FCDC Tanzania's Data Quality Toolkit for Comprehensive Care

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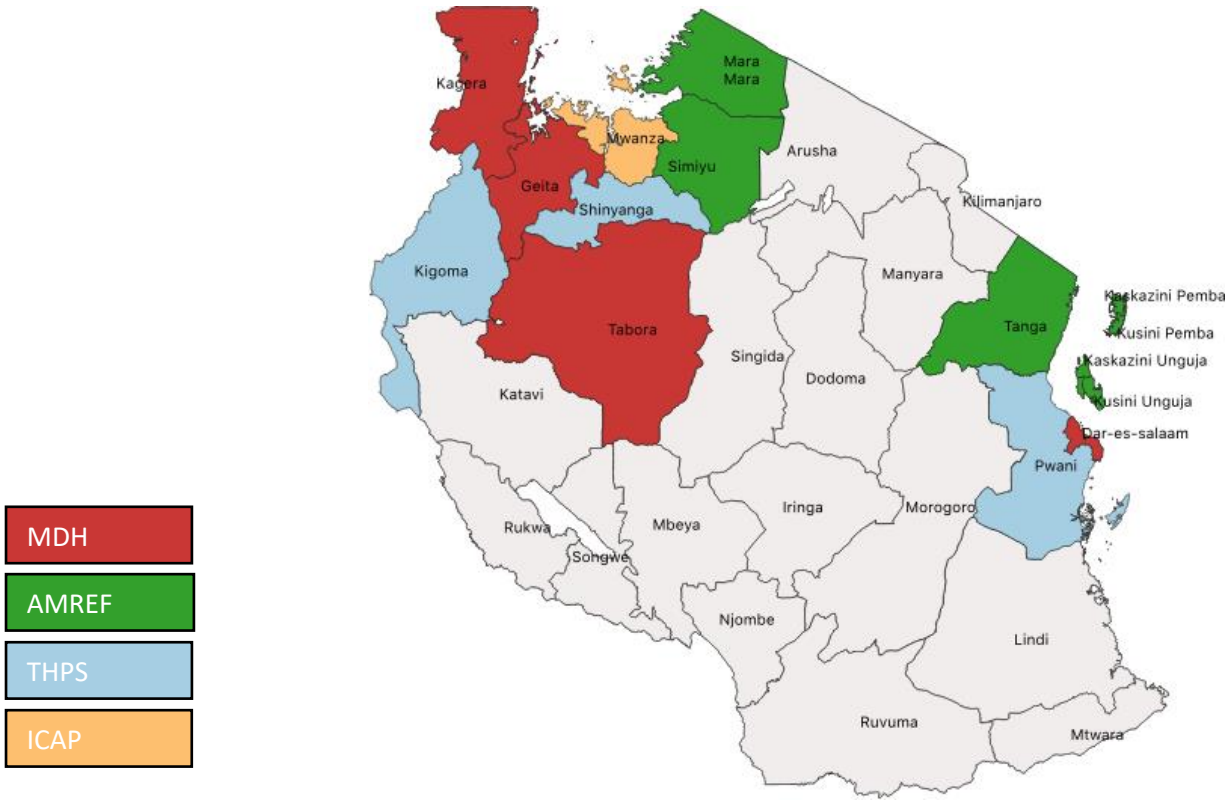

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List of Acronyms

AIDS	Acquired Immunodeficiency Syndrome
ART	Antiretroviral Treatment
CDC	Centers for Disease Control and Prevention
CoAg	Cooperative Agreement
CTC	Care and Treatment Clinic
DHIS	District Health Information Software
DQ	Data Quality
DQA	Data Quality Assessment
DQI	Data Quality Improvement
DRT	Data Review Tool
EID	Early Infant Diagnosis
GoT	Government of Tanzania
HCP	Health Care Provider
HIV	Human Immunodeficiency Virus
HTS	HIV Testing Services
HVL	HIV Viral Load
IP	Implementing Partner
KP	Key Populations
LTFU	Lost to Follow-up
M&E	Monitoring and Evaluation
MER	Monitoring, Evaluation, and Reporting
MoH	Ministry of Health
PEPFAR	President's Emergency Plan for AIDS Relief
PITC	Provider Initiated Testing and Counseling
PMM	Partner Management Meeting
PMTCT	Prevention of Mother-to-Child Transmission
POC	Point of Contact
RTK	Rapid Test Kit
R&R	Report and Request
SI	Strategic Information
SOP	Standard Operating Procedure
SoW	Scope of Work
TB	Tuberculosis
TI	Transfer In
TO	Transfer Out
TX	Treatment
UCSF	University of California, San Francisco

1.0 Data Quality Overview, Rhythm, and Calendar

Purpose: To implement routine, standardized and sustainable data quality improvement activities in order to ensure the availability of high-quality site-level (facility and community) data for program monitoring.

Approach: Standardized procedures and tools to be utilized by CDC IPs to ensure robust data quality by routinely identifying data quality issues at the site-level and facilitate the implementation of sustainable remediation strategies.

Robust data quality: Up-to-date, complete, and accurate data in GoT and PEFPAR reporting systems that are consistently reviewed and for which issues are remediated in a timely and sustainable manner.

This toolkit outlines key deliverables, timelines, and standardized approaches that support ongoing data quality vigilance at all levels. It also outlines roles, responsibilities, and interactions among key stakeholders that support these efforts.

Key components include:

- **Data Quality Framework:** The IP Data Quality Framework plan is a "living document" that will be developed during the first year of a comprehensive CoAg and updated, at minimum, at the start of each fiscal year to outline the IP's data quality strategy, roles and responsibilities, data flow, tools, and processes, and standard operating procedures.
- **Data Quality Standards:** A set of data quality standards to ensure high quality data to support comprehensive care in each region and respective IP offices.
    - **Data Review and Verification Process:** IP-driven check of key indicators completeness, accuracy, timeliness.
    - **Quarterly MER reporting and standardized data quality analyses:** A series of routine data quality analyses conducted on key MER indicators to ensure complete, accurate, and high-quality data.
    - **Quarterly remediation of key priorities and implementation of best practices:** Priorities identified through quarterly data quality analyses for IPs to focus on in the subsequent quarter.
    - **Maintenance of facility- and community-level minimum M&E standards:** A set of minimum M&E standards required at all IP-supported facilities to support collection and reporting of high-quality data.
    - **Data quality audits:** Targeted data quality reviews that are done either virtually or at the facility in response to a specific data quality issue. Data quality audits will be supported by UCSF.
    - **Data quality assessments (DQAs):** In-depth facility-level assessments targeting Tier 1 and 2 sites, conducted at least once per year as per the NACP DQA guidelines.

- **Co-Ag close-out:** A standardized approach to reviewing data in the final year of a Co-Ag to ensure incoming IPs start with quality data at the facilities they will support.

- **Best Practice SOPs:** IP developed best practices to analyze data for data quality issues and to remediate data quality issues. These SOPs can be found Appendix 5 of this toolkit.

These key data quality components take place throughout the lifecycle of a CDC Cooperative Agreement, as depicted in Figure 1. A high-level overview of the implementation of the Data Quality Framework and Data Quality Standards as well as quarterly reporting and data quality priorities can be seen in **Table *1***.

Each year, the Toolkit and IP Framework will be updated.

Figure 1: Data quality activities along the lifecycle of a Co-Ag

Table 1: Data quality orientation, standards, and priorities by month

Month	DQ Orientation and DQ Framework	DQ Standards	Reporting and DQ Quarterly Priorities	
Approach	Annually *Dates are standardized and adjusted annually based on weekends and holidays to be last business day before 15th or 30th	Establish and maintain	3-month cycle	
October	**CDC:** Share DQ toolkit to IP by October 15 **IP:** Prepare DQ Framework and share to CDC by October 30	**IP:** Prepare to meet IP-level DQ Standards **IP:** Prepare **Tier 1-2** sites to meet DQ Standards	Q4 Reporting	**IP:** Enter data, run DRT, remediate **Tier 1-2 errors** before DATIM submission date **CDC:** Review data and send feedback on remaining areas of remediation
November	**CDC**: Provide feedback to IP's DQ Framework by November 15 **IP:** Revise/resubmit by November 30	**IP:** Implement and maintain IP-level DQ Standards **IP:** Prepare **Tier 1-2 sites** to meet DQ Standards		**IP:** Remediate data and resubmit **CDC:** Review IP data and confirm remediation. Identify quarterly DQ priorities for IP to remediate before the start of next quarter and share to IPs for PMM inclusion. Determine sites for data audits. **PMM:** IP reports the previous quarter's DQ priorities' remediation status and presents the current quarter's priorities. CDC presents IP's quarterly DQ Scorecard.
December	**CDC:** Review/finalize by December 15	**IP:** Implement and maintain IP-level DQ Standards **IP:** Ensure **all Tier 1 sites** meet DQ Standards		**IP**: Sustainable remediation of DQ priorities by the end of Quarter (December 31) **IP:** Data audits at identified facilities.
January		**IP:** Implement and maintain IP-level DQ Standards **IP:** Ensure **all Tier 2 sites** meet DQ Standards	Q1 Reporting	**IP:** Enter data, run DRT, remediate Tier 1-2 errors before DATIM submission date **CDC:** Review data and send feedback on remaining areas of remediation
February		**IP:** Implement and maintain IP-level DQ Standards **IP:** Ensure **all Tier 3 sites** meet DQ Standards		**IP:** Remediate data and resubmit **CDC:** Review IP data and confirm remediation. Identify quarterly DQ priorities for IP to remediate before the start of next quarter and share to IPs for PMM inclusion. Determine sites for data audits. **PMM:** IP reports the previous quarter's DQ priorities' remediation status and presents the current quarter's priorities. CDC presents IP's quarterly DQ Scorecard.
March		**IP:** Implement and maintain IP-level DQ Standards **IP:** Ensure all Tier 4 static sites meet DQ standards		**IP**: Sustainable remediation of DQ priorities by the end of Quarter (March 31) **IP:** Data audits at identified facilities.
April	**CDC:** Receives IP feedback on DQ toolkit, revises as needed	**IP:** Implement and maintain IP-level DQ Standards **IP:** Ensure **all static sites** maintain DQ standards	Q2 Reporting	**IP:** Enter data, run DRT, remediate Tier 1-2 errors before DATIM submission date **CDC:** Review data and send feedback on remaining areas of remediation
May		**IP:** Implement and maintain IP-level DQ Standards **IP:** Ensure **all static sites** maintain DQ standards		**IP:** Remediate data and resubmit **CDC:** Review IP data and confirm remediation. Identify quarterly DQ priorities for IP to remediate before the start of next quarter and share to IPs for PMM inclusion. Determine sites for data audits.

Month	DQ Orientation and DQ Framework	DQ Standards	Reporting and DQ Quarterly Priorities	
				PMM: IP reports the previous quarter's DQ priorities' remediation status and presents the current quarter's priorities. CDC presents IP's quarterly DQ Scorecard.
June		**IP:** Implement and maintain IP-level DQ Standards **IP:** Ensure **all static sites** maintain DQ standards		**IP**: Sustainable remediation of DQ priorities by the end of Quarter (June 30) **IP:** Data audits at identified facilities.
July		**IP:** Implement and maintain IP-level DQ Standards **IP:** Ensure **all static sites** maintain DQ standards	Q3 Reporting	**IP:** Enter data, run DRT, remediate Tier 1-2 errors before DATIM submission date **CDC:** Review data and send feedback on remaining areas of remediation
August		**IP:** Implement and maintain IP-level DQ Standards **IP:** Ensure **all sites** maintain DQ standards		**IP:** Remediate data and resubmit **CDC:** Review IP data and confirm remediation. Identify quarterly DQ priorities for IP to remediate before the start of next quarter and share to IPs for PMM inclusion. Determine sites for data audits.
Sept	**CDC:** Receives IP feedback on DQ toolkit, revises toolkit as needed **CDC:** Prepares IP DQ Orientation	**IP:** Implement and maintain IP-level DQ Standards **IP:** Ensure **all sites** maintain DQ standards		**IP**: Sustainable remediation of DQ priorities by the end of Quarter (September 30) **IP:** Data audits at identified facilities.

2.0 Roles and Interactions Among Key Stakeholders

CDC and IPs will work together through M&E and program staff to identify gaps and challenges pertaining to data quality and to remediate them in a timely and effective manner.

The CDC M&E POC is the main point of contact for a given implementing partner (or set of partners) regarding reporting (monthly, quarterly), data quality, data backlog, and data use. The CDC M&E POC will communicate regularly with IP M&E staff to flag issues as they arise and will invite CDC and IP programmatic staff to discuss where data issues are explained as the result of programmatic successes or failures. Standard weekly, monthly, and quarterly check-in activities will be held between CDC and IP staff, as described below.

Standard Check-in Activities

1. Bi-weekly email check-ins with IPs
    a. Through these emails, IP M&E staff will share their CTC3 weekly analysis, identifying facilities that have been flagged and following up on flags from the previous week. If IPs have additional data issues that have come up for which they need support, they can address them via this channel.
    b. The CDC M&E POC should note these issues and ask IPs for clarification as needed.
    c. If there are any issues the POC has identified in reviewing the IP data, (e.g., review of indicators to determine regions and facilities struggling with Visit and TX_CURR Data Quality) those issues should be communicated in a clear manner to the IP.

2. Bi-weekly check-in calls with IPs
    a. Check-in calls will alternate every other week with email check-ins (i.e., one week will be an email check-in, the following week will be a call, then an email check-in, then a call, etc.).
    b. Check-in calls will have a similar agenda to the email check-ins but will allow for more in-depth follow-up and discussion. IPs will present their weekly CTC3 analysis as well as any other identified data quality issues. The CDC POC will raise any issues they have observed in the data.
    c. The POC will follow-up on issues under remediation from the preceding two weeks and upon understanding issues that the IP has not been able to resolve, determine whether other SI or programmatic staff need to be brought in to develop a remediation plan (e.g., if there is an issue with the data systems, bring HIS staff into the discussion, or if there is a program implementation issue with viral suppression, then include individuals from the lab branch)
        i. To better understand issues, it is possible that additional analysis may need to be conducted such as data triangulation, pivot tables, etc. If this is the case, the team should consider a timeline for these analyses before moving forward.
    d. Once a solution has been agreed upon, develop a timeline by which to have addressed the issue.
        i. Note that care should be taken to prioritize which issues are the most urgent, important, and impactful.
    e. Every other call (i.e., once per month), the agenda will include three additional items.
        i. A review of the CQI data in the monthly portal. The IPs and CDC POC will review the district level scorecards and discuss facilities with yellow or red CQI indicators. Based on the discussion, the POC will determine the appropriate next steps – i.e., whether the IP needs to do further investigation and report back in a future check-in, whether

other SI or programmatic staff should be brought into the conversation, or whether a solution and timeline can be agreed upon at that time.

ii. A prioritization exercise where together, IPs and CDC agree on the top 1-2 data quality issues on which the IP should focus for the coming month. These issues and a plan for their remediation will be entered into a standard Data Quality Issue Tracker (DQIT) template.

iii. A review of the issues captured in the DQIT from the previous month and documentation of progress made towards their remediation as well as any best practices developed or identified during the remediation process.

3. Quarterly Check-ins with IPs
    a. The POC will review the Standard Quarterly Analysis spreadsheet (the replacement for the variance checks) from UCSF, the Quarterly Dashboard (also created by UCSF), and findings from the DRT.
        i. Only flags that need to be addressed should be sent to the IP to limit confusion and increase focus on tackling true issues.
    b. The POC will discuss with the IP any of the findings that have come up and work to identify what issues can be remediated during the data cleaning window for DATIM, and which issues are part of a larger ongoing remediation strategy.
        i. Under ideal circumstances, issues would be brought up prior to quarterly reporting and should not be surprises.
    c. Prior to PMMs
        i. Identify issues related to reporting (this includes data completeness, timeliness, and accuracy), data quality, and data use. These issues will be documented in the CDC SI PMM Feedback spreadsheet.
        ii. Discuss, within the M&E team, common data issues across IPs and consider where some struggle and others have shown successes. Identify approaches successful IPs have used to remediate data issues or to maintain strengths and consider how this approach may fit with a struggling IP.
            1. If the issues that arise are programmatic and not data quality related, collaborate with the program staff to identify approaches that may be successful

3.0 Data Quality Framework

The IP Data Quality Framework plan is a "living document" that will be developed during the first year of a comprehensive CoAg and updated, at a minimum, at the start of each fiscal year to outline the IP's data quality strategy, roles and responsibilities, data flow, tools, and processes, and standard operating procedures.

The Data Quality Framework starts with an overview of the regions supported through CDC's comprehensive care strategy, including a summary of key HIV indicators in each region and details about the number of supported sites in each region. The rest of the document will be completed by the IP. The document is broken down into the following sections and will require the IP to provide information about their SI-related budget and staffing and their strategies to ensure the collection and reporting of high-quality data.

- Data-related staffing structure: budget, roles, and responsibilities
- Approach to ensuring data quality
- Collection and reporting of MER data
- Data quality analyses

The Data Quality Framework template can be found in Appendix 1.

Key dates for the DQ Framework for FY22

- **Friday, July 22:** IP submits to CDC
- **Friday, August 5:** CDC provides feedback
- **Friday, August 19:** IP submits revision to CDC
- **Tuesday, August 23:** CDC reviews, if needed, provides additional comments
- **Friday, August 26:** All Frameworks to be finalized and approved by CDC

4.0 Data Quality Standards

Purpose

Implement and maintain a minimum set of data quality standards to ensure high quality data to support comprehensive care in each region and respective IP offices.

Data Quality Standards: IP-level

IPs are expected to implement a number of data quality activities on a routine basis for all facilities they support. Every month, the top 1-2 data quality issues will be identified based on ongoing, routine data quality activities, and entered into a standard Data Quality Issue Tracker (DQIT) template. The DQIT will document the priority issues to be addressed, the main councils and facilities affected, and include a remediation plan with a timeline. Issues captured in the DQIT will be reviewed the following month, when new issues will be identified for the IP to focus on. The DQIT is included with the toolkit as a separate file.

Table 2 summarizes the IP-level data quality standards, and a brief explanation of each standard can be found below the table. Relevant tools and SOPs can be found in the appendices.

Table 2: Data Quality Standards: IP Comprehensive Care (facility and community-level) Activities

Activity	Purpose	Responsible	Frequency	Site selection
Data review and verification: CTC3 reporting verification	Verify all static CTC sites successfully uploaded up-to-date data into CTC3	IP staff	Weekly	All electronic sites
Data review and verification: CTC2 database checks	Check the completeness, accuracy, and consistency of data entered in the CTC2 database	IP staff in collaboration with facility staff	Weekly	All electronic sites
Data review and verification: Verification of CQI indicator data upload into MP	Verify that all eligible facilities have uploaded CQI data (through CTC Analytics) into the monthly portal on time	IP staff	Weekly	All electronic sites
Data review and verification: Verification of manual data upload into MP	Verify that all eligible facilities have manually uploaded CQI data into the monthly portal on time	IP staff	Weekly	All sites required to upload manual reports to MP
Routine facility-level data quality checks	Routinely check the quality of data at the health facility and community levels	IP staff	Quarterly	All sites
Quarterly MER reporting and standardized data quality analyses	Check the completeness, accuracy, and consistency of quarterly MER data	CDC and IP staff	Quarterly	Identified via quarterly data review
Data quality remediation of quarterly priorities	Address key challenges identified following quarterly reporting and data review	IP staff in collaboration with facility staff	Quarterly	Identified via quarterly data review

Activity	Purpose	Responsible	Frequency	Site selection
Assessment and maintenance of facility and community-level minimum M&E standards	Ensure standards are established and maintained	IP staff	Quarterly	Quarterly at all sites
Data quality audits	Follow-up on specific data quality issues identified at the facility level	CDC, UCSF, and IP	As needed	As per identified data quality issues
Data quality assessments (DQAs)	In-depth assessments to verify the data being collected at the facility	IP staff and CDC	Annually or as needed	All sites
TX_CURR verification	Verify TX_CURR clients through triangulation of CTC2 card, CTC2 DB, and pharmacy data	IP staff and CDC	Annually or as needed	All sites
Co-Ag close out data review	Ensure incoming IPs start with quality data at the facilities they will support	IP staff and CDC	Final year of a Co-Ag	All electronic sites, with a focus on Tier 1 and 2 facilities

Data review and verification

This is a series of IP-driven checks of the completeness, accuracy, and timeliness of key HIV service delivery indicators. These data checks focus on data entered into the CTC2 database and utilize the CTC3 macro database as well as the monthly portal to access and assess those data. There are three types of data reviews that IPs should conduct for all supported facilities on a weekly basis, described below. Detailed SOPs for each of these data reviews can be found in Appendix 2.

1. **CTC3 reporting verification:** IPs are expected to verify that all electronic sites have successfully reported into the CTC3 macro database. This will be done by analyzing the "Submission trend by month" report from the CTC3 database using a standard analysis tool. IPs will be expected to share their analysis with CDC on a weekly basis.
2. **CTC2 database checks:** IPs are expected to support facility staff to conduct a series of data quality checks in the CTC2 database at all facilities they support. These data quality checks are meant to ensure that the data in the CTC2 database are up-to-date and complete and to minimize conflicting information at the client level.
3. **Verification of CQI indicator data upload into MP:** IPs are expected to verify that all eligible facilities have uploaded CQI data (through CTC Analytics) into the monthly portal as required.
4. **Verification of manual data upload into MP:** IPs are expected to verify that all eligible facilities have manually uploaded data into the monthly portal as required.

Routine data quality checks

The purpose of these data quality checks is to routinely assess the quality of data at the health facility and community levels. The expectation is that all data held by the health facility should be accurate, complete, up-to-date, consistently corrected and with a high degree of integrity. IP staff should conduct these data quality

checks at all facilities at least once per quarter. Data quality checks can be integrated into routine supportive supervision visits. Guidance on how to implement these routine data quality checks is in Appendix 2.

Quarterly MER reporting and standardized data quality analyses

Every quarter, a series of routine data quality analyses are conducted on key indicators reported into DATIM. These analyses flag possible data quality issues that are shared with IPs in standard templates for further investigation, explanation, and remediation, as needed. The analyses are iterative, so that as IPs update their data in DATIM, corrected data quality flags are resolved and retired while newly introduced data quality issues are flagged and shared with IPs in follow-up rounds of analysis.

The first analysis uses the DATIM-generated DRT template, which flags three types of data quality issues:

- MER logic checks, which check the relationships both within an indicator and between two related indicators;
- Disaggregate completeness, which identifies cases where the sum of a disaggregate is not equal to the total numerator or total denominator; and,
- Checks across time periods, which assess the consistency of reporting data across time periods and against targets.

These DRT flags are shared with IPs in a standard template. IPs are asked to investigate each flag, indicate in the template whether the data need to be updated in DATIM, and then correct the data as needed. Additional rounds of analysis verify whether data have been updated in DATIM.

N.B.: The above analyses take into account the current manual data entry process into DATIM and the process of pulling the DRT from the database. This process will have some changes once the data entry process shifts from manual entry to a data import process. As part of the DATIM import process, the DRT checks will be run on the data using an external application prior to the import into DATIM. More information regarding this will be shared as additional details are finalized and rolled out.

The second analysis looks at changes in key indicators from one quarter to the next and evaluates how indicators change in relation to one another. Potential data quality issues are flagged at the facility level using a standardized set of variance cut-off points. Flagged facilities are summarized in a standardized template which is shared with IPs. IPs are required to investigate each flag and categorize flags as: data quality issues, program challenges, or program successes, and to provide a detailed explanation of the observed variation in the data. Triangulation of flagged data with monthly data (available in the monthly portal) is one strategy that can help determine whether the issue is related to data quality or is programmatic. In the case of data quality issues and program challenges, IPs are requested to indicate whether the data in DATIM need to be updated and to provide a plan and timeline for remediation of the issue. Additional rounds of analysis verify whether data have been updated in DATIM and follow-up on flags that have not been well explained.

Data quality remediation of quarterly priorities

Following the standardized data quality analyses each quarter, a set of key data and/or programmatic priorities are identified for each region. IPs are expected to focus on addressing these priorities throughout the following quarter. The best practice SOPs in Appendix 5 may be useful for these efforts. These will be updated each year.

Assessment and maintenance of facility and community-level minimum M&E standards

IPs are expected to ensure that the minimum M&E standards are met at all facilities they support. These standards are meant to support the collection and reporting of high-quality data by ensuring appropriate staffing and training levels, documentation and storage standards, file and data management systems, and data review, validation, and reporting standards.

IPs will assess the minimum M&E standards at all facilities and in all communities on a quarterly basis using standard ODK data collection forms. A detailed presentation of the facility and community-level minimum M&E standards can be found in Appendices 3A and 3B.

Data quality audits

Data quality audits will be conducted to investigate specific data quality issues that are observed at individual facilities. They are not as intensive as DQAs and can be done either virtually or in-person. A standard data quality audit tool has been developed and can be found in Appendix 4. Data quality audits will be conducted jointly by CDC, UCSF, and the IP.

Data quality assessments (DQAs)

DQAs are a more intensive, in-person data quality review and should be conducted at all facilities at least once per year as per the NACP DQA guidelines. DQAs can be conducted more often if routine data quality activities point to the need for a more thorough investigation of facility data. For example, a data quality audit conducted to investigate a specific issue might point to a larger data quality challenge that requires more in-depth investigation and remediation, in which case a full-scale DQA can be done.

TX_CURR verification

The TX_CURR verification activity was conducted across all CDC-supported sites for the first time in May and June of 2022. The objectives of the activity were to conduct a physical count of patients currently on ART and to identify systematic data quality challenges at CDC-supported facilities. The activity triangulates patient-level data across three data sources: the CTC2 database care and treatment module, the CTC2 card, and pharmacy records (either ARV dispensing register or PMD module within CTC2). The activity uses a query built into CTC-Analytics to generate the required information from the CTC2 DB, including the PMD module if in use, combined with an Excel tool. The SOP for this activity has been included in this toolkit (Appendix 7). The Excel tools for this activity as well as a Powerpoint reporting template (for reference) have been included within the toolkit package.

Co-Ag close out data review

This is a standardized approach to reviewing data for IPs in the final year of their cooperative agreements to ensure incoming IPs start with quality data at the facilities they will be supporting. The Co-Ag close out data review will use the same data quality activities mentioned above, but will be more intensive and cover all facilities supported by an IP in the final year of their Co-Ag. The methods for this activity can be found in Appendix 6.

Appendices

Appendix 1: Data Quality Framework Template

[IP name] Data Quality Framework
Version: COP21 FY22
Date:

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Regions supported through CDC's comprehensive care strategy

		Comprehensive Care					Epidemic					FY22 Tiers: # of Sites				
Region	**IP**	**Facility**	**Comm**	**VMMC**	**DREAMS**	**OVC**	**COP21 PLHIV Estimates**	**FY21 Q4 TX_CURR**	**Unmet TX Gap***	**FY21 Q4 VLS**	**Unmet VLS Gap****	**Tier 1**	**Tier 2**	**Tier 3**	**Tier 4**	**Total sites (Tier 1-4)**
Dar es Salaam	MDH	X	X			[USAID]	218,829	175,198	43,631	149,937	13,574	40	49	27	81	197
Geita	MDH	X	X	X		[USAID]	80,061	66,542	13,519	55,504	6,954	16	28	18	34	96
Kagera	MDH	X	X	X	X	[USAID]	98,799	85,490	13,309	75,222	3,338	13	63	37	66	179
Kigoma	THPS	X	X	X		[USAID]	25,710	21,577	4,133	18,570	1,025	4	15	12	34	65
Mara	AMREF	X	X	X		[USAID]	58,619	52,766	5,853	43,678	5,673	13	27	16	34	90
Mwanza	ICAP	X	X	X	X	[USAID]	143,189	120,998	22,191	95,967	19,004	33	51	25	81	190
Pwani	THPS	X	X			[USAID]	47,823	45,575	2,248	39,411	2,565	12	22	14	32	80
Shinyanga	THPS	X	[USAID]	X	X	[USAID]	76,398	67,259	9,139	52,195	13,013	16	36	9	29	90
Simiyu	AMREF	X	X	X		[USAID]	42,752	32,251	10,501	26,330	2,516	7	18	19	48	92
Tabora	MDH	X	X			[USAID]	89,146	77,445	11,701	68,893	2,159	14	47	31	59	151
Tanga	AMREF	X	X			[USAID]	61,924	53,268	8,656	43,830	5,081	12	23	21	39	95
Zanzibar	AMREF	X	X			[USAID]	8,229	6,414	1,815	5,652	330	2	2	1	6	11

*Unmet TX Gap is calculated by subtracting the FY21 Q4 TX_CURR numerator from the COP21 PLHIV Estimates.

**Unmet VLS Gap is calculated by subtracting the FY21 Q4 PVLS denominator from the FY21 Q2 TX_CURR numerator.

Data-related staffing structure: Budget, roles, and responsibilities

SI Personnel: Budget

Instructions: Complete table below

	FY22 Funded Amount: $	% of FY22 Funded Amount
CoAg Funded amount		100%
SI Staffing budget: HQ		
SI Staffing budget: Field		

Instructions: Complete for regions supported by CoAg

Region	IP	Offices (HQ or field)	# of Data-related staff (M&E, HIS, data analyses, data management)
HQ office		HQ	
Dar es Salaam	MDH	Field	
Geita	MDH	Field	
Kagera	MDH	Field	
Kigoma	THPS	Field	
Mara	AMREF	Field	
Mwanza	ICAP	Field	
Pwani	THPS	Field	
Shinyanga	THPS	Field	
Simiyu	AMREF	Field	
Tabora	MDH	Field	
Tanga	AMREF	Field	
Zanzibar	AMREF	Field	

SI Personnel: Roles and Responsibilities

INSTRUCTIONS: List each role in the organization and their specific responsibilities (i.e., collecting data, entering data, managing SI staff, managing regional office, data management, checking data, conducting analysis, reviewing reports, making decisions based on the data, etc.)

Region	IP	Offices (HQ or field)	Data-related Personnel Names	**Specific responsibilities** (i.e., collecting data, entering data, managing SI staff, managing regional office, data management, checking data, conducting analysis, reviewing reports, making decisions based on the data, etc.)
HQ office		HQ		
Dar es Salaam	MDH	Field		
Geita	MDH	Field		
Kagera	MDH	Field		
Kigoma	THPS	Field		
Mara	AMREF	Field		
Mwanza	ICAP	Field		
Pwani	THPS	Field		
Shinyanga	THPS	Field		
Simiyu	AMREF	Field		
Tabora	MDH	Field		
Tanga	AMREF	Field		
Zanzibar	AMREF	Field		

INSTRUCTIONS: Include organogram for the SI staff and complete the table below.

Data quality standards

IP data-related staff are expected to spend the majority of their time on site of facility and community activities providing routine (daily and weekly) support to achieve the following:

- Establish and maintain data quality standards.
- Remediate data quality issues.
- Build capacity with facility staff for up-to-date, complete, and accurate data quality and data use.

INSTRUCTIONS: Complete the last column: "Approach to ensure success"

Data Quality Assurance for Comprehensive Care		
Data Quality Assurance	**Follow-up Checks**	**IP to complete: Approach to ensure success starting with Tier 1 and 2 (ex. frequency of visits, site-level activities, etc.)**
Up-to-date: All data are entered into CTC2 within 5 days of visit or result return and CTC2 data are uploaded to CTC3 and MP on a weekly basis	• Weekly CTC3 Submission shows last visit date in the past 5 days • Monthly Portal shows appropriate trends through Data Quality indicators • MER shows appropriate trends	
Complete: All information related to visits and lab results are documented fully in the patient file, facility/community data sources (CTC2, registers, lab folders, etc.)	• Weekly CTC3 Submission shows last visit date in the past 5 days • Monthly Portal shows appropriate trends through Data Quality indicators • MER shows appropriate trends	
Accurate: Information in source file mirrors electronic sources (CTC2, DHIS2, DATIM)	Quarterly triangulation of CTC2, DHIS2 and MER reflect comparable results (<2% variance)	
Consistently reviewed: Weekly and monthly review so that issues are remediated *before* end of quarter	Substantial and systematic reduction of quarterly DQ flags each quarter	

Remediated in a sustainable manner: As DQ issues are identified, remediation is designed so that same DQ issues do not continue each quarter	Once remediated, issues no longer identified as part of quarterly DQ review.	
DQ capacity of site staff ▪ Data staff are running weekly checks ▪ Data staff are investigating DQ issues and remediating ▪ Data staff are reviewing weekly CTC3 submission data results ▪ Data staff develop and post monthly trend charts of key indicators (HTS_TST, TX_CURR and TX_PVLS) ▪ Data staff meet with In-charge to review data at least monthly	▪ Review of key issues shared and remediated between sites and IPs during routine CDC/IP calls ▪ Virtual site visits	
Communication approach from sites ▪ IP to flag challenges and request support between routine visits ▪ Regional WhatsApp Groups that include all sites	Review of key issues shared and remediated between sites and IPs during routing CDC/IP calls	

Data management

INSTRUCTIONS: Complete table below to provide information on data source and data collection for MER reporting.

Indicator	Data Source (CTC2, register, lab results, etc.)	Location of Data Source (HTS/facility, HTS/community, MCH department, lab, etc.)	Strategy for routine review and remediation (weekly/monthly data quality)	Approach for collecting data for Quarterly Reporting	Dates that data for Quarterly Reporting are collected	Storage approach at IP HQ and field offices that ensure privacy and safety

INSTRUCTIONS: Insert a flow chart and description showing how data will be collected for entry into DATIM, reviewed at IP offices and entered into DATIM. You may require multiple data flow visuals to capture ART care and treatment in facilities, HTS in facilities, HTS in communities, maternal child health, and viral load testing and results.

Data analysis

INSTRUCTIONS: Explain how the following analyses will be conducted and responsible parties

Analyses	Frequency	Responsible Person (IP completes)
MER: DRT	Prior to first submission deadline for DATIM. Remediation of DQ issues for all Tier 1 and 2 sites/areas prior to first submission into DATIM.	
MER: Variance analyses	Prior to first submission deadline for DATIM. Remediation of DQ issues for all Tier 1 and 2 sites/areas prior to first submission into DATIM.	
Triangulation: MER, Monthly Portal, DHIS	Run after DATIM is closed the 1st time (before it is reopened for final data cleaning). Remediation of DQ issues for all Tier 1 and 2 sites/areas prior to first submission into DATIM.	
Trend: Monthly Portal	Each month between the 15-20th for manually uploaded data and weekly for CQI indicator data. Remediation of DQ issues.	
CTC3 Submission Trend	Each Monday. Remediation of DQ issues and upload/processing challenges	

Reminder of Key Dates for DQ Framework

- **Friday, July 22:** IP submits to CDC
- **Friday, August 5:** CDC provides feedback
- **Friday, August 19:** IP submits revision to CDC
- **Tuesday, August 23:** CDC reviews, if needed, provides additional comments
- **Friday, August 26:** All Frameworks to be finalized and approved by CDC

Appendix 2: Data Quality Standards SOPs

CTC3 reporting verification

IPs will analyze the CTC3 "Submission trend by month" report for supported sites every week. The analysis will be done using a standardized tool and analysis findings will be reported to CDC using a standardized presentation. The tool and presentation template are attached to the toolkit as separate documents. The tool contains instructions for use.

CTC2 database checks

IPs are expected to support facility staff to conduct the following checks in the CTC2 database on a weekly basis.

1. Check/track **client movement** within CTC2 DB.
   - Click CTC2 module.
   - Click data entry.
   - Click patient status and movement.
   - Specify patient ID to be searched and press OK.
   - Update client ART status as appropriate.

2. **Track data entry** at the facility level on weekly basis. Every Monday morning before data entry activities have started, do the following:
   - Click CTC2 module.
   - Click printouts.
   - Click printouts administrative.
   - Click data entry activity.
   - Specify time (dates criteria) (choose *Monday to Friday of the previous week*) and press OK.
   - Discuss with facility staff on the progress of data entry at the facility and identify challenges/backlog and plan for remediation.

3. Perform **built-in data checks** and send results to IP each week.
   - Click CTC2 module.
   - Click printouts.
   - Click printout administrative.
   - Click data check.
   - Select data check items, select all.
   - Specify date to use (*use visit dates*) and press OK.
   - Sent printed result to IP for required action.

4. Investigate all clients who are **not featuring in cross-sectional report**.
   - Click CTC2 module.
   - Click printouts.
   - Click printouts-NACP reports.
   - Click patients not featuring in cross-sectional report.

- Specify current quarter and year and then press OK.
- Send result to IP and or update CTC2 database as needed.

5. Check clients with **pharmacy visit but no clinical visit**.
   - Click CTC2 module.
   - Click cross cutting printouts.
   - Click pharmacy visit with no clinical visit.
   - Specify minimum and maximum date and press OK.
   - Check result with CTC2 cards and update/correct as required.

6. Check clients with **clinical visit but no pharmacy visit**.
   - Click CTC2 module.
   - Click cross cutting printouts.
   - Click clinical visit with no pharmacy visit.
   - Specify minimum and maximum date and press OK.
   - Triangulate result with information from pharmacy module and update/correct as required.

7. Cross-check monthly **reported TO** at the facility and compare with documented TO in CTC3 database.
   - Click CTC2 module.
   - Click printouts.
   - Click printouts list and patients.
   - Click list of patients transferred out.
   - Specify period (date criteria) and press OK.
   - Crosscheck result of the check with result in the client movement from CTC3. For clients who are not found in client movement inform facility manager and make follow-up to establish status.
8. Cross check monthly **unknown status clients** at the facility and compare with documented TO in CTC3 database.
   - Click CTC2 module.
   - Click printouts.
   - Patients who are not visited recently.
   - List patients who are not visited in the past (30) days.
   - Follow up status choose missed appointment.
   - Choose list format then Ok.
   - Compare the list and tracking register to see clients with no outcome from the tracking register in that month.
   - Crosscheck result of the check with result in the client movement from CTC3.
   - Click CTC2 module.
   - Click Data Entry.
   - Patient Status & movement.
   - Enter the Patient ID you want to cross check then click OK.
     - Make sure you have access to internet.

Update the CTC2 database for those clients found to be TO in other facilities. For clients who are not found in client movement inform facility manager and make follow-up to establish their status.

Follow-up steps for flagged facilities

For any facilities flagged as a result of the above CTC2 checks, use the below to guide follow-up and documentation of challenges:

- Notify data clerks and respective cluster leads.
- Follow up after one week. Identify and list facilities that have not resolved their challenges with CTC3 macro.
- Contact facilities and document challenges. Notify IP SI team (Regional and HQ) of challenges.
- Formulate and implement strategies to resolve challenges.

Routine checks for completeness of CQI indicator data in monthly portal

The following SOP describes how to conduct routine verifications to determine whether all eligible facilities have uploaded data into the monthly portal as required. It also provides guidance on what do when facilities are not uploading data on time.

On a weekly basis

- ❖ Check whether all eligible facilities have uploaded data into the monthly portal on a weekly basis as required (every Monday by 12:00 hrs).
- ❖ Notify data clerks and respective cluster leads about facilities that have not uploaded data to the monthly portal the previous week (every Monday by 13:00 hrs).
- ❖ Follow up on progress of data upload for facilities that failed to upload the previous week. Identify and list facilities that still have not uploaded by Wednesday at 12:00 hrs.
- ❖ Contact facilities and document reasons for failed upload.
- ❖ Notify SI team (Regional and HQ) on reason(s) provided for failure to upload data into monthly portal.
- ❖ Formulate and implement strategies to resolve data upload issues.
- ❖ For all facilities that uploaded data on time:
    - Review the Visit Data Quality and TX_CURR Data Quality indicators. This can be done easily by downloading the CQI Site Scorecard Scoreboard file.
    - Identify facilities that have a 'red' score for either of these two indicators.
    - Follow-up with the appropriate IP and facility staff to determine the cause behind the low score.
    - Formulate and implement strategies to resolve the issues behind poor performance.
- ❖ Follow up on facilities with poor performance on the Visit Data Quality and TX_CURR Data Quality indicators the previous week. If poor performance continues for a second week, notify the SI team (Regional and HQ) on reason(s) provided for poor performance.

On a monthly basis

- ❖ Check whether all eligible facilities have uploaded data into monthly portal on a monthly basis (16th of every month).

- ❖ Notify data clerks and respective cluster leads about facilities that have not uploaded data to the monthly portal for the previous month (16th of every month).
- ❖ Follow up on progress of previous data uploads for facilities that failed to upload by due date. Identify and list facilities still have not uploaded by the 19/20th of every month.
- ❖ Contact facilities and document reasons for failed upload.
- ❖ Notify SI team (Regional and HQ) on reason(s) provided for failure to upload data into monthly portal.
- ❖ Formulate and implement strategies to resolve identified data upload issues.

Routine data quality checks

The purpose of these data quality checks is to routinely assess the quality of data at the health facility and community levels. The expectation is that all data held by the health facility should be accurate, complete, up-to-date, consistently corrected and with a high degree of integrity. IP staff should conduct these data quality checks at all facilities at least once per quarter. Data quality checks can be integrated into routine supportive supervision visits.

IPs will conduct routine data quality checks as follows:

1. IP M&E/SI officers will visit each facility in a district at least once quarterly to review data.
2. IP M&E/SI officers will meet with the data clerks and present the results of the last data quality check.
3. The IP M&E/SI officers will identify source documents and review the documents for completeness and timeliness.
4. The IP M&E/SI officers will recreate/validate selected indicators and compare to what was reported in the previous reporting period.
5. The IP M&E/SI officers will randomly select 10 clients on ART who have had a clinic visit in the past month and will compare the client CTC2 cards to what had been recorded in the CTC2 database and the pharmacy module.
6. Data quality issues identified will be noted and discussed with the data clerk and other facility staff to better understand the cause of data quality concern.
7. An action plan for remediation, including a timeline, will be developed with the facility staff.

Data quality assessments

All IPs will conduct a DQA at least once a year at a purposeful sample of sites representing 80% of their TX_CURR population under CDC funding. Sampling of sites should focus on Tier 1 and 2 sites and should also include sites with known data quality issues. Indicators to be prioritized in these DQAs are: (1) TX_CURR, (2) HTS_TST (including HTS_INDEX), and (3) TX_PVLS. IPs who support PMTCT activities are also expected to include PMTCT_EID.

IPs are expected to coordinate and perform these DQAs alongside CDC, NACP, and local government authorities. These DQAs will follow the NACP DQA guidelines and IPs will be responsible for documenting DQA results in the Data Quality Issue Tracker application. IPs will regularly review DQA results with CDC M&E and program teams and will present plans for remediation of data quality issues and progress to date.

Appendix 3a: Facility and Community-level Minimum M&E Standards

The following describes a minimum set of data quality standards that CDC-supported IPs are expected to maintain at Tier 1-4 facilities as well as within community activities they support. An ODK data collection form has been developed that can be used by IPs and/or external organizations to assess and score the level to which the minimum standards have been met. The ODK data collection forms are available here: mestandards.reachproject.or.tz.

Facility-level minimum M&E standards

Part A: Staffing and training standards

Standard A1: All facility staff that collect and/or report data are trained to collect, verify, aggregate and report facility data for each data source they work with.

- A1.1 All required staff positions for provision of HIV-related services and reporting are currently filled as per NACP/MOH guidelines.
- A1.2 Facility staff responsible for reporting MOHCDGEC data are trained to collect, verify, aggregate MOH data for each data source used at the facility.
- A1.3 Facility staff are trained within one month of new data collection or reporting tools being introduced at the facility. This includes updates to the CTC2 database or other electronic data collection systems.

Part B: Documentation and storage standards

Standard B1: Site has sufficient and secure filing equipment to appropriately accommodate client load.

- B1.1 Facility has enough file folders to accommodate all client records.
- B1.2 Facility has sufficient space to store all client files including both active and inactive clients.
- B1.3 All client files including both active and inactive clients are stored in a shelf or cabinet.
- B1.4 Filing shelves/cabinets containing client files are secure i.e files are either stored in lockable cabinets or stored in a room with a door that locks and secure windows.

Standard B2: Facility has the most recent versions of paper-based national data collection and reporting tools.

- B2.1 Facility has most recent CTC1 Card.
- B2.2 Facility has most recent CTC2 Card.
- B2.3 Facility has most recent ART register.
- B2.4 Facility has most recent Care and Treatment cross-sectional report forms.
- B2.5 Facility has most recent HTS register.
- B2.6 Facility has most recent HTS Monthly Summary Form.
- B2.7 Facility has most recent ANC register.
- B2.8 Facility has most recent PMTCT mother-child cohort register.
- B2.9 Facility has most recent HEID card.
- B2.10 Facility has most recent Facility HEID register.

B2.11 Facility has most recent Presumptive TB register.
B2.12 Facility has most recent viral load laboratory request form.
B2.13 Facility has most recent referral form.
B2.14 Facility has a copy of the MOH written guidelines on how to collect and report on routine data (MUONGOZO #1).

Standard B3: Electronic data collection and reporting systems and systems support are available and functioning. There should be sufficient computers that meet CTC2 minimum standards and are protected against viruses, power surges, and unauthorized access.

B3.1 Facility has a functional computer dedicated for the CTC2 database (including all modules – e.g., pharmacy, HTS, etc.).
B3.2 All computers containing client information are password protected.
B3.3 All computers have a functioning uninterrupted power supply (UPS).
B3.4 All computers are installed with the current version of CTC2 DB.
B3.5 All computers are installed with up-to-date anti-virus software.
B3.6 Facility has consistent and reliable internet connectivity.
B3.7 Facility has reliable data backup devices (e.g., external hard drive).
B3.8 Facility has maintenance plan for all electronic equipment used for CTC2 database.
B3.9 Facility has sufficient office space and furniture (desks and chairs) for data staff

Part C: File and data management standards

Standard C1: Client files and data collection tools are well organized, easily accessible, and clear protocols exist to ensure timely data entry into the CTC2.

C1.1 Facility has clear system for organizing CTC2 cards (e.g., by file or client number, by category (current, stopped, LTFU, transfer out & dead), etc.).
C1.2 CTC2 cards are pulled from storage prior to the first appointment for all clients with scheduled visits in a given day.
C1.3 Facility has clear protocol for movement of CTC2 cards post-visit to ensure data are entered into the CTC2 database and client files are returned to storage.
C1.4 Facility does not have more than 5 days of backlog for CTC2 data entry.
C1.5 Facility has SOPs for movement of CTC2 cards/client files between different service points (e.g., CTC clinic, PMTCT, TB clinic).
C1.6 Paper-based registers, tally sheets, and monthly/quarterly reports are easily accessible.
C1.7 Paper-based registers are in good shape and clearly labelled – e.g., no pages containing data are torn out/missing, covers are intact, covers labeled with dates, etc.

Part D: Data review, validation, and reporting standards

Standard D1: Site has updated reporting guidelines easily accessible for reference and clear reporting SOPs in place.

D1.1 A comprehensive list of fiscal year targets are posted and visible at each corresponding service delivery point.
D1.2 Facility has posted SOPs on steps for aggregating and reporting monthly and quarterly indicators.
D1.3 CTC has clear protocol to trace clients designated as LTFU to determine ART status.

D1.4 Facility has clearly designated staff who are responsible for compiling/preparing monthly and quarterly reports for each service.
D1.5 Facility has clearly designated staff who are responsible for submitting monthly and quarterly reports for each service.
D1.6 Facility in-charge validates every monthly and quarterly report before submission.
D1.7 Facility conducts data review meetings on a regular basis.

Community-level minimum M&E standards

The community-level minimum standards take into consideration that most HIV-related activities are implemented by facility staff in the community. The following are additions to the facility minimum standards for community level.

Part A: Staffing and training standards

Standard A1: All staff at community and facility that collect and/or report data are trained to collect, verify, aggregate, and report community data for each data source they work with.

A1.1 Community staff responsible for reporting PEPFAR data are trained to collect, verify, and aggregate PEPFAR data (e.g., MER indicators) for each data source.

Part B: Documentation and storage standards

Standard B2: Community IP should make sure facilities in their catchment area have the most recent versions of paper-based national data collection and reporting tools.

B2.1 Facility has most recent National KVP registers.
B2.2 Facility has most recent National KVP monthly/Quarterly reporting forms.
B2.3 Facility has most recent Clients recording forms.
B2.4 Facility has most recent community HTS register.
B2.5 Facility has most recent community HTS Monthly Summary Forms.
B2.6 Facility has most recent PrEP card.
B2.7 Community IP/CSO has most recent CBHS register.

Part C: Data review, validation and reporting standards

Standard C1: Site has updated reporting guidelines printed and easily accessible for reference.

C1.1 Facility and community staff have a printed copy of the latest PEPFAR indicator guidance.
C1.2 A comprehensive list of fiscal year targets are posted and visible at the supported sites.
C1.3 Facility and community staff have a clear protocol to trace clients designated as LTFU to determine ART status for clients identified by facility staff.
C1.4 Facility has clearly designated staff who are responsible for compiling/preparing monthly and quarterly reports for community services.
C1.5 Facility has clearly designated staff who are responsible for submitting monthly and quarterly reports for community service.
C1.6 Facility in-charge validates every monthly and quarterly report before submission.
C1.7 Community IP and contracted CSOs conduct data review meetings on a regular basis.

Appendix 3b: Assessing the M&E minimum standards

Assessment of facility-level minimum M&E standards

An standard ODK data collection form has been developed to assess facilities on facility-level minimum M&E standards. This tool is meant to be simple and straightforward, with responses to each of the minimum standards primarily based on the observations of the individual conducting the assessment. Note that this tool is meant to be used at the facility and that all responses should be physically or visually verified, as appropriate.

IP staff will follow all standard protocols when carrying out a visit to a GOT health facility including:

- Informing the facility-in-charge of the purpose of the visit and all activities that will be conducted, preferably two weeks before the planned assessment dates.
- Upon arriving at the facility, introduce the activity to the facility in-charge and the CTC in-charge. Hold a meeting with the above-mentioned staff and again explain the purpose of the visit.
- Conduct assessment of facility-level minimum M&E standards using the provided ODK tool.

Data collection and scoring of the facility-level minimum M&E standards

Each minimum standard in the ODK tool allows for the selection of only one response. Most of the questions are either Yes/No or have three answer choices of Yes, Partially, or No. A 'Yes' response is assigned when the standard is fully met. A response of 'Partially' is assigned when the standard is not fully met but is met at last half-way (i.e., ≥50%). We will use the following statement/question as an example*: All required staff positions for provision of HIV-related services and reporting, according to NACP/MOH guidelines, are currently filled.* If the response is that only half of the required positions are filled, then the response should be 'Partially'. A response of 'No' will be assigned if the standard is not met at all or is met but less than half-way (i.e., <50%). In the above example, if only one-third of the staff positions had been filled, the response should be 'No'.

Additional information regarding the ODK tool:

- There is a separate ODK tool for each IP. The ODK tools are available from this link: mestandards.reachproject.or.tz.
- You do not have to be connected to the internet while completing the ODK form. The form can be downloaded in advance of traveling to a facility, completed and saved while at the facility, and then uploaded to the server at a later time when internet is available.
- The ODK tool requires that the geo-coordinates of the facility be collected at the time that the form is completed. This is done within the ODK form itself.
- For some standards, the ODK form will require that a photo be taken with the device and saved as part of data collection.
- The ODK tool will automatically generate a score at the end of the assessment, based on the responses selected. The scoring is described below.

- Challenges with the ODK tool should be reported to the UCSF HIS team through our HIS support email at his.tz@ucglobalprograms.org.

Facility-level minimum M&E standards scoring

The ODK tool will automatically generate a score at the end of the assessment, based on the responses selected. The following table shows how the scores are assigned throughout the ODK form. Note that responses of not applicable are not scored and are removed from the scoring calculations.

Response	Value
Yes	2
Partially	1
No	0

Sub-section score:

To get the total score under each section, the scores for all questions in the section are summed. To compute a % score, the sum of the scores is divided by the possible maximum score as follows:

$$\%\ \text{score for Part A} = (\text{Sum of score in Part A}/\text{Total possible score for Part A}) \times 100$$

Total score:

To get the total score, the scores for each of the subsections is totaled, i.e., Total score = Part A score + Part B score + Part C score. The % total score = (Total score/Total maximum score possible in all sections) × 100.

The scores can be interpreted as described in the below table.

Score	Color code	Interpretation	Action required
75%-100%		Good	The facility should work to maintain their performance
50%-74%		Moderate	The facility needs to work on identified gaps
30%-49%		Poor	Action is required to improve identified gaps
0%-29%		Very Poor	Immediate action is required to improve identified gaps

NB: The ODK tool will automatically compute the score; however, the ODK tool does not display any color coding.

Appendix 4: Data Quality Audit tool SOP

Introduction

The Data Quality Audit tool is an Excel tool that was designed to investigate specific data quality issues at the facility level. It is intended to be used by the Data Quality Audit team from CDC, UCSF, and the IP, as well as facility staff. The tool was originally designed to be used as a virtual audit tool but can be used at the facility if the audit is done on-site.

An overview of the tool and the instructions for completing the Data Quality Audit tool can be found below. The Excel tool itself is attached to this toolkit as a separate file.

Overview of the Data Quality Audit tool

The Data Quality Audit tool has five tabs:

- **Instructions:** Provides instructions on how to use the tool**.**
- **Pre-audit facility**: A tool used prior to the data audit activity to collect basic site information including staff training, documentation and reporting, routine data collection and reporting tools, organization, and storage of CTC2 client files and CTC2 database. This is meant to be used by staff at the facility undergoing the data quality audit.
- **Virtual audit tool:** This tab guides the data quality audit activity. It includes a series of questions meant to be asked during the data quality audit, as well as a summary of specific data quality issues to be discussed during the audit.
- **Trend analysis:** This tab will be used to conduct analyses of key facility data prior to the audit. The findings of these analyses will be summarized on the "Virtual audit tool" tab**.**
- **Data triangulation:** A data triangulation analysis tool to that will be used to analyze facility data prior to the data quality audit. The findings of these analyses will be summarized on the "Virtual audit tool" tab**.**

How to use the Data Quality Audit tool

The following describes how to conduct a data quality audit using the Data Quality Audit tool. Instructions are also contained in the first tab of the Data Audit Tool.

Pre-audit activities

1. The UCSF and CDC teams will use routine data quality activities to identify facilities that have potential data quality issues which require further investigation. An example of a detailed trend analysis for target facilities to identify and document data quality issues is included in the tool. Findings from the analysis will be summarized on the "Virtual audit tool" tab and will highlight data quality issues to be addressed during the audit.
2. For selected facilities, the UCSF and CDC teams will conduct data triangulation analyses using different sources (i.e., DATIM, DHIS2, and Monthly portal) to further understand and document data quality issues. Findings from the analysis will be summarized on the "Virtual audit tool" tab and will highlight data quality issues to be addressed during the audit.

3. After a facility has been identified for audit, the team will agree on an audit date and the supporting IP will be requested to send the "Pre_audit_facility" tab to the responsible facility in-charge. The facility team should complete this tool and return it to the audit team at least 3 days prior to the date of the audit. IPs should provide support to the facility to complete this tool as needed.
4. IPs are expected to ensure the facility staff are available for the audit on the agreed upon date.

Conducting a Data Quality Audit

1. Before the audit, the audit team should:
    a. review the identified data quality issues for the facility as well as the supporting analyses to be familiar with what needs to be discussed during the audit.
    b. complete all fields in part 1 of the "Virtual audit tool" tab (Facility and Call Information) with the exception of the facility participant field (this will be completed at the beginning of the audit)
2. Begin the audit with introductions and explain the purpose of the activity.
3. Ask the Data Officer to print their quarterly reports from the CTC2 database so that any discrepancies between DATIM data and facility data can be discussed.
4. Follow the steps on the "Virtual audit tool" tab. Record responses for each question/field as you go. Note that Part 4 (Data review) will be based on data quality issues identified during preparatory analysis and will be different for each facility.
5. Discuss the audit result/findings with the facility team and plan for remediation and follow-up.
6. Thank the facility staff and close the activity.

Appendices 5: Best Practice SOPs

The following SOPs are included in this appendix:

1. Recent retention data indicator validation (for health facility)
2. Identification of overstated HTS_TST_POS
3. Analyzing TX_CURR net loss using data triangulation
4. DATIM reporting

Appendix 5.1: Recent retention data indicator validation (for health facility) SOP

- Determine the number of clients currently receiving ART using the 1-month LTFU definition (1-month TX_CURR definition) and cross-check against the number of clients who received ART in the pharmacy module or at dispensing outlet(s) during the same period.
- Determine the number of clients currently receiving ART using the 3-month LTFU definition (3-month TX CURR definition) and cross-check against the number of clients who received ART in the pharmacy module or at dispensing outlet(s) during the same period.
- If the numbers correlate, then reported figures are correct.
- If the numbers do not match, cross-check with patient file (CTC2 cards) and dispensing register.

Appendix 5.2: Identification of overstated HTS_TST_POS SOP

Introduction

This SOP provides guidance on how to identify possible overstated HTS_TST_POS results, including a standard analysis to determine which facilities have data irregularities that may require further follow-up, how to conduct on-site investigations, the tools for those investigations, and a tool for creating a follow-up action plan with affected sites.
It is important to remember the sensitivity around data quality and site-level investigations into potential data fabrication and to approach this activity tactfully with those sensitivities in mind.

Step 1: Desk review

Objective

Analyze routine data to identify facilities that may have overstated HTS_TST_POS numbers. This analysis will allow for flagging of facilities with inconsistent trends across retention indicators, patient movement and data completeness / quality for on-site review.

Methodology

The following analyses should be conducted routinely, examining trends over time (by month over the previous 12-month period) to look for unexpected changes in relevant indicators. The analyses described below should be conducted at the facility level unless otherwise indicated as analysis by district or region may hide inconsistencies reported by individual facilities. For each of the following analyses, document all districts and facilities that have data inconsistencies requiring further investigation.

Analyses

1. HTS_TST_POS: Determine the proportion of HTS_TST_POS for the month by sex (M/F) and age band and look for inconsistencies in these trends over time.
2. Date of birth (DOB): Flag all clients newly enrolled in the month with the DOB of July 15 (standard for those clients who do not know their DOB). Calculate the proportion of clients with this date of birth and look for months with increases in this proportion.
3. Transfer Out (TO):
    a. Look for inconsistencies in the trend of TO over the previous 12 months, especially sharp increases.
    b. Compare the trend in TOs and TIs above site (by district and region). Look for districts and regions that have a large increase in TOs without a corresponding increase in TIs. Once identified, look for facilities in the district that have large increases in TOs within the same time period.

[Note the increase in TIs may not be as great as in TOs; however, if a large increase in TOs is noted, we would expect at least some increase in TIs]

4. Early Net Loss after ART initiation: Categorize clients with Net Loss Status (LTFU/Unknown, Died, TO, Stopped) according to the number of months spent on ART: ≤ 3 months, 4-6 months, 7+ months. Look at the trend over time for these categories and look for facilities with increases in the proportion of clients on ART for 12 months or less.

5. Unstable TX_NEW: Analyze the % change of TX_NEW by month and look for facilities with unexpected increases. Also, analyze monthly trends of TX_NEW overtime.
6. Additional analyses: Conduct analysis on additional variables of interest, such as:
    a. Analyze where clients were referred from (e.g., Index, OPD, Community, PMTCT, TB Clinic). Look for unexpected increases in the proportion of clients newly enrolled in ART from a single location/program.
    b. HCWs involved in identifying new positives and enrollment of new clients on treatment. Look for HCWs that have unexplained increases in these variables.

Prioritization of facilities for on-site review

Review the list of facilities that have been flagged for data inconsistencies. Sum how many different analyses each facility was flagged for (i.e., if a facility had both an increase in 15th July DOB and unstable TX_NEW, they would be considered to have 2 flags). Categorize each facility according to its tier classification (i.e., Tier 1, Tier 2, etc.). Sort the facilities by tier and then according to the number of flags, from the most to the fewest. This will create a prioritized list of facilities for on-site review – starting with the Tier 1 facilities with the greatest number of flags.

Plan for as many on-site reviews as possible, noting that each one is likely to require 1-3 full days at the facility. Prior to visiting each facility, conduct some analysis of the CTC2 data to determine how to prioritize the review of CTC2 cards on site. The following queries can be run for each facility to identify data quality issues that may be the result of fabricated data. The results of this analysis will guide the "CTC2 card review and data cross-check" step during the on-site review.

CTC2 DB queries

Run a query on all clients newly initiated on TX for the time period of interest to quantify the proportion of clients:

a. With DOB = July 15
b. Missing phone number
c. Missing treatment supporter name
d. Missing routine lab tests
e. Clients with perfect attendance
f. Clients with visits on days the CTC was closed (if applicable)

Run a query on all clients newly initiated on TX for the time period of interest to determine whether each facility has:

a. Large numbers of clients transferred out on the same day
b. A large and unexpected increase in the number of deaths among care and treatment clients

Step 2: On-site review

Objective

To investigate the possibility of over-reported HTS_TST_POS and related variables, and where applicable, to identify the magnitude of over-reporting and the causes behind it.

Methodology

The on-site review will use both qualitative and quantitative methods. When speaking with facility staff, keep in mind the sensitive nature of data quality activities and issues around data fabrication. Be sure to always establish rapport, clearly present the purpose of the visit, and emphasize the importance that everyone feels comfortable to share openly and honestly without fear of being judged or blamed. Explain that you are looking for systemic issues that may be driving data quality problems, not for individuals to blame or hold accountable.

For quantitative data verification activities, determine in advance the period of time (i.e., month/quarter) for which data will be reviewed.

At the facility

A. Arrival: Introduction of activity and data request

Follow all standard protocols when carrying out a visit to a GOT health facility.

Before arriving at the facility, inform the facility-in-charge of the purpose of the visit and all activities that will be conducted. Request a meeting with or access to the following individuals:

- CTC In-charge
- CTC data officer
- HTS focal person
- CTC HCWs
- Others based on which data were flagged during desk review

Upon arriving at the facility, review the purpose of the visit and the activities to be conducted with the facility in-charge and the CTC in-charge. Hold a meeting with the above-mentioned staff.

- Begin with introductions
- Explain the purpose of the visit (working together with facility staff to review and develop strategies to improve data quality, want to understand the root causes of any identified problems from a systems perspective rather than looking for individuals who may have contributed, and want to determine what can be done to prevent the situation from happening again)
- Emphasize the importance of accurate data to inform facility/ district/ regional/ national planning and resource allocation with regard to HIV services and explain how inaccurate data can affect decisions related to HR needs [testers/ nurses/ clinicians/ trackers], future focus/investment of program activities [identification versus retention], ARV/IPT quantification/ consumption/ expiry, and estimates/ perception of magnitude of HIV burden
- Request the CTC In-charge/data officer to provide the following facility records for the pre-specified period of interest:
    a. Routine reports: Monthly HTS reports, RTK R&R (part of HTS register), cross-sectional ART reports, ARV dispensing report
    b. Registers: HTS and test for verification registers, clinic appointment registers, tracking registers, and ARV dispensing registers
    c. Request CTC2 files of all TX_NEW clients for the pre-specified period or a subset of clients based on the findings of the desk review data analysis (e.g., if during desk review you found a facility with a large increase in the number of client deaths, consider requesting the CTC2 cards of those clients first)

B. Qualitative discussions

Objective

To identify the underlying causes of overstated HTS_TST_POS.

Specific objectives

1. To understand the root causes of overstated HTS_TST_POS at the facility level
2. To understand individual and system level drivers that led to overstated HTS_TST_POS
3. To determine what could be done to avoid the overstated HTS_TST_POS
4. To determine the level of awareness of overstated HTS_TST_POS among facility staff

Methodology

A qualitative discussion guide will be used to conduct face to face interviews with facility personnel directly involved in HIV testing, recording, and reporting (e.g., health facility in-charge/HTC coordinators). If plausible, interviews can be conducted as a small group discussion with facility personnel directly involved in HIV testing, recording, and reporting. All discussions should be conducted after establishing rapport with facility staff and reminding them that the intention of this activity is not to cast blame but rather to identify systemic issues that may be resulting in poor data quality and develop strategies to resolve those issues.

C. Data verification

1. Triangulation of ARV dispensing vs new clients on TX
    a. Run a report of patients starting new medications (ARV and TPT) for the pre-specified period of interest on the printouts section
    b. Review pharmacy records for the time period of interest
        - Electronic sites: Run a report of patient dispensing records on the printout section (you will need to have PIDs) to generate dispensing records of a particular patient for periods she/he received ARVs
        - Paper sites: Review the site's dispensing register records
    c. Cross-check whether new clients indicated to have started ART in CTC2 DB are also all found and accurately recorded in ARV dispensing records. Note inconsistencies and seek clarification from HCWs.

2. Triangulation of ARV and TPT consumption data
    a. Run a report of ARV/TPT refill visits
    b. Review R&Rs for the time period of interest
    c. Cross-check whether overall ARV/TPT consumption within the specified period correlates with ARV/TPT refill visits/numbers recorded in CTC2 DB

3. Triangulation of HTS_TST_POS vs HIV test kits consumption
    a. For the time period of interest:
        - Identify the number of HTS_TST_POS reported
        - Review the HTS register and determine the number of Unigold tests consumed during the same period

- Review the ledger register and determine the number of Unigold tests consumed during the same period

b. Assess whether these three values reconcile, considering that:
   - Every HTS_TST_POS requires at least 2 Unigold tests (to confirm new POS and retest for verification)
   - Some Unigold tests are used for QC/EQA

   [Note, you may not be able to verify this for community HTS_POS if their RTK consumption data is not kept at the facility]

4. Review of HTS_TST register / electronic testing data
   a. Review the available HTS_TST data to look for indications that the data may have been manipulated, such as:
      - A large number of positive tests in a row or on a single day
      - The majority of positive results coming from a single provider and/or testing point
      - A lot of corrections or erasing (for paper tools)
      - Registers that have pages ripped out (for paper tools)

D. CTC2 card review and data cross-check

Review CTC2 cards of clients newly initiated on ART during the period of interest. For smaller facilities, consider reviewing all TX_NEW clients from the period of interest. For larger facility, use the findings from the desk review analysis to prioritize CTC2 cards of clients with identified data quality issues.

1. Review CTC2 cards as outlined below. Document any inconsistencies for follow-up with facility staff.
   a. Cross-check whether new clients indicated to have started ART in the CTC2 DB and verified in the ARV dispensing register also have the same information in their CTC2 cards.
   b. Check for large numbers of clients seen by a single provider, particularly on multiple care processes/visits (e.g., HTS, HTS for verification, contact elicitation, ART dispensing/refills, TPT dispensing/refills, etc.). If observed:
      i. Verify whether the provider is qualified to provide all of those services.
      ii. Check if the handwriting and signature of the provider is valid. If necessary, validate with the provider.
   c. Check for multiple corrections/erasing/revisions. If found, enquire why corrections were made and by whom.
   d. Check for lab reports that correspond to requested lab tests. Note if tests were requested but no documentation of results is present.
   e. Check for missing key variables: client phone number and address, map cue (check if map cue can be reached), treatment supporter details, etc.
   f. Check for repetition of key variables across multiple CTC2 cards – e.g., client and/or treatment supporter details are similar across multiples cards
   g. Investigate whether client visits were documented in the original client file or temporary files

2. For TO files, check the following and document any inconsistencies for follow up with facility staff.
    a. Does the client file have a TO form? Is the feedback section still attached?
    b. Was the client adherent to clinic appointments before transferring (compare appointment versus visit dates prior to the date of transfer out)?
    c. Was the transfer confirmed at the destination? Check if destination facility is indicated on the form/ feedback portion/ CTC2 file/ CTC2 database.
    d. Check the TO counter book (available in all Tier 1 & 2 facilities) to verify whether all TO records are documented appropriately.
    e. If the patient was LTF before being declared TO, was the tracker involved?
        i. Is there a tracking form in the file (if used at the facility)?
        ii. Does the tracking form date precede the TO date?
        iii. Is the client in same day tracking and tracking register? Does the date in same day tracking or tracking register precede TO date?
    f. Pick a sample of the TO files and request the HCP to call some of the patients to ascertain whether they are reachable and reaffirm that they are continuing with care at TI facility.

Note: If a provider is found to have completed several suspicious CTC2 cards, review files of all clients initiated on ART by that provider and assess the clients' current follow-up status.

3. Select clients who have data inconsistencies or suspicious data in their CTC2 cards and cross-check their information against other registers/data sources.
    a. Compare the client's names, DOB and other demographic characteristics in their CTC2 card to the information in the HTS register, the retest for verification register, and the ARV dispensing register/Pharmacy module.
    b. While reviewing registers, note any registers with multiple corrections/revisions or a lot of erasing. If that is the case enquire why the corrections were made, and by whom.

E. Drawing conclusions and preparing for debrief

Do not make conclusions based on suspicion. Be prepared to accept there may be "no evidence of overstated POS" and that observed discrepancies have reasonable explanations.
Prepare a summary of your team's findings. Include examples of data inconsistencies that you observed, if any. Do NOT disclose information about staff who have acknowledged data fabrication at the facility.

Prepare suggested actions to address any issues found during the visit. If over-stated positives have been identified, follow-up actions should include scheduling follow-up visits to:

- Work with the facility staff to remove those clients from the CTC2 database
- Continue to orient facility staff on the importance of having high quality data
- Provide on-the-job training and mentorship on routine data quality activities that facility staff should conduct and following up with them on the implementation of those activities

If over-stated positives were not identified but other data quality or service provision challenges were found, similar follow-up actions can be suggested to address those.

The IP should closely monitor the data reported by any facility identified as having over-stated positives or other data quality or service provision challenges to ensure that any similar issues in the future are detected immediately.

F. Facility debrief and action plan

With all due respect acknowledge the good work being done by facility staff and the importance of their work. Reassure facility staff that the intention is not to cast blame or punish incorrect practices but rather to identify issues and rectify them. Make clear that you understand that HCWs may have been pressured on the issue of data and reporting, and that you want to work with the team to make changes that will improve data quality. Reaffirm your commitment to support them through this process.

Provide facility staff with a summary of the activities conducted and your findings.

a. Allow staff time to internalize feedback given, re-asses their practices and discuss/provide evidence for overstated POS [if any].
b. Together with facility staff, develop an action plan based on findings, including follow-up visits and support.
c. Close the activity by encouraging staff to reach out to you or any team member should they want to provide further clarification, seek guidance, or request support. Reassure them that you will take all reasonable steps to protect them from unwanted consequences resulting from their reaching out to disclose further information.

G. Action plan template

Action plan				
Based on the findings of the data verification exercise, please describe any challenges identified and recommended strengthening measures, with an estimate of the length of time the improvement measure could take.				
	Identified Gaps/Weaknesses	**Description of Action Point**	**Person(s) Responsible**	**Timeline**
1				
2				
3				
Additional notes:				
Date of next follow up visit (if applicable): __ __ / __ __ / __ __				

Qualitative discussion guide: Health facility staff

Objective

The objective of this activity is to identify the underlying causes of overstated HTS_TST_POS.

Specific objectives

1. To understand the root causes of overstated HTS_TST_POS at the facility level
2. To understand individual and system level drivers that led to overstated HTS_TST_POS
3. To determine what could be done to avoid the overstated HTS_TST_POS
4. To determine the level of awareness of overstated HTS_TST_POS among facility staff

Methodology

This tool will be used to conduct face to face interviews with facility personnel directly involved in HIV testing, recording, and reporting (e.g., health facility in-charge/HTC coordinators). If plausible, interviews can be conducted as a small group discussion with facility personnel directly involved in HIV testing, recording, and reporting.

Qualitative discussion guide: Health facility staff

1. Health Facility Name: _____
2. District: _____ Region: _____ IP: _____
3. Date: ____/____/____ (dd/mm/yy)
4. Interviewer name: _____
5. Note taker name: _____
6. Participant title(s): _____

Section 1: Introduction

As we have already mentioned, we are here to follow up on data quality challenges with newly identified HIV positive clients. We would like to ask you a few questions about how services are implemented and documented at this facility, and any data quality issues you may be aware of. The goal of the exercise is not to cast blame or punish but rather to improve practices and outcomes. We request that you share any information which will help us in this process and that you are as honest as possible. The information you share will remain confidential – we will not share what you tell us with anyone, and your name will not be shared in any of our documentation.

Section 2: Service implementation and documentation

I would first like to understand how HIV testing and ART initiation happens at your facility and how they are documented.

1. Can you explain to me how HIV testing is done at this facility, where testing data are recorded and how data are reported?

   Probes:

   i. Where does HIV testing take place?
   ii. Who are the people involved?
   iii. Who is involved in recording HIV testing data?
   iv. Who is responsible for aggregating routine monthly HTS reports?
   v. Is there any person who verifies the data recorded in the HTS register and/or compares the monthly reports to the HTS registers to check accuracy?

2. If a person is newly identified HIV positive what is the process to initiate that person on ART and where is relevant information documented?

   Probes:

   i. Do you normally initiate the client at the point of testing? Explain.
      a. If initiated at the point of identification (testing), what is the documentation process (who fills the CTC2 Card, Pre-ART/enrollment and ART registers)? Explain.
      b. If a client is not initiated at the point of testing, how are they referred to the CTC and where and how is this referral documented? Explain.
         i. Is it a common practice that the CTC will return written feedback when they have received a referred client? Explain.
         ii. Do you normally perform escorted referral? Explain, how, when and under what circumstances.

3. Please explain to me what routine laboratory tests are done for clients after initiation on ART.
    a. How and where are these lab tests documented? How and where are the results documented?
    b. Who is responsible for ordering lab tests? Who is responsible for filing test results in client files?

4. When a client falls out of ART – i.e., transfers out, dies, LTF or stops treatment – how and where is this documented?
    a. Is there someone who verifies this final ART patient status? Who is that and how does this verification take place? What documentation exists and where is it kept?

Section 3: As we have explained, we are following up on challenges with over-reporting of HTS_TST_POS. We would like to ask you some questions about this issue.

5. Do you think over-reporting of HTS_TST_POS is a problem at health facilities in Tanzania? Have you ever heard of anything like this happening?
    a. If YES, what do you think are the cause(s)?
        i. Do you think facilities are given targets for HTS_TST_POS that are not achievable?
        ii. Do you think there is anything IPs are doing that could lead to facilities over-reporting HTS_TST_POS?
        iii. Do you think people understand the impact of overstated HTS_TST_POS on the HIV/AIDS program?

6. Do you think this has ever happened at your facility?
    a. If YES, what do you think were the reasons?
    b. If YES, what do you think could have been done to prevent it?
        i. At the facility level (HTS personnel/management)
        ii. By IPs at the National/Zonal/Regional levels

7. Does the IP who supports this facility conduct routine HIV data verification or DQAs at your facility?
    a. Please explain
        Probe: (How regular? When last? Who was involved (IP/GoT))
    b. If the answers to Q6 and Q7 are both YES, ask: Why do you think the data verification exercises did not identify the over-reporting of HTS_TST_POS?

8. Is there any information which you think is relevant to this subject that I have not asked but it is important for us to know?
9. Do you have any questions or comments?

Once again, we would like to thank you for your time and readiness to answer our questions, the information you have shared with us will highly contribute to the mitigation of overstated HTS_TST_POS.

THANK YOU

Qualitative discussion guide: IP regional / zonal staff

Objective

The objective of this activity is to identify the underlying causes of overstated HTS_TST_POS.

Specific objectives

1. To understand the root causes of overstated HTS_TST_POS at the facility level
2. To understand individual and system level drivers that led to overstated HTS_TST_POS
3. To determine what could be done to avoid the overstated HTS_TST_POS
4. To determine the level of awareness of overstated HTS_TST_POS among IP staff

Methodology

This tool will be used to conduct face to face interviews with staff at IP regional/zonal level offices. If plausible, interviews can be conducted as a small group discussion.

Qualitative discussion guide: IP regional / zonal staff

1. IP: _____
2. District: _____ Region: _____
3. Date: ____/____/____ (dd/mm/yy)
4. Interviewer name: _____
5. Note taker name: _____
6. Participant name(s)/title(s): _____

As you may be aware, PEPFAR has recently experienced an increase in diagnosis of PLHIV. Some IPs have determined that this figure may have been over-reported by facilities they support. We would like to ask you a few questions about whether you have any knowledge of this happening at facilities throughout the country. The goal of the exercise is to determine whether there are systemic factors that are driving this issue, how these factors can be addressed, and how to prevent similar challenges from occurring in the future.

1. Do you think over-reporting of HTS_TST_POS is a problem?
    a. If YES, what do you think are the cause(s)?
        i. Do you think facilities are given targets for HTS_TST_POS that are not achievable?
        ii. Do you think there is anything IPs are doing that could lead to facilities over-reporting HTS_TST_POS?
        iii. Do you think people understand the impact of overstated HTS_TST_POS on the HIV/AIDS program?
    b. If YES, how do you think these numbers are being inflated? Probe: is it at the facility level, is it at the IP level, etc.?

2. Do you think this has ever happened in facilities your organization supports?
    a. If YES, what do you think were the reasons?
    b. If YES, what do you think could have been done to prevent it?
        i. At the facility level (HTS personnel/management)
        ii. By you as the IP

3. Do you conduct routine HIV data verification or DQAs at the facilities you support?
    a. Please explain. Probe: How regular? When last? Who was involved (IP/GoT)?
    b. If the answers to Q6 and Q7 are both YES, ask: Why do you think the data verification exercises did not identify the over-reporting of HTS_TST_POS in those facilities?
4. Is there any information which you think is relevant to this subject that I have not asked but it is important for us to know?
5. Do you have any questions or comments?

Once again, we would like to thank you for your time and readiness to answer our questions, the information you have shared with us will highly contribute to the mitigation of overstated HTS_TST_POS.

THANK YOU

Appendix 5.3 Analyzing TX_CURR net loss using data triangulation

Introduction

As the Tanzanian care and treatment program grows and matures, facilities are expected to continue to add new clients while maintaining the clients they already have on ART, resulting in a steady increase in TX_CURR. Although there are valid reasons for a care and treatment clinic to experience a decrease in their number of clients on treatment, a decrease in TX_CURR from one quarter to the next warrants investigation.

This SOP provides guidance on how to use data triangulation to determine the root cause of a net loss in TX_CURR at the facility level.

Required data sources / tools

- CTC2 database / CTC Analytics / ART register
- Pharmacy module database / Dispensing register
- Appointment and tracking registers
- CTC2 cards

Methodology

1. Use CTC Analytics, the CTC2 database, or the ART register to prepare a list of clients on ART who are categorized as lost to follow-up (LTF). LTF is defined as clients on ART who were current on ART during the previous reporting quarter but had no clinical contact or ARV pick-up for more than 28 days since their last expected clinical contact or ARV pick-up.
2. Using the unique CTC ID and the TX_CURR net loss tool (Table 3), triangulate the last visit date and the ART status at the last visit date for each client on the LTF list in all of the following data sources:
    a. Pharmacy module/Dispensing register
    b. Appointment register
    c. Tracking register
    d. CTC2 card

Table 3: TX_CURR Net Loss Tool

For each client ID, document the last visit date and ART status from the below data sources					
SN	Client ID	CTC2 card	Pharmacy module / Dispensing register	Appointment register	Tracking register
1					
2					
3					
4					

3. Use the table below to take the appropriate action based on the findings from step 2.

Triangulation findings	Triangulation conclusion	Next steps	Follow-up steps
Client has a more recent visit date and ART pick-up than what is in CTC2 DB which is consistent across pharmacy module, appointment register, and CTC2 card OR pharmacy module and CTC2 card	Client is current on treatment	Update CTC2 database Regenerate reports	
Client does not have a more recent visit date or drug pick-up in any data source – i.e., client's most recent visit date and ART status in pharmacy module, appointment register, and CTC2 card match CTC2 DB	Client is true LTF	Check client movement in CTC2 database via CTC3 for possible enrollment at another facility. If not found, share client information with lay counsellors, CTC in charge and/or management to initiate tracing protocol.	Once final follow-up status is determined (i.e., death, TO, stopped ART, LTF), update CTC2 card and CTC2 database
Client has a more recent appointment in CTC2 card and was supposed to collect drugs, but pick-up is not documented in pharmacy module (regardless of appointment register)	Follow-up needed at pharmacy	Cross-check pharmacy paper documentation (e.g., dispensing register and/or prescription form) to check for client pick-up	If documentation found, update pharmacy module and CT2 database If no documentation found, call client
Any other scenario	Follow-up needed	Call client to determine whether client visited and verify with appropriate facility staff	Update CTC2 database as needed

5. Root cause analysis
    a. Determine causes of breakdown in documentation
        i. Poor management/storage of physical files
        ii. Internet connectivity issues
        iii. Training of relevant staff is not up to date or staff is not following documentation protocols
    b. Determine causes for clients falling out of care

Appendix 5.4: DATIM reporting SOPs

TX_PVLS (Denominator)

- Open CTC Analytics
- Link your dataset(s)
- Click Analytics tab, under categories section choose CQI,
- Go to the right on the list of queries, choose Viral load Coverage, then RUN,
- Specify period (end date) and number of days before considered lost, click OK,
- Click "RUN" and export your results into Excel.
- Remove Duplicate IDs (Output is already sorted by most recent test date and results, by removing duplicates based on Patient ID, you will remain with unique IDs)
- Copy **(Patient ID, Sex, Age, Pregnant)**, and paste into DATIM Age disaggregate tool to get required Age for DATIM reporting
- This can be done for single dataset or a group of datasets

TX_PVLS (Numerator)

- Open CTC Analytics
- Link your dataset(s)
- Click Analytics tab, under categories section choose CQI,
- Go to the right on the list of queries, choose Viral load Coverage, then RUN,
- Specify period (end date) and number of days before considered lost, click OK
-
- Click "RUN" and export your results into Excel.
- Remove Duplicate IDs (Output is already sorted by most recent test date and results, by removing duplicates based on Patient ID, you will remain with unique IDs)
- Filter results with **HVL < 1000 copies**
- Copy **(Patient ID, Sex, Age, Pregnant)**, and paste into DATIM Age disaggregate tool to get required Age for DATIM reporting
- This can be done for single dataset or a group of datasets

Sample collection

- Open CTC Analytics
- Link your dataset / Datasets
- Under Analytics Tab, Go to Viral Suppression
- Select Viral Load samples collected in a given time frame
- Choose Analysis Date and Run the results

HVL coverage

- If coverage by sample collection (Ratio of sample collection to Eligible Clients)
- If coverage by Documented results (Ratio of documented results to Eligible Clients)

Appendix 6: Co-Ag close-out data review strategy

Overview

This document lays out a standardized approach to reviewing data for IPs in the final year of their cooperative agreements to ensure incoming IPs start with quality data at the facilities they will be supporting.

Methodology

To ensure incoming IPs start with quality data at the facilities they will be supporting, the following set of activities will be implemented during the final year of a cooperative agreement.

Activity	UCSF suggested methods
Identify set of key indicators to include in all analyses	• Guidance from CDC • Clinical cascade (POS, TX_New, TX_Curr, TX_PVLS, TX_Net_New) • PMTCT/EID cascade
Bird's eye view analysis of last 8 quarters of data **[starting in Q2 of close-out year]**	• Council level dashboard (visualizations) to look at trends over time for any clear aberrations • Document issues identified and continuing effects (if any) seen in current data

Detailed quarterly analysis of last 4 quarters of data
 	
[starting in Q2 of close-out year]
	• Conduct several analyses with focus on whether past issues are still affecting data and, if yes, how to correct those issues in a sustainable way
	• Analyze variance in key indicators from one quarter to the next using established variance analysis tool
	• Compare TX_CURR in DATIM versus monthly portal for each quarter
	• Trend/variance analysis of additional monthly portal indicators: XFER_IN, XFER_OUT, XFER_DEATH
	• Council or regional level comparison of XFER_IN vs XFER_OUT (monthly portal data)
	• Triangulation of data sources
	  ○ TX_CURR versus pharmacy records
	  ○ HTS_TST versus RTK logs
	• Analyses will be reviewed with IPs on regular (bi-weekly?) calls and specific data challenges assigned to IPs to resolve; some form of "triangulation template" could be used to track data issues and remediation done by IPs; UCSF would then verify remediation took place and track issue for future reporting quarters to ensure remediation was sustained
	• The same process will be repeated with Q3 and Q4 data

Activity	UCSF suggested methods

Verification of site-level minimum standards and validation of key indicators	• UCSF/CDC to develop SOP to sample IP facilities (focus on tier 1 and 2 sites) for data quality assessments which would include:
	  ○ Assessment and scoring of facility and community-level M&E minimum standards
	  ○ Validation of key indicators against source documents

Verification of CTC2 database versions, reporting to CTC3, and backlog	• Use the SOP in the data quality standards section of this toolkit to conduct the "CTC3 reporting verification" activity

Appendix 7: TX_CURR Verification

Data Quality Assessment at CDC-Supported Facilities (May 2022)

Objectives of DQA

- To conduct a physical count of the patients who are currently on ART across all CDC-supported facilities
- Identify systematic data quality challenges and make recommendations to improve data quality

Data sources to validate results

- Triangulate results from ART registers, CTC2 DB, CTC2 files and Pharmacy records (either pharmacy module of CTC2 DB or dispensing register)
- The selected data elements such as the clients' ID, last ARV drug pick-up date, number of days dispensed, last clinic visit date, referred from, next appointment, and last HVL sample date will be compared between data sources using an Excel DQA data verification tool
- Data collected will be used to calculate the percentage of discordance between the source document (patient chart) and data from other reporting tools such as the pharmacy system, CTC2 Database and/or ART register

Guiding procedures in conducting verification

Follow all standard protocols when carrying out a visit to a GoT health facility.

Introducing the activity and building rapport

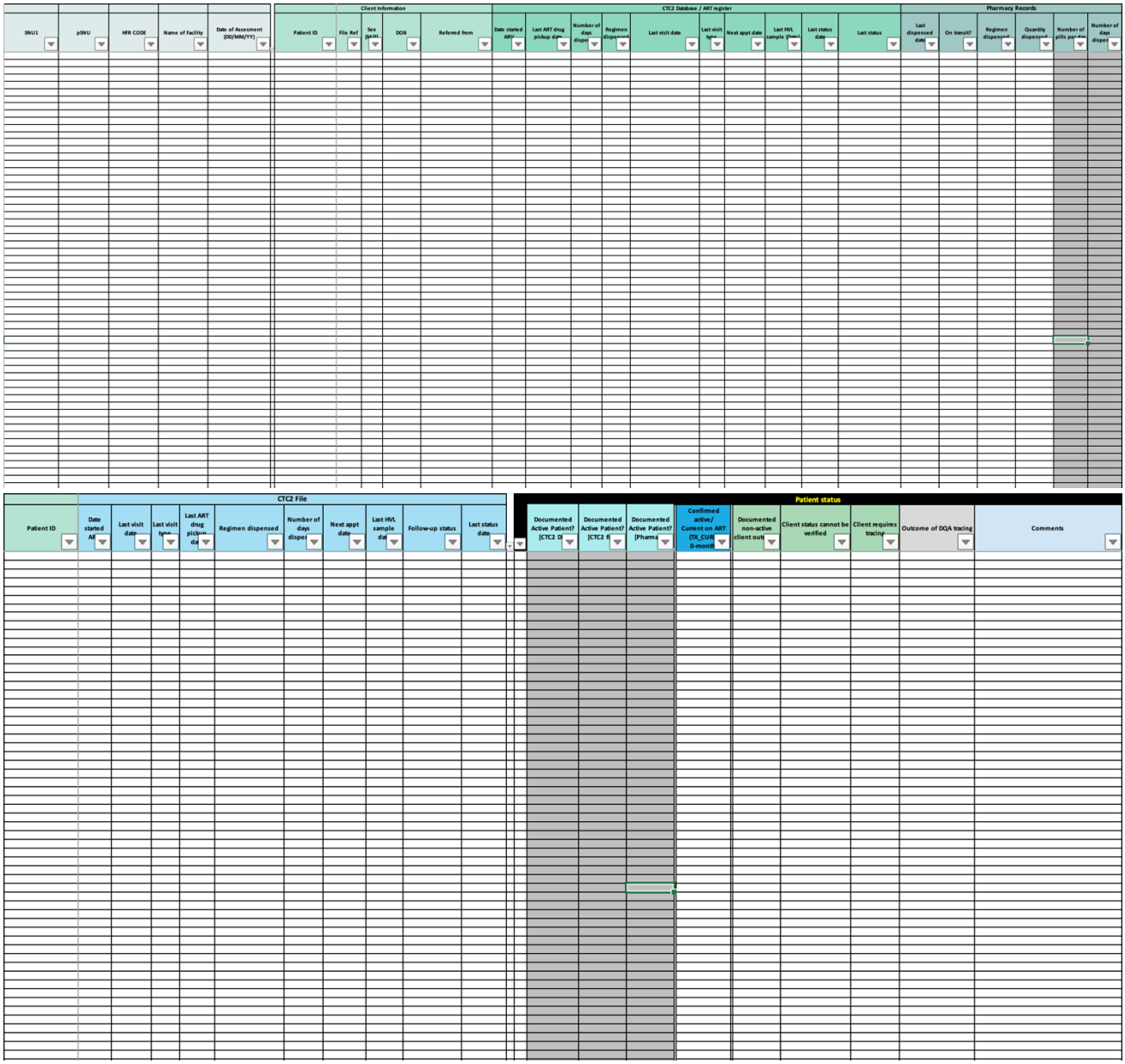
Before arriving at the facility, inform the facility-in-charge of the purpose of the visit and all activities that will be conducted. Upon arriving at the facility, review the purpose of the visit and how the DQA will be carried out with the facility in-charge and the CTC in-charge.

- Begin with introductions
- Explain the purpose of the visit (verification of TX_CURR clients, working together with facility staff to review and develop strategies to improve data quality, understanding root causes of any identified problems from a systems perspective rather than looking for individuals who may have contributed)
- Emphasize the importance of accurate data to inform HIV program planning at all levels and explain how inaccurate data can affect decisions related to HR needs, future focus/investment of program activities, ARV/IPT quantification/consumption/expiry, and estimates/perception of magnitude of HIV burden

When speaking with facility staff, keep in mind the sensitive nature of data quality activities and issues around data fabrication. Be sure to always establish rapport, clearly present the purpose of the visit, and emphasize the importance that everyone feels free to share openly and honestly without fear of being judged or blamed. Explain that you are looking for systemic issues that may be driving data quality problems, not for individuals to blame or hold accountable. If plausible, a group discussion with facility personnel directly involved in HIV service delivery, recording, and reporting can be conducted.

Excel DQA data verification tool

An excel tool has been developed for this exercise. It will capture several key data elements, including the last visit date, number days of ARVs dispensed, next appointment date, last status, and HVL sample date for each client from the three data sources included in this activity. It will also capture the outcome for each client, as defined below.



DQA methods

1. Here are a few key things to note about the Excel DQA tool. Additional instructions for filling individual columns are found below.
    a. Use a new copy of the Excel DQA tool for each facility.
    b. There are two versions of the data collection spreadsheet (DQA tool) contained within the Excel file.
        i. The tab labeled "DQA tool" should be used at facilities where pharmacy data will be pulled from the CTC2 database, PMD module.
        ii. The tab labeled "DQA tool_dispensing" should be used at facilities that do not use the PMD module and where pharmacy data will be extracted from the ARV dispensing register. This tab contains the same variables as the "DQA tool" tab but has an extra built-in formula that will automatically pull the pharmacy data from the "Dispensing register" tab into the "DQA tool_dispensing" tab, matched on Patient ID.
    c. Columns V, W, X, Y, Z, AA, AN, AO, and AP in the Dispensing version of the tool and Columns Z, AA, AN, AO, and AP in the Register version of the tool will auto-populate based on data entered into the tool. These columns have been locked to prevent changes to the programmed formulas.
    d. For clients whose last visit date in the CTC2 DB was prior to 2020, you do not need to review the CTC2 file unless the pharmacy data shows a drug pick-up in the last 6 months. More information can be found in Step 4 of this SOP.
    e. Be sure to complete columns A-E for all rows. Note that the date in Column E is used for formulas in other columns and should reflect the date of the DQA exercise for the particular client in that row. For example, if the DQA exercise is carried out at the same facility over multiple days, the date of assessment for each row should correspond to the date that particular file was reviewed.
2. The data required from the CTC2 database and the pharmacy module (where the pharmacy module is in use) will be generated using CTC-Analytics. A query has already been added to the CTC-A application that will generate the required data.
    a. Open CTC-Analytics and go to the Analytics tab.
    b. Refresh the query list by clicking on "Refresh".
    c. Go to the query Category of USER DEFINED.
    d. Run the query called "CDC: 2022 DQA".
    e. Export query results in Excel.
    f. From the CTC-Analytics Excel output, copy the generated data and paste it into the DQA data verification tool in the tab labeled "DQA tool", starting in Cell G4. Paste the information using the "Paste Values" option so that you do not overwrite the formatting of the cells in the Excel tool.
3. For sites not using the CTC2 pharmacy module, extract the pharmacy data from the ARV dispensing register for the last six months. Start from the most recent date and work backwards in time. The tab labeled "Dispensing register" should be used to key in

the required pharmacy data from the dispensing register. Note that only the data from the most recent drug pick-up needs to be entered. The tool automatically cross-checks that the patient IDs pulled from the CTC2 database are found in the dispensing register data and vice-versa, as described below.

To use the "Dispensing register" tab, follow the below steps.

a. Start from the most recent date in the Dispensing register and work backwards to ensure only the most recent drug pick-up for each client is captured.
    i. Column A, which contains the patient ID, has built-in conditional formatting that will highlight duplicate values in red. In this case, only the data from the most recent drug pick-up needs to be documented.
b. Select the ARV combination from Column B. This will automatically populate the regimen code in Column E. Do not type anything into Column E. If the correct ARV combination is not available from the drop-down menu, select "Other". If no ARV combination is documented, select "Blank".
c. Enter the last dispensed date in Column C. If the client is on transit, record "-1" in Column D.
d. Finally, enter the quantity of pills dispensed in Column F.
    i. If more than one type of pill was dispensed and the quantities differ, document the smaller quantity. For example, if a client is on AZT+3TC+DTG and they were given 60 pills of AZT+3TC (to take twice a day) and 30 pills of DTG (to take once a day), record 30 as the quantity dispensed.
e. The "DQA tool_dispensing" tab contains a built-in formula that will automatically pull the ARV dispensing data from columns C, D, E, and F in the "Dispensing register" tab into columns V, W, X, and Y in the "DQA tool_dispensing" tab. Note that columns Z and AA in the Pharmacy Records section will auto-populate. Do not enter data in these columns.
f. Identify patient IDs in the "DQA tool_dispensing" tab that have no corresponding pharmacy data. Use the last visit date of these clients to double check the dispensing register to be sure the client did not collect drugs on the date of their last visit. Clients with no corresponding pharmacy data should be flagged for tracing.
g. Column G in the "Dispensing register" tab cross-checks whether the Patient ID in Column A is found in the "DQA tool_dispensing" tab – in other words, whether the Patient ID extracted from the ARV dispensing register was also pulled from the CTC2 database. This column will auto-populate, indicating whether the Patient ID pulled from the ARV dispensing register has a match in the data pulled from the CTC2 database. If the column reads "Matched", it means that a matching Patient ID has been found in the CTC2 database list. If

the column reads “Unmatched”, it means that a matching Patient ID has not been found in the CTC2 database list.

For clients that do not have a matching patient ID in the CTC2 DB list (i.e., Column G reads “Unmatched”), add their pharmacy data into the “DQA tool_dispensing” tab by following these steps:

- Copy the patient ID for “Unmatched” clients from Column A in the “Dispensing register” tab and paste it in Column G in the “DQA tool_dispensing” tab.
- Once the Patient ID has been entered in Column G of the “DQA tool_dispensing” tab, the rest of the client’s ARV dispensing data will automatically be pulled from the “Dispensing register” tab into Columns V, W, X, and Y in the “DQA tool_dispensing” tab. Note that once this step is complete, the status in Column G in the “Dispensing register” tab will change to “Matched”.
- These clients should be flagged for tracing unless they are marked as on transit. On transit clients do not need to be traced.

4. Pull client CTC2 files from cabinets or any storage place. Note that files may not be in the file room so the assessment team should check other locations within the health facility such as tuberculosis, maternal and child health clinics, etc. Extract all required variables and enter the information into the “CTC2 File” section of the DQA Excel tool, being sure to match information to the correct patient ID.
    a. For clients whose last visit date in the CTC2 DB was before January 1, 2020, consider these two scenarios:
        i. If the client’s last visit date in the CTC2 DB was prior to 2020 and the client does not have a drug-pick up in the pharmacy records in the last 6 months, you do not need to review the CTC2 file. For this client, you can leave the CTC2 file section of the DQA tool blank. This client should be assigned a final status of non-active in Column AR and the final status (e.g., dead, TO, LTFU, etc.) from the CTC2 DB should be entered in Column AT.
            - Note that if you do not enter data in the CTC2 file section of the tool (i.e., Columns AB through AK), Column AO will not auto-populate. This is fine – Column AO can be left blank for the clients that meet the criteria described above.
        ii. If the last visit date recorded in the CTC2 database was prior to 2020 but the pharmacy data show a drug pick-up within the last 6 months, you should review the client's CTC2 file to determine whether they had a more recent visit that was not entered into the CTC2 database.
    b. The data to be extracted from the CTC2 card are straightforward; however, please note the following:
        i. Column AC – Last visit date. This column has built in conditional formatting that will highlight a cell in red when the date entered does

not match the corresponding last visit date from the CTC2 DB (Column P). This should prompt a careful review to be sure the CTC2 file was thoroughly reviewed and that the date was entered correctly.

ii. Column AJ – Follow-up status. This status should be pulled from the CTC2 card follow-up status column. If this column on the CTC2 card is blank, i.e., the patient is active, select "Blank" in Column AJ of the Excel DQA tool. If you select "Blank" in Column AJ, you do not need to enter a "Last status date" in column AK.

c. The approach to the review of CTC2 files will vary slightly from facility to facility, depending on the arrangement of files.
   i. Where files are organized by patient ID and are not separated by client status (e.g., active, dead, TO, etc.), consider pulling and reviewing all patient files in order to avoid disturbing the file organization.
   ii. Where active client files are stored separately from inactive client files, start with active client files.
   iii. If a facility has archived files, these files do not need to be reviewed.

d. The assessment team should ensure that a comprehensive review of all patient information is performed. There may be cases where patient information is contained within the CTC2 file but not documented on the CTC2 card itself. For example, a patient outcome might be documented on a tracing form but not in the CTC2 card, or a lab request form might be found in the patient file for a viral load test that was not documented in the CTC2 card. If relevant patient information is found on these types of data sources within the CTC2 file, they should be included in the DQA tool and the CTC2 card and CTC2 database should be updated.

5. Based on the information contained within each data source, Columns AN [CTC2 DB], AO [CTC2 file], and AP [Pharmacy] will auto-populate to indicate whether the client can be classified as active according to the available documentation. Note that for clients for whom the CTC2 file section of the tool is blank, Column AO will remain blank.
   a. Active will auto-populate in Column AN and Column AO if the client:
      i. has a future visit date (compared to the date of data collection), and
      ii. has enough medication to last until their next scheduled visit (based on number of days dispensed and last ART pick-up date).
   b. Active will auto-populate in Column AP (pharmacy) if the client currently has ARVs, based on date of last drug pick-up and number of pills dispensed.
      i. Please note <u>that there may be some scenarios in which Column AP does not correctly calculate the client status.</u> There are a few ARV regimens that can be taken as either one pill per day <u>or</u> two pills per day, depending on the strength of the medication given, and others that require one pill to be taken once per day and a second pill to be taken twice per day. In these cases, the algorithm to determine the number of days of medication dispensed was programmed using one pill per day.

c. NOT active will auto-populate if the client does not meet the above criteria.

6. Based on the completeness and consistency of data across the three data sources, determine whether each client qualifies as current on treatment according to the TX_CURR 0-month definition and record this in Column AR:
    a. Select Active for clients who are confirmed active in all three data sources, i.e., the CTC2 database, the CTC2 file, and pharmacy records. Note, if there are any concerns about the data or whether the client is a real client, do not designate the client as active.
    b. Select NOT active for clients who are categorized as NOT active in one or more of the three data sources, or for whom Column AN, AO, or AP is blank, or if there concerns about the client's data or whether the client is a real client.
7. For clients who are not confirmed as current on ART, i.e., have "NOT active" in Column AR, assign an outcome to the client in either Column AT, AU, or AV. Note that only one of these columns should be filled.
    a. Documented non-active client outcome (Column AT): Use these outcomes when a client has complete documentation of one of the following non-active outcomes:
        i. LTFU/opted out/refused to return: Use these outcomes when the outcome is consistently documented and the last appointment was more than 12 months ago.
        ii. TO: Use this when a client who initiated treatment at the current facility has confirmation of receiving services at another facility. If the TO was done within the last 12 months, the transfer should be confirmed by contacting the facility to which the client transferred and verifying the client attended that facility.
        iii. Death: Use this outcome when the death of a patient was confirmed through a relative, death certificate, or other official documentation confirming the individual's death (e.g., hospital document for burial). If documentation is not available and the death occurred in the last 12 months, tracing should be done to confirm the death.
        iv. On-transit: Use this for clients who are marked as on-transit in the pharmacy records. These clients should not be included in the TX_CURR for that facility.
    b. Client status cannot be verified (Column AU): Use these outcomes when the client status cannot be verified based on the available documentation.
        i. No info to trace: Use this category when a client requires tracing (see below for tracing criteria) but insufficient information is available to trace the client (e.g., no phone, no address, no map que, etc.).
        ii. HCW confirmed non-existing: Use this for clients who fit one of the following:
            - Duplicate record – i.e., one individual with more than one CTC2 ID.
            - HCW volunteers information that the client is not real. This should be confirmed by reviewing the CTC2 file and looking for

signs that the client is not real – e.g., limited visits before transferring out, no lab tests or no other documents besides the CTC2 card, DOB of 15 July, phone number that belongs to someone else, etc.

c. Client requires tracing (Column AV): Use these outcomes when a client requires tracing. Tracing is required for any client who falls into the four categories described below and should be done as per national guidelines to verify each client's outcome. Record the outcome of tracing efforts in Column AW. Note this outcome might be documented after the main DQA data collection effort has ended but wherever possible, should be determined before the end of the DQA data collection period. Tracing should be conducted in the following situations:
    i. CTC2 file missing: Use this category when the client has information available in the CTC2 database but the physical CTC2 file is missing.
    ii. Information mismatch: Use this category when the client has conflicting information across the three data sources. For example, if a client is confirmed active in one or more data sources but is NOT active in one or more data sources. Note that on transit clients do NOT need to be traced.
    iii. MissApp ≤28 days: Use this category for clients who missed their appointment but are within 28 days of their appointment date.
    iv. MissApp >28 days & <12 mo: Use this category for clients who missed their appointment and their last appointment date was more than 28 days ago but within the past 12 months.
    v. Other: Use this category if the team thinks the client should be traced but the reason does not fit into one of the above categories.

8. Outcome of DQA tracing (Column AW): For clients who will be traced, assign an outcome to the client once tracing efforts are complete. This outcome might be assigned after the team has left the facility but should be determined before the end of the DQA data collection period. Note that this column should not be used to enter outcomes of previous tracing efforts done by the facility.
    a. Tracing unsuccessful: Use this when tracing to locate or reach client including phone calls and home visit attempts as per national guidelines was unsuccessful.
    b. Verified and returned: Use this for clients who were verified as actual clients and who returned to treatment before the end of the DQA data collection period.
    c. Verified and promised to return: Use this for clients who were verified as actual clients and who promised to return to the facility but had not yet returned before the end of the DQA data collection period.
    d. Verified non-active outcome: Use this for clients who were successfully traced and, through tracing efforts, a non-active outcome (e.g., LTFU, opted out, refused to return, TO, or death) was verified.

e. Other: Use this for clients who were successfully traced but whose tracing outcome does not fit any of the above categories. If this client should be counted in TX_CURR, indicate this in the comments column (AX) and provide an explanation.

9. Where relevant, always update the data in the database, CTC2 file, or pharmacy records before leaving the facility.

Remediation

- Use the comments column in the Excel tool to flag clients for additional follow-up and to ensure discrepancies are properly addressed.
- Ensure that all client files are well organized before leaving the facility.

Ethics

Teams will have access to patient records and charts including personally identifying health information. Therefore, teams must apply a standardized practice to data extraction, making sure:

- To cover the name, age, address, and phone number of each patient.
- Patient identifiers such as name, date of birth and sex are used to identify the records for this activity, confirming the same patient across different data sources.
- Personal identifiers are not removed from the facility and are not part of the data collected. The identifiers are destroyed before leaving the health facility.
- All data abstraction occurs in a private area, away from patients, and covered (such as closing the folder) if patients are present.

Data analysis

- The count of people actively receiving ART should be compared with the number reported by the clinic for the most recent reporting month. The data source for comparison will be the Monthly Portal.
- People who are deceased, transferred out, or experienced interruption in treatment are not considered actively receiving ART.
- The assessment team should work with site-level staff to summarize the results and identify the potential root causes of poor data quality at that site.
- The results will be used to develop site-specific action plans for improving the quality of data and correcting the problems discovered in the activity.
- The lessons learned will be summarized across all sites and shared with facility staff.