Tuberculosis Data Quality Checklist

Guide for Operational District TB Supervisor

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Abbreviations

CENAT	National Center for Tuberculosis and Leprosy Control
HF	health facility
M&E	monitoring and evaluation
OD	operational district
TB	tuberculosis
VF	verification factor
WHO	World Health Organization

Introduction

The goal of the tuberculosis (TB) monitoring and evaluation (M&E) system in Cambodia is to produce quality data that are used for TB surveillance; monitor progress toward the national TB program's targets; and inform decisions on program planning, management, policymaking, and resource allocations. The data generated by the TB M&E system need to be of high quality and credible so that decision makers at every level of the program can rely on the data and use them to optimize the coverage and quality of TB care services to end TB in the country.

Purpose of the Tuberculosis Data Quality Checklist

This checklist, adapted from World Health Organization's (WHO) Data Quality Review modules (see the Reference section at the end of this resource), is designed to facilitate routine and periodic data quality checks conducted through desk reviews and supervisory visits. The checklist will help systematically identify data quality problems across health facilities (health centers and referral hospitals) at the operational district (OD) level. The data quality checks may identify areas requiring improvement and corrective actions.

The checklist is designed for TB supervisors at the OD level to conduct data quality checks on reporting completeness and timeliness, data accuracy, and internal consistency of reported data. Based on the findings summarized in the checklist, TB supervisors at the OD level will prepare summary reports based on the desk review and field level verification of the data received from health facilities, provide the necessary feedback to health facilities (HFs), and share the findings from the data quality checks with provincial TB supervisors.

Data quality dimensions covered by the checklist

The checklist focuses on the following dimensions of data quality:

A. Reporting completeness
B. Reporting timeliness
C. Completeness of indicator data
D. Verification of data accuracy
E. Internal consistency over time

Definitions of these dimensions and their associated assessment forms follow.

A. Reporting completeness

This measures the extent to which the expected number of reports were actually received by the higher administrative unit in a given time period. A completeness rate of 100 percent at the OD level indicates that the OD received reports from all HFs under its administration. A sample completed form is given on the next page.

Reporting Completeness Assessment															
Name of the health facility	Enter the number of monthly reports received by the OD level from the health facility												Expected no. of monthly reports to be sent to the OD level	Actual no. of monthly reports received by the OD level	Reporting completeness rate (%) P=O/N*100
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec			
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
M	2	2	2	2	2	2	2	2	2	2	2	2	24	24	100
N	2	2	2	2	2	2	2	2	2	2	2	2	24	24	100
O	2	2	2	2	2	2	2	2	2	2	2	2	24	24	100
P	3	3	3	3	3	3	3	3	3	3	3	3	24	36	150
Q	4	3	3	1	3	3	3	3	3	3	3	3	24	35	146
R	1	1	1	1	1	1	1	1	1	1	1	1	24	12	50
S	2	2	2	2	2	2	2	2	2	2	2	2	24	24	100
T	2	2	2	2	2	2	2	2	2	2	2	2	24	24	100
U	2	2	2	2	2	2	2	2	2	2	2	2	24	24	100
V	1	1	1	1	1	1	1	1	1	1	1	1	24	12	50
W	2	2	2	2	2	2	2	2	2	2	2	2	24	24	100
X	2	3	3	3	3	3	3	3	3	3	3	3	24	35	146
Y	2	3	3	2	2	2	2	2	2	2	2	2	24	26	108
Z	1	1	1	1	1	1	1	1	1	1	1	1	24	12	50
G	2	2	2	2	2	2	2	2	2	2	2	2	24	24	100
H	2	2	2	2	2	2	2	2	2	2	2	2	24	24	100
I	2	2	2	2	2	2	2	2	2	2	2	2	24	24	100
J	1	2	2	2	2	2	2	2	2	1	1	1	24	20	83
K	1	1	2	2	2	2	2	2	2	2	2	2	24	22	92
L	2	2	1	1	1	1	1	1	1	2	2	2	24	17	71
A	2	1	1	x	x	x	x	x	x	x	x	x	24	4	17
B	2	2	2	2	2	2	2	2	2	2	2	2	24	24	100
C	2	2	2	2	2	2	2	2	2	2	2	2	24	24	100
D	x	x	x	x	x	x	x	x	x	x	x	x	24	0	0

E	2	2	2	2	2	2	2	2	2	2	2	2	24	24	100
F	1	2	2	2	1	1	1	1	2	2	2	2	24	19	79
g	2	2	2	1	1	1	1	1	1	1	1	1	24	15	63
Total	**49**	**51**	**51**	**46**	**47**	**47**	**47**	**47**	**48**	**48**	**48**	**48**	**648**	**577**	**89**

Metrics	**Summary results**	
	Number	**Percentage**
Number and percentage of HFs with a reporting completeness rate between 75%–90%	**2**	**7**
Number and percentage of HFs with a reporting completeness rate below 75%	**7**	**26**
Number and percentage of HFs with a reporting completeness rate 90%–100%	**14**	**52**
Number and percentage of HFs with a reporting completeness rate more than 100%	**4**	**15**
Total number of HFs	**27**	

B. Reporting timeliness:

A national schedule specifies when monthly TB reports should be submitted to the next higher level (as recommended by the National Center for Tuberculosis and Leprosy Control [CENAT]). Reports should be received by the end of second week of the following month. This assessment looks at the timeliness of the HFs submitting reports to the OD level, per CENAT's reporting dates. A sample completed form follows.

Reporting Timeliness Assessment															
Name of the health facility	**Actual number of monthly reports received by the OD level during the year**	**Monthly report received by the OD level by the submission deadline**												**Total number of monthly reports received by the OD level by the submission deadline**	**Reporting timeliness rate (%)**
		Jan	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**		**P = O/B*100**
A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**	**L**	**M**	**N**	**O**	**P**
I	580	50	55	55	55	55	0	55	55	50	50	50	50	580	100
J	549	45	40	45	45	45	46	46	47	47	48	48	49	549	100
K	459	35	35	40	35	38	38	39	39	40	40	41	41	459	100
L	548	39	35	35	45	43	45	47	48	50	52	54	56	548	100
M	396	33	33	33	33	33	33	33	33	33	33	33	33	396	100

N	456	38	38	38	38	38	38	38	38	38	38	38	38	456	100
O	600	40	40	35	35	33	31	29	27	25	23	21	19	354	59
P	840	40	45	50	55	60	65	70	75	80	85	90	95	810	96
Q	1380	60	70	80	90	100	110	120	130	140	150	160	170	1380	100
R	770	22	42	67	33	56	61	67	73	79	85	90	96	770	100
S	1000	122	62	62	100	70	63	57	50	44	37	30	24	721	72
T	501	58	38	27	44	58	38	27	44	58	38	27	44	501	100
Total	**8079**	**582**	**533**	**567**	**608**	**628**	**568**	**627**	**659**	**683**	**678**	**682**	**714**	**7525**	**93**

Metrics	Summary Results	
	Number	Percentage
Number and percentage of HFs with a timeliness rate of 75% or below	2	17
Number and percentage of HFs with reporting timeliness rate between 75%–99%	1	8
Number and percentage of HFs with 100% reporting timeliness	9	75
Total number of HFs	12	

C. Completeness of reported indicator data (list of the indicators to be assessed for data quality at the end of the forms)**:**

Completeness of indicator data is measured by examining the proportion of non-zero values for specific indicators. This is achieved in two ways:

1. By measuring the proportion of blank cells (i.e., the cells where a specific indicator value should be recorded, but is left blank) on reporting forms.
2. By measuring the proportion of cells with a zero recorded as the value whereas it is not zero (or called non-true zero value).

Missing data should be clearly differentiated from true zero values in OD and HF reports. A true zero value indicates that no reportable events occurred during the specified reporting period. A missing value indicates that reportable events occurred but were not in fact reported.

D. Verification of data accuracy:

The objective of data verification is to measure the extent to which data in source documents (e.g., TB patient registration book, TB patient treatment card) used by HFs have been accurately aggregated and reported to the OD level. This allows errors that occur in data reporting to be identified for specific indicators and provides an estimate of the facility's degree of overreporting or underreporting.

For data verification, data from source documents (e.g., TB patient registration book, TB patient treatment cards) are compared with data that are reported through the TB monthly reports (TB MIS) to determine the proportion of reported results that can be verified from the source documents. The values for selected indicators from specific reporting periods are recounted using the relevant source documents at HFs. This recounted value is then compared with the value initially reported to the OD level for the given reporting period. The ratio of the recounted value to the reported value is called the "verification factor" (VF) and constitutes a measure of the indicator's accuracy. A sample completed form follows.

Verification of data accuracy						
Name of the health facility	**Data reported in the monthly report**	**Figure recounted from the TB register**	**Verification Factor**	**VF < 0.90**	**VF > 1.10**	**VF = 1.0 (within +/- 10%)**
			VF = C/B	**(over reporting)**	**(under-reporting)**	**(Exactly matches the reported data)**
A	B	C	D	E	F	G
X	20	20	1.00	0	0	1
Y	21	21	1.00	0	0	1
Z	20	20	1.00	0	0	1
M	34	30	0.88	1	0	0
N	29	35	1.21	0	1	0
O	39	39	1.00	0	0	1
P	29	26	0.90	1	0	0
Q	39	44	1.13	0	1	0
R	59	59	1.00	0	0	1
S	29	29	1.00	0	0	1
Total number of HFs over reporting				**2**		
Total number of HFs underreporting					2	
Total number of HFs exactly matching						6

E. Internal consistency over time:

Internal consistency of data relates to the coherence of the data being evaluated. In addition to measuring data accuracy by comparing data in source documents and in aggregated reports, as described above, internal consistency examines the plausibility of reported data for selected indicators based on the history of reporting those indicators and comparisons with other program indicators that have a predictable relationship to determine whether an expected relationship exists in the observed data between the two indicators.

1. Internal consistency over time (based on the history of reporting of the same indicator) is examined by comparing the value of a variable/indicator with the value of the same variable at earlier time periods. The trend of values for a given indicator/variable is evaluated to determine whether the reported value is extreme in relation to other values reported during the year or over several months/years.

   Usually, a cut-off is set to allow a certain range of variability of reported data that are expected to happen over the months. In general, if a HF has a ratio of the current month's value for a given indicator to the average value of the preceding 12 months for the same indicator that is more than +/- 33 percent different from the OD ratio for the same indicator, then the HF's report is flagged for further scrutiny.

Note: This standard is somewhat arbitrary. The issue is to set it high enough that you are flagging the largest disparities.

2. Internal consistency in comparison with other related program indicators examines the extent to which the reported values of two related indicators follow a predictable pattern. If this pattern is not followed at the national level or for a particular subpopulation, it may indicate data quality problems. Consistency between the reported values of two indicators is defined as the ratio between the reported values of the two indicators. For some indicators, the ratio should be 1 or below; for other indicators the ratio is ≥1. Ideally, it should be within an acceptable limit or range. In general, there are four types of possible relationships:
   a. The values are roughly equal
   b. A is always greater than B
   c. B is always greater than A
   d. Drop-out rate: this should never be negative

Such relationships should be considered when checking for internal consistency in comparison with other related program indicators. A sample completed form follows.

Internal consistency over time assessment

Name of the health facility	Preceding months (specify below)												Current month (specify below)	Average of preceding 12 months in 2021 G = (A+B+C+D+E+F+G+I+J+K+L)/12	Ratio of current month to the average of preceding 12 months (O = N/M)	% difference between HF ratio and OD ratio (O [HF] - O [OD])/O (OD) X 100
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec				
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
X	45	45	45	45	45	45	45	45	45	45	45	45	22	45	**2.05**	**37**
Y	19	17	16	18	17	16	16	15	15	15	14	14	9	16	**1.77**	**77**
Z	75	77	74	78	78	78	79	79	80	81	81	82	36	78	**2.18**	**118**
M	30	30	56	60	73	85	96	108	119	131	143	154	40	90	**2.26**	**126**
N	26	23	24	24	23	23	22	22	21	21	20	20	24	22	**0.93**	**-7**
O	50	48	46	47	45	44	43	42	41	40	38	37	24	43	**1.81**	**81**
P	32	33	32	32	32	32	32	32	32	32	31	31	32	32	**1.00**	**0**
Q	55	49	56	57	58	59	60	61	63	64	65	67	43	59	**1.38**	**38**
R	29	30	32	32	34	35	36	37	38	39	40	41	32	35	**1.10**	**10**
S	66	64	67	65	66	66	66	66	66	66	66	66	66	66	**0.99**	**-1**
Total	**427**	**273**	**293**	**304**	**469**	**322**	**332**	**342**	**519**	**363**	**373**	**383**	**187**	**487**	**1.55**	

Metrics	Summary results	
	Number	Percentage
HFs with a 33% or more difference between the HF and OD ratios	**6**	**60**
HFs with less than a 33% difference between the HF and OD ratios	**4**	**40**
Total number of HFs	**10**	

Data quality metric calculations at the OD level

Data quality metric	Definition	Calculation
Completeness and timeliness of reporting		
Completeness of HF reporting	% of monthly TB reports from the HFs that were actually received at the OD level of the total number of expected reports for a given time period (e.g. year)	Numerator: Number of HF monthly reports received at the OD level during a given period Denominator: Number of monthly reports expected from the HFs during the same period
Timeliness of HF reporting	% of monthly TB reports submitted by the HFs to the OD level that were received on time (i.e., within the report submission deadline [by the end of second week of the following month])	Numerator: Number of monthly TB reports received from HFs on time Denominator: Total number of monthly TB reports actually received from the HFs (within the deadline)
Completeness of indicator data	(a) % of data elements that are non-zero values (b) % of data elements that are non-missing values *Note: The expectation is that in the current situation of the TB epidemic, there will be no missing data or zero values reported by any HF*	Numerator: Total number of monthly reports received from the HFs at the OD level for a given time period that contain a non-zero value for the specified data elements (e.g., number of notified TB cases all forms) Denominator: Total number of HF monthly reports received during the same time period. Numerator: Total number of monthly reports from the HFs at the OD level for a given time period that contain a missing value for the specified data elements (e.g., number of notified TB cases all forms) Denominator: Total number of HF monthly reports received during the same time period.
Internal consistency of reported data		

Verification of data accuracy through a HF site visit	% agreement between verified counts for selected indicators in sampled HF records and reported values for the same HFs The metric measuring the degree of parity (or disparity) between the recounted and reported values of the same variable is called the verification factor (VF). At the OD level, the assessment results can be summarized as: - % of HFs that overreported by more than 10% (i.e., VF < 0.90), - % of HFs that underreported by more than 10% (i.e., VF > 1.10) - % of HFs for which source data exactly match reported data (within +/- 10% [i.e., VF=1.0 or +-10%])	Numerator: Recounted number of events from the source documents Denominator: Reported number of events in the monthly reports in the TB MIS
Internal consistency of reported value of a given indicator over time	Ratio of indicator value for the current month compared with the average value of the same indicator in the preceding twelve months This ratio for a specified indicator calculated for each HF can be compared with the ratio calculated from the OD reports to see if the variation, if any, happened for a specific HF or was a general occurrence throughout the district. (Note: If a deviation from the average trend seen in the HF is more that 33% either way, then it can be a data quality issue, unless there is a valid reason; for example, the occurrence of a high number of cases that month due to a sudden flare up of the epidemic as a result of the large number of in-migration).	Numerator: Value of the indicator as reported in the current monthly report Denominator: Average of the values of the same indicator reported in the preceding four months

Indicators to be Assessed for Data Quality

To assess the data quality metrics, such as the completeness of indicator data reporting, data accuracy verification, and consistency of the reported value of a given indicator over time, it is recommended that every OD TB supervisor use a short list of indicators to assess those data quality dimensions. CENAT will recommend the list of indicators to be reviewed to the OD level. The following is a list of suggested indicators that can be used for the data quality review:

I. Number of TB notification
II. Number of bacteriologically confirmed pulmonary TB cases
III. Number of cases tested using GeneXpert
IV. Number of cases tested positive for rifampicin resistance
V. Number of clinically diagnosed pulmonary TB cases
VI. Number of contacts who are initiated on TB preventive treatment
VII. Number of TB patients who are HIV positive

The checklist can be used to measure the dimensions of data quality mentioned above, and examples are available in the following pages for reference, including a data use and feedback form, which highlights the feedback given by the OD level to HFs. The checklist focuses on the following dimensions of data quality. Once the data are entered electronically, the calculation will be done automatically. If the data entered is in handwritten form, a formula is provided to do the calculation manually:

A. Reporting completeness
B. Reporting timeliness
C. Completeness of indicator data
D. Verification of data accuracy
E. Internal consistency over time

Data Quality Assessment Tools

Reporting Completeness Assessment

OD name: _____

Date: _____

Period covered From_____ To_____

Name of the OD TB supervisor completing the tool: _____

Name of the health facility	Enter the number of monthly reports received by the OD level from the health facility												Expected no. of monthly reports to be sent to the OD level	Actual no. of monthly reports received by the OD level	Reporting completeness rate (%) P=O/N*100
	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sept	Oct	Nov	Dec			
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
Total															
														Summary results	

Metrics	Number	Percentage
Number and percentage of HFs with a reporting completeness rate between 75%–90%		
Number and percentage of HFs with a reporting completeness rate below 75%		
Number and percentage of HFs with a reporting completeness rate 90%–100%		
Number and percentage of HFs with a reporting completeness rate more than 100%		

Total number of HFs

Reporting Timeliness Assessment

OD name: _____

Date: _____

Period covered From_____ To_____

Name of the OD TB supervisor completing the tool: _____

Name of the health facility	**Actual number of monthly reports received by the OD level during the year**	**Monthly report received by the OD level by the submission deadline**												**Total number of monthly reports received by the OD level by the submission deadline**	**Reporting timeliness rate (%) P=O/B*100**
		Jan	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**July**	**Aug**	**Sept**	**Oct**	**Nov**	**Dec**		
A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**	**L**	**M**	**N**	**O**	**P**

Total															

Metrics	Summary results	
	Number	Percentage
Number and percentage of HFs with a timeliness rate of 75% or below		
Number and percentage of HFs with reporting timeliness rate between 75%–99%		
Number and percentage of HFs with a 100% timeliness rate		

Total number of HFs

Verification of Data Accuracy

OD name: _____

Date: _____

Period covered From_____ To_____

Name of the OD TB supervisor completing the tool: _____

Indicator assessed for data accuracy: _____
(*Use multiple checklists to assess multiple indicators)*

Name of the health facility	Data reported in the monthly report	Figure recounted from the TB register	Verification Factor VF = C/B	VF < 0.90 (over-reporting)	VF > 1.10 (under-reporting)	VF = 1.0 (within +/- 10%) (exactly matches the reported data)
A	B	C	D	E	F	G
Total number of HFs over-reporting						
Total number of HFs under-reporting						
Total number of HFs exactly matching						

Internal Consistency Over Time

OD name: _____

Date: _____

Period covered From_____ To_____

Name of the OD TB supervisor completing the tool: _____

Name of the health facility	Preceding months (specify below)												Current month (specify below)	Average of preceding 12 months in 2021 N = (A+B+C+D+E+F+G+H+I+J+K+L) /12	Ratio of current month to the average of the preceding 12 months O = N/M	% difference between HF ratio and OD ratio (O [HF] - O (OD])/O (OD) X 100
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec				
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
Total																

Metrics	Summary results	
	Number	Percentage
HFs with a 33% or more difference between the HF and OD ratio		
HFs with less than a 33% difference between the HF and OD ratio		

Examples of Data Quality Assessment Tools

A. Example of completeness reporting

In this example, the OD has 27 HFs. Therefore, the expected number of reports at the OD level would be 24 (2 reports per month x 12 months). However, the actual number of reports received was 577 (as shown in the last row of the table). Therefore, the reporting completeness rate for this OD is 577/648 / = 89%.

The table below shows the reporting completeness rate of each individual HF. With this information, the number and percentage of HFs achieving 90%–100% reporting compliance, 75%–90% reporting compliance, below 75% reporting compliance, and reporting more than 100% can be measured. In the example below, two HFs submitted 20 and 19 of the 24 monthly reports in a given year, (i.e., their reporting completeness rates were 83% and 79%, respectively). On the other hand, 13 of the 27 HFs submitted all 24 monthly reports, thus achieving a 100% reporting completeness rate.

Health facility reporting completeness assessment															
Name of the health facility	Enter the number of monthly reports received by the OD level from the health facility												Expected no. of monthly reports to be sent to the OD level	Actual no. of monthly reports received by the OD level	Reporting complete-ness rate (%) P=O/N*100
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec			
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
M	2	2	2	2	2	2	2	2	2	2	2	2	24	24	100
N	2	2	2	2	2	2	2	2	2	2	2	2	24	24	100
O	2	2	2	2	2	2	2	2	2	2	2	2	24	24	100
P	3	3	3	3	3	3	3	3	3	3	3	3	24	36	150
Q	4	3	3	1	3	3	3	3	3	3	3	3	24	35	146
R	1	1	1	1	1	1	1	1	1	1	1	1	24	12	50
S	2	2	2	2	2	2	2	2	2	2	2	2	24	24	100
T	2	2	2	2	2	2	2	2	2	2	2	2	24	24	100
U	2	2	2	2	2	2	2	2	2	2	2	2	24	24	100
V	1	1	1	1	1	1	1	1	1	1	1	1	24	12	50
W	2	2	2	2	2	2	2	2	2	2	2	2	24	24	100

X	2	3	3	3	3	3	3	3	3	3	3	3	24	35	146
Y	2	3	3	2	2	2	2	2	2	2	2	2	24	26	108
Z	1	1	1	1	1	1	1	1	1	1	1	1	24	12	50
G	2	2	2	2	2	2	2	2	2	2	2	2	24	24	100
H	2	2	2	2	2	2	2	2	2	2	2	2	24	24	100
I	2	2	2	2	2	2	2	2	2	2	2	2	24	24	100
J	1	2	2	2	2	2	2	2	2	1	1	1	24	20	83
K	1	1	2	2	2	2	2	2	2	2	2	2	24	22	92
L	2	2	1	1	1	1	1	1	1	2	2	2	24	17	71
A	2	1	1	x	x	x	x	x	x	x	x	x	24	4	17
B	2	2	2	2	2	2	2	2	2	2	2	2	24	24	100
C	2	2	2	2	2	2	2	2	2	2	2	2	24	24	100
D	x	x	x	x	x	x	x	x	x	x	x	x	24	0	0
E	2	2	2	2	2	2	2	2	2	2	2	2	24	24	100
F	1	2	2	2	1	1	1	1	2	2	2	2	24	19	79
g	2	2	2	1	1	1	1	1	1	1	1	1	24	15	63
Total	**49**	**51**	**51**	**46**	**47**	**47**	**47**	**47**	**48**	**48**	**48**	**48**	**648**	**577**	**89**

Metrics	**Summary results**	
	Number	**Percentage**
Number and percentage of HFs with a reporting completeness rate between 75%–90%	2	7
Number and percentage of HFs with a reporting completeness rate below 75%	7	**26**
Number and percentage of HFs with a reporting completeness rate 90%–100%	14	52
Number and percentage of HFs with a reporting completeness rate more than 100%	4	15
Total number of HFs	**27**	

X means no report submitted.

B. Example of timeliness reporting

When calculating reporting timeliness, only the reports that were submitted to the OD level are taken into consideration. The number of reports that were not submitted at all are not included in the calculation.

For example, HF I in the table below submitted 580 out of 580 monthly reports, and all 580 reports were submitted by the submission deadline. Thus, the reporting timeliness is 100% although the reporting completeness is only 90% for this HF.

Reporting Timeliness Assessment															
Names of the health facility	Actual number of monthly reports received by the OD level during the year	Monthly report received by the OD level by the submission deadline												Total number of monthly reports received by the OD level by the submission deadline	Reporting timeliness rate (%) P = O / B*100
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec		
A	B	C	D	E	F	G	H	I	J	K	L	M	N	G	H
I	580	50	55	55	55	55	x	55	55	50	50	50	50	580	100
J	549	45	40	45	45	45	46	46	47	47	48	48	49	549	100
K	459	35	35	40	35	38	38	39	39	40	40	41	41	459	100
L	548	39	35	35	45	43	45	47	48	50	52	54	56	548	100
M	396	33	33	33	33	33	33	33	33	33	33	33	33	396	100
N	456	38	38	38	38	38	38	38	38	38	38	38	38	456	100
O	600	40	40	35	35	33	31	29	27	25	23	21	19	354	59
P	840	40	45	50	55	60	65	70	75	80	85	90	95	810	96
Q	1380	60	70	80	90	100	110	120	130	140	150	160	170	1380	100
R	770	22	42	67	33	56	61	67	73	79	85	90	96	770	100
S	1000	122	62	62	100	70	63	57	50	44	37	30	24	721	72
T	501	58	38	27	44	58	38	27	44	58	38	27	44	501	100
Total	**8089**	**582**	**528**	**562**	**603**	**623**	**618**	**622**	**654**	**683**	**678**	**682**	**714**	**7545**	**93**

Metrics	Summary Results	
	Number	Percentage
Number and percentage of HFs with a timeliness rate of 75% or below	2	17
Number and percentage of HFs with a reporting timeliness rate between 75%–99%	1	8
Number and percentage of HFs with 100% reporting timeliness	9	75
Total number of HFs	**12**	

Note: "X" means that the report was submitted but that it was not submitted by the submission deadline.

C. Verification of data accuracy

The indicator/data element used to assess data accuracy is pre-selected. The list of recommended indicators/variables is provided on page 11. Use multiple checklists to assess multiple indicators.

The indicator used in this example is: Number of bacteriologically confirmed pulmonary TB cases.

This checklist is used at the time of supervisory visits to HFs.

The OD supervisor pre-populates the data for Column B (reported data) from the HF reports submitted to the OD level. At the time of the supervisory visit to the HFs, the supervisor recounts the figure from the TB register, compares the recounted figure with the reported figure, and calculates the verification factor to assess the accuracy of the data and any over-reporting or underreporting for that specific indicator or indicators.

Verification of data accuracy						
Name of the health facility	**Data reported in the monthly report**	**Figure recounted from the TB register**	**Verification Factor VF = C/B**	**VF < 0.90 (overreporting)**	**VF > 1.10 (under-reporting)**	**VF = 1.0 (within +/- 10%) (exactly matches the reported data)**
A	B	C	D	E	F	G
X	20	20	1.00	0	0	1
Y	21	21	1.00	0	0	1
Z	20	20	1.00	0	0	1
M	34	30	0.88	1	0	0
N	29	35	1.21	0	1	0
O	39	39	1.00	0	0	1
P	29	26	0.90	1	0	0
Q	39	44	1.13	0	1	0
R	59	59	1.00	0	0	1
S	29	29	1.00	0	0	1
Total number of HFs over-reporting				**2**		
Total number of HFs under-reporting					2	
Total number of HFs exactly matching						6

D. Internal consistency over time

The number of events reported in each month can fluctuate as seen in this table. However, if deviation from the average trend seen in the OD is more that 33% either way, it can be a data quality issue, unless there is a valid reason; for example, the occurrence of a high number of cases that month due to a sudden flare up of the epidemic as a result of the large number of in-migration.

Internal consistency over time assessment																
Name of the health facility	Preceding months (specify below)												Current month (specify below)	Average of preceding 12 months in 2021 G = (A+B+C+D+E+F+G+I+J+K+L)/12	Ratio of current month to the average of the preceding 12 months (O = N/M)	% difference between the HF ratio and the OD ratio (O [HFs) - O [OD]) / O (OD) X 100
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec				
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
X	45	45	45	45	45	45	45	45	45	45	45	45	22	45	2.05	37
Y	19	17	16	18	17	16	16	15	15	15	14	14	9	16	1.77	77
Z	75	77	74	78	78	78	79	79	80	81	81	82	36	78	2.18	118
M	30	30	56	60	73	85	96	108	119	131	143	154	40	90	2.26	126
N	26	23	24	24	23	23	22	22	21	21	20	20	24	22	0.93	-7
O	50	48	46	47	45	44	43	42	41	40	38	37	24	43	1.81	81
P	32	33	32	32	32	32	32	32	32	32	31	31	32	32	1.00	0
Q	55	49	56	57	58	59	60	61	63	64	65	67	43	59	1.38	38
R	29	30	32	32	34	35	36	37	38	39	40	41	32	35	1.10	10
S	66	64	67	65	66	66	66	66	66	66	66	66	66	66	0.99	-1
Total	**427**	**273**	**293**	**304**	**469**	**322**	**332**	**342**	**519**	**363**	**373**	**383**	**187**	**487**	**1.55**	

Metrics	Summary results	
	Number	Percentage
HFs with a 33% or more difference between the HF and OD ratio	6	60
HFs with less than a 33% difference between the HF and OD ratio	4	40
Total number of HFs	**10**	

Data use and feedback checklist

This checklist is to record and monitor the feedback given by the OD level to health facilities.

OD name: _____

Date: _____

Period covered From_____ To_____

Name of the OD TB supervisor completing the tool: _____

Name of health facility	During the period covered, as specified above:			
	Written feedback was given to the health facility on the data quality assessment done	OD office prepared charts for TB indicators showing health facility performance	The health facility attended the TB performance review meeting held at the OD level	Written feedback was given to the health facility on TB program performance based on the TB indicators
A	B	C	D	E

Total number of HFs				

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