



Improving the Quality of Zambia's Clinical Care Data

Findings from Expedited Audits of Data Quality in 93 Health Facilities in October 2017

January 2018



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MEASURE Evaluation
University of North Carolina at Chapel Hill
123 West Franklin Street Building C, Suite 330
Chapel Hill, North Carolina, USA 27516
Phone: +1 919-445-9350
measure@unc.edu
www.measureevaluation.org

This publication was produced with the support of the United States Agency for International Development (USAID) under the terms of MEASURE Evaluation cooperative agreement AID-OAA-L-14-00004. MEASURE Evaluation is implemented by the Carolina Population Center, University of North Carolina at Chapel Hill in partnership with ICF International; John Snow, Inc.; Management Sciences for Health; Palladium; and Tulane University. Views expressed are not necessarily those of USAID or the United States government. TR-17-228
ISBN: 978-1-64232-000-8



ACKNOWLEDGMENTS

We would like to acknowledge the strong support of the United States Agency for International Development (USAID)/Zambia in the development and refinement of the protocol, as well as their contribution to the successful completion of data collection. This activity received support both from USAID/Zambia and USAID/Washington, which saw the value of this rapid assessment. It was also supported by the United States President's Emergency Plan for AIDS Relief (PEPFAR). The work could not have been completed without the tireless effort of the data collectors and the collaboration of the Zambia Prevention, Care and Treatment Partnership (ZPCTIIB) and facility staff. We acknowledge the knowledge management team of the USAID- and PEPFAR-funded MEASURE Evaluation, University of North Carolina at Chapel Hill, for editorial and production services.

Cover photo by Milissa Markiewicz, MEASURE Evaluation: An enumerator reviews patient files in Zambia.

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ABBREVIATIONS

ART	antiretroviral therapy
DAR	daily activity register
DEC	data entry clerk
DQA	data quality assessment
eLMIS	electronic logistics management information system
IP	implementing partner
LTFU	clients lost to follow-up
TX_CURR	total number of HIV-positive people currently on ART treatment
USAID	United States Agency for International Development
ZPCTIIB	Zambia Prevention, Care and Treatment Partnership

INTRODUCTION

Data from Zambia’s health facilities must be of high quality for U.S. government funders and for the country’s policymakers to make sound decisions on health policy, health programs, and the allocation of scarce resources. The goal of investments in data quality is to improve health services for the Zambian people.

At the request of the United States Agency for International Development (USAID)/Zambia, and with the benefit of expert guidance from the mission, the USAID-funded MEASURE Evaluation and USAID/Zambia developed and implemented an intensive and rapid set of activities and assessments focused on data quality. Two data quality assessments (DQAs) at USAID-supported health facilities in Zambia—one in July 2017 and the other in October 2017—were complemented by a focused and comprehensive data quality intervention undertaken by the mission and the implementing partner in August and September. This report provides a brief narrative on the findings and some special features of the DQA activity.

METHODS

Pilot DQA in July 2017

The first DQA activity was a pilot assessment at 33 health facilities, completed in July 2017. The pilot DQA had two main objectives: (1) to assess the quality of reported data for four President’s Emergency Plan for AIDS Relief (PEPFAR) indicators in the test and treat indicator cascade; and (2) to diagnose reporting challenges for a key PEPFAR indicator—“Total number of HIV-positive people currently on ART treatment (TX_CURR)” — throughout the data flow (i.e., physical patient files, electronic medical records [SmartCare], and pharmacy dispensary records [the Daily Activity Register, DAR, and eLMIS]). DQA findings for Objective 2, the TX_CURR element, were subsequently used to inform a comprehensive USAID response.

Mission Response

The Zambia Prevention, Care and Treatment Partnership (ZPCTIIB), in close coordination with USAID Zambia, launched a comprehensive file audit process in response to the pilot DQA findings. The file audit included the following steps: 1) Review of all patient files in ZPCTIIB-support facilities, 2) Cross-check of patients in the electronic systems including SmartCare and eLMIS, and 3) Update of patient files and electronic systems with information from the cross-check process. ZPCTIIB also identified clients lost to follow-up (LTFU) and conducted extensive community follow-up of these individuals.

Expedited Follow-Up DQA in October 2017

As the third and final stage of the mission response, USAID/Zambia, working with MEASURE Evaluation, developed a new and groundbreaking modification to the standard DQA process that allows for a decidedly expedited data collection process and rapid reporting of verified results. With iterative guidance from the mission, they developed a new protocol, rooted in standard DQA procedures, tailored to fit mission-specific circumstances and tasks.

The new protocol, as developed for this application in Zambia, uses a streamlined data collection instrument that reflects a sharply defined dual focus on (1) verifying facility-level numbers reported for TX_CURR as of September 1, 2017 and (2) tracking progress of the ZPCTIIB file audit and LTFU intervention. The associated instructions and a pocket guide for data collectors are intentionally brief, precise, user friendly, and easily portable (electronically or in hard copy). (See Appendix 1. Tally Sheet Instructions, Appendix 2. Tally Sheet, and Appendix 3. Quick Guide to File Sorting).

Advance Preparation for Expedited DQA

Satisfactory implementation of this new and expedited approach to DQA data collection relies on the two stages of advance preparation described above—that is, a pilot (or mini-pilot) DQA to diagnose the key issues, followed by a data cleaning intervention aimed at addressing the identified issues. The success of the data-cleaning intervention is then subjected to confirmation by the expedited DQA; in this case, an objective and independent outside organization conducted the DQA.

These three steps together—pilot/mini-pilot DQA, data cleaning intervention, and follow-up verification using a streamlined and highly focused instrument—enable the radically accelerated pace of field implementation and reporting of results. This expedited approach makes it feasible to verify and report results that are close to real time—for example, interim verification results daily and cumulative, final results weekly.

Implementation of the October 2017 Expedited DQA in Zambia

The expedited DQA described here was the first of its kind. MEASURE Evaluation and USAID/Zambia implemented it in October 2017 at 93 high-volume health facilities in six provinces. They completed data collection at all 93 facilities in 24 days, including a revisit and second recount during the final week at three facilities.

Fifteen three-person field teams and nine MEASURE Evaluation supervisors conducted data collection in the context of a highly collaborative effort involving U.S. Government stakeholders, the Ministry of Health, and interested local IPs. Teams from USAID/Zambia and CDC/Zambia, as well as provincial officials from the Ministry of Health, provided very welcome and extremely helpful field oversight throughout the exercise. The rapid pace of the exercise—made possible by the file clean-up intervention—was also greatly facilitated by the receptive, cooperative, and attentive assistance that ZPCTIIB facility-based staff provided.

As previously noted, application of the new approach as designed for Zambia focused exclusively on verification of the TX_CURR indicator, with supplemental components aimed at assessing progress of the ZPCTIIB file clean-up (including documentation of LTFU, community follow-up, and reactivation) and documenting any remaining challenges to future TX_CURR reporting.

RESULTS

Quality of TX_CURR reporting—July pilot compared to the larger exercise in October

In short, the ZPCTIIB file audit had a hugely beneficial impact on the quality of TX_CURR reporting in Zambia. Evidence from the expedited DQA confirms that the ZPCTIIB audit represents a valid and reliable count and will establish a solid baseline upon which future reporting can build. Future TX_CURR reporting will also benefit greatly from the foundational reorganization and updating of ART files, and from broader implications of the exercise—for example, an enhanced understanding among multiple stakeholders of appropriate data management procedures and how they relate to potential future challenges for TX_CURR reporting.

For the expedited DQA in October, the “acceptable range” for the DQA verification factor was set at a relatively stringent level (+/- 5%), meaning a DQA recount that falls within a range of plus or minus 5 percent of the count provided by ZPCTIIB following the file clean-up.

- Among the 93 facilities visited for the expedited DQA, 79 (86%) achieved a verification factor that fell within the narrow (+/- 5%) acceptable range, and another five were within +/- 1 percent of the acceptable range.
- The overall verification factor for the October DQA was 100 percent across all 93 facilities visited and more than 300,000 patient records reviewed. In other words, the overall number ZPCTIIB is reporting for TX_CURR falls confidently within the narrow range of acceptability.

The drastic improvement engendered by the mission response is especially evident when looking at Table 1 below, which compares DQA results for nine of the 10 facilities at which ZPCTIIB assessed TX_CURR in the July pilot with results for the same facilities in the October follow-up DQA.

In the July pilot, all nine facilities showed evidence of overreporting on the TX_CURR indicator. Verification factors indicated overreporting by as much as 271 percent for Buchi Urban and 177 percent for Luangwa Health Centre. The overall verification factor for all nine facilities was 131.2 percent.

Table 1. Verification factors for the 9 facilities assessed in both the July 2017 pilot DQA (before the mission response) and the October 2017 expedited DQA (after the mission response)

Facility name	Before USAID mission response			After USAID mission response		
	Number in ZPCTIIB report	MEASURE pilot DQA recount	July 2017 verification factor (%)	Number in ZPCTIIB report	MEASURE expedited recount	October 2017 verification factor (%)
Kabundi East	3,257	2,342	139.1%	2,855	2,865	99.7%
Lubengele	2,532	1,869	135.5%	2,323	2,297	101.1%
Luangwa Health Center	2,360	1,333	177.0%	1,691	1,706	99.1%
Thompson Hospital	8,756	8,275	105.8%	4,642	4,464	104.0%
Buchi Urban	4,245	1,566	271.1%	1,832	2,108	86.9%
Liteta Hospital	3,267	3,168	103.1%	2,275	2,365	96.2%
Kayosha	1,343	1,134	118.4%	1,200	1,174	102.2%
Samfya Stage II	4,343	3,528	123.1%	2,432	2,425	100.3%
Central Clinic	3,707	2,548	145.5%	1,753	1,728	101.4%
Overall	33,810	25,763	131.2%	21,003	21,132	99.4%

Documentation of the ZPCTIIB Clean-Up

Data collectors and supervisors were able to note the improvements observed in facilities compared to the July DQA. Specific examples of improvements are outlined below.

- Most ART patient files were updated, especially the critically important pharmacy form/data.
- The organization, numerical arrangement, and accessibility of ART files have vastly improved:
 - DQA sampling of the inactive files confirmed that very few active files remain to be separated from those that are inactive; at least 95 percent of the active files had been correctly separated from inactive ones.
 - As a result, and in contrast to the July pilot, the DQA teams did not need to sort through and review all files classified as inactive.
- A helpful programmatic effect of the file separation and reorganization was to bring clarity at the facility level to the proper classification of LFTU clients and the proper documentation of clients who are followed up and reactivated.

DISCUSSION

TX_CURR Reporting Challenges Going Forward

- **Sustaining progress.** Perhaps the most daunting challenge will be sustaining and maintaining the tremendous progress made by ZPCTIIB in organizing and updating the files. Even with IP assistance at the facilities, this will be difficult in the context of ongoing staffing shortages, frequent turnover, and the heavy workload experienced by so many nurses and clinicians.
- **SmartCare.** Many issues continue to inhibit the usefulness of the electronic SmartCare system, which is now available in all but a few of the 93 facilities. For example, it was not uncommon for the DQA teams to find that the SmartCare system had been “down” for some time and/or was not up to date. Another issue occurs when a patient transfers from a facility but keeps his/her ART number, leading to different patients having the same last four digits in their patient numbers, with the only distinguishing factor being the facility number. However, the facility number is often not recorded on the patient file; only the last four digits are written in.
- **Pharmacy forms.** Routine updating of pharmacy forms is essential. Currently, there are many cases in which a patient began treatment as long as four to five years ago, but only one visit had been recorded on the pharmacy form (“one liners”) at the time of the ZPCTIIB file update. The DQA teams cross-checked all such files against the DAR and SmartCare.
 - The DQA found a number of cases in which clients coming to the facility for their medication received an updated Refill Card, but nobody had transferred this information to the pharmacy form in the patient file or to SmartCare. Therefore, no record of the refill visit is available at the facility; those clients will not receive appropriate follow-up and will be missed in the count of clients active on ART. This issue proved especially problematic at Buchi.
- **Daily activity register.** The DARs in some facilities are not up to date; some of them contain duplicate entries for the same patient or different patients with the same ART number.
- **Satellite and mobile clinic files** will continue to present a challenge, because ART files are kept at them rather than stored centrally. Accessing the satellite sites can be difficult, and their active files can be easily missed.

RECOMMENDATIONS

- The job of the IP DEC is complicated, detailed, and demanding. This work inevitably generates challenges, both known and new, that must be addressed. All DECs need a solid initial training, followed by annual refresher training and monthly, in-depth supportive supervisory visits for skills updating. Access to ongoing training and support is especially critical in the context of frequent staff turnover. Ideally, the role of the DEC should be better integrated in the patient flow, with accommodations for updating the records as a real-time function of the patient visit.
- Intensive, internal DQAs need to be performed regularly by the IP and verified by USAID. Limited but hands-on reviews at regular intervals can provide interim verification to confirm that reported numbers are backed by evidence and that all levels of personnel fully understand and consistently follow appropriate procedures.
- Facility data systems are currently disparate and consist of primarily paper-based systems (e.g., registers, pharmacy records, patient files, mobile clinic files) plus a few electronic systems (SmartCare, eLMIS) that cannot “talk to each other.” The risks for data quality are obvious. The various forms often do not agree on dates, names, status, and among others. Ideally, it will eventually be possible to consolidate these systems and establish electronically interoperable ones that eliminate, or at least minimize, the need for duplication of effort and cross-transcribing of data across records.
- In most healthcare facilities, space for clinics and patients is limited and at a premium. There is simply no space to accommodate *and secure* an adequate number of filing cabinets and provide organized and accessible storage for archived files. The challenge of finding adequate space for patient files within existing structures is not easily solved. Nevertheless, it is important to note the consequences for data quality when the task of maintaining orderly files is physically difficult or impossible.

APPENDIX 1. TALLY SHEET INSTRUCTIONS

MEASURE Evaluation TX_CURR Data Validation Exercise

TALLYING PROCEDURES

Step 1:

Make a tally sheet for ZPCTIIB’s active files that looks like this:

Ndola Central Hospital, 3-10-17, Mwamba Mulenga (facility, data, enumerator name)

ART Number	Active	Inactive between July 3 rd and Sept 1 st	Notes from file	DAR SmartCare Cross-Check	Final Determination

- If a file is active, you do not need to do anything except check it as “active”
- If a file is not active given the available information in the file, clearly star (*) the ART number
- For each starred ART number, write a note ONLY if it is a patient that appears to be active after September 1st. Please write “pick up after Sept 1” or “Visit after Sept 1.” No other notes are necessary.
- **SKIP** the DAR, SmartCare check column — this will be done later
- Final Determination: Write in this column if there is a patient status form or note on the outside of the file that states: Stopped, Dead, LTFU, Transferred Out, or Reactivated

Here’s an example of a tally sheet filled out:

ART Number	Active	Inactive between July 3 rd and Sept 1 st	Notes from File	DAR SmartCare Cross-Check	Final Determination
4032	✓				
4033 *					
4034 *			Pick up after September 1		
4035	✓				
4036 *					
4037					Dead
4038					T.O.

STEP 2:

Cross-check files from tally sheets that were marked as inactive using the following flow chart:

Cross-Checks for ZPCTIIB's Active Files	Source	Outcome
1. Does the DAR (daily activity register) show that the patient had medication between July 3 rd and September 1 st ?	DAR	YES – file is active. Check the <u>active</u> column and write "DAR = YES" in cross-check column (4034) NO – Write "DAR = NO" in cross-check column. Go to next
2. Does SmartCare show that the patient had medication or a clinical visit between July 3 rd and September 1 st ?	SmartCare	YES – file is active. Check the <u>active</u> column and write "SC = YES" in cross-check column (4036) NO – Write "SC = NO" in cross-check column. Go to next
3. The patient is NOT active in either SmartCare or the DAR		TRUE – File is inactive. Check the <u>inactive</u> column (4033)

Here is an example of the same tally sheet filled out with the Check column completed.

ART Number	Active	Inactive between July 3 rd and Sept 1 st	Notes from file	DAR, SmartCare Cross-Check	Final Determination
4032	✓				
4033 *		✓		DAR = NO SC = NO	
4034 *	✓			DAR = YES	
4035	✓				
4036 *	✓		Pick up after September 1	DAR = NO SC = YES	
4037					Reactivated
4038					T.O.

STEP 3:

Back cross-check 100 active files in the DAR:

1. Identify files that have very old documentation and 1 line of updated pharmacy information that makes the file active.
2. Pull 100 of these files and set aside. Note: If you are unable to find 100 such files at your facility, pull as many as you find.
3. One team member should look these patients up in the DAR by ART number to ensure that the date of service on the pharmacy form matches the date in the DAR.
4. Please record all dates in a facility notebook together on one page as below.
5. Mark the 4th column if dates do not match

ART Number	Date of Pharmacy Pick Up in File	Date of Pharmacy Pick Up in DAR	Dates do not Match
4032	15/7/17	15/7/17	
4033	05/09/17	15/7/17	X

Step 4:

Make a tally sheet for ZPCTIIB’s inactive files that looks like this:

Ndola Central Hospital, 3-10-17, Mwamba Mulenga (Facility, data, enumerator name)

ART Number	Inactive	Active between July 3 rd and Sept 1 st	Notes from File	Final Determination

Description of table contents to be filled out by enumerators:

- If a file is inactive and there is no patient status form, mark inactive
- If a file is inactive and there is a patient status form write the status in the final determination column (TO, Dead, LTFU, Stopped). The status may also be written on the outside of the file
- If a file has evidence of being “active,” check the active column
- For each file marked “active,” write a note about what you found in the file that determines that it is active

Here’s an example of a tally sheet filled out:

Number	Inactive	Active between July 3rd and Sept 1st	Notes from File	Final Determination
6032	✓			
6039	✓			
6059		✓	Picked up prescriptions on 20/8/2017	
6065	✓			
6069				Dead
6070				TO
6071				Stopped

APPENDIX 2. TALLY SHEET

MEASURE Evaluation ART Data Validation Exercise: October 2–31, 2017

Date(s) of Assessment: _____

Facility Name: _____ Facility Type* _____

Province: _____ District: _____

Beginning Date for ART at Facility: Month _____ Year _____

DATA TALLY SHEET: For ZPCTIIB active files

Total Files Reviewed	Active files on ART	Inactive Files	Number of Files with patient STATUS DOCUMENTED by Patient Status Form or written on outside of file				
			Transfer Out (TO)	Lost to Follow-Up (LTFU)	Dead	Stopped	Reactivated

How many active files were back cross-checked in the DAR (Step 3)?

What percent of active files that were back cross-checked had dates that matched the DAR?

DATA TALLY SHEET: From ZPCTIIB inactive files

Total Files Reviewed	Inactive files	Active files on ART	Number of Files with patient STATUS DOCUMENTED by Patient Status Form			
			Transfer Out (TO)	Lost to Follow-Up (LTFU)	Dead	Stopped

Estimate what percent of total inactive files were reviewed and reported:

Tracking Team Progress			
Total number of all files reviewed at facility	No. of auditors counting	Average. no. files counted per person (Total divided by number of auditors)	Total number days/hours required to complete count

ZPCTIIB Data Base:

How many active patients are in the ZPCTIIB data base for this facility?

***Facility Type:** Hospital, Health Centre, Rural Health Centre, Clinic

Tally sheet completed by: _____ Date: _____

APPENDIX 3. QUICK GUIDE TO FILE SORTING

Number Currently on ART Validation Exercise: Quick Guide for Data Collectors

Determine if client had ART between July 3 rd and Sept 1 st	Source	Outcome
1. Is there evidence that the client is: Transferred Out, Lost to Follow Up, Stopped, or Dead before Sept 1 st ?	Patient Status Form <u>OR</u> Outside of the File	YES – File closed. STOP NO – Go to next
2. Did the client have a pharmacy pick up between July 3 rd and Sept 1 st ?	Pharmacy Form	YES – File active. STOP NO – Go to next
3. Does the client have a next visit date on the pharmacy form that falls AFTER July 3 rd ?	Pharmacy Form	YES – File active. STOP NO – Go to next
4. Did the client receive enough medication at last pharmacy pick up to last beyond July 3 rd ? See table of dates below	Pharmacy Form	YES – File active. STOP NO – Go to next
5. Did the client have a clinical appointment between July 3 rd and Sept 1 st ?	Initial Visit Form <u>OR</u> Clinical Follow Up Form Short Visit Form ARV Eligibility Form	YES – File active. STOP NO – Go to next
6. Does the client have a recent patient status form with section D marked as "reactivated"? The date for reactivation is during September 2017.	Patient Status Form	YES – Tally as reactivated NO – Go to next
7. If answer to all questions is NO – file needs cross-checked with Smartcare, eLMIS, DAR		

Prescription Reference Dates for Active Clients
90 day supply on/after April 3 rd
60 day supply on/after May 3 rd
30 day supply on/after June 3 rd
2 week supply on/after June 20 th
1 week supply on/after June 27 th

Remember:

- * Pre-ART clients (who have never initiated ART) are NOT counted as active
- * Clients who initiated ART for the first time AFTER September 1st are NOT counted as active

MEASURE Evaluation

University of North Carolina at Chapel Hill
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Chapel Hill, North Carolina, USA 27516
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measure@unc.edu

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