



## RESEARCH AND EVALUATION REPORT

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# Validation of data in the USAID ASSIST Project HIV care improvement activities in Tanzania

**MARCH 2016**

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This data validation report was prepared by University Research Co., LLC (URC) for review by the United States Agency for International Development (USAID) and authored by Elizabeth Hizza (URC), Stella Kasindi Mwita (URC), Christin Gilmer (Harvard T. H. Chan School of Public Health), and Edward Broughton (URC), under the USAID Applying Science to Strengthen and Improve Systems (ASSIST) Project, managed by URC. Technical assistance to improve the quality of HIV care in Tanzania is made possible by the generous support of the American people through USAID, with funding from the U.S. President's Emergency Plan for AIDS Relief (PEPFAR).



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### DISCLAIMER

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For more information on the work of the USAID ASSIST Project, please visit [www.usaidassist.org](http://www.usaidassist.org) or write [assist-info@urc-chs.com](mailto:assist-info@urc-chs.com).

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## Acronyms

ALT	Alanine aminotransferase, a liver function test
ART	Antiretroviral therapy
ASSIST	USAID Applying Science to Strengthen and Improve Systems Project
CD4	Cluster of differentiation 4
CTC	Care and Treatment Center
CTC2	Patient medical record for HIV care and treatment
DHIS	District Health Information System
ETAT	Emergency triage and treatment
HIV	Human immunodeficiency virus
Ht	Height
IPD	Inpatient department
IPT	Isoniazid preventive therapy
LTFU	Lost to follow-up
MVC	Most vulnerable children
NA	Not available
OpenMRS	Open Medical Record System
PITC	Provider-initiated testing and counseling
PMTCT	Prevention of mother-to-child transmission
QI	Quality improvement
RCH	Reproductive and Child Health
SES	Standard evaluation system for quality improvement developed under the USAID Health Care Improvement Project
TB	Tuberculosis
URC	University Research Co., LLC
USAID	United States Agency for International Development

# EXECUTIVE SUMMARY

## Introduction

This report summarizes findings of a validation exercise for data collected and reported for the USAID Applying Science to Strengthen and Improve Systems (ASSIST) Project in Tanzania by University Research Co., LLC (URC) as part of technical assistance to improve HIV care in several regions.

The USAID ASSIST Project mandates participating countries perform external validation exercises for improvement indicators and collection of data from control sites that do not receive support from USAID. ASSIST engaged the Harvard T.H. Chan School of Public Health as an independent organization to perform these activities in Tanzania.

This report investigates the validity of health indicator data used to inform HIV care improvement activities in three health facilities in the Morogoro Region of Tanzania: one regional hospital and two health centers. The indicators validated addressed both pediatric and adult HIV care and PMTCT in these public health facilities. We sought to determine if the data collected on the indicators during the course of implementing improvement activities were accurate, complete, and indicative of the health care being delivered and the health status of patients receiving care at the participating facilities.

## Methods

This retrospective cross-sectional cohort assessment was conducted in August 2015 using data from patient record and facility registers to determine consistency, accuracy, and completeness of patient- and facility-level data, examining records in three facilities in Morogoro Urban District. The record reviews were supplemented with face-to-face interviews with staff involved in managing these data.

In each facility, 10 HIV patient record forms known as CTC2 cards were selected at random from patients who had received care at the facility in the previous month. These were examined for completeness (i.e., to determine if all the expected information was actually recorded) and to determine if data from those cards had been entered accurately into the antiretroviral therapy register. In addition, information reported in the three facilities' QI team journals was compared with the database in the ASSIST office in Dar es Salaam where all improvement data are entered.

## Results

The review of the CTC2 cards found a high proportion of data missing in the sampled cards in all three facilities. On average, 84% of the personal/demographic data were complete, yet only 68% of the information expected in the treatment eligibility section of the cards and 66% of the information expected to be recorded in the HIV care visit section of the cards were complete. The study also found that the section of the CTC2 card for counseling was generally with only partially completed or not completed at all. Examination of the individual items in the columns showed some (i.e., hemoglobin, alanine aminotransferase, height, and CD4 count) were missing from most or all of the sampled charts. The fact that these items were missing in a large proportion of the sampled CTC2s shows that using any of these as quality improvement outcome indicators will not give valid information on the success or otherwise of changes implemented as part of the improvement process. Absence of these elements of clinical condition and treatment makes it difficult for clinicians to closely track overall patient status and make evidence-based adjustments to the treatment protocols of the patients.

ART registers showed poor face validity. For example, it seems unlikely that Kingolwira had 100% of adults in the three months remain alive and on treatment 12 months after initiation of ART, particularly when the corresponding figures for the other two facilities were much lower (below 75%).

There were significant challenges to storage, indexing, and organization of the CTC2 cards and facility registers. Given the severe shortage of clinical staff in these facilities and the demands of a very high patient load, it is important that the system for access to medical records be as efficient as possible. While

the facility CTC filing process from all three facilities assessed in this study appeared well-organized and coordinated, the large volume of CTC2 cards and the lack of filing space made filing, sorting, and retrieving difficult and time-consuming.

## **Conclusions and Recommendations**

Caution must be taken when using the following process and outcome indicators to inform improvement activities.

- Proportion of adults and children known alive and on treatment 12 months after ART initiation
- Proportion of HIV-positive pregnant or lactating women on ART (new and old, cumulative)
- Proportion of patients experiencing an improvement in CD4 counts (or percentages for children)
- Proportion of patients reporting fewer opportunistic infections
- Proportion of patients reporting improvements in signs and symptoms compared to the previous clinic visit

Based on this rapid assessment, data on the above indicators from these facilities are unlikely to be accurate because of inconsistencies in the transfer of patient data from CTC2 to facility register and also because of the high proportion of CTC2s that are incomplete on these indicators.

In order to improve clinical effectiveness, data validity, and quality improvement processes at health facilities like these in Tanzania, the following recommendations are offered:

- Expand the use of the Open MRS software currently being used in Morogoro Regional Hospital
- Orient health workers to consistently update the CTC2 cards to ensure they are complete, to standardize the symbols and abbreviations used by clinicians when entering patient data into the medical records, including assuring use of consistent convention to indicate missing data
- Improve training for data clerks on the use of the national ART database and basic database search criteria and queries and expand health care workers' understanding of the capabilities of the national ART database to perform searches, look up specific client information, and determine medication effectiveness.
- Create more efficient methods for data entry and record management by data clerks through increased job training and frequent quality improvement audits.
- Improve storage and security of files and records and the amount of storage space (with filing cabinets) for storage to facilitate rapid retrieval of medical records.



# I. INTRODUCTION

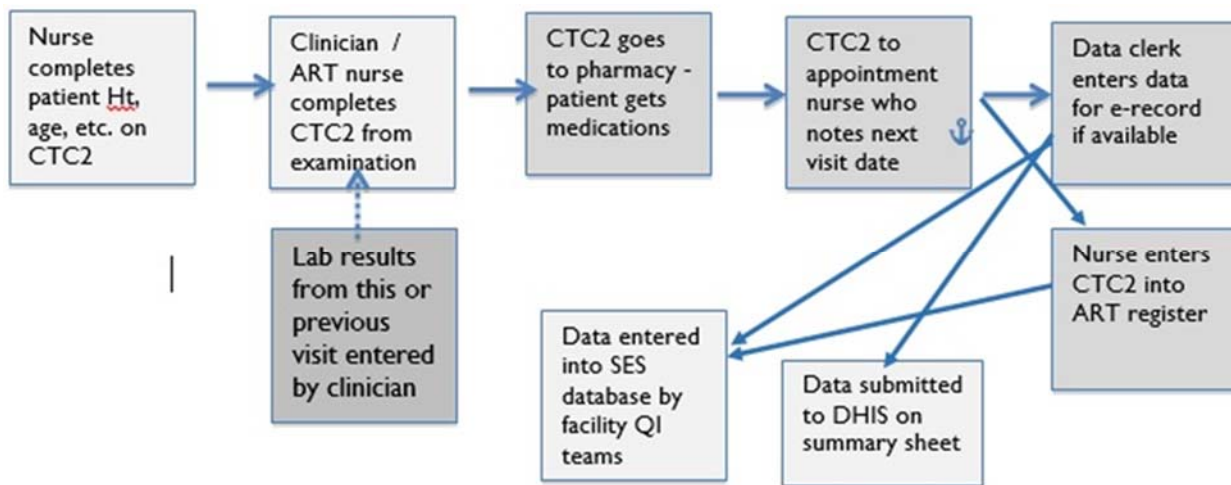
The USAID Applying Science to Strengthen and Improve Systems (ASSIST) Project has been providing technical assistance to health facilities providing prevention of mother-to-child transmission (PMTCT) and antiretroviral therapy (ART) services in several regions in Tanzania since 2012. The project facilitates changes in the health system to improve the care delivered using quality improvement methods.

Quality improvement (QI) relies on data for key performance indicators to determine whether or not the changes implemented are leading to the desired improvements in processes and outcomes of care. It is therefore important that the data collected by those involved in the improvement activities be sufficiently accurate to guide this iterative cycle of change and evaluation.

This report investigates the validity of health indicator data used to inform HIV care improvement activities in three health facilities in the Morogoro Region of Tanzania: one regional hospital and two health centers. The indicators validated addressed both pediatric and adult HIV care and PMTCT in these public health facilities. We sought to determine if the data collected on the indicators during the course of implementing improvement activities were accurate, complete, and indicative of the health care being delivered and the health status of patients receiving care at the participating facilities.

Under normal circumstances, information on the care received by the patient and the status of their health is recorded and flows from that point to the team of health workers who make up the QI team in the facility. The path of that data begins with the patient encounter, which is recorded by a nurse who recorded other patient history and demographic information in the Care and Treatment Center (CTC) patient record form, a four-sided card known in Tanzania as the CTC2 card. Data from the CTC2 are eventually entered into a ward register or electronic database (depending on availability in the facility) that is submitted to the District Health Information System (DHIS). The CTC2 data are collated, analyzed, and used by the improvement team to inform the activities they are undertaking with the goal of improving the processes and outcomes of care. **Figure 1** shows the basic flow of the information from the point of origin to reporting by the QI team or entry into the DHIS.

**Figure 1. Flow of data**



There is some variability to this pattern, depending on the services received by the patient and the level of staffing available at the facility relative to the patient load. QI teams also record information about the changes they implement in the facility as part of their intervention to improve health service delivery in a QI team documentation journal known as the Standard Evaluation System (SES) journal. The team journal also has a place for the team to record data on the indicator that is being used to monitor the effect of changes and space to plot a time series chart for that indicator.

Anecdotally, it has been seen by ASSIST improvement advisors working in these facilities and others that there are inconsistencies in the data reported by the facility QI teams and the summary prepared for the DHIS. These data are checked for gross inconsistencies by the district health officer in charge of monitoring but there are no closer checks for validity of the data. It is useful to determine which data source is the most accurate and develop interventions to address causes of inaccuracies in at any points in the cascade shown in **Figure 1**. It is important to examine these data for accuracy to determine if it is appropriate to use the data to guide the improvement activities, as well as to assess the accuracy of data reported by health facilities in the DHIS.

## II. METHODS

This retrospective cross-sectional cohort assessment was conducted using data from patient record and facility registers to determine consistency, accuracy, and completeness of patient- and facility-level data. It was carried out during August and September 2015 in Morogoro Regional Hospital, Kingolwira Health Center, and Saba Saba Health Center in Morogoro Urban District. The record reviews were supplemented with face-to-face interviews with staff in two of the facilities involved in managing these data. Key staff were not available on the days of data collection in Kingolwira.

This examination of data had three dimension as follows:

- 1) Ten CTC2 patient record forms were selected at random from each facility for patients who had received care at the facility in the previous month. These were examined for completeness (i.e., to determine if all the expected information was actually recorded) and to determine if data from those cards had been entered into the e-record or the ART register accurately. The CTC2 card is shown in **Appendix 1** with indications in red showing which health provider usually completes which section. Data recorded in the sampled CTC2s were compared with the recorded in the ART register or in the electronic database if the health facility used one.
- 2) Information reported in the three facilities' QI team journals was compared with data in the ASSIST SES electronic databases where all improvement data are entered to evaluate consistency of the data as transcribed and entered into the ASSIST database. In-person interviews were conducted with the data clerk at Saba Saba Health Center and Morogoro Regional Hospital about their procedures for entering data on indicators, recording QI activities, data entry, and training they had received related to medical records and data.
- 3) ART registers from each of the three facilities were examined for face validity, the degree to which the indicator calculated from the register appears to indicate the actual quality of care being provided to patients. Mother-child follow-up registers and provider-initiated counselling and testing (PICT) registers were also reviewed to check for face validity of specific indicators. We looked for completeness of the results, and whether or not they were realistic, based on register data covering the previous three months.

## III. RESULTS

The review of the CTC2 cards found a high proportion of data missing in the sampled CTC2s in all three facilities. There are 25 personal and demographic fields to be completed in each CTC2, for a total of 250 pieces of data across the 10 CTC2s sampled in each facility. Results are shown in **Table 1**, Row 1. There are 16 fields in the eligibility section on page 4 of the CTC2 card (**Table 1**, Row 2). There are 25 columns in the visit details section (**Table 1**, Row 3). Although it was not the focus of this evaluation, it was noted that page 2 of the CTC 2 card, the section for counseling, were generally with only partially completed or not completed at all.

In the 25 visit details columns, many data were missing. On average, only 66% of the information expected to be recorded in the HIV care visit section of the cards was filled in (**Table 1**). In some cases,

there was “NA” or “-“ denoting the information was not available rather than being available but not entered onto the CTC2 card and these were not considered missing. Examination of the individual items in the columns showed some were missing from all of the sampled charts (**Table 2**).

**Table 1: Indicators of completeness of sampled CTC2 cards**

Indicator	Facility			Average
	Morogoro	Kingolwira	Saba Saba	
1. % of possible fields complete in personal/demographic section	80%	84%	88%	84%
2 % complete in treatment eligibility section	71%	67%	66%	68%
3. Visit data columns completed	57%	63%	76%	66%
4. Register / electronic database have updated data for 10 sampled card	Yes	No	Yes	

**Table 2: Proportion of fields with missing information in the clinical status and treatment sections of the sampled CTC2 cards**

CTC2 column number	Field	Total out of 30 CTC2 cards				%
		Morogoro	Kingolwira	Saba Saba	Total	
3	Weight			6	6	20
4	Height / length	10	10	9	29	97
6	CD4 count / %	9	8	10	27	90
7	Signs & symptoms	9	9		18	60
11	TB treatment/IPT			4	4	13
13	Reason for change in ARV regimen	9	6		15	50
16	Other treatment	9			9	30
17	Hemoglobin	10	10	10	30	100
18	Alanine aminotransferase	10	10	10	30	100
19	Other laboratory results	10	8		18	60
21	Nutritional supplement		1	1	2	7
22	Referral	10	4	9	23	77
23	Next visit date			1	1	3
24	Follow-up status	10	9		19	63

Results of the observations of CTC2 availability, filing, and storage are shown in **Table 3**. Morogoro Regional Hospital had the fewest problems with storage, while Saba Saba had the worst situation among the three with respect to the CTC2 cards.

**Table 3: Storage, indexing, and organization of CTC2 cards**

	Facility		
	Morogoro	Kingolwira	Saba Saba
CTC2 storage room secure?	Yes	Yes	No
Adequate space for files?	No	No	No
Adequate shelving for CTC2s?	No	No	No
CTC2s indexed for easy access?	Yes	Yes	No
Transferred, lost to follow-up, and dead patient records kept separately?	Yes	Yes	No
Clear flow of files/forms from storage to use?	Yes	Yes	Yes

ART registers showed poor face validity as many were incomplete. For example, it seems unlikely that Kingolwira had 100% of adults in the three months remain alive and on treatment 12 months after initiation of ART, particularly when the corresponding figures for the other two facilities were much lower (Table 4).

**Table 4: Register data for four service performance indicators**

Indicator	Month	Morogoro	Kingolwira	Saba Saba
Adults and children known alive and on treatment 12 months after ART initiation	2015	<b>Adults</b>		
	May	NA	100%	59%
	June	63%	100%	69%
	July	67%	100%	71%
	2015	<b>Children</b>		
	May	NA	NA	71%
	June	20%	NA	67%
	July	NA	NA	100%
HIV-positive pregnant or lactating women on ART (new and old, cumulative)	May	NA	NA	81%
	June	NA	NA	82%
	July	NA	NA	84%
Children tested for HIV at pediatric wards per month	2015	<b>Ward 6 and ICU</b>	<b>RCH</b>	
	May	32%	17%	32%
	June	0%	4%	0%
	July	16%	6%	16%
	2015	<b>ETAT</b>	<b>IPD</b>	
	May	NA	27%	NA
	June	8%	3%	NA
	July	31%	0%	NA

## IV. DISCUSSION

Evaluation of data from CTC2s and ART registers at the three facilities in Morogoro Urban District showed that there were deficits in completion of sections of the CTC2 cards and seeming inconsistencies in the registers. It was also noted that there were deficits in storage, indexing, and organization of the records. These factors suggest that data collected by improvement teams at this level may not be valid indicators of quality performance in these three facilities. At the same time, the QI teams in the three facilities were able to identify and attempt to address several problems over the past three years, suggesting that despite data deficiencies, improvements in care could still be made. The study also found that the system of retrieval and use of the records was less than optimal. The transfer of the information from the CTC2 cards to either the electronic record or the facility register was generally good.

It was observed in Kingolwira that records on pregnant and lactating women on ART and their children were missing or difficult to track. In some cases, the records of the mother and child were kept separately. Another issue noted there was that some records were not being entered using the latest versions of the CTC2 card and registers. This evaluation included data entered into the old versions). It is recommended that this be addressed at least with all new patients.

Also noted at Kingolwira over the period covered by this evaluation was the absence of the data clerk. Because the nurses did not know how to enter the data into the electronic database, there was a backlog of CTC2 cards whose data had not been entered into the system. This is a recurrent problem caused by the shortage of health care workers in facilities and inadequate training of staff, which precludes them from taking over the duties of another staff member when they are unavailable. It should also be noted that data clerks receive training from a regional implementing partner specifically designated for that role. ASSIST staff have been working with this implementing partner to solve this issue, as well as other capacity issues with the data clerks.

Morogoro Regional Hospital was using a database system called "Open MRS" that allowed data clerks to efficiently retrieve patient demographic information, patient clinical status, clinician notes, and more. Data from the CTC2s were frequently updated in the database, though the files themselves were not bound well, and documentation was not organized for ease of access.

For patients who had been on ART for more than 26 months (the number of rows for patient visit data on the CTC2), their card would have been completely filled at least once. When a subsequent chart is started, the nurse should transfer all of the demographic information from the previous to the new card but also staple the two (or more) cards to keep them together. In some cases this had not happened. Completion of the treatment eligibility section was observed in about two-thirds of the sample in all three facilities. It may also have been the case that the information had not been transferred to the new CTC2 from a subsequent one for patients who had been receiving treatment for more than 26 months.

Two elements in the clinical status and treatment section were consistently blank in all thirty CTC2s sampled. Hemoglobin levels should be done monthly for pregnant women and at baseline, week 4, week 8, and thereafter every six months for others if the ART regimen contains Zidovudine (AZT). These tests were either not conducted or not recorded in the patients' CTC2s. It is often the case that the equipment and supplies need to conduct these tests are not available, so the test is not conducted. The same was found for the alanine aminotransferase (ALT) test, a liver function test that is recommended at least at the start of services (baseline) and more regularly if the client is receiving ART combinations that have Nevirapine or elderly clients or others at risk of renal or liver disease. The Height/Length section was also not completed in most charts, but this is likely because that measure is only relevant children under the age of 15 years. Signs and symptom and opportunistic infections are two elements for which data should be collected and recorded for every patient on every visit. The fact that they were missing in 60% and 13%, respectively, of the sampled CTC2s shows that using either as quality improvement outcome indicator will not give valid information on the success or otherwise of changes implemented as part of the improvement process.

CD4 counts or percentages were also not completed in the once-every-six-months period recommended by national guidelines. Therefore, using this as an outcome indicator to guide quality improvement activities is also not supported by these findings. As with other laboratory tests, the completion of this test according to national guidelines depends on the functioning of the testing equipment, its capacity compared to demand, and availability of the reagents. While Morogoro Regional Hospital has CD4 laboratory equipment of highest capacity between the three facilities, it had only a 90% completion of recorded values for CD4. The reasons for this deficit were not investigated for this evaluation, and further examination is needed to identify the cause and address it with system changes.

Absence of these elements of clinical condition and treatment makes it difficult for clinicians to closely track overall patient status and make evidence-based adjustments to the treatment protocols of the patients.

There were significant challenges to storage, indexing, and organization of the CTC2 cards and facility registers. Given the severe shortage of clinical staff in these facilities and the demands of a very high patient load, it is important that the system for access to medical records be as efficient as possible. This is an issue that ASSIST has been working on with the QI team in each facility. In some facilities supported by ASSIST in Morogoro Region and elsewhere, expert patients, identified as people with HIV who have the time and skills, have been trained to support nurses in this role. While the facility CTC filing process from all three facilities assessed in this study appeared well-organized and coordinated, the large volume of CTC2 cards and the lack of filing space made filing, sorting, and retrieving difficult and time-consuming.

## **A. Limitations**

Legibility of patient records hampered extraction of the data from the files. This is something that the ASSIST-supported QI teams have been working on in recent months. Illegible entries into the CTC2s and registers means that there could be underestimation of the completeness of the medical records.

Another limitation of this evaluation is the small sample size. Given the time limitations, a sample of 10 CTC2s was chosen from the total number of active patients. This limits the statistical inferences that can be made. However, this study was intended to be only a rapid assessment of the status of medical records for the purpose of estimating validity of the data rather than a full study with rigorous statistical methods. While limited, this report gives valuable information about issue of the accuracy and completeness of the medical records used to inform improvement activities.

## **V. CONCLUSION AND RECOMMENDATIONS**

Caution must be taken when using the following process and outcome indicators to inform improvement activities.

- Proportion of adults and children known alive and on treatment 12 months after ART initiation
- Proportion of HIV-positive pregnant or lactating women on ART (new and old, cumulative)
- Proportion of patients experiencing an improvement in CD4 counts (or percentages for children)
- Proportion of patients reporting fewer opportunistic infections
- Proportion of patients reporting improvements in signs and symptoms compared to the previous clinic visit

The indicator “Proportion of children tested for HIV at pediatric wards per month” was difficult to assess because the indicator is captured in the PITC and inpatient registers but possibly not recorded in a CTC2 card if the HIV status is unknown or it is known but the child has not been started on ART.

Based on this rapid assessment, data on the above indicators from these facilities are unlikely to be accurate because of inconsistencies in the transfer of patient data from CTC2 to facility register and also because of the high proportion of CTC2s that are incomplete on these indicators. The ASSIST improvement advisors report that the data have improved and that improving the completeness and accuracy of register information has been an important goal of the intervention. However, gaps in performance remain.

## **A. Recommendations and Follow-up Activities**

Each facility in the Morogoro Region working with the USAID ASSIST Project had worked on improving the completeness and accuracy of the data collected for improvement activities and record keeping over the past several months with the ASSIST improvement advisors. This formed a regular part of their coaching visits and other contacts throughout the period. Each still demonstrated substantive deficiencies and the need for the technical assistance for at least this aspect of care to continue. Facility-specific recommendations for continued improvements to address issues identified in this report have been presented to each of the facility in-charges by senior member of the ASSIST Tanzania team and are summarized below:

### **1. Morogoro Regional Hospital**

- Improve the quality of chart binding
- Ensuring that the most up-to-date forms are used for every patient and in every chart
- Document demographic data on the current CTC2 cards (as much information has likely changed over the past several years but this is not reflected if/when new cards are issued)
- Update both the electronic medical records system and the paper-based charts on a frequent and regular basis

### **2. Kingolwira Health Center**

- Improve the inputting and capture of data for pregnant and lactating women on ART and their children.
- Use the latest CTC2 forms and registers
- Improve the separation of lost-to-follow-up, dead, and transferred-out charts in a rapid manner so as to reflect current clinical rosters.

## **B. Overall Recommendations**

In order to improve clinical effectiveness, data validity, and quality improvement processes at health facilities like these in Tanzania, the following recommendations are offered:

- Expand the use of the Open MRS software currently being used in Morogoro Regional Hospital (being piloted in only two health facilities outside of Dar es Salaam).
- Orient health workers to consistently update the CTC2 cards to ensure they are complete.
- Standardize the symbols and abbreviations used by clinicians when entering patient data into the medical records.
- Use the latest CTC2 card for every patient seen and update cards added (when old cards are filled up) with accurate demographic information.
- Improve training for data clerks on the use of the national ART database and basic database search criteria and queries.

- Transfer HIV-positive or at-risk children of HIV-positive mothers into their own HIV-exposed infant charts and separate them from mothers in PMTCT.
- Expand health care workers' understanding of the capabilities of the national ART database to perform searches, look up specific client information, and determine medication effectiveness.
- Create more efficient methods for data entry and record management by data clerks through increased job training and frequent quality improvement audits.
- Continue to emphasize to facility clinicians the importance of maintaining adequate individual medical records and facility registers to inform clinical care and management decisions.
- Implement changes to improve compliance with the national guidelines to complete CD4 counts every six month through emphasis to health workers and sustaining the availability of CD4 reagents and equipment.
- Improve storage and security of files and records and the amount of storage space (with filing cabinets) for storage to facilitate rapid retrieval of medical records.
- Improve consistency in using “-“, “N/A,” or blank spaces on CTC2 cards and charts and only employing one of these terms across the entire staff.

It was reported by the ASSIST improvement advisors that each clinic was forthcoming about their deficits and their desire to continue their work to improve systems of management in the facility and their own professional development. It is recommended that ASSIST continue providing improvement support to these facilities and reassess their data collection, storage, and organization systems to determine if there have been changes in response to the improvement work.




# APPENDIX: CTC2 CARD HIV PATIENT MEDICAL RECORD

**CTC2: PATIENT RECORD FORM**

**THE UNITED REPUBLIC OF TANZANIA**

**MINISTRY OF HEALTH AND SOCIAL WELFARE**

**Section completed by the nurse.**



CTC2 Card No:

FACILITY NAME: \_\_\_\_\_ FACILITY CODE: \_\_\_\_\_ DISTRICT: \_\_\_\_\_

UNIQUE CTC ID NUMBER: \_\_\_\_\_ HEALTH FACILITY FILE NUMBER: \_\_\_\_\_

NAME (first, middle, last): \_\_\_\_\_ SEX: Female  Male

DATE OF BIRTH\* (dd/mm/yy): \_\_\_\_\_ MARITAL STATUS (see code 1): \_\_\_\_\_

AGE (Years/Months): \_\_\_\_\_

HEIGHT: \_\_\_\_\_ cm (Adults)

**PATIENT REFERRED FROM (tick appropriate):**

- OPD / INPATIENT
- STI
- TB DOTS
- RCH/ PMTCT/EID
- PLHIV GROUP
- SELF REFERRAL (incl. VCT)
- HOME BASED CARE
- OTHER (specify) \_\_\_\_\_

**PATIENT ADDRESS**

DISTRICT/DIVISION/WARD: \_\_\_\_\_

STREET/VIL LAGE: \_\_\_\_\_

STREET/VILLAGE/CHAIRMAN: \_\_\_\_\_

NAME OF TEN CELL LEADER: \_\_\_\_\_

NAME OF HEAD OF HOUSEHOLD: \_\_\_\_\_

CONTACT OF HOUSEHOLD HEAD:

PATIENT'S TELEPHONE No.

**TRANSFER IN (tick those applicable)**

- WITH RECORDS (referral and CTC 1 forms)
- NO RECORDS AVAILABLE
- IN CARE
- ON ART

**PATIENT SUPPORT**

NAME OF TREATMENT SUPPORTER: \_\_\_\_\_

TELEPHONE No. OF TREATMENT SUPPORTER: \_\_\_\_\_

PATIENT JOINED COMMUNITY SUPPORT ORGANISATION Yes  No

NAME OF ORGANISATION/GROUP: \_\_\_\_\_

(1) VISIT DATE (dd/mm/yy)	(2) VISIT TYPE (code 2)	(3) WEIGHT (kilograms)	(4) LENGTH/ HEIGHT (in cm) (<15YRS)	(5) WHO CLINICAL STAGE (1-4)	(6) CD4 COUNT%**	(7) SIGNS and SYM- TOMS & Ols (code 3)	(8) FUNCTIONAL STATUS (code 4)	(9) PREGNANT Y/N (if Y, insert EDD & ANC # if N insert code 5)	(10) TB Screen- ing and Dx (code 6)	(11) TB Rx/IPT (code 7)	(12) ARV STATUS (code 8)	(13) ARV REASON (code 9)
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Section completed by the clinician at each visit.

\*see training manual on how to estimate date of birth when not known (dd/mm/yy)      \*\* for children ≤5 YRS CD4%, otherwise CD4 count

Counselor completes this section, including family information.

**CTC2 DISCUSSION TOPICS AND CODES**

Discussion topics for follow-up and counseling (group or individual, pre-and post ART). Choose one to three priority topics each visit								
Topic	Date	Comments	Date	Comments	Date	Comments	Date	Comments
Basic HIV/AIDS and prevention								
Disclosure and identifying treatment supporter								
Coping and planning the future								
Promoting Testing within household								
Pregnancy, MTCT and family planning								
Adolescent issues								
Disease progression and role of ART								
Prevention of diseases, environmental hygiene, hand washing, bed nets and nutrition								
CTX and INH prophylaxis								
Importance of adherence, how to remind, plan, what to do when traveling, sick etc. Refer to checklist								
How to use CTC1 for exemptions								
Importance of HBC and PLHIV support group								
Self Care								
Importance of appointments, dates and time, planning transport								
Provide patient leaflets/ brochures								
STIs/RTIs Syndromes								

**FAMILY INFORMATION**

	NAME	RELATION	AGE	HIV STATUS + / - / unknown	HIV CARE Y / N	UNIQUE CTC ID No./ HEI OR HEID No.	HEALTH FACILITY FILE No.
1							
2							
3							
4							
5							
6							
7							

## CODES

<p><b>1. MARITAL STATUS</b>            S = SINGLE            M = MARRIED            CO = COHABITING            D = DIVORCED/SEPARATED            W = WIDOW/WIDOWED</p>	<p><b>9. ARV REASON NO START</b>            51 = DOES NOT FULFILL CRITERIA            52 = FULFILLS CRITERIA BUT COUNSELING FOR ARVS ONGOING            53 = FULFILLS CRITERIA BUT NO ARVS AVAILABLE            54 = FULFILLS CRITERIA BUT IS NOT WILLING            55 = FULFILLS CRITERIA BUT IS ON TB RX            57 = FULFILLS CRITERIA BUT AWAITS LAB RESULTS            58 = FULFILLS CRITERIA BUT HAS OI AND IS TOO SICK TO START            99 = FULFILLS CRITERIA BUT NO START - OTHER</p>	<p><b>7. TB TREATMENT (RX)/IPT</b>            START TB = START TB Rx (Insert date)            CTN TB = CONTINUE            CPLT TB = COMPLETE (Insert date)            STOP TB = STOPPED (Insert date)            RES TB = RESTART (Insert date)</p> <p>Restart screening after Completion TB Rx            START IPT = START IPT Rx (Insert date)            CTN IPT = CONTINUE            CPLT IPT = COMPLETE (Insert date)            STOP IPT = STOPPED (Insert date)            RES IPT = RESTART (Insert date)</p> <p>Restart screening after client stops IPT</p>																																																																																							
<p><b>2. VISIT TYPE</b>            S = Scheduled visit at this clinic            US = Unscheduled visit at this clinic            TK = Traced back after LTFU            TS = Treatment supports drug pick up            O = Visit other clinic (refill/outreach or transit)            IP = In-Patient Consultation</p>	<p><b>ARV START</b>            211 ADULT CD4 &lt;= 350            212 ADULT WHO STAGE 3 OR 4            213 PREGNANT WOMEN CONFIRMED HIV+            214 BREAST FEEDING MOTHERS CONFIRMED HIV+            215 TB CO-INFECTED            222 CHILD &lt; 24 MONTHS CONFIRMED HIV+            223 CHILD 24 - 59 MONTHS WHO STAGE I OR II IF CD4% &lt; 750/25%            224 CHILD 24 - 59 MONTHS WHO STAGE 3 OR 4            225 CHILD ≥ 5 YEARS WHO, STAGE I OR II CD4 &lt; 350            227 CHILD &lt; 18 MONTHS WITH SEVERE HIV DISEASE (PRESUMPTIVE HIV DIAGNOSIS)            108 OTHER REASONS TO START</p>	<p><b>8. ARV STATUS</b>            1 = NO ARV 2 = START ARV 3 = CONTINUE            4 = CHANGE 5 = STOP 6 = RESTART            7 = PMTCT Prophylaxis</p>																																																																																							
<p><b>3. SIGNS, SYMPTOMS AND OI's</b>            ABDOMINAL PAIN            ANAEMIA            BN BURNING/NUMB/TINGLING            CNS DIZZY, ANXIETY, NIGHTMARE,            DEPRESSION            COUGH*            DB DIFFICULT BREATHING            DEMENTIA            DIARRHOEA            ENC- HIV ENCEPHALOPATHY            FAT CHANGES            FATIGUE            FEVER*            GUD GENITAL ULCER DISEASE            HEADACHE            HM HEMOPTYSIS*            IRIS IMM. RECONST. INFLAMM SYNDROME            ITCHING            JAUNDICE            MOLLUSCUM            NIGHT SWEATS*            NAUSEA            PE PAROTID ENLARGEMENT            PID PELVIC INFLAMMATORY DISEASE            PNEUMONIA            PPE PAPULAR PRURITIC ERUPTIONS            RASH            THRUSH ORAL/VAGINAL            UD URETHRAL DISCHARGE            ULCERS MOUTH OR OTHER            WEIGHT LOSS*            ZOSTER</p>	<p><b>CHANGE OR STOP ARVS BECAUSE OF TB OR ADVERSE REACTIONS</b>            110 = START TB TREATMENT            111 = NAUSEA/VOMITING            112 = DIARRHOEA            113 = HEADACHE            114 = FEVER            115 = RASH            116 = PERIPHERAL NEUROPATHY            117 = HEPATITIS            118 = JAUNDICE            119 = DEMENTIA            120 = ANAEMIA            121 = PANCREATITIS            122 = CNS ADVERSE EVENT            123 = OTHER ADVERSE EVENT (SPECIFY)</p>	<p><b>11. ARV ADHERENCE</b>            G (good) = fewer than 2 missed days            P (poor) = 2 or more missed days  <b>REASONS FOR POOR ARV ADHERENCE</b>            1 = TOXICITY            2 = SHARE WITH OTHERS            3 = FORGOT TO TAKE DRUGS            4 = FELT BETTER            5 = TOO ILL            6 = STIGMA            7 = PHARMACY DRUG STOCK OUT            8 = PATIENT LOST / RAN OUT OF PILLS            9 = DELIVERY / TRAVEL PROBLEMS            10 = INABILITY TO PAY            11 = ALCOHOL            12 = DEPRESSION            13 = OTHER (SPECIFY)</p>																																																																																							
<p><i>If other, specify:</i>            OPPORTUNISTIC INFECTIONS            CM CRYPTOCOCCAL MENINGITIS            KS KAPOSI'S SARCOMA            OC ESOPHAGEAL CANDIASIS            PCP PNEUMOCYSTIS PNEUMONIA</p> <p><b>*These are TB Symptoms</b></p>	<p><b>CHANGE OR STOP ARVS BECAUSE OF TREATMENT FAILURE</b>            131 = TREATMENT FAILURE, CLINICAL            132 = TREATMENT FAILURE, IMMUNOLOGICAL</p> <p><b>CHANGE OR STOP ARVS, OTHER REASON</b>            141 = POOR ADHERENCE            142 = PATIENT DECISION            143 = PREGNANCY            144 = END OF PMTCT            148 = STOCK OUT            149 = OTHER REASON (SPECIFY)            151 = RESTART ARV AFTER 3 OR MORE MONTHS NOT ON ARV</p>	<p><b>12. OI TREATMENT/PROPHYLAXIS AND RELEVANT CO-MEDICATIONS</b>            1 = COTRIMOXAZOLE            2 = FLUCONAZOLE            3 = OTHER ANTIBIOTICS            4 = ANTIMALARIAL            5 = OTHER MEDICINES</p>																																																																																							
<p><b>4. FUNCTIONAL STATUS:</b>            W= WORKING A= AMBULATORY            B= BEDRIDDEN</p>	<p><b>10. ARV COMBINATION REGIMENS</b></p> <table border="1"> <thead> <tr> <th>Adult Code</th> <th>Regimen</th> <th>Pediatric Code</th> </tr> </thead> <tbody> <tr> <td colspan="3" style="text-align: center;">First Line</td> </tr> <tr> <td>1g-A</td> <td>TDF, 3TC, EFV</td> <td></td> </tr> <tr> <td>1b-A</td> <td>AZT, 3TC, NVP</td> <td>1b-P</td> </tr> <tr> <td></td> <td>ABC, 3TC, LPV/r</td> <td>1n-P</td> </tr> <tr> <td>1c-A</td> <td>AZT, 3TC, EFV</td> <td>1c-P</td> </tr> <tr> <td>1e-A</td> <td>TDF, FTC, EFV</td> <td></td> </tr> <tr> <td>1f-A</td> <td>TDF, FTC, NVP</td> <td></td> </tr> <tr> <td>1h-A</td> <td>TDF, 3TC, NVP</td> <td></td> </tr> <tr> <td>1k-A</td> <td>ABC, 3TC, EFV</td> <td>1k-P</td> </tr> <tr> <td>1m-A</td> <td>ABC, 3TC, NVP</td> <td>1m-P</td> </tr> <tr> <td>1a-A</td> <td>d4T, 3TC, NVP</td> <td>1a-P</td> </tr> <tr> <td></td> <td>d4T, 3TC, EFV</td> <td>1d-P</td> </tr> <tr> <td>1x-A</td> <td>Other 1st Line</td> <td>1x-P</td> </tr> <tr> <td colspan="3" style="text-align: center;">Second Line</td> </tr> <tr> <td>2f-A</td> <td>TDF, FTC, LPV/r</td> <td></td> </tr> <tr> <td>2h-A</td> <td>TDF, FTC, ATV/r</td> <td></td> </tr> <tr> <td>2s-A</td> <td>AZT, 3TC, ATV/r</td> <td></td> </tr> <tr> <td>2g-A</td> <td>ABC, 3TC, LPV/r</td> <td>2g-P</td> </tr> <tr> <td>2e-A</td> <td>TDF, 3TC, LPV/r</td> <td></td> </tr> <tr> <td>2k-A</td> <td>ABC, 3TC, ATV/r</td> <td></td> </tr> <tr> <td>2m-A</td> <td>TDF, 3TC, ATV/r</td> <td></td> </tr> <tr> <td>2n-A</td> <td>AZT, 3TC, LPV/r</td> <td>2n-P</td> </tr> <tr> <td></td> <td>AZT, 3TC, EFV</td> <td>2t-P</td> </tr> <tr> <td>2x-A</td> <td>Other 2nd line</td> <td>2x-P</td> </tr> <tr> <td colspan="3" style="text-align: center;">PMTCT Prophylaxis</td> </tr> <tr> <td>5a</td> <td>AZT</td> <td></td> </tr> <tr> <td>5b</td> <td>AZT, 3TC, NVP</td> <td></td> </tr> <tr> <td>5c</td> <td>AZT, 3TC</td> <td></td> </tr> </tbody> </table>	Adult Code	Regimen	Pediatric Code	First Line			1g-A	TDF, 3TC, EFV		1b-A	AZT, 3TC, NVP	1b-P		ABC, 3TC, LPV/r	1n-P	1c-A	AZT, 3TC, EFV	1c-P	1e-A	TDF, FTC, EFV		1f-A	TDF, FTC, NVP		1h-A	TDF, 3TC, NVP		1k-A	ABC, 3TC, EFV	1k-P	1m-A	ABC, 3TC, NVP	1m-P	1a-A	d4T, 3TC, NVP	1a-P		d4T, 3TC, EFV	1d-P	1x-A	Other 1st Line	1x-P	Second Line			2f-A	TDF, FTC, LPV/r		2h-A	TDF, FTC, ATV/r		2s-A	AZT, 3TC, ATV/r		2g-A	ABC, 3TC, LPV/r	2g-P	2e-A	TDF, 3TC, LPV/r		2k-A	ABC, 3TC, ATV/r		2m-A	TDF, 3TC, ATV/r		2n-A	AZT, 3TC, LPV/r	2n-P		AZT, 3TC, EFV	2t-P	2x-A	Other 2nd line	2x-P	PMTCT Prophylaxis			5a	AZT		5b	AZT, 3TC, NVP		5c	AZT, 3TC		<p><b>13. NUTRITIONAL STATUS</b>            OK = NOT MALNOURISHED            MOD = MODERATE MALNOURISHED            SEV = SEVERELY MALNOURISHED</p>
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<p><b>5. FAMILY PLANNING</b>            O=NOT USING P=PILLS            J=DEPO INJECTION M=IMPLANTS            Z=STERILIZATION C=CONDOM            T=TRAD/WITHDRAWAL L=IUD</p>	<p><b>14. NUTRITIONAL SUPPLEMENT</b>            TF = THERAPEUTIC FOOD            SF = SUPPLEMENTAL FOOD            NA = NOT APPLICABLE</p>																																																																																								
<p><b>6. TB SCREENING/DIAGNOSIS</b>            Screen -ve = Answered NO to all 5 TB screening questions            TB Susp = Answered Yes to 1 or more of TB screening questions            SS+ = Sputum Sample Positive            SS- = Sputum Sample Negative            CXR+ = Chest X-Ray suggestive of TB            CXR- = Chest X-Ray not suggestive of TB</p>	<p><b>15. REFERRED TO</b>            1 = PMTCT            2 = HBC            3 = PLHIV SUPPORT GROUP/CLUB            4 = ORPHAN AND VULNERABLE CHILDREN GROUP            5 = MEDICAL SPECIALITY            6 = NUTRITIONAL SUPPORT            7 = LEGAL            8 = TB CLINIC            9 = FP SERVICES            10 = OTHER (SPECIFY)</p>																																																																																								
	<p><b>16. FOLLOW UP STATUS</b>            MISSAPP = 1 OR 2 MISSING APPOINTMENTS            LTF = LOST TO FOLLOW-UP (Not seen for 3 or more months since last scheduled appointment [ART patients], OR 3 or more missing appointments [pre-ART patients with 2 attempts to follow-up])            TO = TRANSFER OUT, if TO, to where?            DEAD = PATIENT DIED            OPT OUT = PATIENT OPTED OUT</p>																																																																																								









**USAID APPLYING SCIENCE TO STRENGTHEN  
AND IMPROVE SYSTEMS PROJECT**

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