

Review of CTC Analytics Data Use at Site Level in Tanzania

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Data for Impact

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Abbreviations

ART	antiretroviral therapy
CTC	Care and Treatment Center
CQC	Continuous Quality Improvement
D4I	Data for Impact
DACC	District AIDS Control Coordinator
EID	early infant diagnosis
HVL	high viral load
IIT	interruption in treatment
IPT	isoniazid preventive therapy
QA/QI	quality assurance/quality improvement
USAID	United States Agency for International Development

Background

The Data for Impact (D4I) project in Tanzania, supported by the United States Agency for International Development (USAID), has been leading efforts in conducting site-level intensive monitoring visits for HIV and TB service delivery to determine if sites are meeting service quality standards and to make recommendations for corrective action at the site level based on the assessments.

Despite significant investments in this quality improvement process, performance challenges persist in key HIV focus areas, such as under target service delivery, inadequate follow-up, and lack of documentation. These gaps can be attributed to a lack of accountability mechanisms to track implementation of prioritized action items, stakeholders' inability to triangulate information across multiple information systems, and a lack of access to real-time analyses and visualizations at the site level. Recognizing these performance limiting factors, the D4I team has proposed to enhance accountability mechanisms by facilitating the use of data and demand creation through supporting facility staff in reviewing the data, developing data guidance tools for site-level data use and analytics, and strengthening capacity of the site Quality Improvement Teams. Empowering facility staff to understand and utilize data to inform decisions will help to improve performance.

Recently, USAID/Tanzania engaged the University of California, San Francisco to develop a new platform to help sites to better view their performance data via an online platform called Care and Treatment Center (CTC) Analytics. According to the user's manual, this is a "web-based system whose main objective is to facilitate timely reporting, analysis, and use of HIV Continuous Quality Improvement (CQI) indicators to improve service delivery at the care and treatment clinic. The system was built to analyze and generate reports using two streams of data: (1) data uploaded by users, and (2) data analyzed by CTC Analytics, which are read from the CTC 2 Export for Analysis file."

To better understand the application of the CTC Analytics platform to data use strategies at the site level, a trip was conducted by the D4I field team and a consultant to assess data use at the site level in discussion with facility staff during site monitoring visits. This report summarizes the outcomes from these assessments. The information obtained during the activity was used to develop a set of recommendations aimed at increasing the availability and use of real-time site-level data to improve the quality-of-service provision.

Value of Data Use

The World Health Organization’s [building blocks framework](#) for health systems strengthening identifies six attributes of a health system: a health workforce; health services; health financing; governance and leadership; medical products, vaccines, and technologies; and **health information**. While each building block of the WHO framework is important, quality and timely data from health information systems are the foundation of the health system and inform decision-making in each of the other five building blocks of the health system.

While the availability of quality information is a fundamental building block, indeed a prerequisite for a well-functioning health system, unless that information is used, its value is diminished. In this report we define the “use” of data as the analysis, synthesis, interpretation, and review of data for data-informed decision-making processes. “Data-informed decision making,” refers to the proactive and interactive processes (Patton, 2008) that consider data during program monitoring, review, planning, and improvement; advocacy; and policy development and review. By these definitions, data use goes beyond filling out data reporting forms at the various levels of a national health information system and the passive dissemination of reports and information products.

Data use for decision-making can take place at all levels of a health system including the central ministry, regional and district administrative units, donors and implementing partners and the site level. This report focuses on the site level.

Methodology

Information on use of the CTC Analytics platform at the site level was assessed during site visits to Mtwara and Manyara regions and from the general experience of D4I field staff during site-level quality assurance/quality improvement (QA/QI) visits. The Mtwara site visits in March included a regional hospital, health centers, and a dispensary. While the main focus of the visits was the D4I QA/QI assessments, we were able to engage staff at the sites in conversations focusing on their familiarity with and use of the CTC Analytics platform. Charles Mkude, Data Analyst for D4I, facilitated the discussions.



Figure 1. D4I staff member reviews data with facility staff. Photo courtesy of Scott Moreland.

Since D4I uses the CTC Analytics dashboard report to focus on indicators and areas for improvement at the site level, these semi-structured discussions were relevant to the objectives of the site monitoring visit and discussions. Discussions were well attended with an average of 8–10 site-level staff, including site-level providers, managers, and data clerks. There was a high level of staff engagement and discussion during these 45–60 minute discussions.

Topics that were discussed are listed below. As these were informal discussions not all topics were covered in every session.

1. Who are the main site-level users of CTC Analytics data?
2. How are CTC data used at the site level?
3. What kind of orientation or training in CTC Analytics have staff had?
4. How often are these data used?
5. Are there any issues of access to the system and data?
6. Are there any problems with these data such as missing or incomplete data, or data that are not up-to-date?
7. Are there any additional information or data that may be useful that are not in the system?
8. How well do staff understand the indicators used in the CTC Analytics report?

Box 1. Nanyamba Health Center, Mtwara

Despite some technical capability problems with using the system, health care workers at the facility acknowledged that the system has empowered them to change the way they were doing their work. For example, poor documentation was affecting their performance, but they had no quick way of identifying this. Through use of the CTC system, they found that they were not performing well in some areas such as IPT, IIT, early infant diagnosis (EID), and HVL coverage. To determine the magnitude of the problem, facility staff performed a triangulation of data from registries. They discovered that some clients visited the facility and received a certain service, but documentation was not done. This was found to occur in indicators such IPT, HVL, EID and on client's visit.

Results of the Review

A consolidation and summary of the discussions and of D4I field staff experiences are organized along the main discussion topics listed above.

Who are the main site-level users of CTC Analytics data?

Main site-level users of CTC Analytics are CTC staff including clinicians, nurses and data clerks working at CTC. In very few of the facilities users include facility in-charge (facility manager) and other staff supporting CTC services e.g., laboratory technicians, pharmacists and staff involved in HIV testing.

How are CTC data used at the site level?

CTC Analytics data are mainly used to assess facility performance and to inform corrective action in areas where the facility has not performed well. The data are used to identify gaps and strategize on how staff can address those gaps. Other uses include retrieving follow up lists—i.e., eligible clients for high viral load (HVL), isoniazid preventive therapy (IPT), multi-month dispensing (MMD), interruption in treatment (IIT) (see Box 1)—and preparation of monthly reports. Also, the CTC Analytics dashboard is used to focus on poorly performing indicators during D4I QA/QI site visits.

How does use differ by type of site-level stakeholder?

There are minor differences in the use of CTC Analytics data by type of site-level stakeholder. Where there are differences, it mainly depends on the activeness of CTC in-charge in convening meetings to discuss the data. In most facilities, data clerks normally extract data from the CTC Analytics and share it with the CTC in-charge. Then, using the CTC 2 database, data clerks extract a list of clients eligible for IPT, HVL, clients who experience IIT, and clients who missed their appointment which contributes to a low facility performance score. The lists are shared with the CTC in-charge who then shares with the respective health care workers for corrective action. For example, a list of clients who missed their appointment and experience IIT is shared

with community-based health workers for tracking, and a list of clients in need of HVL sample collection is shared with the clinician or nurses for corrective action including inviting them for service provision.

Only a few staff, specifically data clerks and those in charge of CTC, know how to navigate the system. This, to some extent, deters the use of the system by other staff, such as providers. Therefore, it was requested that more staff should be trained and oriented on the system.

How often are these data used?

The frequency of the use of CTC data varies by site. Most often the data are collectively reviewed on a monthly basis during site-level data review meetings by site-level providers and data clerks. In some cases, the data are accessed daily, in others weekly, and in others monthly depending on the needs. In general, the data clerks use it daily, while the other stakeholders use it weekly and/or monthly.

The interval between when the staff normally meet to review the data may be too long given the fact that this is real-time data. For example, a facility may have an average of six clients who experience IIT on a weekly basis. Waiting one month to take action would mean the number will increase to 24 clients, and tracking 24 clients is more difficult than tracking six clients on a weekly basis.

Are the data easy to access?

The system is easy to access provided one has credentials and internet connectivity. In general, the CTC Analytics link is available at the facility. However, in most cases, only the data clerk knows how to access the data and share visualization of the data with other facility staff for discussion. In most facilities, data clerks have been provided with credentials and received orientation on how to navigate through the system. However, in one health center (Mirerani Health Center, Manyara) some CTC workers know how to use CTC Analytics, while others in the same region have limited access (see Box 2).

On one site (Likombe Health Center, Mtwara), facility staff requested further orientation on how to navigate and extract information from the system to perform these tasks independently.

Also in one facility, health care workers at the facility raised their concern that the implementing partners should ensure that sites receive the internet bundle on a timely and regular basis for use of the system, which requires internet connectivity.

Are there any problems with these data such as missing or incomplete data, or data that are not up-to-date?

Missing or incomplete data does not reflect a problem with CTC Analytics platform but rather with data entry into the CTC 2 database. Data in the CTC Analytics is uploaded from CTC 2 database. Therefore, any data

Box 2. Mirerani Health Centre, Manyara

Facility staff know about CTC Analytics output which was extracted and shared with them by the District Data Officer. They said that they are not conversant with the uses of the system because the data clerk at the facility is new and in fact, he is currently being oriented on different systems used for reporting. Also, the CTC in charge has little knowledge of how to use a computer. Therefore, they normally received a CTC Analytics printout from the District Data Officer and implementing partner staff and work on the performance gaps found in those printouts. Through discussion, it was also revealed that District AIDS Control Coordinator (DACC) works closely with them to support them on the use of the system.

(It is important to note that this is the only high-volume facility in the council [a tier-two facility] and the other four facilities are all tier four. Therefore, this facility can be considered the main HIV facility in the council.)

entry issues in the CTC 2 database will be reflected in the CTC Analytics platform and may affect facility performance in CTC Analytics.

There are a few instances of a disconnect between the indicators and the realities of service provision protocols and real-world experiences. This results in overall site scores being reduced, which staff thought was unfair. For example, there was a problem with the EID indicators where the indicator was scoring red regardless of whether the facility had any relevant clients or not. This issue was changed so that the indicator would not appear red. However, the facility's score is still affected as the scoring points for this indicator are automatically deducted, and as a result, this lowers the facility's total performance score.

It was agreed that more emphasis should be put on strengthening the inclusion and exclusion criteria. For example, the system should have the capacity to exclude TB/HIV co-infected clients from same-day antiretroviral therapy (ART) initiation as these clients are not eligible for same-day initiation of ART since they require TB treatment for two weeks before they can initiate ART.

Another issue was highlighted related to differences in indicator definitions between the CTC Analytics portal and the CTC Analytics tool (formerly DACC tool), particularly with the HVL indicator. In the CTC Analytics tool, clients with documented HVL results are considered as not eligible and included in HVL coverage, regardless of whether the sample was collected on time or not. This is not the case for the CTC Analytics portal where clients with a delayed HVL sample are not included in HVL coverage. This is an issue that needs further assessment and clarification for health care workers at the facility level.

Lastly is the issue of appointment adherence. The system requires clients to come on the day of their appointment in order to not be considered a missed appointment. However, clients' various livelihood activities, such as fishing and farming, make that challenging. Instead, it was suggested that the system allow a grace period of at least three days. This aligns with current practice in the appointment registers, where a client is considered to have missed his/her appointment after the passage of two days.

Is there any additional information or data that may be useful that are not in the system?

Stakeholders did not note any additional information at site level that might be useful. However, through informal conversation with one of the DACCs from the Iringa region, they stated it would be useful for the system to produce data with absolute numbers by facilities with disaggregation by age above and below 15. This would help in response to ad hoc requests they normally receive from the National AIDS Control Programme/Ministry (for example, requests to provide the latest information on clients currently in treatment). Currently, the system only produces scores for indicators, and it's not feasible to assess progress in terms of absolute numbers, overall or by age group. Having this data in the system will enable them to respond to those ad hoc requests with real time data, instead of relying on ART reports that are reported on a quarterly basis.

This suggestion to have absolute numbers was mentioned at another facility which stated that they often had to respond to requests from government offices that require client counts. For example, during the visit day facility staff were asked to provide information as part of preparation for the Uhuru Torch flag off which was planned to take place in the region. The information requested included the number of clients currently on treatment, newly initiated on ART, and tested for HIV. Staff were not able to get those data from the system due to lack of data values.

How well do staff understand the indicators?

Staff were not familiar with CQI indicator definitions as indicated in the indicator matrix. There is low understanding of the CQI indicators included in the portal by most of the staff at the facilities. While most of the data clerks are competent with the indicators, this is not the case with clinicians and nurses. Given the fact that the definition of CQI indicators differs to some extent with the CTC platform and the CTC Analytics tool, there is a need for staff to be further oriented on the indicators.

Have staff had any training or orientation to the system?

In most facilities, it was mainly the data clerks who received orientation on using the CTC Analytics portal. These data clerks were responsible for disseminating the knowledge to other staff at the facility. In some instances, orientation was provided online through Zoom and in others orientation was provided via supportive supervision conducted by the implementing partner. However, more orientation is needed for site-level staff on the use of the system.

Summary of Assessment

1. The CTC Analytics Platform has only been rolled out since January 2023. As with any new system there are a few issues with the way the system works that could be improved.
2. The main use of the CTC Analytics platform is to support understanding about performance at the site level and use this to then probe for causes of underperformance.
3. The frequency of review of reports and data from the system is inconsistent across sites but appears to be once a month at a minimum.
4. There are a few instances of a disconnect between the indicators and the realities of service provision protocols and real-world experiences. This results in overall site scores being reduced, which staff thought was unfair.
5. Staff access to the system at the site level beyond the data clerk varies with very few staff having direct access to the system. There was a lack of ownership of the system by facility staff, particularly by the facility staff in charge who were not familiar with the system. In general, the system is seen as something for the CTC staff, mainly data clerks and some laboratory staff.
6. Staff and managers are not always familiar with the indicators and their definitions.
7. While there appears to have been orientations to the system at the sites, the main beneficiaries were the data clerks. Staff requested additional training. This is consistent with some staff not being familiar with the system.

Recommendations

1. Facilities should consider meeting on a weekly basis for prompt identification of gaps and to make timely decisions to address the gaps. CQI performance information should be used during morning staff meetings and at least twice a week for discussion to increase ownership and use among all staff, including those in charge of the facility. This will also enable the facility to benefit from having real-time data.

2. Additional training on the use of the CTC Analytics platform for site-level staff should be considered. The training should emphasize how to interpret the data dashboards with an emphasis on data use in support of facility management and decision-making. This could be reinforced by recommendation 3.
3. Guidelines on interpretation of CTC Analytics reports and data review protocols, including data review frequency, should be developed. This would include detailed examples of dashboard indicator reports and what they mean, with an emphasis on possible corrective actions.
4. Additional training on the indicators for site-level staff should be considered since, as noted, very few staff besides the data clerks were familiar with the indicators. An understanding of the indicators is essential to understanding site-level performance. This could be reinforced by recommendation 5.
5. A “pocket guide” to the indicators should be developed. This would be a simple-to-read and understand guidebook for the indicators, keyed to the CTC Analytics dashboard, and provide the key concepts the indicators are designed to measure. It would complement existing indicator documentation.
6. A review of some indicators in light of inconsistencies in how indicators line up with service protocols should be carried out and where needed, the definitions or data entry protocols should be revised.
7. Absolute numbers, in addition to scores, should be considered for inclusion in indicator reports.

Proposed D4I Follow-On Tasks

An important finding of the review was that use of the CTC Analytics platform at the facility level could benefit from further technical assistance and site-level capacity building. Recommendations 2,3, and 5 are particularly appropriate for D4I given their complementarity with the ongoing intensive site visits.

D4I proposes to first develop guidelines on the interpretation of CTC Analytics reports, data review protocols, and data use strategies (recommendation 2). This would take the perspective that data are an important ingredient in facility-level management decisions in support of improvements in service delivery quality. It would borrow elements of the Data.Fi-developed “Situation Room” methodology particularly regarding connecting the data with possible corrective actions.

An additional data use-oriented tool that D4I can develop is the “pocket guide” to the CQI indicators (recommendation 5). This will extend the current CQI Indicator Matrix which currently suggests data interpretation guidelines for each indicator but does not suggest what corrective actions might be appropriate to improve performance.

D4I would pilot use of the guidelines and the “pocket guide” once they are developed to conduct coaching sessions in a few selected facilities (recommendation 3). These would emphasize how to interpret the available data and dashboards with an emphasis on data use in support of facility management and decision-making. These coaching sessions would be conducted as part of the site monitoring visit, with an additional day dedicated to offering training and technical assistance targeted to site-level quality improvement teams and other identified key stakeholders.

A tentative timeline of proposed activities and deliverables are provided below:

Selection and Preparation Phase (5 weeks):

- a. Develop a comprehensive training curriculum on data use, including modules on data collection, analysis, interpretation, and utilization.

- b. Identify health facilities in Tanzania that will participate in the pilot training program, considering their diversity in terms of location and level of care.
- c. Collaborate with local health authorities and facility managers to gain their buy-in and support for the training initiative.
- d. Develop a facility-specific training plan, tailored to address the unique needs and challenges of each selected health facility.
- e. Assign trainers to each health facility and provide them with the necessary support and guidance.

Training Implementation Phase (4 weeks):

- a. Conduct on-site training sessions at each health facility, focusing on the practical application of data use in routine operations.
- b. If needed, deliver the training in multiple sessions to accommodate different staff members, ensuring maximum participation and engagement.
- c. Foster a supportive learning environment, encouraging participants to share their experiences and challenges related to data use.
- d. Provide ongoing mentoring and support to health facility staff, offering guidance and troubleshooting assistance as needed.

Benchmarks:

- 1. Develop a comprehensive training curriculum on data use, including modules on analysis, interpretation, and utilization.
- 2. Design training materials, including presentations, handouts, and case studies.
- 3. Selection of participating health facilities and development of training plans
- 4. Completion of on-site training sessions at each health facility

Final Deliverables:

- 1. Final training curriculum and materials (guidelines, pocket guide, and training materials)
- 2. Training report on completion of on-site training sessions at each health facility

References

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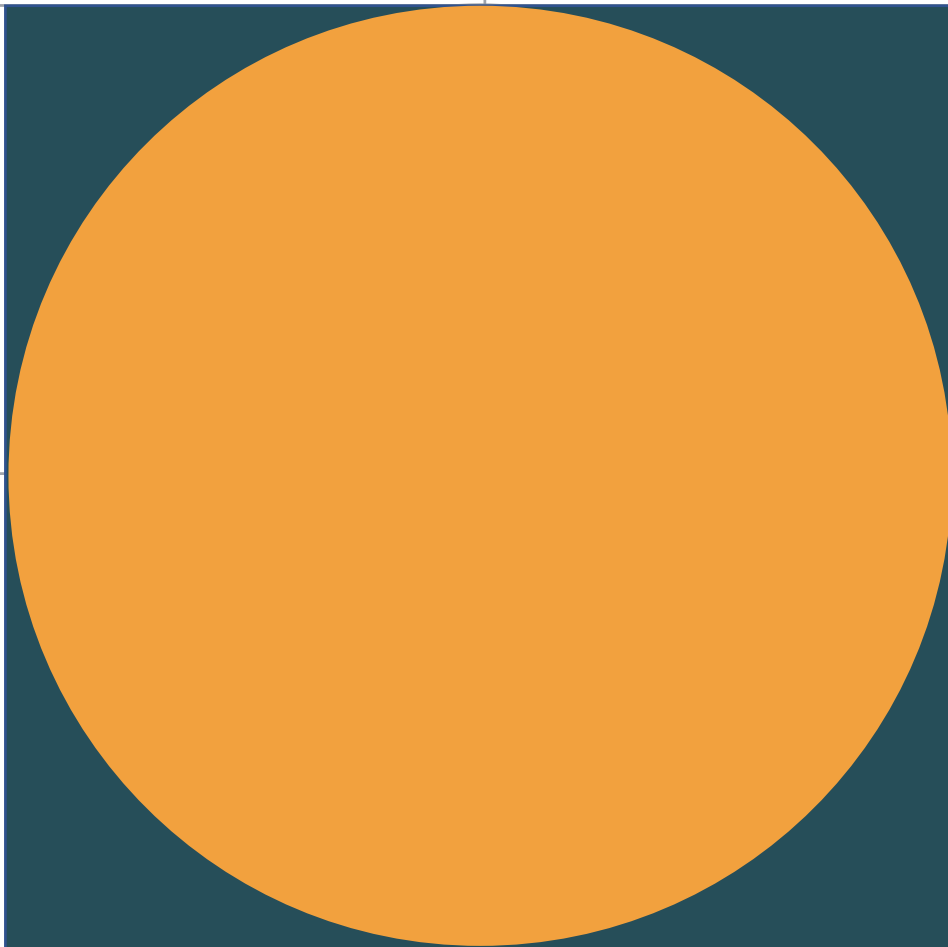
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