomet East	7	9	8	78%	89%
	Chepalungu	5	10	9	50%	90%
Bomet County		**12**	**19**	**17**	**63%**	**89%**
Isiolo	Garbatula	0	1	1	0%	100%
	Merti	0	0	0	100%	100%
Isiolo County		**0**	**1**	**1**	**0%**	**100%**
Kisumu	Muhoroni	17	17	18	100%	106%
	Seme	8	22	22	36%	100%
Kisumu County		**25**	**39**	**40**	**64%**	**103%**
Migori	Kuria East	2	4	5	50%	125%
	Suna West	4	15	15	27%	100%
Migori County		**6**	**19**	**20**	**32%**	**105%**
Nyandarua	Kinangop	21	24	24	88%	100%
	Olkalou	15	18	18	83%	100%
Nyandarua County		**36**	**42**	**42**	**86%**	**100%**
Trans Nzoia	Kiminini	4	33	27	12%	82%
	Kwanza	3	8	7	38%	88%
Trans Nzoia County		**7**	**41**	**34**	**17%**	**83%**
Kenya		**86**	**161**	**154**	**53%**	**96%**

The average level of agreement between the TB5 cards and TB4 register for outcome died was 53%. Out of all the 12 sub counties sampled, Merti (had no case) and Muhoroni sub counties had a 100% level of agreement between the TB5 cards and TB4 registers.

Four sub counties registered a level of agreement that was below acceptable limits between the TB4 register and TIBU. These sub counties are Bomet East at 89%, Chepalungu at 90%, Kiminini

at 82% and Kwanza at 88%. It is also important to note that there are sub counties that had more outcome died recorded in TIBU as compared to the TB4 registers. These sub counties are Muhoroni at 106% and Kuria east at 125%. The rest of the sub counties registered a 100% level of agreement for the same.

Table 3.1g: Availability of Patient record cards and TIBU data in comparison to TB4 facility registers (case-based data)

		Counts			Agreement	
County	**Sub county**	**Cards**	**Register**	**TIBU**	**TB4 registers vs Record cards**	**TB4 registers vs TIBU**
Bomet	Bomet East	34	34	34	100%	100%
	Chepalungu	24	25	25	96%	100%
Isiolo	Garbatula	13	15	15	87%	100%
	Merti	25	25	25	100%	100%
Kisumu	Muhoroni	59	67	66	88%	99%
	Seme	42	55	51	76%	93%
Migori	Kuria East	14	14	12	100%	86%
	Suna West	27	55	52	49%	95%
Nyandarua	Kinangop	54	56	56	96%	100%
	Olkalou	57	59	59	97%	100%
Trans Nzoia	Kiminini	27	50	50	54%	100%
	Kwanza	34	45	45	76%	100%
Kenya		**410**	**500**	**490**	82%	98%

In 2020, when comparing overall availability of individual-level records, the level of agreement between TB5 cards and TB4 registers was 82% while the level of agreement between TB4 registers and TIBU was 98%. This means that out of a total 500 patients registered, only 410 were assigned TB5 record cards while 10 patients recorded in the TB4 registers were never notified in TIBU.

Out of all the 12 sub counties visited, Merti and Bomet East attained 100% level of agreement across the three levels of reporting.

Table 3.1h: Sub-county registration numbers in Patient record cards and TB4 facility registers in comparison to TIBU data (case-based data)

		Number						Agreement	
County	**Sub county**	**Matched Patient Record cards with TIBU**	**Total Records available in TIBU**	**Matched TB4 registers with TIBU**	**Total available in TB4 registers**	**Matched TB4 registers with record cards**	**Record card vs TB4 registers**	**TIBU vs Record cards**	**TIBU vs TB4 registers**
Bomet	Bomet East	32	34	34	34	32	94%	94%	100%
	Chepalungu	23	25	24	25	24	96%	92%	96%
Isiolo	Garbatula	13	15	15	15	13	87%	87%	100%
	Merti	2	25	3	25	20	80%	8%	12%
Kisumu	Muhoroni	50	66	63	67	54	81%	76%	94%
	Seme	13	51	49	55	14	25%	25%	89%
Migori	Kuria East	7	12	7	14	10	71%	58%	50%
	Suna West	20	52	50	55	22	40%	38%	91%
Nyandarua	Kinangop	51	56	54	56	53	95%	91%	96%
	Olkalou	56	59	58	59	57	97%	95%	98%
Trans Nzoia	Kiminini	16	50	50	50	16	32%	32%	100%
	Kwanza	24	45	30	45	24	53%	53%	67%
Total		**307**	490	**437**	500	**339**	68%	63%	87%

Sub county registration numbers are auto-generated when data is entered into TIBU. These are then transcribed back into TB4 registers and TB5 patient cards; thus TIBU was considered the standard for this indicator. Out of all 490 patients notified in TIBU, only 307 (63%) patients had their sub county registration numbers recorded correctly in TB5 cards and 437 (87%) in TB4 registers. Five hundred records were sampled from the TB4 registers where 339 had matching sub county registration numbers in the TB5 cards - thus the level of agreement between TB5 cards and TB4 registers was 68%.

Three sub counties: Bomet East, Garbatula and Kiminini attained 100% level of agreement between TB4 registers and TIBU.

Table 3.1i: Registration dates in TB4 facility registers in comparison to TIBU data (case-based data)

		Numbers		Agreement
County	**Sub county**	**Matched TB4 registers with TIBU**	**Total available in TB4 registers**	**TIBU vs TB4 registers**
Bomet	Bomet East	32	34	94%
	Chepalungu	16	25	64%
Isiolo	Garbatula	14	15	93%
	Merti	23	25	92%
Kisumu	Muhoroni	57	67	85%
	Seme	24	55	44%
Migori	Kuria East	8	14	57%
	Suna West	26	55	47%
Nyandarua	Kinangop	28	56	50%
	Olkalou	19	59	32%
Trans Nzoia	Kiminini	29	50	58%
	Kwanza	3	45	7%
Total		**279**	**500**	56%

The field 'Registration dates' was missing in the prior versions of patient record cards; thus these were excluded from the comparisons. The level of agreement between TB4 registers and TIBU for registration dates was 56%. This translated to 279 records having their registration dates in TIBU matching the 500 available records in the TB4 registers. There were no sub counties that matched all their registration dates with the ones in the TB4 registers.

Table 3.1j: Type of patient in Patient record cards and TIBU data in comparison to TB4 facility registers (case-based data)

		Numbers				Agreement	
County	**Sub county**	**Matched Patient Record cards with TB4 registers**	**Total Record cards available**	**Matched TIBU with TB4 registers**	**Total available in TB4**	**TB4 registers vs Record card**	**TB4 registers vs TIBU**
Bomet	Bomet East	6	34	34	34	18%	100%
	Chepalungu	12	24	24	25	50%	96%
Isiolo	Garbatula	3	13	15	15	23%	100%
	Merti	6	25	24	25	24%	96%
Kisumu	Muhoroni	14	59	65	67	24%	97%
	Seme	25	42	48	55	60%	87%
Migori	Kuria East	2	14	12	14	14%	86%
	Suna West	12	27	50	55	44%	91%
Nyandarua	Kinangop	13	54	54	56	24%	96%
	Olkalou	10	57	56	59	18%	95%
Trans Nzoia	Kiminini	15	27	47	50	56%	94%
	Kwanza	8	34	41	45	24%	91%
Total		**126**	**410**	**470**	500	**31%**	**94%**

It was noted that versions of the patient record cards in some facilities visited did not have a provision for recording patient type. A hundred and twenty six (31%) of the available patient record cards had a patient type recorded. However, Seme sub county attained the highest level of agreement between patient record cards and TB4 registers at 60%. The level of agreement between TIBU and TB4 registers was 94%. Bomet East and Garbatula attained 100% level of agreement between TB4 registers and TIBU.

Table 3.1k: Treatment start dates 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 register	Total Record cards available	Matched TIBU with TB4 registers	Total available in TB4	TB4 registers vs Record card	TB4 registers vs TIBU
Bomet	Bomet East	31	34	34	34	91%	100%
	Chepalungu	17	24	24	25	71%	96%
Isiolo	Garbatula	12	13	14	15	92%	93%
	Merti	22	25	23	25	88%	92%
Kisumu	Muhoroni	54	59	61	67	92%	91%
	Seme	38	42	46	55	90%	84%
Migori	Kuria East	13	14	11	14	93%	79%
	Suna West	25	27	45	55	93%	82%
Nyandarua	Kinangop	44	54	46	56	81%	82%
	Olkalou	54	57	56	59	95%	95%
Trans Nzoia	Kiminini	22	27	36	50	81%	72%
	Kwanza	23	34	30	45	68%	67%
Total		**355**	**410**	**426**	500	**87%**	**85%**

The level of agreement between TB4 registers and patient record cards for the treatment start date was 87%. Only Olkalou sub county was within the acceptable range at 95%.

The level of agreement between TB4 registers and TIBU was 85% with Bomet East, Chepalungu and Olkalou sub counties attaining 100%, 96% and 95% respectively.

Table 3.1l: Gene Xpert results 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 available record cards	Matched TIBU with TB4 registers	Total available in register	TB4 registers vs Record cards	TB4 registers vs TIBU
Bomet	Bomet East	19	34	30	34	56%	88%
	Chepalungu	16	24	21	25	67%	84%
Isiolo	Garbatula	11	13	15	15	85%	100%
	Merti	21	25	25	25	84%	100%
Kisumu	Muhoroni	55	59	61	67	93%	91%
	Seme	29	42	44	55	69%	80%
Migori	Kuria East	11	14	7	14	79%	50%
	Suna West	25	27	49	55	93%	89%
Nyandarua	Kinangop	37	54	47	56	69%	84%
	Olkalou	48	57	56	59	84%	95%
Trans Nzoia	Kiminini	15	27	38	50	56%	76%
	Kwanza	19	34	31	45	56%	69%
Kenya		**306**	**410**	**424**	**500**	**75%**	**85%**

Of the available 410 record cards, 306 (75%) had the GeneXpert results correctly matched with the TB4 registers. There was a 85% level of agreement between TIBU and TB4 registers. Merti and Garbatula attained a 100% level of agreement between TB4 registers and TIBU for recording GeneXpert results.

Table 3.1m: Month two smear results in Patient record cards and TIBU data in comparison to TB4 facility registers (case-based data)

		Numbers				Agreement	
County	**Sub county**	**Matched Patient Record cards with TB4 registers**	**Total available record cards**	**Matched TIBU with TB4 registers**	**Total available in register**	**TB4 registers vs Record cards**	**TB4 registers vs TIBU**
Bomet	Bomet East	24	34	33	34	71%	97%
	Chepalungu	13	24	21	25	54%	84%
Isiolo	Garbatula	9	13	14	15	69%	93%
	Merti	23	25	24	25	92%	96%
Kisumu	Muhoroni	53	59	63	67	90%	94%
	Seme	30	42	41	55	71%	75%
Migori	Kuria East	11	14	11	14	79%	79%
	Suna West	21	27	50	55	78%	91%
Nyandarua	Kinangop	42	54	56	56	78%	100%
	Olkalou	53	57	56	59	93%	95%
Trans Nzoia	Kiminini	13	27	39	50	48%	78%
	Kwanza	20	34	24	45	59%	53%
Kenya		**312**	**410**	**432**	**500**	**76%**	**86%**

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 of the same lays basis for adequate patient follow up and later assigning proper outcomes.

For month two smear results, 86% of the TIBU records were correctly matched with facility registers. Perfect matches of 100% were reported from Kinangop sub county with Bomet East (97%), Merti (96%) and Olkalou (95%) being within the acceptable levels. Kwanza and Kiminini had the least matches at 53% and 78% respectively.

For patient record cards, 76% were correctly matched with facility registers, this was an improvement from the last DQA at 59%. None of the sub counties achieved the recommended range of matches with the highest being Olkalou at 93% and Kiminini the least at 48%.

Prospective supervisory visits should always emphasize the importance of documenting initial and follow up smear results on the patient record cards as a primary source document.

Table3.1n: Month two smear results date in Patient record cards and TIBU data in comparison to TB4 facility registers (case-based data)

		Numbers				Agreement	
County	**Sub county**	**Matched Patient Record cards with TB4 registers**	**Total available record cards**	**Matched TIBU with TB4 registers**	**Total available in register**	**TB4 registers vs Record cards**	**TB4 registers vs TIBU**
Bomet	Bomet East	7	34	18	34	21%	53%
	Chepalungu	2	24	10	25	8%	40%
Isiolo	Garbatula	4	13	8	15	31%	53%
	Merti	7	25	8	25	28%	32%
Kisumu	Muhoroni	30	59	34	67	51%	51%
	Seme	9	42	13	55	21%	24%
Migori	Kuria East	1	14	3	14	7%	21%
	Suna West	6	27	17	55	22%	31%
Nyandarua	Kinangop	14	54	28	56	26%	50%
	Olkalou	24	57	27	59	42%	46%
Trans Nzoia	Kiminini	9	27	24	50	33%	48%
	Kwanza	2	34	17	45	6%	38%
Kenya		**115**	**410**	**207**	**500**	**28%**	**41%**

A review on documentation of the date when month two smear results were done shows that only 28% of the patient record cards were correctly matched with facility registers. Sub counties with the least agreement were Kwanza at (6%), Kuria East (7%) and Chepalungu (8%).

In TIBU, 41% of the records had concurrence with the facility registers, an improvement from 30% attained during the previous assessment period. Matching varied across sub counties with the highest being in Bomet East and Garbatula at 53% and the lowest being in Kuria East at 21%.

The date when smears were done help determine the turnaround time for results which is critical for prompt quality of care decisions and help flag out delays within the diagnostic pathway. From the assessment, it is clear that this variable is not duly updated.

Table 3.10: Treatment outcomes in Patient record cards and TIBU data in comparison to TB4 facility registers (case-based data)

		Numbers				Agreement	
County	**Sub county**	**Matched Patient Record cards with TB4 registers**	**Total Record cards available**	**Matched TIBU with TB4 registers**	**Total available in TB4**	**TB4 registers vs Record cards**	**TB4 registers vs TIBU**
Bomet	Bomet East	26	34	33	34	76%	97%
	Chepalungu	12	24	24	25	50%	96%
Isiolo	Garbatula	10	13	15	15	77%	100%
	Merti	23	25	24	25	92%	96%
Kisumu	Muhoroni	51	59	61	67	86%	91%
	Seme	23	42	39	55	55%	71%
Migori	Kuria East	7	14	10	14	50%	71%
	Suna West	11	27	51	55	41%	93%
Nyandarua	Kinangop	53	54	55	56	98%	98%
	Olkalou	50	57	57	59	88%	97%
Trans Nzoia	Kiminini	12	27	43	50	44%	86%
	Kwanza	13	34	35	45	38%	78%
Total		**291**	**410**	**447**	**500**	71%	89%

In this indicator, TB treatment outcomes in Patient record cards and TIBU were compared with outcomes in Facility Registers on a case-by-case basis. On average, 71% of patient record cards had treatment outcomes similarly recorded as in facility registers, an improvement from 48% during the previous assessment period. This varied from as low as 38% in Kiminini sub-county to 98% in Kinangop. When compared with facility registers, 89% of outcomes in TIBU were similar. Perfect agreement was documented in Garbatula with five other sub counties having matches within the acceptable range. Least matches were from Seme and Kuria East at 71%.

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

Table 3.1p: Treatment outcome dates in Patient record cards and TIBU data in comparison to TB4 facility registers (case-based data)

		Numbers				Agreement	
County	Sub county	Matched Patient Record cards with TB4 registers	Total Record cards available	Matched TIBU with TB4 registers	Total available in TB4	TB4 registers vs Record cards	TB4 registers vs TIBU
Bomet	Bomet East	28	34	30	34	82%	88%
	Chepalungu	9	24	25	25	38%	100%
Isiolo	Garbatula	10	13	15	15	77%	100%
	Merti	22	25	25	25	88%	100%
Kisumu	Muhoroni	50	59	55	67	85%	82%
	Seme	20	42	29	55	48%	53%
Migori	Kuria East	7	14	10	14	50%	71%
	Suna West	12	27	44	55	44%	80%
Nyandarua	Kinangop	52	54	53	56	96%	95%
	Olkalou	49	57	57	59	86%	97%
Trans Nzoia	Kiminini	13	27	43	50	48%	86%
	Kwanza	18	34	33	45	53%	73%
Total		290	410	419	500	71%	84%

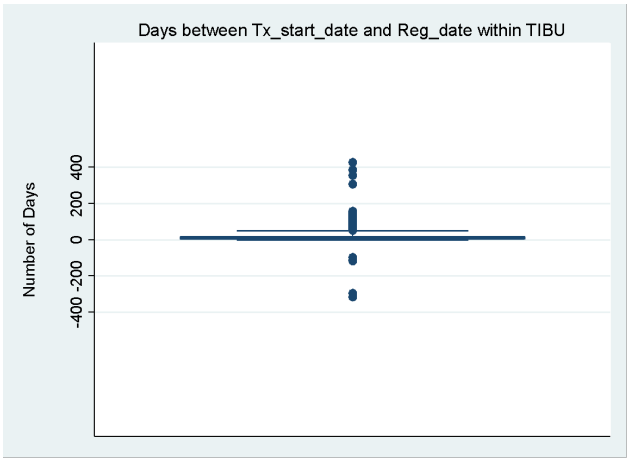
On agreement in the date of treatment outcomes, 71% of patient record cards had dates correctly matched with the facility TB registers, an improvement from 50% in the previous period of assessment. This was higher when TIBU data was compared to facility TB registers (84%).

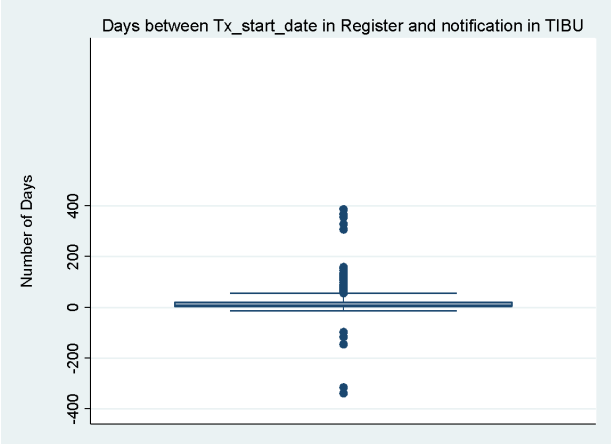
Table 3.1q Median times to notifications from start of treatment

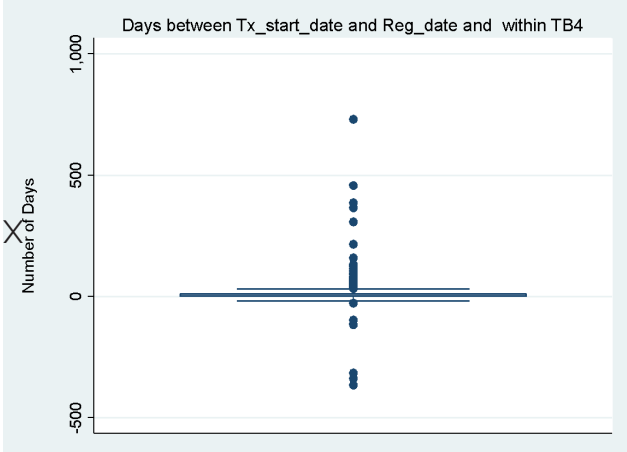
Variable	N	Median	IQR	
			25th	75th
Time to notification in TB4	473	3	0	13
Time to notification in TIBU	488	8	1	21
Time from treatment start in register to notification in TIBU	481	8	1	23

Median time to registration from the date when treatment was started within the facility register (TB4) was 3 days. This period was a much shorter compared to the 6 days of the previous DQA (2019 report) and 8 days (2020 report). In TIBU the median time was found to be 8 days. This was a great improvement in the time to notification within TIBU as compared to the previous DQA reports of 14 days (in 2019 report) and 13 days (in 2020 report). Across the tools, comparison between facility register and TIBU showed that the median days was also 8 days with almost similar interquartile

range (IQR). While the findings demonstrated improvement in time to notification within TIBU and between TB4 and TIBU, the findings had similar pattern as reported in the 2020 DQA report.







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. Additionally, outliers were noted where patients took more than 2000 days to be notified. There were similar findings in TIBU for the period taken between the start of treatment and registration.

Table 3.1r Levels of agreement Using Kappa

Agreement between TB4 Register and TIBU			
Variable	Agreement	Kappa	Std. Err
Smear Month 0 Results	87.35%	0.70	0.032
GeneXpert Results	86.53%	0.78	0.0297
Smear Month 2 Results	88.16%	0.80	0.036
Type of Patient	95.15%	0.75	0.034
Treatment Outcome	91.22%	0.87	0.027

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 0.70, 0.78, 0.80 and 0.75 respectively indicating substantial agreement between the facility register and TIBU. Treatment Outcome, however with a kappa score of 0.87 indicated an almost perfect level of agreement between the facility register and TIBU. The findings showed improved agreements as compared to previous DQA (DQA 2020 report).

3.2: Drug Resistant Tuberculosis Results

The analysis compared DR TB cases in three documents: logbooks, DR TB registers (the source/reference document) and TIBU for the period 2020 and 2021 Q1. Ten (83%) out of the sampled twelve sub counties reported twenty-three DR TB cases in 2020 and six (50%) sub counties reported eight DR TB cases in 2021.

Summary of DR TB

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

		2020			Agree-ment (Logbook vs Reg)	Agree-ment (TIBU vs Reg)	2021 Q1			Agree-ment (Logbook vs Reg)	Agree-ment (TIBU vs Reg)	Average (2020/2021)	
County	Sub Counties	Log-book	Reg	TIBU			Log-book	Reg	TIBU			Agree-ment (Logbook Vs Reg)	Agree-ment (TIBU vs Reg)
Bomet	Bomet East	3	2	3	150%	150%	1	0	1	0%	0%	75%	75%
	Chepa-lungu	6	6	6	100%	100%	2	2	2	100%	100%	100%	100%
Bomet County		**9**	**8**	**9**	**113%**	**113%**	**3**	**2**	**3**	**150%**	**150%**	**131%**	**131%**
Isiolo	Garbatula	1	1	1	100%	100%	0	0	0	100%	100%	100%	100%
	Merti	0	0	0	100%	100%	0	0	0	100%	100%	100%	100%
Isiolo County		**1**	**1**	**1**	**100%**	**100%**	**0**	**0**	**0**	**100%**	**100%**	**100%**	**100%**
Kisumu	Muhoroni	1	1	1	100%	100%	0	0	0	100%	100%	100%	100%
	Seme	1	1	1	100%	100%	1	1	1	100%	100%	100%	100%
Kisumu County		**2**	**2**	**2**	**100%**	**100%**	**1**	**1**	**1**	**100%**	**100%**	**100%**	**100%**
Migori	Kuria East	1	2	2	50%	100%	0	0	0	100%	100%	75%	100%
	Suna West	4	3	4	133%	133%	0	0	0	100%	100%	117%	117%
Migori County		**5**	**5**	**6**	**100%**	**120%**	**0**	**0**	**0**	**100%**	**100%**	**100%**	**110%**
Nyanda-rua	Kinangop	1	1	1	100%	100%	2	2	2	100%	100%	100%	100%
	Olkalou	2	2	2	100%	100%	1	1	1	100%	100%	100%	100%
Nyandarua County		**3**	**3**	**3**	**100%**	**100%**	**3**	**3**	**3**	**100%**	**100%**	**100%**	**100%**
Trans Nzoia	Kiminini	2	1	2	200%	200%	1	1	1	100%	100%	150%	150%
	Kwanza	0	0	0	100%	100%	0	0	0	100%	100%	100%	100%
Trans Nzoia County		**2**	**1**	**2**	**200%**	**200%**	**1**	**1**	**1**	**100%**	**100%**	**150%**	**150%**
Kenya		**22**	**20**	**23**	**110%**	**115%**	**8**	**7**	**8**	**114%**	**114%**	**112%**	**115%**

Nationally in 2020, the average level of agreement for all forms of DR TB between the patient logbooks and registers was 110% while the agreement between TIBU and DRTB register was 115%. This was a slight improvement as compared to 2020 DQA that was at 120%. There were more DR TB cases recorded in the log books (22) compared to those in the DR TB register (20). In 2021 quarter one, the average level of agreement between the logbook and TIBU as compared to the DR TB register was each 114%.

The overall levels of agreement between logbook and the DR TB register was 112% while that of register and TIBU was 115% as shown in Table 3.2a.

Rifampicin Resistant TB aggregate data

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

		2020					2021 Q1					Average (2020/2021)	
County	Sub Counties	Log-book	Reg	TIBU	Agree-ment (Logbook vs Reg)	Agree-ment (TIBU vs Reg)	Log-book	Reg	TIBU	Agree-ment (Logbook vs Reg)	Agree-ment (TIBU vs Reg)	Agree-ment (Logbook Vs Reg)	Agree-ment (TIBU vs Reg)
Bomet	Bomet East	2	1	2	200%	200%	1	0	1	0%	0%	100%	100%
	Chepa-lungu	6	6	6	100%	100%	2	1	2	200%	200%	150%	150%
Bomet County		**8**	**7**	**8**	**114%**	**114%**	**3**	**1**	**3**	**300%**	**300%**	**207%**	**207%**
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 County		**0**	**0**	**0**	**100%**	**100%**	**0**	**0**	**0**	**100%**	**100%**	**100%**	**100%**
Kisumu	Muhoroni	1	1	1	100%	100%	0	0	0	100%	100%	100%	100%
	Seme	1	1	1	100%	100%	1	1	1	100%	100%	100%	100%
Kisumu County		**2**	**2**	**2**	**100%**	**100%**	**1**	**1**	**1**	**100%**	**100%**	**100%**	**100%**
Migori	Kuria East	0	0	0	100%	100%	0	0	0	100%	100%	100%	100%
	Suna West	2	1	1	200%	100%	0	0	0	100%	100%	150%	100%
Migori County		**2**	**1**	**1**	**200%**	**100%**	**0**	**0**	**0**	**100%**	**100%**	**150%**	**100%**
Nyanda-rua	Kinangop	1	1	0	100%	0%	2	2	2	100%	100%	100%	50%
	Olkalou	1	1	1	100%	100%	0	0	0	100%	100%	100%	100%
Nyandarua County		**2**	**2**	**1**	**100%**	**50%**	**2**	**2**	**2**	**100%**	**100%**	**100%**	**75%**
Trans Nzoia	Kiminini	2	1	1	200%	100%	0	0	0	100%	100%	150%	100%
	Kwanza	0	0	0	100%	100%	0	0	0	100%	100%	100%	100%
Trans Nzoia County		**2**	**1**	**1**	**200%**	**100%**	**0**	**0**	**0**	**100%**	**100%**	**150%**	**100%**
Kenya		**16**	**13**	**13**	123%	100%	**6**	**4**	**6**	**150%**	**150%**	**137%**	**125%**

The level of agreement for RR TB cases between logbooks and registers was 123% in 2020 and 150% in 2021 Q1 meaning there were fewer cases in the registers. The agreement between registers and TIBU was 100% in 2020 and 150% in 2021 Q1. This implies there were more patients in TIBU than the register for quarter one of the year 2021.

In 2020, 3 sub counties (Bomet East, Suna West and Kiminini) had RR cases documented in log books but no corresponding entries in the registers. In 2021 Q1, only 2 sub counties (Bomet East, Chepalungu) had a case in the log book and TIBU but no documentation in the registers.

There is thus dire need to strengthen the use of DR TB registers in addition to the logbooks and TIBU.

Multi Drug Resistant TB aggregate data

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

		2020			Agree-ment (Logbook vs Reg)	Agree-ment (TIBU vs Reg)	2021 Q1			Agreement (Logbook vs Reg)	Agreement (TIBU vs Reg)	Average (2020/2021)	
County	Sub Counties	Log-book	Reg	TIBU			Log-book	Reg	TIBU			Agreement (Logbook Vs Reg)	Agreement (TIBU vs Reg)
Bomet	Bomet East	0	0	0	100%	100%	0	0	1	100%	100%	100%	100%
	Chepalungu	0	0	0	100%	100%	0	0	0	100%	100%	100%	100%
Bomet County		**0**	**0**	**0**	**100%**	**100%**	**0**	**0**	**1**	**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 County		**0**	**0**	**0**	**100%**	**100%**	**0**	**0**	**0**	**100%**	**100%**	**100%**	**100%**
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 County		**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	1	1	2	100%	200%	0	0	0	100%	100%	100%	150%
Migori County		**1**	**1**	**2**	**100%**	**200%**	**0**	**0**	**0**	**100%**	**100%**	**100%**	**150%**
Nyandarua	Kinangop	0	0	1	100%	100%	0	0	0	100%	100%	100%	100%
	Olkalou	1	1	1	100%	100%	1	1	1	100%	100%	100%	100%
Nyandarua County		**1**	**1**	**2**	**100%**	**200%**	**1**	**1**	**1**	**100%**	**100%**	**100%**	**150%**
Trans Nzoia	Kiminini	0	0	1	100%	100%	1	1	1	100%	100%	100%	100%
	Kwanza	0	0	0	100%	100%	0	0	0	100%	100%	100%	100%
Trans Nzoia County		**0**	**0**	**1**	**100%**	**100%**	**1**	**1**	**1**	**100%**	**100%**	**100%**	**100%**
Kenya		**2**	**2**	**5**	**100%**	**250%**	**2**	**2**	**3**	**100%**	**150%**	**100%**	**200%**

The level of agreement for aggregate number of MDR records between logbooks and registers was 100% in 2020 and 2021. Agreement in the number of MDR cases in the register and TIBU was 250% in 2020 and 150% in 2021 Q1.

In 2020, only Olkalou sub county had 100% level of agreement in the log books, DR TB registers and TIBU. This was also observed in Olkalou and Kiminini sub counties in 2021.

In 2020, two sub counties (Kinangop and Kiminini) had no data in log books and registers but had cases notified in TIBU. In 2021, this was observed in Bomet East.

The higher number of patients in TIBU than the register could be due poor documentation in the register, absence of registers, duplicate records in TIBU or late notification of cases from the previous year.

Drug Resistant Tuberculosis Outcomes

Cured

The level of Agreement for aggregate data of cured patients was 150% across all the documents. This was contributed by the two patients within Bomet East that were missing in the register but found to have logbooks and were notified in TIBU.

Table 3.2d: Aggregate DR TB outcome of Cured 2019

		2019				
County	**Sub Counties**	**Logbook**	**Reg**	**TIBU**	**Agreement (Logbook vs Reg)**	**Agreement (TIBU vs Reg)**
Bomet	Bomet East	2	0	2	0%	0%
Chepalungu	0	0	0	100%	100%	
Bomet Total		**2**	**0**	**2**	**0%**	**0%**
Isiolo	Garbatula	0	0	0	100%	100%
Merti	0	0	0	100%	100%	
Isiolo Total		**0**	**0**	**0**	**100%**	**100%**
Kisumu	Muhoroni	0	0	0	100%	100%
Seme	0	0	0	100%	100%	
Kisumu Total		**0**	**0**	**0**	**100%**	**100%**
Migori	Kuria East	0	0	0	100%	100%
Suna West	2	2	2	100%	100%	
Migori Total		**2**	**2**	**2**	**100%**	**100%**
Nyandarua	Kinangop	1	1	1	100%	100%
Olkalou	1	1	1	100%	100%	
Nyandarua Total		**2**	**2**	**2**	**100%**	**100%**
Trans Nzoia	Kiminini	0	0	0	100%	100%
Kwanza	0	0	0	100%	100%	
Trans Nzoia Total		**0**	**0**	**0**	**100%**	**100%**
Grand Total		**6**	**4**	**6**	**150%**	**150%**

Case based DR TB data results and discussion

Eight DR TB patient records were sampled across the three documents from the period 2020.

Patient Registration Number

There was a perfect match across the log book, DR TB registers and TIBU in two sub counties (Chepalungu and Kiminini). The average agreement between the log books and DR TB registers was 50%. The level of agreement between the DR TB registers and TIBU was 63% as shown in the table 3.2e below.

Table 3.2e: Agreement in patient registration numbers between logbook, DR TB register and TIBU

	Numbers				Agreement	
Sub county	Log books in facility	Reg number in logbook matching that in register	Total records in Register	Reg number in register matching that in TIBU	Log book VS DRTB Register	DR TB Register Vs TIBU
Bomet East	1	0	1	0	0%	0%
Chepalungu	1	1	1	1	100%	100%
Kiminini	1	1	1	1	100%	100%
Kinangop	1	0	1	1	0%	100%
Olkalou	1	0	1	0	0%	0%
Suna West	3	2	3	2	67%	67%
Kenya	8	4	8	5	50%	63%

Date of patient registration

There was a 38% match between the logbook and the DR TB register, while TIBU and the register had 100% level of agreement in the recorded dates the DR TB patients were registered. Perfect agreement (100%) in all data tools was observed in Bomet East, Kiminini and Kinangop sub counties. Bomet East, Kiminini and Kinangop had perfect agreement between log books and DR TB registers while Chepalungu, Olkalou and Suna West had zero agreement as shown in table 3.2f.

Table 3.2f: Agreement in Date of registration in logbook, DR TB register and TIBU

	Numbers				Agreement	
Sub county	Log books in facility	Reg date in logbook matching that in register	Total DR TB records in Register	Reg date in register matching that in TIBU	Log book VS DRTB Register	DR TB Register Vs TIBU
Bomet East	1	1	1	1	100%	100%
Chepalungu	1	0	1	1	0%	100%
Kiminini	1	1	1	1	100%	100%
Kinangop	1	1	1	1	100%	100%
Olkalou	1	0	1	1	0%	100%
Suna West	3	0	3	3	0%	100%
Kenya	8	3	8	8	38%	100%

GeneXpert results

There was a 25% agreement between the DRTB logbook and the register for gene Xpert results, while TIBU and the register had 50% agreement. Two sub counties (Kiminini and Olkalou) had perfect agreement across all data tools while two sub counties (Bomet East and Suna West) had no complete agreement across all data tools.

Table 3.1h: Agreement in GeneXpert results in logbook, DR TB register and TIBU

	Numbers				Agreement	
Sub county	**Log books in facility**	**GX result in logbook matching that in register**	**Total DR TB records in Register**	**GX result in register matching that in TIBU**	**Log book VS DRTB Register**	**DR TB Register Vs TIBU**
Bomet East	1	0	1	0	0%	0%
Chepalungu	1	0	1	1	0%	100%
Kiminini	1	1	1	1	100%	100%
Kinangop	1	0	1	1	0%	100%
Olkalou	1	1	1	1	100%	100%
Suna West	3	0	3	0	0%	0%
Kenya	8	2	8	4	25%	50%

Patient registration group

The level of agreement between log books and DRTB registers was at 25% while TIBU and the DRTB register was 38% in patient registration group. Only one sub county(Chepalungu) achieved 100% agreement while three failed across all the data tools.

Table 3.1i: Agreement in Patient registration group in logbook, DR TB register and TIBU

	Numbers				Agreement	
Sub county	**Log books in facility**	**Patient type in logbook matching that in register**	**Total DR TB records in Register**	**Patient type in register matching that in TIBU**	**Log book VS DRTB Register**	**DR TB Register Vs TIBU**
Bomet East	1	0	1	0	0%	0%
Chepalungu	1	1	1	1	100%	100%
Kiminini	1	0	1	1	0%	100%
Kinangop	1	0	1	0	0%	0%
Olkalou	1	0	1	0	0%	0%
Suna West	3	1	3	1	33%	33%
Kenya	8	2	8	3	25%	38%

Resistance Pattern

There was a 50% match between DRTB log books and registers for the resistance pattern, while TIBU and registers had 50% agreement. An agreement of 100% was observed across all data tools in three sub counties. Two sub counties (Bomet East and Olkalou) did not match in any of the records.

Table 3.1j: Agreement in Resistance Pattern in logbook, DR TB register and TIBU

	Numbers				Agreement	
Sub county	Log books in facility	Resistance Pattern in logbook matching that in register	Total DR TB records in Register	Resistance Pattern in register matching that in TIBU	Log book VS DRTB Register	TIBU Vs DRTB Register
Bomet East	1	0	1	0	0%	0%
Chepalungu	1	1	1	1	100%	100%
Kiminini	1	1	1	1	100%	100%
Kinangop	1	1	1	1	100%	100%
Olkalou	1	0	1	0	0%	0%
Suna West	3	1	3	1	33%	33%
Kenya	8	4	8	4	50%	50%

Table 3.1k: Agreement in Month 6 Culture in logbook, DR TB register and TIBU

Carrying out Month 6 culture follow up investigation for TB patients is critical in monitoring the treatment progress of the DRTB patients and determination of interim treatment outcomes.

All the six sub counties with DRTB cases that were visited had a 75% match for Month 6 culture between the logbook and the DRTB register. TIBU also had a 75% match on the month six culture variable with the DRTB register. The one case in Bomet East never matched across the three recording tools

	Numbers				Agreement	
Sub county	Log books in facility	Month 6 culture in logbook matching that in register	Total DR TB records in Register	Month 6 culture in TIBU matching that in Register	Log book VS DRTB Register	TIBU Vs DRTB Register
Bomet East	1	0	1	0	0%	0%
Chepalungu	1	1	1	1	100%	100%
Kiminini	1	1	1	1	100%	100%
Kinangop	1	1	1	1	100%	100%
Olkalou	1	1	1	1	100%	100%
Suna West	3	2	3	2	67%	67%
Kenya	8	6	8	6	75%	75%

The difference in agreement for Month 6 in the three documents, could be attributed to delayed results being relayed back to the health facilities, and untimely updating of the results in the respective patient recording tools.

3.3: Aggregated TPT data

Aggregate data for children under 5 years contacts of bacteriologically confirmed pulmonary TB patients who were initiated on TPT for the years 2020 and 2021 were collected. Two sub-counties recorded perfect agreement in 2020 and 2021.

Table 3.3a: Levels of agreement for aggregated data for TPT in TPT record cards and TIBU data in comparison to Contact management registers

		2020			Agree-ment (TPT Card vs TPT Reg)	Agree-ment (TIBU vs TPT Reg)	2021 Q1			Agree-ment (TPT Card vs TPT Reg)	Agree-ment (TIBU vs TPT Reg)	Average (2020/2021)	
County	Sub Counties	TPT Card	TPT Reg	TIBU			TPT Card	TPT Reg	TIBU			Agree-ment (TPT Card Vs TPT Reg)	Agree-ment (TIBU vs TPT Reg)
Bomet	Bomet East	10	59	60	17%	102%	3	15	15	20%	100%	18%	101%
	Chepa-lungu	0	43	39	0%	91%	0	20	21	0%	105%	0%	98%
Bomet County		**10**	**102**	**99**	**10%**	**97%**	**3**	**35**	**36**	**9%**	**103%**	**9%**	**100%**
Isiolo	Garbatula	0	0	0	100%	100%	0	0	0	100%	100%	100%	100%
	Merti	1	1	1	100%	100%	0	0	0	100%	100%	100%	100%
Isiolo County		**1**	**1**	**1**	**100%**	**100%**	**0**	**0**	**0**	**100%**	**100%**	**100%**	**100%**
Kisumu	Muhoroni	0	16	9	0%	56%	0	7	10	0%	143%	0%	100%
	Seme	0	23	25	0%	109%	0	1	1	0%	100%	0%	104%
Kisumu County		**0**	**39**	**34**	**0%**	**87%**	**0**	**8**	**11**	**0%**	**138%**	**0%**	**112%**
Migori	Kuria East	0	32	9	0%	28%	0	6	1	0%	17%	0%	22%
	Suna West	0	98	108	0%	110%	0	45	43	0%	96%	0%	103%
Migori County		**0**	**130**	**117**	**0%**	**90%**	**0**	**51**	**44**	**0%**	**86%**	**0%**	**88%**
Nyand-arua	Kinangop	0	24	24	0%	100%	0	7	10	0%	143%	0%	121%
	Olkalou	0	14	13	0%	93%	0	9	8	0%	89%	0%	91%
Nyandarua County		**0**	**38**	**37**	**0%**	**97%**	**0**	**16**	**18**	**0%**	**113%**	**0%**	**105%**
Trans Nzoia	Kiminini	0	64	38	0%	59%	0	36	4	0%	11%	0%	35%
	Kwanza	0	24	29	0%	121%	0	0	1	100%	100%	50%	110%
Trans Nzoia County		**0**	**88**	**67**	**0%**	**76%**	**0**	**36**	**5**	**0%**	**14%**	**0%**	**45%**
Kenya		**11**	**398**	**355**	**3%**	**89%**	**3**	**146**	**114**	**2%**	**78%**	**2%**	**84%**

The overall level of agreement of TIBU data when compared with TPT registers for the year 2020 was at 89%. This implies there were more records in the TPT registers than those notified in TIBU. Only one Sub County had a perfect agreement.

Generally, three sub-counties reported below the acceptable range while three sub counties Seme (109%), Suna west (110%) and Kwanza (121%) reported more cases as shown in Table 3.3a.

For 2021, the overall level of agreement of TIBU data when compared to TPT registers was at 78%. This was a 11% decline when compared to 2020 (89%). Two sub-counties had a perfect agreement (Merti and Kinangop).

TPT Outcomes

The overall level of agreement of TIBU data with TPT registers for clients initiated on TPT in 2020 who completed therapy was 89%. This shows records in TPT registers are more updated than TIBU.

Among the Eleven sub-counties that had TPT clients, ten were reported to have completed treatment from both the register and TIBU. One sub-county (Kinangop) had a perfect agreement while five sub-counties; Chepalungu [91%], Muhoroni [56%], Kuria East [28%] and Kiminini [59%], Bomet east [102%], had less clients assigned an outcome in TIBU. Three sub counties Seme [109%], Suna West [110%], Kwanza [121%] had more clients with outcomes in TIBU than facility TPT register.

Table 3.3b: Levels of agreement for aggregated data for TPT outcomes in TPT record cards and TIBU data in comparison to Contact management registers

		2020					2021 Q1					Average (2020/2021)	
County	Sub Counties	TPT Card	TPT Reg	TIBU	Agreement (TPT Card vs TPT Reg)	Agreement (TIBU vs TPT Reg)	TPT Card	TPT Reg	TIBU	Agreement (TPT Card vs TPT Reg)	Agreement (TIBU vs TPT Reg)	Agreement (TPT Card Vs TPT Reg)	Agreement (TIBU vs TPT Reg)
Bomet	Bomet East	10	59	60	17%	102%	3	15	15	20%	100%	18%	101%
	Chepalungu	0	43	39	0%	91%	0	20	21	0%	105%	0%	98%
Bomet County		**10**	**102**	**99**	**10%**	**97%**	**3**	**35**	**36**	**9%**	**103%**	**9%**	**100%**
Isiolo	Garbatula	0	0	0	100%	100%	0	0	0	100%	100%	100%	100%
	Merti	1	1	1	100%	100%	0	0	0	100%	100%	100%	100%
Isiolo County		**1**	**1**	**1**	**100%**	**100%**	**0**	**0**	**0**	**100%**	**100%**	**100%**	**100%**
Kisumu	Muhoroni	0	16	9	0%	56%	0	7	10	0%	143%	0%	100%
	Seme	0	23	25	0%	109%	0	1	1	0%	100%	0%	104%
Kisumu County		**0**	**39**	**34**	**0%**	**87%**	**0**	**8**	**11**	**0%**	**138%**	**0%**	**112%**
Migori	Kuria East	0	32	9	0%	28%	0	6	1	0%	17%	0%	22%
	Suna West	0	98	108	0%	110%	0	45	43	0%	96%	0%	103%
Migori County		**0**	**130**	**117**	**0%**	**90%**	**0**	**51**	**44**	**0%**	**86%**	**0%**	**88%**
Nyandarua	Kinangop	0	24	24	0%	100%	0	7	10	0%	143%	0%	121%
	Olkalou	0	14	13	0%	93%	0	9	8	0%	89%	0%	91%
Nyandarua County		**0**	**38**	**37**	**0%**	**97%**	**0**	**16**	**18**	**0%**	**113%**	**0%**	**105%**
Trans Nzoia	Kiminini	0	64	38	0%	59%	0	36	4	0%	11%	0%	35%
	Kwanza	0	24	29	0%	121%	0	0	1	100%	100%	50%	110%
Trans Nzoia County		**0**	**88**	**67**	**0%**	**76%**	**0**	**36**	**5**	**0%**	**14%**	**0%**	**45%**
Kenya		**11**	**398**	**355**	**3%**	**89%**	**3**	**146**	**114**	**2%**	**78%**	**2%**	**84%**

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 and so far, there are still endemic Counties with cases. The main challenges experienced have been persisting physical disabilities mainly associated with late diagnosis.

In the DQA exercise that was carried out in July 2021, out of the 12 Sub-counties visited, only two had notified a leprosy patient in 2020, which were Kiminini and Muhoroni Sub Counties in Trans Nzoia and Kisumu Counties respectively. Both cases were from public hospitals and were classified as Multi-Bacillary (MB) in TIBU. In both Sub counties, there was no Leprosy register to document the cases. There was no cohort (2019) data to assess outcomes for all the Sub-counties visited.

3.5: Availability of DS TB recording and reporting tools

Availability of Reporting tools in the sampled facilities (N = 150)	
TB5 Cards (Patient Record cards)	136 (90.6%)
TB4 Facility Registers	150 (100%)
TB3 Cards (Appointment cards)	133 (88.6%)
Sputum Request forms	132 (88%)
Commodity reporting tools	144 (81.3%)

There was no reported stock out of TB4 facility registers in the facilities assessed as compared to 4% reported stock outs out in the previous assessment period.

The distribution of Patient record cards is still inadequate with 9.4% of the facilities reporting stock outs as compared to 6% in the previous assessment period.

There was a 3.4% decline in availability of the TB appointment cards as compared to the previous assessment period. Also there was a decline in availability of sputum request forms

Table 3.3c Versions of recording and reporting tools in use

Year/Version	TB5 Record Cards	TB4 register	TB3 Appointment card	Sputum request form	Commodity reporting Tool
Jan-16	72 (48%)				
Mar-16	54 (36%)	100 (66%)	116 (77%)	6 (4%)	27 (18%)
Sep 2016		1 (0%)		1 (0%)	4 (2%)
2017		40 (26%)	6 (4%)	3 (2%)	23 (15%)
2018				31 (20%)	1 (0%)
2019				1 (0%)	
Sep_2020			1 (0%)	21 (14%)	21 (14%)
Missing	2 (1%)	1 (0%)	3 (2%)	13 (8%)	34 (22%)
None of the Above		8 (5%)	7 (4%)	54 (36%)	15 (10%)
Tool not Found in Facility	15 (10%)		17 (11%)	18 (12%)	25 (16%)

The most common versions of TB4 register and TB appointment cards were March 2016 at 66% and 77% respectively.

Among the assessed facilities, 48% had Jan-2016 version of the TB5 record cards. However, 2 facilities (1%) were reported to be using March 2013 versions.

For commodity recording and reporting tools, the versions were varied. However, 34% of facilities assessed had no version. Among the facilities visited, 16% did not have commodity-reporting tools

Table 3.3d 3 months Stock Sufficiency

Year/Version	TB5 Record Cards	TB4 register	TB3 Appointment card	Sputum request form
Yes	118 (79%)	147 (98%)	108 (72%)	116 (77%)
No	20 (13%)	2 (1%)	25 (17%)	16 (11%)
Stock outs	12 (8%)	1 (1%)	17 (11%)	18 (12%)

Most of the facilities had sufficient stocks for all the recording tools,

Facilities without Record cards			
No	**Facility**	**No**	**Facility**
1	Arito Langi Dispensary	7	Kolongolo M Dispensary
2	Asat Beach Dispensary	8	Lolwe Dispensary
3	Bar Korwa Dispensary	9	Manyuanda Health Centre
4	Barambate Dispensary	10	Ojele Memorial Hospital
5	Bodi Health Centre	11	Ratta Health Centre
6	Kobos Dispensary	12	Tumoi Dispensary

Facilities without Appointment Cards			
No	**Facility**	**No**	**Facility**
1	Arito Langi Dispensary	10	Lolwe Dispensary
2	Asat Beach Dispensary	11	Mama Plister Blair Health Centre
3	Bar Korwa Dispensary	12	Maridadi RCEA Medical Centre
4	Barambate Dispensary	13	Miranga Sub District Hospital
5	Bodi Health Centre	14	Oriang Kanyadwera Dispensary
6	Dago Jonyo Dispensary	15	Ratta Health Centre
7	Kolenyo Dispensary	16	Rodi Dispensary
8	Kolongolo M Dispensary	17	St Fredas Cottage Hospital
9	Langi Kawino Dispensary		

Facilities without Sputum request forms			
No	**Facility**	**No**	**Facility**
1	Arito Langi Dispensary	10	Kugitimo Health Centre
2	Asat Beach Dispensary	11	Kuoyo Kaila Dispensary
3	Bar Korwa Dispensary	12	Langi Kawino Dispensary
4	Bodi Health Centre	13	Manyuanda Health Centre
5	Crystal Medical Clinic	14	Miranga Sub District Hospital
6	Dago Jonyo Dispensary	15	Opapla Dispensary
7	Kiplobotwa Dispensary	16	Oriang Alwala Dispensary
8	Kolenyo Dispensary	17	Oriang Kanyadwera Dispensary
9	Kombewa District Hospital	18	Ratta Health Centre

Facilities without Commodity reporting tools			
No	**Facility**	**No**	**Facility**
1	Arito Langi Dispensary	14	Mama Nursing Home
2	Bar Korwa Dispensary	15	Mama Plister Blair Health Centre
3	Barambate Dispensary	16	Manyuanda Health Centre
4	Biliqo Marara	17	Miranga Sub District Hospital
5	Bisan Biliqo Dispensary	18	Oruba Nursing And Maternity Home
6	Bulesa Dispensary	19	Rachar Sugar Belt Hospital
7	Chemelil Sugar Health Centre	20	Ratta Health Centre
8	Crystal Medical Clinic	21	Rodi Dispensary
9	God Kwer Dispensary	22	Sikhendu Dispensary
10	Kobos Dispensary	23	St Fredas Cottage Hospital
11	Kolenyo Dispensary	24	Sugumerga Dispensary
12	Kuoyo Kaila Dispensary	25	Tumoi Dispensary
13	Langi Kawino Dispensary		

4.0: CONCLUSIONS & RECOMMENDATIONS

4.1 Conclusions

1. For DS TB, the overall level of agreement between patient record cards and facility register was at 69%; a drop from 71%

2. The overall level of agreement between TIBU and register was at 87%; a drop from 94% among the DS TB records

3. For DR TB, the overall level of data agreement between TIBU and register was at 115%, an improvement in recording and reporting from 123% during the previous assessment period.

4. The overall agreement based on level of health facilities was perfect (100%) in level 2 (Dispensaries) and lowest in level 5 (Referral hospital) at 42%

5. In terms of sector, the agreement was highest in the private sector at 103%

4.2 Recommendations

National level

#	Recommendation	Level	Priority	Responsible Person(s)
1	Distribute updated recording and reporting tools (Version September 2020)	National	High (3 months)	DNTLD-P County Sub County
2	Develop mechanisms and share circular on withdrawal of outdated recording and reporting tools	National	High (3 months)	DNTLD-P County Sub County
3	Capacity build to standardize knowledge on revisedd recording and reporting tools	Sub national and facility level	Medium	DNTLD – P, implementing partners and county

4	Review of the DQA tool to capture emerging issues	National	High	M&E
5	Purposively revisit the counties and sub counties visited/done in the current DQA to monitor improvement	M&E	High (Next DQA)	M&E

Sub National level

#	Recommendation	Level	Priority	Responsible Person(s)
1	Ensure culture and LPA results are updated at facility level	Sub national level	High	SCTLC
2	Strengthen the data aspects of facility supervision to ensure all documents are updated	Sub national	High	SCTLC
3	Conduct sub national DQAs and share findings at county and national level	Sub national and facility level	High	CDH CTLC SCTLC Implementing partners

Annexes

Annex 1: List of contributors

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Annex 2: List of health facilities

Annex 3: Levels of agreement for aggregated data for All forms of TB in Patient record cards and TIBU data in comparison to TB4 facility registers

Table 2a: Levels of agreement for aggregated data for all forms of TB in Patient record cards and TIBU data in comparison to TB4 facility registers

		2020					2021					Average (2020/2021)	
County	**Sub Counties**	**TB5 Cards**	**TB4 Reg**	**TIBU**	**Agreement (TB5 Cards vs TB4 Reg)**	**Agreement (TIBU vs TB4 Reg)**	**TB5 Cards**	**TB4 Reg**	**TIBU**	**Agreement (TB5 Cards vs TB4 Reg)**	**Agreement (TIBU vs TB4 Reg)**	**Agreement (TB5 cards Vs TB4 Reg)**	**Agreement (TIBU vs TB4 Reg)**
Bomet	Bomet East	344	462	438	74%	95%	81	119	116	68%	97%	71%	96%
	Chepalungu	190	234	224	81%	96%	55	67	67	82%	100%	82%	98%
Bomet County		**534**	**696**	**662**	**77%**	**95%**	**136**	**186**	**183**	**73%**	**98%**	**75%**	**97%**
Isiolo	Garbatula	37	40	41	93%	103%	10	19	19	53%	100%	73%	101%
	Merti	32	32	32	100%	100%	10	10	10	100%	100%	100%	100%
Isiolo County		**69**	**72**	**73**	**96%**	**101%**	**20**	**29**	**29**	**69%**	**100%**	**82%**	**101%**
Kisumu	Muhoroni	122	140	136	87%	97%	55	51	40	108%	78%	97%	88%
	Seme	116	136	133	85%	98%	29	34	35	85%	103%	85%	100%
Kisumu County		**238**	**276**	**269**	**86%**	**97%**	**84**	**85**	**75**	**99%**	**88%**	**93%**	**93%**
Migori	Kuria East	41	47	47	87%	100%	12	11	9	109%	82%	98%	91%
	Suna West	134	213	223	63%	105%	43	52	58	83%	112%	73%	108%
Migori County		**175**	**260**	**270**	**67%**	**104%**	**55**	**63**	**67**	**87%**	**106%**	**77%**	**105%**
Nyandarua	Kinangop	215	220	219	98%	100%	64	64	64	100%	100%	99%	100%
	Olkalou	146	162	156	90%	96%	36	50	48	72%	96%	81%	96%
Nyandarua County		**361**	**382**	**375**	**95%**	**98%**	**100**	**114**	**112**	**88%**	**98%**	**91%**	**98%**
Trans Nzoia	Kiminini	135	563	331	24%	59%	51	170	82	30%	48%	27%	54%
	Kwanza	89	108	105	82%	97%	14	17	17	82%	100%	82%	99%
Trans Nzoia County		**224**	**671**	**436**	33%	65%	**65**	**187**	**99**	35%	53%	34%	59%
Kenya		**1601**	**2357**	**2085**	**68%**	**88%**	**460**	**664**	**565**	**69%**	**85%**	**69%**	**87%**

NATIONAL TUBERCULOSIS, LEPROSY AND LUNG DISEASE PROGRAM