HIV TRAINING EVALUATION

A Rapid Evaluation of the Uganda MoH Training Program on the Use of HIV Patient Monitoring Tools

This HIV training evaluation was prepared by University Research Co., LLC (URC) for review by the Ministry of Health of Uganda and the United States Agency for International Development (USAID). It was authored by Robert Kyeyagaliire, Bart Burkhalter, and Nigel Livesley of URC and Norah Namwenge of the Ministry of Health. The evaluation was carried out under the USAID Health Care Improvement Project, which is made possible by the generous support of the American people through USAID.
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DISCLAIMER
The views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.
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For more information on HCI’s work, please visit www.hciproject.org.

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ABBREVIATIONS

ACP AIDS Control Program
ART Antiretroviral therapy
ARV Antiretroviral
HC Health center
HCI USAID Health Care Improvement Project
JCRC Joint Clinical Research Centre
MoH Ministry of Health, Uganda
NS Not significant
PM Patient monitoring
TASO The AIDS Support Organization
URC University Research Co., LLC
USAID United States Agency for International Development
WHO World Health Organization
EXECUTIVE SUMMARY

Introduction

Due to the chronic nature of HIV/AIDS, accurate, up-to-date patient records are vital to ensuring that HIV/AIDS patients receive quality care. Recognizing this, the Uganda Ministry of Health (MoH) has developed a set of patient monitoring tools—registers and cards—to aid health workers in recording encounters with HIV/AIDS patients, tracking services provided, ensuring that needed services are provided, and provide data to the district level. The MoH has developed a training course to help health workers use these tools accurately and completely. Such training was conducted for 23 health facilities in Mbale Region in August 2009. The USAID Health Care Improvement Project (HCI) conducted a rapid evaluation of that training session and some of its outcomes to determine whether it improved health workers’ performance in using the tools.

Methodology

Ten of the 23 facilities were selected for evaluation. Data were collected through a retrospective record review and interviews with facility in-charge and medical superintendents. Three patient monitoring tools were reviewed at each facility: cards for recording either pre-antiretroviral therapy (ART) or ART care and two registers for recording pre-ART and ART care.

Pre-training performance was based on the quality of patient recordkeeping (that is, how well they were completed) in June and July 2009 and post-training performance on the same tools the following September and October. Also investigated was the timeliness of quarterly reporting on HIV data by facilities to the district MoH offices. The interviews gathered information on why health workers might not follow the instructions from the training.

Results

• Of 75 participants from the 23 participating health facilities who were invited to the training, 74 attended. The training lasted four days, as scheduled, and was facilitated by eight program officers from the MoH AIDS Control Program. The training was well implemented, on schedule, and gave all participants a training manual and a copy of the patient monitoring tools.

• The knowledge test given to trainees at the start of the training and at its conclusion was also given twice, four days apart, to a comparison group of similar persons who did not attend the training. The training group’s performance increased 10.0 percentage points over the four days while that of the comparison group increased 5.9 percentage points. The 4.1 percentage point difference was not statistically significant.

• The accuracy and completeness of 1087 medical records (583 before the training and 504 after) from the 10 sampled facilities averaged only a 2 percentage point improvement pre-to-post training: 69.1% pre-training versus 71.1% post-training. The quality of pre-ART and ART registers showed an average pre-to-post improvement of 6.3 percentage points, but that for pre-ART and ART care cards decreased slightly. Pre-to-post gain varied substantially over the 10 sampled facilities. Whether the health workers who completed these tools were trained is not fully known.

• Analysis of the interview data in combination with the pre- and post-training record quality at each facility found that the following factors were associated with higher performance and/or gains in performance: support provided by the facility in-charge, support provided by an external partner, having a sufficient supply of patient monitoring tools, having health workers trained in the tools’ use provide HIV care and complete the tools, and having someone at site responsible for data and records.
• Little change was seen in the timeliness of reporting care-related data to district MoH offices: four facilities were on time before the training and six after.

Conclusions and Recommendations

• The training was well conducted and led to improvements in knowledge but was not, on its own, sufficient to ensure adequate use of the patient monitoring tools. In addition to training, the MoH can improve patient monitoring by ensuring adequate stocks of these tools at facilities, assigning a facility staff member to be responsible for data management, and assigning a facility staff member to supervise record and data management functions.

• Future trainings should stress that use of the patient monitoring tools is a team effort requiring the participation of different staff, including nurses, clinicians, records personnel, and expert clients. A team approach should be fostered in efforts to improve the training and use of the patient monitoring tools, perhaps by training the whole team as a unit.

• Training should be followed up by on-site coaching to support participants in following instructions provided in the training.

• This evaluation was conducted only a month after the training; subsequent studies should investigate whether health facilities perform better over a longer period; more time which would allow those trained to assimilate instructions from the training. Whether proper use of patient monitoring tools directly leads to improved quality of care for patients should also be studied.
I. INTRODUCTION

A. Background

HIV/AIDS is a chronic condition requiring regular care and follow-up. Accurate, up-to-date patient records are vital to ensure that quality care is provided to these patients. The Uganda Ministry of Health (MoH) has developed a set of patient monitoring tools, including registers and an HIV care/ART patient card, that should be completed by health workers when providing care to these patients. The patient card was developed by the MoH from the World Health Organization’s generic HIV care/ART card, taking into account Uganda’s local conditions and the nature and progression of HIV seen in the country. These tools record services provided to a patient, clinical status, the dates of both, and other information critical to the patient’s health.

The MoH trains health workers in how to use these tools, but they do not always do so: A 2008 study found that only 57% of private facilities providing HIV care and antiretroviral therapy (ART) used the MoH patient monitoring tools (Kyayise et al. 2008). The MoH training lasts four days and teaches participants how to complete the tools correctly and fully. The tools and training aim to improve HIV and ART program monitoring at the facility, district, and national level and to build the capacity of district health officials to monitor HIV service delivery in their respective districts.

Working with the MoH, the United States Agency for International Development (USAID) Health Care Improvement Project (HCI) evaluated the training with the objective of developing recommendations that might help the MoH training unit improve the training and ultimately improve quality of HIV care (see Box 1). The evaluation assessed performance by measuring how accurately and fully health workers completed three patient monitoring tools: an HIV care card with sections for pre-ART care and ART care; a pre-ART register; and an ART register. The effectiveness of the training program was defined as an increase in performance from before the training to about six weeks after it.

The MoH conducted the training from August 4–7, 2009, with 74 participants from 23 health facilities and 11 district health offices representing the 11 districts of Mbale Region in Eastern Uganda. Participants came from two levels: 1) HIV care/ART providers and managers at the health facility level

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Box 1. Why training on the use of patient monitoring tools is important for improving the quality of care

Good clinical management requires good information. Improving records will give better information to clinicians and hopefully lead to improved clinical outcomes.

Better understanding of patient monitoring tools by health workers will result in more accurate documentation of interactions between patients and health workers, which is essential for longitudinal monitoring of patients and determining the effectiveness of care and treatment.

Proper records management leads to better data, which can help identify which areas require improvement.

Standardized records for monitoring HIV care and treatment countrywide will provide better data for national planning purposes.

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and 2) HIV/ART focal persons and officers overseeing patient monitoring data at the district level. Evaluation team members attended the training and collected data during visits to the facilities in late November and early December 2009.

B. Objectives of the Evaluation

The evaluation’s main objective was to determine the degree to which the training program improved health worker performance in using the tools and to explore factors that might foster or deter such use. Specific objectives were:

1. Measure the extent to which the training program was implemented,
2. Compare the training group’s performance to that of a comparison group in a pre- and post-training knowledge test,
3. Compare the accuracy and completeness of tools that had been used in the facilities where the trainees work, before and after the training,
4. Compare the timeliness of facility reporting to districts before and after the training, and
5. Investigate factors that might support or inhibit trainee and facility performance.

C. Patient Monitoring Tools

Patient monitoring involves documenting all clinical encounters by keeping regular and accurate records of key aspects of each patient’s care and treatment. Such documentation makes it possible to capture the history of a patient or a group of patients over time and to collect data for reporting on and evaluating patient care at regular intervals.

For the purposes of this report, the use of six patient monitoring tools was assessed: the pre-ART card, ART card, pre-ART register, ART register, quarterly report form, and cohort analysis report form. The first four were used in the evaluation to measure performance. (The pre-ART card and ART card are actually a single tool, called the “HIV Care/ART Card,” but are used slightly differently for pre-ART and ART patients.) The evaluation measured whether different key sections of the tool (“field”) were correctly completed on this card. Table 1 describes the four patient monitoring tools of interest; Figure 1 shows how they interrelate.

<table>
<thead>
<tr>
<th>Tool</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIV care/ART cards:</td>
<td>This treatment tool was designed to document key clinical details plus the education and support given to an HIV-positive patient during clinic visits. One card is used for each patient and consists of three parts:</td>
</tr>
<tr>
<td></td>
<td>o A summary page provides the patient’s demographic characteristics, ART history, and care entry point. It is normally completed at the initiation of HIV care.</td>
</tr>
<tr>
<td></td>
<td>o Encounter pages document interactions in patient-clinician encounters.</td>
</tr>
<tr>
<td></td>
<td>o An education and counseling page summarizes the health education and counseling given to the patient.</td>
</tr>
<tr>
<td>Pre-ART register</td>
<td>This register tracks key health information of all HIV patients enrolled in chronic HIV care at a facility before they become eligible for ART. A patient’s inclusion in this register ceases when he/she enters ART.</td>
</tr>
<tr>
<td>ART register</td>
<td>This register tracks the distribution of antiretroviral regimens to every patient enrolled in ART at a facility. It is used after a patient has started ART. Patients are entered by cohort determined by the year and month they started ART.</td>
</tr>
</tbody>
</table>
Figure 1: Interrelationships of patient monitoring tools

Overview of data flow from patient card to the other patient monitoring forms

- HIV patient enrolls in chronic HIV care
- New patients entered into Pre-ART register
- When ART starts, transfer to ART register

HIV care/ART card

Side 1: Summary card
Update from Encounter card as needed

Side 2: Encounter card
Updated with each outpatient visit for patients in HIV Care/ART

- Pre-ART register
- ART register

Quarterly HIV care/ART report
- New and cumulative number enrolled in ART and HIV Care Total currently on ART
- Manual analysis by facility then district
- Aggregated ART
  Quarterly cohort analysis report:
  at 6 mo, 12 mo, annually
  - Treatment regimens
  - Treatment outcome
  - CD4

District electronic database for quarterly cohort analysis
Where possible
D. Patient Monitoring Training

The patient monitoring tool training teaches health workers from HIV care facilities how to accurately and fully complete all patient monitoring tools and to use them in providing care or developing data reports for use at a higher level. Training participants who were the subject of this study represented two MoH functions: the provision and management of HIV care and ART at facilities and district-level oversight of patient monitoring data.

The overall objectives of the training were to:

1. Improve ART program monitoring at facility, district, and national levels through:
   a. Improved facility-level data management,
   b. Use of data to improve patient management, and
   c. Preparation and timely submission of reports.

2. Build the capacity of district health officials in monitoring ART service delivery in their districts by training other members of the district staff in providing ongoing support and supervision of all district facilities and staff.

A team of eight training facilitators met a day before the training to go through the materials, assign roles, and plan the conduct of the training. The facilitators were program officers from the MoH AIDS Control Program (ACP), senior medical officers, and regional HIV care focal persons. The training course schedule and topics are in Table 2.

<table>
<thead>
<tr>
<th>Day 1</th>
<th>Day 2</th>
<th>Day 3</th>
<th>Day 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overview of the patient monitoring system for ART and chronic HIV/AIDS care</td>
<td>How to complete the pre-ART register (including exercise)</td>
<td>Exercise on how to complete the quarterly reporting form</td>
<td>Aggregating data indicators</td>
</tr>
<tr>
<td>Pre-training knowledge test</td>
<td>How to complete the ART register (including exercise)</td>
<td>How to complete the cohort analysis report (including exercise)</td>
<td>Data validation</td>
</tr>
<tr>
<td>HIV/ART card Exercise on filling in and using data from the card</td>
<td>How to complete the quarterly reporting form</td>
<td>Post-training knowledge test</td>
<td>Problem solving</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The patient held care</td>
<td>The referral form</td>
</tr>
</tbody>
</table>

As part of the training, participants should receive copies of all patient monitoring tools, the Participant Training Manual for HIV Care/ART Patient Monitoring, and the participant exercise booklet. The MoH AIDS Control Program developed the training manual based on the World Health Organization (WHO) Integrated Management of Adolescent and Adult Illnesses training module. The training manual and exercise booklet contain all the training materials, exercises, and case studies.

II. METHODOLOGY

A. Measuring the Extent to Which the Patient Monitoring Tools Were Used

The evaluator (RK) attended the August 2009 training to meet and build relationships with participants and document aspects of the training that would enable an estimate of the extent to which it was implemented. This included how many participants actually attended the training, whether those who started the training stayed for the entire program, whether all of them received all the tools, and the general quality of the training.
1. Knowledge test
As is usually the case in MoH training programs, a knowledge test was administered to all participants before the training and the same test at the end. All 74 participants who started the program took the test at the beginning, and 68 of them took it at the end. (Two participants who reported late took the pre-test before entering the training venue.)

The test presented case scenarios depicting HIV/AIDS patients seeking care, with 21 multiple choice questions about the case scenarios. (The test is attached in Appendix A.) The test served several purposes: identified weaknesses in trainees’ knowledge for the course instructors, engaged the trainees in a relevant, stimulating activity right away, and gave course leaders an indication of whether the course increased relevant participant knowledge.

Gains observed in pre-post knowledge scores might not be due to the training but to other, perhaps unknown factors. Consequently, the evaluation gave the same test to a comparison group who did not take the training and who worked at facilities similar to those who did. The comparison group consisted of 12 people from three health facilities and two districts in the Jinja Region. They took the test at a four-day interval, just as was done for the training group. Gains in the test scores of the comparison group were compared to those of the training group.

2. Selection of sample facilities to visit for data collection
The evaluation team selected 10 facilities to represent the training group. To do so, the team grouped the 23 facilities into three strata (regional referral hospitals, district/private hospitals, and health centers) and purposively selected facilities from each: The selected health centers and district and private hospitals were located in five districts, willing to participate, and not difficult to schedule or reach. These facilities had 11,955 HIV patients at the time of the study. Visits to these facilities to collect data were made from November 30 to December 5, 2009; data were collected by one of the authors (RK), working with Quality of HIV Care regional coordinators from Mbale Region. Table 3 shows the characteristics of sampled sites.

<table>
<thead>
<tr>
<th>Sites</th>
<th>Site name</th>
<th>Type of facility</th>
<th>Active HIV patients</th>
<th>District/Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Site 1</td>
<td>Budaka</td>
<td>Health center IV</td>
<td>517</td>
<td>Budaka</td>
</tr>
<tr>
<td>Site 2</td>
<td>Muyembe</td>
<td>Health center IV</td>
<td>774</td>
<td>Sironko</td>
</tr>
<tr>
<td>Site 3</td>
<td>Budadiri</td>
<td>Health center IV</td>
<td>681</td>
<td>Sironko</td>
</tr>
<tr>
<td>Site 4</td>
<td>Magale</td>
<td>Health center IV</td>
<td>1,085</td>
<td>Manafwa</td>
</tr>
<tr>
<td>Site 5</td>
<td>Mukuju</td>
<td>Health center IV</td>
<td>327</td>
<td>Tororo</td>
</tr>
<tr>
<td>Site 6</td>
<td>Mulanda</td>
<td>Health center IV</td>
<td>666</td>
<td>Tororo</td>
</tr>
<tr>
<td>Site 7</td>
<td>Bududa</td>
<td>District general hospital</td>
<td>1,293</td>
<td>Bududa</td>
</tr>
<tr>
<td>Site 8</td>
<td>Toro</td>
<td>District general hospital</td>
<td>2,553</td>
<td>Tororo</td>
</tr>
<tr>
<td>Site 9</td>
<td>St. Anthony</td>
<td>Private general hospital</td>
<td>224</td>
<td>Tororo</td>
</tr>
<tr>
<td>Site 10</td>
<td>Mbale Hospital</td>
<td>Regional referral hospital</td>
<td>3,835</td>
<td>Mbale</td>
</tr>
</tbody>
</table>

3. Measuring patient monitoring performance, pre- and post-training
The evaluation team defined performance as the accurate and complete use of the patient monitoring tools. Table 4 shows the variables from these tools that were assessed. In collaboration with MoH officials, the team developed data collection forms that contained a subset of the fields in each tool; these are included in Appendix B. To complete the form, the data collector recorded whether or not each field was completed correctly in the tool. The data collection forms were tested in Mengo Hospital in Kampala to determine the approximate time it would take to review the records and their effectiveness in garnering the desired data.
Table 4: Fields assessed during the evaluation of each patient monitoring tool

<table>
<thead>
<tr>
<th>Tool</th>
<th>Variables</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-ART register</td>
<td>Patient name Contact address WHO clinical staging Patient's follow-up status Patient's TB status Date started on ART ART eligibility status Assessment for TB Patient on Cotrimoxazole Criteria met before initiating HIV care</td>
</tr>
<tr>
<td>ART register</td>
<td>Patient’s name Contact address WHO clinical staging Patient’s follow-up status Patient’s TB status Patient’s weight Gender Initial antiretroviral (ARV) regimen Date started on ART Functional status Appointment keeping</td>
</tr>
<tr>
<td>Pre-ART section of the HIV care/ART card</td>
<td>Whether the correct card was used Contact address Age Gender Whether patient is on ART or pre-ART Care entry point Patient’s TB status Presence of opportunistic infections WHO clinical staging Weight Discussion on status disclosure Preparation of patient for ART Home-based care services available</td>
</tr>
<tr>
<td>ART section of the HIV care/ART card</td>
<td>Whether correct card was used Contact address Age Gender Patient on ART or pre-ART Care entry point Date of initiation on ART Duration on ART Patient’s TB status Presence of opportunistic infections WHO clinical staging ART regimen prescribed Adherence to ARVs Weight Discussion on status disclosure Counseling about progression on ART Preparation of patient for ART ART support and treatment Home-based care services available</td>
</tr>
</tbody>
</table>

During visits to the 10 sample facilities, pre-training performance was assessed from the records of patients who initiated care in June and July, and post-training performance was assessed from the records of patients who initiated care in September and October. For each tool in each facility, data were collected on the first 25 patients to initiate care during the pre-training period and the first 25 who initiated care during the post-training period. If fewer than 25 initiating patients in a facility were listed for a particular tool for a study period (June–July or September–October), then data were collected for all initiating patients listed for that tool for that facility and study period. (In a few cases, a sample of more than 25 initiating patients was used for a particular tool, facility, and study period; see Table D-1.)

The performance score for each patient card or registry record was calculated as the percentage of all assessed fields that were completed correctly. For example, there were 10 assessed fields in the pre-ART register, and if the data collector determined that a particular patient had eight of these fields completed correctly on the register during the post-training period, then the pre-ART registry score for that patient would be 80%. The overall performance score for the ART card was calculated as the average of ART card performance scores for all assessed patients for the pre- or post-training period.

The patient monitoring tools do not provide for the name of the health worker who filled in the tool for a particular patient or whether he/she had attended training. In eight of the 10 sample facilities, the data collection team could tell with certainty that at least one of the health workers completing the patient monitoring tools had attended the training by comparing the handwriting of names on the training registration form to that on the tools. In Magale and Mulanda health centers (HCs), the study team could not determine whether the handwriting on the tool was by someone who had participated in the training.
B. Measuring Timeliness of Reporting
After the training, health facilities were to submit quarterly HIV/ART cross-sectional and cohort analyses to the district health offices and MoH. Previously, the facilities had made monthly submissions to these authorities. The evaluation team compared the timeliness of these submissions before and after the training. They designed a data collection tool to collect data on submissions for June and July (before the training) and for September (after the training). The MoH requires that quarterly reports be submitted within 15 days after the end of a quarter, so 15 days was used as the standard to decide whether submissions were timely.

C. Identifying and Analyzing Factors that May Have Affected Performance
Information was gathered about factors other than the training that may have influenced the training’s success in improving both patient monitoring and reporting timeliness. At each of the 10 sampled facilities, the HIV in-charge was interviewed and focus groups held (see Appendix C for the questions asked). The evaluation team developed an in-depth interview guide to elicit from the in-charges factors that they thought likely supported or deterred the lessons from the training. The team, the data management officer, and the HIV in-charge at Mengo Hospital designed and tested a focus group discussion guide. Eleven focus group discussions were held, one at each sample health facility and another at the Tororo district health office. The number of participants in the focus groups ranged from two to eight and included health facility in-charges, records personnel, and facility medical superintendents, plus staff from five district offices.

Based on the interviews and focus groups, the evaluation team identified five factors that could help or hinder performance in completing the tools. The team assigned a score between 0 and 1 for each factor at each facility, reflecting the degree to which the factor was present (1) or absent (0). In addition, the number of clinician-nurse trainees and records staff trainees from each facility was listed as a possible confounding factor. The confounding factors and their scores for each facility are given in Table D-3 in Appendix D.

For each factor, the correlation between facility patient monitoring performance and the presence of the factor at the facility was calculated over the 10 facilities. High correlation suggests that the factor was associated with high performance and low correlation that it was not. Insights and opinions from the focus groups and interviews also contributed to conclusions about the possible impact of these factors.

All quantitative data were entered and summarized by indicator and health facility using Microsoft Excel. The statistical significance and correlations between pre- and post-differences in performance by health facility and performance indicator were determined using a two-tailed, chi-squared test in Excel. The statistical significance of the pre-to-post change in knowledge scores was analyzed in Excel using a paired, two-tailed t-test.

III. RESULTS
A. Extent to Which the Training Program Was Implemented
Of the 75 persons invited to the training, 72 came the first day and 74 attended the second and later days. Participants were 52 HIV care/ART managers from 23 health facilities in Mbale Region and 22 district health officers and data personnel from all 11 district health offices in Mbale.

All 74 participants received copies of the training manual at the start of the training and copies of all patient monitoring tools at the close of the training.
The training was implemented according to the published schedule and plan and, according to the evaluator present, both the instructors and participants exhibited considerable enthusiasm. As a result of this evidence, the evaluation team concluded that the training program was fully implemented.

**B. Pre-post Knowledge Test**

The 68 training participants who took the (same) knowledge test before and after the training increased their average pre-to-post score by 10.0 percentage points, a highly significant difference. The 11-person comparison group increased its average pre-to-post scores by 5.9 percentage points, which was not significant. However, even though the gain by the training group was greater than that of the comparison group, the difference in the gains of the two groups was not significant. Table 5 compares the average knowledge test scores of the trainees to those of the comparison group.

**Table 5: Knowledge test scores of training participants and comparison group**

<table>
<thead>
<tr>
<th></th>
<th>Mean pre-score</th>
<th>Mean post-score</th>
<th>Mean increase</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1-sided</td>
</tr>
<tr>
<td>Training group (n = 68)</td>
<td>65.3%</td>
<td>75.3%</td>
<td>10.0 percentage points</td>
<td>0.0005*</td>
</tr>
<tr>
<td>Comparison group (n = 11)</td>
<td>62.7%</td>
<td>68.6%</td>
<td>5.9 percentage points</td>
<td>0.07 (NS)</td>
</tr>
</tbody>
</table>

Training versus comparison gain | 68.6% | 0.35 (NS) | 0.18 (NS)

Note: * indicates statistical significance; NS indicates not significant.

**C. Patient Monitoring Tool Performance**

Although the evaluation target was to review records of 25 initiating patients per tool at each facility, the number actually reviewed varied from 0 to 36 per site, as shown in Table C-1. If the target had been exactly achieved, then 2000 records would have been reviewed, rather than 1087. Furthermore, the same initiating patients should be listed on each facility’s pre-ART register and card and on each facility’s ART register and card. However, the evaluation team found no cards for many initiating patients listed in the register and some, although fewer, cards on initiating patients who were not listed in the register.

The number of records reviewed varied greatly by facility and by patient monitoring tool. The low number of records for some sites and tools means that their estimated performance is not as reliable as those with a larger number of assessed records. The Mulanda HC had not put the ART register into use at the time of the data collection visit even though it had been obtained at the training and was available in the facility, so it had no data on this tool. Figure 2 shows the number of records reviewed by patient monitoring tool.
All the tools were being used at all health facilities before the training, though with inconsistencies. The average pre- and post-training performance per tool at each site is in Table D-2. The averages in that table have different reliabilities because the number of records reviewed at each site and for each tool differed, as specified in Table D-1.

The average score over all sites and tools was 72.3% pre-training and 73.5% post-training: a gain of just over 1 percentage point. This small increase indicates that the training did not have much impact overall on performance as measured. However, when the average performance score is calculated for each patient monitoring tool over all sites, differences in performance among the tools are apparent, as shown in Table 6 and Figure 3. The highest performance and gains occurred in the registers and the lowest performance and gains in the cards. Possible explanations for this result could relate to the facts that the ART register did not have as many fields as the other tools and that the cards required more time to complete by already over-worked staff. Since the result indicates that the pre-to-post gain in performance was somewhat larger for the registers than the cards, perhaps the training was somewhat effective in improving the quality of the register performance but not card performance. Note that the average performance figures in Table 6 and Figure 3 are calculated using the performance scores for all the records, not the site averages, so the facilities with more records are more heavily represented. Table D-2 contains average scores for each site.

Table 6: Average performance per record over all sites, by patient monitoring tool

<table>
<thead>
<tr>
<th>Performance variables</th>
<th>Pre-ART register</th>
<th>ART register</th>
<th>Pre-ART card</th>
<th>ART card</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-training average score (%)</td>
<td>74.1%</td>
<td>83.4%</td>
<td>59.6%</td>
<td>60.0%</td>
</tr>
<tr>
<td>Post-training average score (%)</td>
<td>80.4%</td>
<td>89.0%</td>
<td>60.2%</td>
<td>56.7%</td>
</tr>
<tr>
<td>Pre-post gain (percentage points)</td>
<td>6.3</td>
<td>6.6</td>
<td>0.6</td>
<td>– 3.2</td>
</tr>
</tbody>
</table>
In addition to substantial differences in average performance and performance gain among the tools, there were also substantial differences among sites. For example, the pre-training average performance for the pre-ART register ranged from 67.5% (Muyembe HC) to 90.0% (St. Anthony Hospital), and the pre-to-post gain for the pre-ART register ranged from –18.1 percentage points (Mukuju HC) to 36.1 percentage points (Bududa Hospital). Overall, in the 40 possible tool-specific performance gains at the sites (4 tools x 10 sites = 40), there were 18 gains of 1% or more, 14 losses of –1% or more, 7 stayed essentially the same (between 1% and –1%), and one had no data. Table D-2 has the average pre- and post-training scores and gains by patient monitoring tool for each site. The fact that substantial performance and performance gain differences exist among sites suggests that the training program might be improved by learning why some sites improve more than others.

The results noted above—in which the overall pre- and post-performance score is averaged across all tools and sites, and the overall pre- and post-gains for each patient monitoring tool is averaged across all sites—in effect weights the contribution of each site by the number of records reviewed at the site. An alternative is to weight all sites equally, irrespective of the number of records reviewed at the site. We did this and produced results that are not very different for those reported.

An important concern is the use of “pre-to-post gain in performance” as the dependent variable of interest. The pre-training scores of some tools at some sites were quite high, so not much gain was possible. For example, both Magale HC and St. Anthony Hospital had pre-training pre-ART registration performance of about 90%; three sites had pre-training ART registration performance well over 90% (St. Anthony Hospital = 99%, Buduka HC = 97%, Magale HC = 93%); and St. Anthony Hospital had pre-training ART card performance equaling 97.5%. There are two approaches that partially address the concern of some sites not having room for improvement: removing sites from the analysis that were high pre-training performers and using post-training performance as the dependent variable of interest rather than pre-to-post gain in performance. Both of these alternative approaches were used in the analysis of other factors that might affect these results.
D. Timely Submission of HIV Care Reports

Health facilities were supposed to submit HIV care reports to their district health office for the pre-training period by the end of July and for the post-training period by the middle of October. One facility (Mbale Referral Hospital) submits its report directly to the national MoH rather than to the district, so it was removed from this analysis. Of the remaining nine facilities, four submitted their reports on time before the training, while six were on time after the training (Table 7). Two facilities (Budaka HC and Muyembe HC) went from not-on-time before training to on-time after training, and seven stayed the same.

<table>
<thead>
<tr>
<th>District</th>
<th>Health facility</th>
<th>Pre-training</th>
<th>Post-training</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>On time</td>
<td>Not on time</td>
</tr>
<tr>
<td>Budaka</td>
<td>Budaka HC</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Bududa</td>
<td>Bududa Hospital</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Sironko</td>
<td>Budadiri HC</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Sironko</td>
<td>Muyembe HC</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Manafwa</td>
<td>Magale HC</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Tororo</td>
<td>Tororo Hospital</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Tororo</td>
<td>Mukuju HC</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Tororo</td>
<td>St. Anthony Hospital</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Tororo</td>
<td>Mulanda HC</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

E. Factors that May Have Affected Performance

The focus groups and interviews revealed five factors that might have supported or hindered the impact of the training on tool and/or timeliness of reporting:

1. Support is provided by the facility in-charge (“site in-charge”).
2. Support is provided by an external partner (“external support”).
3. Facility has sufficient patient monitoring tools (“enough tools”).
4. Trainees were the ones providing HIV care and completing the tools (“trainees do patient monitoring”).
5. Someone at site is responsible for data and records (“site supervisor”).

The following short descriptions of some of the conversations about these factors may enhance understanding:

- **External support**: Several persons thought that the presence of an external, supporting-partner staff person who provided support on how to use the tools and may have offered incentives for proper record-keeping and data collection, caused better overall use of the tools. In the evaluated facilities, such external partner support was provided by HCI, the Baylor College of Medicine, and others. In some cases, such partner organizations in HIV care require health facilities to provide periodical data on the level of care provided to their patients. This practice gives health workers opportunities to use the patient monitoring tools and also develop a culture of longitudinal records management essential for effective care of chronic illnesses. At Mbale Hospital, for example, WHO was piloting an information management system for HIV care and required complete and accurate records consistently. Health workers took extra effort to meet this requirement. At Tororo Hospital, the in-charge said that “While the Centers for Disease Control and Prevention project was in operation, the site had a robust system for collecting accurate, valid, and timely data. Health workers were even paid to collect these data.”

- **Enough tools**: The MoH is the primary manager of logistics for HIV patient monitoring supplies, although other partners assist, especially in distribution. In facilities where stock of the tools was
limited or nonexistent, their use is equally limited. As the in-charge of Mulanda HC noted, “We cannot use what we do not have.” Facilities with an adequate supply of patient monitoring tools also tended to achieve substantial improvements in register performance.

- **Trainees do patient monitoring:** In the past, trainees had different roles at their facilities: providing patient care, completing patient registers and/or care cards, or actively involved in the management of the patient monitoring function. Many focus groups and those interviewed thought that the training would have more impact in facilities whose trainees were those actively involved in the patient monitoring function than in facilities that didn’t send such trainees. This conjecture was supported by the evidence that found a high correlation between facility gain in performance and trainees from the facility actively involved in patient monitoring activities.

- **Site supervisor:** Several persons suggested that health facility staff whose responsibilities include the management of patient records and data are likely to have better health record performance after the training. In addition, limited staff in health facilities with high patient loads hinders proper use of the patient monitoring tools, thereby compromising the quality of care provided. “Even after trainings, proper and accurate use of patient monitoring tools might still not be practical if the health workers are few and loaded with other duties in addition to HIV care,” said the in-charge of HIV care at Tororo Hospital. In Muyembe HC, the in-charge expressed concern that often the people trained did not share the knowledge learned from the training with others at their facility, thus hindering implementation.

Table D-3 gives the estimated strength of each of these factors for each facility on a scale of 0 to 1. For each tool and factor, correlations were computed between the gain in tool performance and estimated strength of each factor over the 10 sites (Table 8).

**Table 8: Correlation of performance gain and factors, by patient monitoring tool and factor**

<table>
<thead>
<tr>
<th>Factor</th>
<th>Pre-ART card</th>
<th>ART card</th>
<th>Pre-ART register</th>
<th>ART register</th>
</tr>
</thead>
<tbody>
<tr>
<td>Site in-charge</td>
<td>– 0.27</td>
<td>– 0.14</td>
<td>0.23</td>
<td>0.24</td>
</tr>
<tr>
<td>External support</td>
<td>0.33</td>
<td>0.40</td>
<td>0.65</td>
<td>0.06</td>
</tr>
<tr>
<td>Enough tools</td>
<td>0.05</td>
<td>– 0.09</td>
<td>0.73</td>
<td>0.33</td>
</tr>
<tr>
<td>Trainees do patient monitoring</td>
<td>0.21</td>
<td>– 0.14</td>
<td>0.72</td>
<td>0.33</td>
</tr>
<tr>
<td>Site supervisor</td>
<td>– 0.01</td>
<td>0.05</td>
<td>0.70</td>
<td>0.46</td>
</tr>
</tbody>
</table>

In general, high positive correlations between a factor and tool occurred when facilities with substantial gains in patient monitoring performance also showed a high score in the factor, while facilities with a low performance gain scored low on the factor. This suggests that the factor may well be helping when present or hindering when absent. Low correlations, whether positive or negative, suggest that there is little or no effect of the factor on performance gain.

Table 8 shows three factors (Enough tools, Trainees do patient monitoring, and Site supervisor) have fairly high positive correlations with pre-ART register performance gain (0.70–0.73) and moderate correlation with ART register performance gain (0.33–0.46). Site-by-site consideration of the pre-ART register gains and values of factors, for this example, helps to explain this result; five of the 10 sites had consistently high estimates (> 0.8) of the three factors, and these same sites, with one exception, also had high performance gains in the pre-ART register. The other five sites had lower but irregular correlations between the factors and performance gains.

These results suggest the following about the confounding factors but do not provide strong causal evidence.

12 • Evaluation of Training on HIV Patient Monitoring Tools
Three factors (Enough tools, Trainees do patient monitoring, and Site supervisor) were associated with gains in the quality of the registers, while their absence is associated with lower gains in register quality and may be hindering improvement. However, these three factors are not associated with gains in ART card quality.

“External support” may help to achieve gains in the pre-ART register but not the ART register, and may be weakly associated with gains in card quality.

“Site In-charge” is weakly associated with gains in register but not card quality.

Another possible factor affecting gains in accurate tool use was the number and type (clinicians/nurses, health records personnel) of staff from each facility who attended the training. Because patient monitoring is a facility activity involving several people performing different functions, and because it is not always possible to detect which staff members made, or didn’t make, entries in the patient monitoring tools, information about how facility teams do patient monitoring may be crucial to designing a training program that yields significant improvements in performance. The number and type of trainees from each facility are in Table D-3. Unfortunately for this evaluation, there was very little variation in the number and type of trainees across sites. All sites had one or two clinicians and/or nurses at the training, and all but one site had just one health records person (Mukuju HC had none). The lack of variation across sites prevented finding meaningful correlations between this possible confounding factor and facility performance.

IV. DISCUSSION AND RECOMMENDATIONS

The training on HIV patient monitoring tools was well implemented: 74 of the 75 persons who signed up for the training actually started and completed the four-day training. The training was conducted by experienced MoH trainers and adhered to the apparently well-designed course plan, in terms of both topics covered and schedule. According to daily evaluations, some participants felt more time should have been allocated to cohort analysis and writing quarterly reports. Since all participants were working in HIV care, the topics of discussion were familiar to all of them, and they actively participated in the sessions, including the practical exercises that yielded high levels of discussion. Possibly most important, all 10 sampled facilities were using the new standardized patient monitoring records, and all the trainees obtained copies of the new records.

The pre-to-post gain on the knowledge test that attendees took at the start of the training and again at the end has two components: gain due to knowledge increase and gain due to taking the same test again four days later. The pre-to-post average gain of the workshop attendees was 10.0 percentage points, compared to an average gain of 5.9 percentage points in a comparison group that did not attend the workshop but took exactly the same test four days apart. Although the 10.0 percentage point gain by itself was statistically significant, the difference in knowledge gain between the training group and comparison group was not, suggesting that the training did not have a statistically significant impact on trainee knowledge. However, this conclusion must be viewed with care because the comparison group was small (12 persons).

The question at the heart of this evaluation was whether the training program increased the accuracy and completeness of the patient monitoring tools (pre-ART card, ART card, pre-ART register, and ART register). An assessment of a pre-training sample (n=583) and a post-training sample (n=504) of these tools found no pre-to-post improvement in performance (72.3% average performance before training versus 73.5% afterward). However, the improvement in the two registers was substantially more than in the cards (6.3 and 6.6 percentage point gain in the pre-ART and ART registers, respectively, versus 0.3 and –3.2 percentage points in the pre-ART and ART cards, respectively). This is a disappointing finding; a larger positive impact on performance had been hoped for.
One possible explanation for this lack of training effect is that the post-training measurements in the evaluation were of performance that occurred less than two months after the training, which may be too short a period for site staff to assimilate all the knowledge they acquired from the training and implement it while providing care. It might be worthwhile to investigate this possibility with a second follow-up evaluation eight or more months after the training to determine whether the gains are sustainable and performance has continued to improve in the sample facilities. Other important concerns to explore in a follow-up evaluation are: Why were the performance and performance gains for the pre-ART and ART cards consistently low? Have they improved with time? How can the training program be modified to improve performance of the pre-ART and ART cards? How can the names of initiating patients on the register and on cards be brought in line, so that all initiating patients are listed on both? Can the percentage of eligible patients who are actually listed on a particular tool be defined and measured as one of the performance scores to be maximized?

Another explanation for the low performance gains was investigated. Noting that performance differed substantially among the 10 sample facilities, the evaluation team asked whether some facility characteristics were highly associated with better performance and better gains in performance. Five site characteristics were strongly associated with gains in register performance: support is provided by the facility in-charge; support is provided by an external partner; the facility has sufficient patient monitoring tools; trainees were the ones providing HIV care and completing the tools; and someone at site is responsible for data and records. The external partner characteristic was also moderately associated with performance gains in ART care card performance.

Why were the performance and performance gains of the registers higher than for the cards? Possible partial explanations include: Registers are completed by health records personnel with support from volunteers and even expert patients, whereas the cards are largely completed by overworked clinicians and nurses who struggle to complete all their many direct care responsibilities, let alone the cards. Also, the cards have many fields that require clinical expertise to complete, so these fields are left blank when the card is completed by a non-clinician. Finally, the new cards were considerably different and more demanding than the previous one, certainly more so than the new versus old registers: Learning to use the new cards may take longer.

Clearly, the HIV patient monitoring function is a facility activity, not just a function of one or a few health records staff. Several types of evidence support this view: the wide variability of performance across facilities, the high correlation between performance and certain confounding factors, such as a responsible oversight person or support from an external partner, and the frequent observation by those interviewed that good patient monitoring performance requires a team effort. To investigate, the evaluation team hypothesized that facilities that sent both health records staff and health care providers to the training would have larger performance gains than those sending only health record staff or health workers. However, nine of the 10 facilities sent both types, which prevented testing this hypothesis.

Although not part of this evaluation, the data collection team found that health facilities had problems with storage and retrieval of patient monitoring tools. For example, since there is no standard means for storing patient HIV care cards, health facilities develop different methods, some of which do not support efficient retrieval, especially on clinic days. This wastes patients’ time and affects the clinic’s efficiency. The training program might consider adding a section on patient monitoring tool storage methods that would ease retrieval.

Most facilities found it difficult to use the quarterly reporting form, probably because staff were accustomed to the previous system of monthly reporting. According to the district authorities, most facilities that do not submit their reports have not yet grasped the concepts of proper use and sharing of data for decision-making.
The evaluation on use of patient monitoring tools obtained post-training performance data recorded less than two months after the training. Such a short time-frame might not conclusively explain the effect of the training as participants might not have had adequate time to implement all that they had learned. It might therefore be necessary to have a subsequent evaluation to determine the longer term effects of the training possibly including other regions and with a bigger sample size.

V. CONCLUSIONS

This evaluation did not find across-the-board improvements in performance. Gains in the quality of some HIV health records and in some facilities was substantially better than in others. Persons involved in HIV care and patient monitoring in these facilities identified several characteristics of the facilities themselves and the patient monitoring function in the facilities that turned out to be associated with increased pre-to-post training performance. Furthermore, the patient monitoring and HIV care function in a facility is done by a team of persons, not one or two individuals, so we expect that improving the impact of the patient monitoring tool training program will not be a simple task. Increased impact will come by incorporating in the training a better understanding of the factors that help or hinder the HIV patient monitoring and care function in facilities and how to strengthen the helpful factors and diminish the harmful ones. Some factors may be relatively easy to strengthen, such as having enough patient monitoring tools, while others may be very difficult, such as ensuring that those responsible for completing these tools have time to do so.

Further studies should investigate whether health facilities perform better over time as they assimilate instructions from the training, and whether proper use of patient monitoring tools leads to improved health outcomes.
APPENDIX A: KNOWLEDGE TEST: HIV CARE/ ART PATIENT MONITORING

Read the following patient scenarios and think about which register you should fill out for each patient. Circle all the answers that apply.

SCENARIO 1: Patient tested HIV positive last week and comes in today to register for chronic HIV care. He is stage II.
   a. Pre-ART register: first entry for patient
   b. Pre-ART register: find patient’s name/row on register and enter additional data
   c. ART register: first entry for patient
   d. ART register: find patient’s name/row on register and enter additional data

SCENARIO 2: Patient tested HIV positive last week and comes today to register for chronic HIV care. Your assessment shows that he has esophageal thrush. Thus, he is eligible for ART, but not yet ready to start.
   a. Pre-ART register: first entry for patient
   b. Pre-ART register: find patient’s name/row on register and enter additional data
   c. ART register: first entry for patient
   d. ART register: find patient’s name/row on register and enter additional data

SCENARIO 3: Patient tested HIV positive last year. She registered for care last month and comes today to start Cotrimoxazole prophylaxis. She is stage III, but not yet ready for ART.
   a. Pre-ART register: first entry for patient
   b. Pre-ART register: find patient’s name/row on register and enter additional data
   c. ART register: first entry for patient
   d. ART register: find patient’s name/row on register and enter additional data

SCENARIO 4: Patient has just started on ART two weeks ago and comes back for a follow-up visit.
   a. Pre-ART register: first entry for patient
   b. Pre-ART register: find patient’s name/row on register and enter additional data
   c. ART register: first entry for patient
   d. ART register: find patient’s name/row on register and enter additional data

SCENARIO 5: Patient decides to stop ART due to intolerance of side effects. She continues to receive Cotrimoxazole prophylaxis.
   a. Pre-ART register: first entry for patient
   b. Pre-ART register: find patient’s name/row on register and enter additional data
   c. ART register: first entry for patient
   d. ART register: find patient’s name/row on register and enter additional data

SCENARIO 6: Patient has been receiving HIV care (not ART) at another facility and transfers in with records.
   a. Pre-ART register: first entry for patient
   b. Pre-ART register: find patient’s name/row on register and enter additional data
   c. ART register: first entry for patient
   d. ART register: find patient’s name/row on register and enter additional data
SCENARIO 7: Patient has started ART at another facility and transfers in with records.
   a. Pre-ART register: first entry for patient
   b. Pre-ART register: find patient’s name/row on register and enter additional data
   c. ART register: find patient’s name/row on register and enter additional data
   d. None of the above

For questions 7-20 circle the correct answer.

8: A patient is said to have been lost when:
   a. S/he misses a scheduled appointment
   b. S/he misses 90 days from the appointment date only
   c. S/he sends a treatment supporter to pick drugs
   d. None of the above

9. A patient is said to have been lost to follow up (Dropped) when:
   a. S/he misses a scheduled appointment
   b. S/he misses 90 days from the appointment date
   c. S/he sends a treatment supporter to pick drugs
   d. S/he misses 90 days from the last review date

10. The pre-ART register is a registry for:
    a. All patients diagnosed with HIV at the facility
    b. All HIV positive patients seeking care at the facility
    c. All HIV positive patients on ART at the facility
    d. All HIV positive patients on ART not coming for review at the facility

11. The ART register is a registry for:
    a. All patients diagnosed with HIV at the facility
    b. All HIV positive patients seeking care at the facility
    c. All HIV positive patients on ART at the facility
    d. Cohorts of patients in care at the facility

12. In the pre-ART and ART register:
    a. Each column represents an individual client
    b. Each row represents an individual client
    c. All the above
    d. None of the above

13. An HIV care/ ART patient card is:
    a. Filled for only clients on ARVs
    b. Filled for all clients in HIV care
    c. Summary of all clients visiting the facility
    d. Filled at the end of the month

14. Cohorts in ART register are:
    a. Clients who enroll on the same day in care
    b. Clients who enroll in the same quarter of the year
    c. Clients on the same treatment regimen
    d. Clients started on ART in the same month and year

15. Patients are eligible for ART:
    a. When CD4 is equal or less than 250
    b. In clinical stage 3 and 4
    c. None of the above
    d. All the above
16. A quarterly reporting form is
   a. A cross-sectional summary of a patient in care
   b. A cross-sectional summary of all patients in care for the past 6 months
   c. A monthly report of all clients on ART in care
   d. A three-month cross-sectional summary of all patients in care

17. A patient on Triomune, has good adherence when:
   a. Is 95% or above adherent
   b. Is 85-94% adherent
   c. Missed 4 pills in the last 30 days
   d. All the above
   e. None of the above

18. An HIV care/ART card is filled
   a. For all patients who test HIV positive
   b. For all exposed infants
   c. For only patients on ART
   d. For patients who enroll into chronic care at the facility

19. An HIV-exposed infant gets an HIV/ART card when
   a. Clinical diagnosis of HIV is made and ART started
   b. When 18 months old
   c. All the above
   d. None of the above

20. A patient held card:
   a. Has summary information from a patient's ART card
   b. Contains information on ART regimen only
   c. Is kept in the clinic
   d. All the above
   e. None of the above

21. Regarding the referral form:
   a. It is a summary of a patient's demographic and clinical information and is completed when transferring a patient to another facility
   b. Is used to refer a patient to another unit within the same facility
   c. All the above
   d. None of the above
### HIV Care/ART Card

Name of Health Facility__________________   Type of Facility____________________

Name of Reviewer______________________     Date of Review____________________

<table>
<thead>
<tr>
<th>Yes/No</th>
<th>Yes/No</th>
<th>Yes/No</th>
<th>Yes/No</th>
<th>Yes/No</th>
</tr>
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<tbody>
<tr>
<td>Patient ID</td>
<td>Card used</td>
<td>SUMMARY PAGE OF THE HIV CARE/ART CARD</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Month under review</td>
<td>Address recorded</td>
<td>Age recorded</td>
<td>Gender</td>
<td>Care entry point</td>
</tr>
<tr>
<td>Patient on ART or Pre-ART</td>
<td>Date for initiation of ART</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Yes/No</th>
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<tr>
<td>Weight recorded</td>
<td>TB assessment</td>
<td>Presence of OIs</td>
<td>WHO clinical staging</td>
<td>ARV regimen prescribed</td>
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<td>Adherence assessed</td>
<td>Duration on ART</td>
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<th>Yes/No</th>
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</thead>
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<tr>
<td>FOLLOW-UP EDUCATION, SUPPORT AND PREPARATION FOR ARV TREATMENT</td>
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<tr>
<td>Education on disclosure</td>
<td>Progression and treatment</td>
<td>ART preparation</td>
<td>ART support and treatment</td>
<td>Home based care</td>
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### Pre-ART Register

Name of Health Facility__________________   Type of Facility____________________

Name of Reviewer______________________     Date of Review____________________

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<thead>
<tr>
<th>Patient Unique No.</th>
<th>Yes/No</th>
<th>Yes/No</th>
<th>Yes/No</th>
<th>Yes/No</th>
<th>Yes/No</th>
</tr>
</thead>
</table>

**INFORMATION TRANSFERRED FROM HIV CARE/ART CARD**

- Client name
- Address
- Criteria met
- Status at enrollment
- Clinical stage
- ART eligibility
- Date started on ART

### QUARTERLY PRE-ART FOLLOW-UP

- Follow-up status
- TB status
- Cotrimoxazole

### ART Register

Name of Health Facility__________________   Type of Facility____________________

Name of Reviewer______________________     Date of Review____________________

<table>
<thead>
<tr>
<th>Patient Unique No.</th>
<th>Yes/No</th>
<th>Yes/No</th>
<th>Yes/No</th>
<th>Yes/No</th>
<th>Yes/No</th>
</tr>
</thead>
</table>

**STATUS AT START OF ART**

- ART start date
- Name
- Gender
- Address
- Functional status
- Weight
- WHO clinical stage
- Initial regimen

**FOLLOW-UP PAGES**

- Follow-up status
- TB status
- Appointment keeping
APPENDIX C: INTERVIEW AND FOCUS GROUP QUESTIONS TO DETERMINE DATA USE AND CONFOUNDING FACTORS

The following sets of questions were used to assess: 1) Data use at the facility and district level, and 2) confounding factors.

1. **Data use at facility and district level**
   a. Why do you have periodical collection and compilation of data at this facility/district?
   b. How useful would you consider the data collected at this facility and forwarded to the district?
   c. What level of data analysis exists at this facility?
   d. What kind of decisions have you made in the last quarter that has been based on HIV care generated in your facility?

2. **Confounding factors (interview guide for facility in-charges)**
   a. In your opinion, what factors might still affect data collection, analysis and sharing despite the training you received?
   b. How is the supply of patient monitoring tools? Who supplies them and how often?
   c. Does your facility receive support from any partner organization in HIV care? What are their expectations regarding data?
## APPENDIX D: DATA

### Table D-1: Number of patient monitoring records reviewed per facility before and after training

<table>
<thead>
<tr>
<th>Patient monitoring tool</th>
<th>Records reviewed per site</th>
<th>Site1</th>
<th>Site2</th>
<th>Site3</th>
<th>Site4</th>
<th>Site5</th>
<th>Site6</th>
<th>Site7</th>
<th>Site8</th>
<th>Site9</th>
<th>Site10</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-ART register</td>
<td>Pre</td>
<td>32</td>
<td>25</td>
<td>36</td>
<td>24</td>
<td>26</td>
<td>20</td>
<td>30</td>
<td>25</td>
<td>15</td>
<td>36</td>
<td>269</td>
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<tr>
<td></td>
<td>Post</td>
<td>18</td>
<td>25</td>
<td>25</td>
<td>19</td>
<td>15</td>
<td>14</td>
<td>28</td>
<td>25</td>
<td>7</td>
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<td>13</td>
<td>16</td>
<td>26</td>
<td>26</td>
<td>10</td>
<td>0</td>
<td>9</td>
<td>15</td>
<td>10</td>
<td>22</td>
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<tr>
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<td>Post</td>
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<td>8</td>
<td>9</td>
<td>11</td>
<td>7</td>
<td>14</td>
<td>13</td>
<td>13</td>
<td>3</td>
<td>22</td>
<td>103</td>
</tr>
<tr>
<td>Pre-ART card</td>
<td>Pre</td>
<td>10</td>
<td>9</td>
<td>6</td>
<td>23</td>
<td>15</td>
<td>6</td>
<td>7</td>
<td>20</td>
<td>11</td>
<td>5</td>
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<td>12</td>
<td>120</td>
</tr>
<tr>
<td>ART card</td>
<td>Pre</td>
<td>2</td>
<td>4</td>
<td>5</td>
<td>5</td>
<td>2</td>
<td>10</td>
<td>5</td>
<td>3</td>
<td>9</td>
<td>10</td>
<td>55</td>
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<tr>
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<td>Post</td>
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<td>7</td>
<td>10</td>
<td>8</td>
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<td>10</td>
<td>8</td>
<td>9</td>
<td>3</td>
<td>10</td>
<td>76</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td>109</td>
<td>105</td>
<td>127</td>
<td>136</td>
<td>88</td>
<td>66</td>
<td>115</td>
<td>131</td>
<td>64</td>
<td>110</td>
<td>1,087</td>
</tr>
</tbody>
</table>

**NOTE:** Site 1 = Buduka HC, Site 2 = Muyembe HC, Site 3 = Budadiri HC, Site 4 = Magale HC, Site 5 = Mukuju HC, Site 6 = Mulanda HC, Site 7 = Bududa Dist Hosp, Site 8 = Tororo Dist Hosp, Site 9 = St. Anthony Priv Hosp, Site 10 = Mbale Reg Hosp.

### Table D-2: Average performance score by site and PM tool before and after training

<table>
<thead>
<tr>
<th>Patient monitoring tool</th>
<th>Average performance per site (1)</th>
<th>Site1</th>
<th>Site2</th>
<th>Site3</th>
<th>Site4</th>
<th>Site5</th>
<th>Site6</th>
<th>Site7</th>
<th>Site8</th>
<th>Site9</th>
<th>Site10</th>
<th>Total(2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-ART register</td>
<td>Pre</td>
<td>72.9</td>
<td>67.5</td>
<td>75.4</td>
<td>89.6</td>
<td>84.1</td>
<td>71.3</td>
<td>56.8</td>
<td>77.0</td>
<td>90.0</td>
<td>68.4</td>
<td>75.3</td>
</tr>
<tr>
<td></td>
<td>Post</td>
<td>94.4</td>
<td>71.5</td>
<td>80.6</td>
<td>71.5</td>
<td>83.3</td>
<td>60.7</td>
<td>92.9</td>
<td>77.0</td>
<td>85.7</td>
<td>82.9</td>
<td>80.1</td>
</tr>
<tr>
<td></td>
<td>Gain</td>
<td>21.5</td>
<td>4.0</td>
<td>5.2</td>
<td>–18.1</td>
<td>–0.8</td>
<td>–10.5</td>
<td>36.1</td>
<td>0.0</td>
<td>–4.3</td>
<td>14.5</td>
<td>4.8</td>
</tr>
<tr>
<td>ART register</td>
<td>Pre</td>
<td>97.9</td>
<td>83.0</td>
<td>65.4</td>
<td>93.4</td>
<td>85.5</td>
<td>--</td>
<td>77.8</td>
<td>75.2</td>
<td>99.1</td>
<td>84.3</td>
<td>84.6</td>
</tr>
<tr>
<td></td>
<td>Post</td>
<td>88.6</td>
<td>85.2</td>
<td>64.6</td>
<td>91.7</td>
<td>100</td>
<td>--</td>
<td>96.8</td>
<td>78.3</td>
<td>100</td>
<td>95.5</td>
<td>89.0</td>
</tr>
<tr>
<td></td>
<td>Gain</td>
<td>–9.3</td>
<td>2.2</td>
<td>–0.8</td>
<td>–1.7</td>
<td>14.5</td>
<td>--</td>
<td>19.0</td>
<td>3.1</td>
<td>0.9</td>
<td>11.2</td>
<td>4.4</td>
</tr>
<tr>
<td>Pre-ART card</td>
<td>Pre</td>
<td>57.9</td>
<td>63.1</td>
<td>63.1</td>
<td>64.0</td>
<td>60.5</td>
<td>54.8</td>
<td>75.5</td>
<td>43.6</td>
<td>70.8</td>
<td>50.0</td>
<td>60.4</td>
</tr>
<tr>
<td></td>
<td>Post</td>
<td>62.1</td>
<td>61.7</td>
<td>62.1</td>
<td>64.3</td>
<td>45.7</td>
<td>50.0</td>
<td>72.4</td>
<td>55.8</td>
<td>61.9</td>
<td>58.3</td>
<td>59.4</td>
</tr>
<tr>
<td></td>
<td>Gain</td>
<td>4.2</td>
<td>–2.6</td>
<td>–1.0</td>
<td>0.3</td>
<td>–14.8</td>
<td>–4.8</td>
<td>–3.1</td>
<td>12.2</td>
<td>–8.9</td>
<td>8.3</td>
<td>–1.0</td>
</tr>
<tr>
<td>ART card</td>
<td>Pre</td>
<td>47.2</td>
<td>43.1</td>
<td>62.2</td>
<td>57.8</td>
<td>58.3</td>
<td>52.2</td>
<td>58.9</td>
<td>47.9</td>
<td>97.5</td>
<td>47.8</td>
<td>57.3</td>
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<tr>
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<td>Post</td>
<td>56.9</td>
<td>57.1</td>
<td>54.4</td>
<td>63.9</td>
<td>44.4</td>
<td>51.7</td>
<td>68.8</td>
<td>47.5</td>
<td>92.6</td>
<td>51.7</td>
<td>58.9</td>
</tr>
<tr>
<td></td>
<td>Gain</td>
<td>9.7</td>
<td>14.0</td>
<td>–7.8</td>
<td>6.1</td>
<td>–13.9</td>
<td>–0.5</td>
<td>9.9</td>
<td>–0.4</td>
<td>–4.9</td>
<td>3.9</td>
<td>1.6</td>
</tr>
</tbody>
</table>

**NOTE:** (1) Site names are in Table D-1. (2) Pre- and post-totals are average site scores. "Gain" is total post-training minus total pre-training.
### Table D-3: Possible confounding factors by site

<table>
<thead>
<tr>
<th>Factors (1)</th>
<th>Site1</th>
<th>Site2</th>
<th>Site 3</th>
<th>Site 4</th>
<th>Site 5</th>
<th>Site 6</th>
<th>Site 7</th>
<th>Site 8</th>
<th>Site 9</th>
<th>Site 10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Site In-Charge</td>
<td>1.0</td>
<td>0.0</td>
<td>0.8</td>
<td>0.2</td>
<td>0.6</td>
<td>0.2</td>
<td>0.5</td>
<td>0.5</td>
<td>0.0</td>
<td>0.4</td>
</tr>
<tr>
<td>External support</td>
<td>0.0</td>
<td>0.3</td>
<td>1.0</td>
<td>0.7</td>
<td>1.0</td>
<td>1.0</td>
<td>1.0</td>
<td>0.7</td>
<td>0.0</td>
<td>0.5</td>
</tr>
<tr>
<td>Enough tools</td>
<td>0.8</td>
<td>0.5</td>
<td>1.0</td>
<td>0.3</td>
<td>0.6</td>
<td>1.0</td>
<td>1.0</td>
<td>0.2</td>
<td>0.2</td>
<td>0.8</td>
</tr>
<tr>
<td>Trainees do patient monitoring</td>
<td>0.8</td>
<td>1.0</td>
<td>1.0</td>
<td>0.5</td>
<td>1.0</td>
<td>1.0</td>
<td>1.0</td>
<td>0.8</td>
<td>0.5</td>
<td>1.0</td>
</tr>
<tr>
<td>Site supervisor</td>
<td>0.8</td>
<td>0.7</td>
<td>1.0</td>
<td>0.2</td>
<td>0.3</td>
<td>1.0</td>
<td>1.0</td>
<td>0.6</td>
<td>0.3</td>
<td>1.0</td>
</tr>
<tr>
<td>Clinical trainees</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Records trainees</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

(1) "Site In-Charge" = support by facility in-charge. "External support" = support by external partner. "Enough tools" = facility has sufficient patient monitoring tools. "Trainees do patient monitoring" = trainees were same persons providing HIV care and completing patient monitoring tools. "Site supervisor" = someone at site is responsible for data and records. "Clinical trainees" = number of clinicians and nurses at training. "Records trainees" = number of record staff at training. (2) Site names are in Table D-1.