IMPROVING ASSESSMENT OF ART
ADHERENCE AT BAYLOR UGANDA MAIN
CLINIC MULAGO HOSPITAL

BY

GRACE PAUL KISITU & PAUL TUMBU

MEDIUM-TERM FELLOWS

2010
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BY

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MEDIUM-TERM FELLOWS

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DECLARATION:

I, **Grace Paul Kisitu** and **Paul Tumbu** do hereby declare that this end-of-project report entitled “IMPROVING ASSESSMENT OF ART ADHERENCE AT BAYLOR UGANDA MAIN CLINIC MULAGO HOSPITAL” has been prepared and submitted in fulfilment of the requirements of the Medium-term HIV/AIDS Fellowship Program at Makerere University School of Public Health and has not been submitted for any academic or non-academic qualifications.

Signed.................................................................. Date..................................................

Grace Paul Kisitu, Medium-term Fellow

Signed.................................................................. Date..................................................

Paul Tumbu, Medium-term Fellow

Signed.................................................................. Date..................................................

Dr Allan Ahimbisibwe
Institutional Supervisor

Signed.................................................................. Date..................................................

Dr Ellie Rutebemberwa
Academic Supervisor
ROLE OF FELLOWS:

From the inception of the project to its implementation, the CQI fellows played a number of roles and these include the following:

i. The CQI fellows spearheaded the multi-voting process during which the problem areas in HIV care service delivery in Baylor-Uganda were prioritized with the eventual selection of ART adherence assessment.

ii. The CQI fellows developed the project proposal on Improving ART adherence assessment among clients receiving ART at Baylor-Uganda main clinic.

iii. The fellows were also involved data collection for analysis both at baseline and follow up during the implementation of the project.

iv. The fellows also spearheaded the implementation of the various counter measures or practical solutions that were developed to improve on the assessment of adherence among the Baylor-Uganda ART clients.

v. The fellows compiled the project report.
ACKNOWLEDGEMENTS:

We would like to acknowledge with thanks the following individuals for the role they played in initiating and implementing this Quality improvement project aimed at Improving ART adherence assessment at Baylor-Uganda main clinic.

Dr.Kekitiinwa Addy, Dr.Allan Ahimbisibwe, Dr.Iriso Robert, Dr.Elly Rutebemberwa, Mr.Albert Maganda, Mr.Methuselah Kahungu, Mr.Kasozi Innocent, Mrs. Naluswa Gloria kakuru, Ms.Nanyunja Sarah, Mr.Geoffrey Musooba, Mr.Kenneth Musononwa and the entire Baylor staff.

We would also like to extend our sincere gratitude to the Makerere University School of Public Health and CDC-Uganda for the opportunity they provided us to enhance our Quality Improvement knowledge and skills through the Continuous Quality Improvement fellowship program.
### ACRONYMS AND ABBREVIATIONS:

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ART</td>
<td>antiretroviral therapy</td>
</tr>
<tr>
<td>AIDS</td>
<td>acquired immunodeficiency syndrome</td>
</tr>
<tr>
<td>CQI</td>
<td>continuous quality improvement</td>
</tr>
<tr>
<td>DOT</td>
<td>directly observed therapy</td>
</tr>
<tr>
<td>FDC</td>
<td>fixed dose combination</td>
</tr>
<tr>
<td>H/E</td>
<td>health education</td>
</tr>
<tr>
<td>HIV</td>
<td>human immunodeficiency syndrome</td>
</tr>
<tr>
<td>MTCT</td>
<td>mother-to-child-transmission</td>
</tr>
<tr>
<td>MEMS</td>
<td>medical event monitoring system</td>
</tr>
<tr>
<td>PI</td>
<td>protease inhibitor</td>
</tr>
<tr>
<td>SR</td>
<td>self report</td>
</tr>
<tr>
<td>QI</td>
<td>quality improvement</td>
</tr>
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OPERATIONAL DEFINITIONS:

Adherence
The ability to comply with medication prescribed and dispensed

ART adherence
The ability to comply with ART medication prescribed and dispensed in the clinic for 95% of the time or more.

Assessment
The process of verifying and documenting how the ART medications dispensed from the clinic on the previous visit were consumed.

Health care providers
People who offer services to sick people in a health facility,

Prophylaxis
The treatment which is given to patients in order to prevent diseases from occurrence or re-occurrence.
EXECUTIVE SUMMARY:

Baylor Uganda, located in Mulago Hospital complex, is a not-for-profit non-governmental organization providing HIV/AIDS prevention, care and treatment services to children and their families. About 2700 HIV clients are currently getting antiretroviral drugs from Baylor Uganda’s different clinics within Kampala and upcountry.

The success of an ART programme is largely dependent on the patients’ adherence to their drugs. The challenge however, is that adherence to drugs by the children entirely depends on the adult caretakers’ ability, willingness and motivation to administer the drugs. ART adherence assessment may not necessarily have a direct relation with good adherence, but can play a very significant role as means to promote, encourage and maintain good adherence depending on the assessment findings. Baylor Uganda has in place a mechanism of assessment of adherence to ART by specific health workers using appropriate assessment tools.

However, results from the review of a sample of patient data collected and analysed for the months of April, May and June of 2009 indicated that not all patients on ART received routine adherence assessment as desired by standard practice measures. This subsequently led to the formation of a Quality Improvement team whose task was to identify the causative factors and possible solutions to the above problem.

The causative factors that were identified included: a) multiple patient visit tools of which some had no provision for adherence assessment, b) inappropriate visit scheduling by clinicians, c) patient lack of awareness of the need for adherence assessment, d) patients forgetting the drugs at home, e) syrup medication which is difficult to assess, f) problems with the patient flow process, g) Wrong visit tool allocation at the reception.

The suggested solutions to the problems above included: a) reducing visit tools & apply only those that assess for ART adherence, b) revision of the scheduling system and development of orientation guides for new staff, c) introduction of appointment cards, d) Incorporation of adherence assessment messages into the health education plan, e) harmonization of adherence assessment & taking of patient physical parameters in one service point, f) switching of patients on 1st line syrup medication to FDC pills, g) re-sensitization of the reception nurse on the need
to allocate the correct visit tools to patients. The target was to reduce the proportion of clients on ART not receiving adherence assessment from 47% to 15% over a 6 month period. I.e. from October/2009 to March/2010.

The interventions mentioned above were implemented and data was analyzed monthly to assess their effect. The proportion of children on ART who did not receive adherence assessment was noted to gradually decline from a pre-implementation proportion of 47% to 12% at the end of march/2010, even further below the intended target.
INTRODUCTION AND BACKGROUND:

Baylor Uganda is a legally registered not-for-profit non-governmental organization operating in Mulago National Referral Hospital premises under the Department of Paediatrics and Child Health and provides paediatric, adolescent and family-based HIV/AIDS prevention, care and treatment among other core functions. Currently the total numbers of clients active in care is 4500 and out of these 2700 are active on ART at the clinic.

Antiretroviral therapy adherence assessment is one of the mandatory Quality Improvement indicators that the Ministry of Health of Uganda has recommended to be monitored by any HIV care program. Adherence assessment coupled with the appropriate adherence messages is believed to encourage, improve and maintain good adherence which is the cornerstone for success in ART care.

Failure to routinely assess for adherence may lead to complacency among the patients or carers towards correct administration of ART. This may also deny the health care providers the opportunity to counsel patients and understand the reasons behind poor ART adherence to which solutions could be offered. Poor ART adherence would in the long run lead to development of drug resistance and treatment failure which may manifest as frequent opportunistic infections resulting in poor quality of life for the patients.

At Baylor Uganda patients make three types of visits to the clinic which are as follows, i) routine physician visit, ii) nurse visit, iii) acute visit. The routine physician visit is made at least once every 3 months and the patients are seen by the doctor. Nurse visits are made in between the physician visits and are basically for drug refills for stable patients. Acute visits are usually the unscheduled visits e.g. sick patients, drug stock outs before return date, however, some patients are also scheduled for this visit e.g. review of acutely ill patients receiving treatment plus patients returning for review of laboratory results. ART Adherence assessment is done on the nurse and physician visits. On the nurse visits, adherence assessment is done by the nurse seeing the patient while on the physician visit it is done separately by a specific pill counting person. All patient appointments are given by the doctors and it is their responsibility to give the appropriate or correct appointments to the patients, the same applies to the reception nurse who should place the correct or appropriate tools in the patients’ files for the type of visit they make when they return.
LITERATURE REVIEW:

Assessment of ART drug adherence among HIV clients involves application of various methods aimed at ascertaining the patients’ compliance to medication. Findings of ART adherence assessment may inform health workers of the level of adherence among the clients. Strict adherence to HAART is crucial in order to maintain a low viral load and prevent the development of drug-resistant virus. However, complicated regimens, medication side effects, and demographic and psychosocial factors can make adherence to HAART difficult thus justifying the need to assess patients’ drug adherence.

Some of the methods used to assess patient adherence to ART in HIV care centers include the following,

i) pill counting, ii) patient self reports (SR), iii) Directly Observed Therapy (DOT), iv) Medication event monitoring system (MEMS), v) plasma ART drug level assays.

**Pill counting**- This has been used to assess adherence with variable success. It involves counting of patient pills physically and making calculations to ascertain whether the patient’s pills at the time are what he/she is expected to have. Pill counts can either be done as unannounced or on schedule during patient clinic visits. Unannounced pill counts have been useful as a measure of adherence in the past, but these are difficult and require home visits. On the other hand, scheduled pill counts, because of their predictability, allow patients to "dump" pills and thus can lead to an overestimation of adherence. As a result, in the HIV literature, pill counts are more often used as an adjunct to other adherence measures (ie, MEMS and SR).

**Self report**- SR is increasingly being used in the clinic setting as a way of measuring adherence. Although there is a tendency to overestimate adherence with SR, questionnaires have been developed that markedly improve the accuracy of this tool by formulating questions that are both specific and nonjudgmental. Abbreviated forms of these questionnaires can be used in busy clinics to quickly assess adherence.

**Directly observed Therapy**- This involves a health worker witnessing a patient take their medication and this activity is acknowledged by ticking a treatment card.
DOT, which has been used with success in treating tuberculosis (TB), seems less feasible in HIV disease. First, HIV-positive patients require a lifetime of therapy, compared with 6 to 9 months of therapy for TB. Second, 2 times-daily regimens required for HIV are difficult and expensive to monitor compared with thrice-weekly monitoring for TB. Finally, issues of confidentiality and identification make it more difficult to mandate DOT for HIV infection as has been done for TB.

**Plasma ART drug assays**- This involves routine quantifying of the concentration of the drugs in the patient’s plasma. Using plasma drug levels as a measure of adherence can be fraught with problems. HIV drugs such as zidovudine (ZDV) and PIs have short half-lives and thus only reflect short-term adherence. Furthermore, poor absorption of a drug leading to decreased plasma levels of that drug might result in a patient being mislabeled as non-adherent.

**Medication Event Monitoring System**- The MEMS device consists of a microchip housed in a plastic cap that fits on standard medication bottles. The chip records the date and time of each opening and closing of the medication bottle, which should coincide with the patient taking his or her medications. When the patient returns for follow-up, the MEMS cap is placed on a communicator that reads the data on the microchip. The data are then displayed, detailing the openings and closings of the bottle cap that occurred over a desired interval.

Despite some of its shortcomings, Pill counting as a method of adherence assessment is the most widely used in resource limited settings including Baylor-Uganda. In this particular project it was the method applied for adherence assessment. It should however be noted that the process of adherence assessment especially using pill counts may not necessarily have a direct relation with good adherence, but can play a very significant role as means to promote and encourage good adherence depending on the assessment findings.
STATEMENT OF THE PROBLEM/JUSTIFICATION:

The Ministry of Health of Uganda recommends that all patients on ART should be assessed for adherence. However, in the months of April, May, June and September 2009, the proportion of children on ART in Baylor-Uganda main clinic who were not assessed or had incomplete adherence assessment were 26%, 37%, 37% and 47% respectively. If this situation continues it is likely to promote complacency among the patients with their carers and health providers towards correct administration and follow up on ART use resulting in poor ART adherence thus leading to treatment failure and subsequent poor quality of life among the clients.

Figure 1: CONCEPTUAL FRAMEWORK:
PROJECT OBJECTIVES:

• GENERAL OBJECTIVE(S):
  
i. To reduce the proportion of clients receiving ART in Baylor-Uganda main clinic who do not receive ART adherence assessment.

• SPECIFIC OBJECTIVE(S):
  
i. To determine the causes or factors contributing to the non-assessment of adherence among patients receiving ART at the Baylor-Uganda main clinic.

ii. To develop practical solutions to the causes or factors contributing to the non-assessment of adherence among patients receiving ART at the Baylor-Uganda main clinic.
METHODOLOGY:

REASON FOR IMPROVEMENT:

Following the introductory CQI fellowship training the fellows organized a feedback session for all the organization staff. During this session, brainstorming was done and the entire staff of Baylor Uganda participated in suggesting possible areas within the organization that required improvement.

Ten areas of service provision were subjected to a voting process to prioritize those that required improvement and these included the following:

- Continuity of care
- HIV monitoring (CD4 LEVELS)
- Growth monitoring
- ART eligibility
- Adherence assessment to ART
- Seprin prophylaxis
- Use of mosquito nets
- TB screening
- Counselling issues
- Patient waiting time

Table 1 below shows the results of the multi-voting exercise that was conducted by the fellows and also involved other Baylor-Uganda staff.

MULTI-VOTING MATRIX:

Table 1:

<table>
<thead>
<tr>
<th>ITEM</th>
<th>1ST VOTING</th>
<th>2ND VOTING</th>
<th>SELECTED?</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. CONTINUITY OF CARE</td>
<td>25</td>
<td>20</td>
<td>YES</td>
</tr>
<tr>
<td>B. HIV MONITORING (CD4 LEVELS)</td>
<td>22</td>
<td>14</td>
<td>NO</td>
</tr>
<tr>
<td>C. GROWTH MONITORING</td>
<td>22</td>
<td>12</td>
<td>NO</td>
</tr>
<tr>
<td>D. ART ELIGIBILITY (% OF ELIGIBLE CHILDREN WHO ARE ON ART)</td>
<td>6</td>
<td>3</td>
<td>NO</td>
</tr>
<tr>
<td>E. ADHERENCE ASSESSMENT TO ART</td>
<td>58</td>
<td>37</td>
<td>YES</td>
</tr>
<tr>
<td>F. SEPTRIN PROPHYLAXIS</td>
<td>0</td>
<td></td>
<td>NO</td>
</tr>
<tr>
<td>G. USE OF MOSQUITO NETS</td>
<td>0</td>
<td></td>
<td>NO</td>
</tr>
<tr>
<td>H. TB SCREENING</td>
<td>34</td>
<td>22</td>
<td>YES</td>
</tr>
<tr>
<td>I. COUNSELING ISSUES</td>
<td>0</td>
<td></td>
<td>NO</td>
</tr>
<tr>
<td>J. PATIENT WAITING TIME</td>
<td>0</td>
<td></td>
<td>NO</td>
</tr>
</tbody>
</table>

The priority areas voted for initial improvement included a) Continuity of patient care, b) TB screening and c) Adherence assessment to ART as indicated in table 1 above. The entire team
suggested that theme selection among the three areas be carried out by the Continuous Quality Improvement (CQI) team. The CQI team was consequently constituted comprising of: 1 paediatrician, 1 medical officer, 3 nurses and 1 laboratory technologist as indicated in table 2 below.

Table 2

<table>
<thead>
<tr>
<th>Name</th>
<th>Cadre</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr. Kisitu Grace Paul</td>
<td>Medical Officer</td>
</tr>
<tr>
<td>Dr. Tumbu Paul</td>
<td>Paediatrician</td>
</tr>
<tr>
<td>Mr. Kahungu Methuselah</td>
<td>Nurse</td>
</tr>
<tr>
<td>Mrs. Gloria Kakuru</td>
<td>Lab technologist</td>
</tr>
<tr>
<td>Mr. Kasozi Innocent</td>
<td>Nurse</td>
</tr>
<tr>
<td>Ms. Nanyunja Sarah</td>
<td>Nurse</td>
</tr>
</tbody>
</table>

The CQI was mandated to carry on with subsequent project work and they started by choosing the project using the theme selection matrix as shown in table 3 below.

Table 3:

<table>
<thead>
<tr>
<th>THEME</th>
<th>CUSTOMER</th>
<th>IMPACT</th>
<th>NEED TO IMPROVE</th>
<th>OVERALL RATING.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improving ART adherence assessment.</td>
<td>Children on ART</td>
<td>5</td>
<td>5</td>
<td>25</td>
</tr>
<tr>
<td>Improving TB screening.</td>
<td>All HIV positive children</td>
<td>5</td>
<td>4</td>
<td>20</td>
</tr>
<tr>
<td>Improving continuity of care</td>
<td>All HIV positive children in care</td>
<td>4</td>
<td>4</td>
<td>16</td>
</tr>
</tbody>
</table>

Basing on the above results, a project of improving adherence assessment for patients on antiretroviral therapy (ART) was initiated. The team started by analyzing the causative or factors contributing to the non-assessment of adherence among patients on ART. Figure 2 and figure 3 show how the problem above was broken down into parts (stratification) and how the various root causes contributed to the problem (cause-effect analysis) respectively.
Explanation for the Pareto chart:

**Inappropriate tools used:** - the correct appointment is given by the clinician, however on the date of return the tool inserted in the patient file is not the one appropriate for that visit. It is inappropriate because the tool has no provision for adherence assessment as had been planned by the clinician on the previous visit.

**Inappropriate appointment:** - means the appointment prescribed by the clinician does not take into account the element of adherence assessment yet it would be due on the next visit. That is, the tool that would be inserted for the appointment has no provision for assessment of adherence.

**No appointment:** - The clinician does not give a return date at all and some patients do not come back for adherence assessment as required.
After analyzing the causative factors to the problem of non-assessment for adherence among children on HAART the CQI team then set about to develop solutions to address the problem above through a counter measure matrix as shown below in Table 4. This also involved voting for whether or not to implement the suggested practical solutions to the problem.
### Table 4: Counter Measure Matrix

<table>
<thead>
<tr>
<th>Problem</th>
<th>Root cause</th>
<th>Counter measure</th>
<th>Practical method</th>
<th>Effectiveness</th>
<th>Feasibility</th>
<th>Score</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low pediatric ART adherence assessment</td>
<td>Inappropriate appointments given to patients</td>
<td>Revise appointment schedule &amp; develop guidelines &amp; cards.</td>
<td>- Develop new schedule guideline/appt cards -Develop orientation guidelines for new clinicians</td>
<td>4</td>
<td>5</td>
<td>20</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>Some pts still on syrup formulation</td>
<td>Switch all 1st line ART syrups to FDCs.</td>
<td>Issue bi-monthly reminders to clinicians</td>
<td>4</td>
<td>5</td>
<td>20</td>
<td>yes</td>
</tr>
<tr>
<td></td>
<td>Patients /caretakers not returning containers /pill balances</td>
<td>Provide health education</td>
<td>Integrate adherence assessment into H/E plan</td>
<td>3</td>
<td>5</td>
<td>15</td>
<td>yes</td>
</tr>
<tr>
<td></td>
<td>Multiple patient service points</td>
<td>harmonise triage &amp; assessment in one service point</td>
<td>Transfer adherence assessment to triage room</td>
<td>5</td>
<td>3</td>
<td>15</td>
<td>yes</td>
</tr>
<tr>
<td></td>
<td>Inappropriate tools inserted in patient files</td>
<td>re-orient reception nurse</td>
<td>Support supervision</td>
<td>5</td>
<td>4</td>
<td>20</td>
<td>yes</td>
</tr>
<tr>
<td></td>
<td>Multiple patient tools/appointments</td>
<td>Reduce number of tools/apptments</td>
<td>Withdraw acute visit form</td>
<td>5</td>
<td>5</td>
<td>25</td>
<td>yes</td>
</tr>
</tbody>
</table>
From the counter measure matrix, all the suggested solutions were voted to be implemented. However, all but two suggested solutions were implemented as will further be discussed below.

**Figure 3** below shows the changes or improvements that were made in the old patient flow process and **Figure 4** shows the new modified patient flow process aimed at improving the assessment of adherence for patients on ART.

Data on ART adherence assessment was collected monthly from 40 patient files and analyzed to assess the progress of the improvement project over a 6 month period from the start of implementation. I.e. October/2010 to March/2010.

In total 200 patient files were sampled and had data extracted for analysis over the course of implementation of the project.
The new changes on the flow chart included the following:

1. Triage and the adherence rooms were merged to avoid patients skipping adherence assessment.

2. The acute visit form was removed to avoid the mix up among clinicians caused by multiple tools/types of appointments.

3. Health Education on adherence assessment was intensified to most of the caretakers in the waiting area on daily basis.

4. Counsellors have been targeted to be sensitized in checking all patients files for completeness of adherence assessment.
Figure 5: New modified Flow chart for Baylor Uganda main
PROJECT OUTCOMES

There was progressive decrease among children receiving ART in the Baylor-Uganda main clinic who did not receive adherence assessment for their ART medication. The proportions decreased from a pre-implementation figure of 47% in September, 2009 to 12% at the end of March, 2010.

These findings were further validated by the routine quarterly monitoring and evaluation report which noted that the proportion of patients on ART who received adherence assessment in by February 2010 was 88%
LESSONS LEARNT

The following were lessons learnt during the course of implementation of Quality Improvement project.

- Team work is key to successful QI project implementation as all team members contribute variably in terms of skills, knowledge and responsibility to the success of the project.
- Problems of Quality in health care provision can be solved with simple practical solutions without the need to cause extra financial burden to the program.
- Not all solutions in Quality improvement may be as effective as may have been expected; however, through continuous innovation the most effective counter measures may be attained.
- A single practical solution may have an impact so big on its own to have such a major influence on the project and the outcome itself.
- Identification of the true root causes of a problem is critical for QI project development otherwise the project may be a failure.
- The CQI project findings can be used to validate the organizations M&E reports as was the case with the Baylor-Uganda where the quarterly M&E report findings on ART adherence assessment were comparable to the project follow up results.

CHALLENGES

Implementation of the QI project above was not without its challenges and some of these have been described below.

- Two of the proposed counter measures were not implemented for reasons below.
  a) Patient appointment cards – These were rejected by the clinicians who pointed out that they would be doing a lot of repeated writing which they perceived as a form of workload increase.
  b) The revision of scheduling guides for the client visits has not been completed because the team is yet to agree on the best or the most appropriate appointment system bearing in
mind the various age categories amongst the clients and the need for tailored appointments that would suit them, this being compounded by an ever increasing patient load.

- The Baylor-Uganda main clinics’ records system was upgraded to the electronic medical records system shortly after the project ended. This denied the teams a chance to further observe their QI innovation for sustained improvement regarding adherence assessment since the improvement had been carried out during the error of manual data tools.
- The process of ongoing data collection and analysis was tedious and had to be carried out during our valuable personal time e.g. weekends, or after official working hours, in order not to affect the daily clinic running.

**SUMMARY AND CONCLUSION**

The CQI team from Baylor-Uganda implemented a QI project to decrease the proportion of patients on ART who do not receive adherence assessment for medication. Despite the challenges met the project was a success as the intended target was met and even surpassed.

Implementation of the project provided hands on experience which will be of great value in future for effective and efficient implementation of Improvement projects to better the quality of service provided to clients.

In conclusion, CQI has a place in the provision of Quality care services to clients and can be applicable to any area of service provision.
RECOMMENDATIONS

From the experience and the lessons learned during the implementation of the CQI project above, the following recommendations have been made:

- Despite the existence of QI framework at Baylor-Uganda within which Quality of Care is routinely assessed, there is need to put in place the following in order to improve the functioning and effectiveness of the QI system.
  
  i. Development of Terms of Reference :-
  
  Quality service provision in health care is a very broad area which thereby necessitates the development of the Terms of Reference for existing QI system. This document would clearly define the scope of coverage of QI related activities and the expected out puts. This document would also provide a means of continuity to orient a new QI caretaker if and when they come on board.

  ii. Time allocation :-
  
  Despite the heavy clinic schedules, more time should be allocated to the QI coordinator in order to effectively oversee QI related activities, follow up on projects and activity plans as follow up has proved to be the difficult bit of it.

- The CQI fellowship program sponsored by The Makerere University School of Public Health in collaboration with The Centre for Disease Control (CDC) should be maintained for its benefits of developing capacity especially in CQI among the local Health Care Centers which benefits the clients at large and also augments the systems of service delivery within Government and non-Governmental health organizations in achieving their desired goals or targets.
REFERENCES:

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Antiretroviral Therapy in Resource-Poor Settings: Decreasing Barriers to Access and Promoting Adherence