TECHNICAL REPORT

Results from the Pilot Phase of an ART/PMTCT Improvement Collaborative in Cote d’Ivoire

SEPTEMBER 2011

This report was prepared by University Research Co., LLC (URC) for review by the United States Agency for International Development (USAID). It was authored by Jean N’Guessan (URC), Virginie E. Traore (PNPEC), Maina Boucar (URC), Alain Ackah (URC), Youssouf Dosso (URC), Victor Kouassi (URC), and Franck Kablan (URC). The pilot phase of the ART/PMTCT Improvement Collaborative in Cote d’Ivoire was funded by the U.S. President’s Emergency Plan for AIDS Relief (PEPFAR) and carried out by the USAID Health Care Improvement Project, which is made possible by the generous support of the American people through USAID.
Results from the Pilot Phase of an ART/PMTCT Improvement Collaborative in Cote d’Ivoire

SEPTEMBER 2011

Jean N’Guessan, University Research Co., LLC (URC)
Virginie E. Traore, National Program for Medical Care for People Living with HIV (PNPEC)
Maina Boucar, URC
Alain Ackah, URC
Youssouf Dosso, URC
Victor Kouassi, URC
Franck Kablan, URC

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.
Acknowledgements: This report was prepared by University Research Co., LLC (URC) for review by the United States Agency for International Development (USAID). The work was led in Cote D'Ivoire by Jean N'Guessan, Virginie E. Traore, Maina Boucar, Alain Ackah, Youssouf Dosso, Victor Kouassi, and Franck Kablan.

This report would not have been possible without the cooperative effort of the key partners in implementing HIV services in health facilities in Cote d'Ivoire: the Ministry of Health and its National Program for the Medical Management of People Living with HIV/AIDS (Programme National de Prise en Charge Médicale des Personnes Vivants Avec le VIH/SIDA, PNPEC); ACONDA; CARE; Elizabeth Glaser Pediatric AIDS Foundation, EGPAF; Ensemble de Solidarité Thérapeutique Hospitalière en Réseau, ESTHER; and Columbia University's International Center for AIDS Care and Treatment Programs (ICAP) as well as the many health facility personnel who invested their time and energy in this activity to improve services for patients.

This document was produced with the generous support of the American people through the President's Emergency Plan for AIDS Relief (PEPFAR), USAID and the USAID Health Care Improvement Project (HCI) and the Centers for Disease Control and Prevention (CDC).

This work was supported by the American people through the United States Agency for International Development (USAID) and its Health Care Improvement Project (HCI). HCI is managed by University Research Co., LLC (URC) under the terms of Contract Numbers GHN-I-01-07-00003-00 and GHN-I-03-07-00003-00. URC's subcontractors for HCI include EnCompass LLC, Family Health International, Health Research, Inc., Initiatives Inc., Institute for Healthcare Improvement, and Johns Hopkins University Center for Communication Programs. For more information on HCI's work, please visit www.hciproject.org or write hci-info@urc-chs.com.

ABBREVIATIONS

AIDS  Acquired Immune Deficiency Syndrome
ARV  Antiretroviral Treatment
DGS  General Directorate of Health
DIPE  Ministry of Health Information, Planning, and Evaluation
EGPAF  Elisabeth Glaser Pediatric Aids Foundation
ESTHER  *Ensemble de Solidarité Thérapeutique Hospitalière en Réseau*
HIV  Human Immunodeficiency Virus
ICAP  Columbia University’s International Center for AIDS Care and Treatment Programs
IEC  Information, Education, Communication
MOH  Ministry of Health
OVC  Orphans and Vulnerable Children
PCR  Polymerase Chain Reaction
PEPFAR  The President’s Emergency Plan for AIDS Relief
PLHIV  Person Living with HIV
PMI  Mother and Infant Protection Center
PMTCT  Prevention of Mother to Child Transmission of HIV
PNOEV  National Program for Orphans and Vulnerable Children
PNPEC  National Program for the Medical Management of People Living with HIV/AIDS
PSP  Public Health Pharmacy
QA  Quality Assurance
QAP  Quality Assurance Project
QI  Quality Improvement
SSSU  Student Health Services
UNAIDS  Joint United Nations Programme on HIV/AIDS
UNICEF  United Nations Children’s Fund
URC  University Research Co., LLC
USAID  United States Agency for International Development
VCT  Voluntary Counseling and Testing
WHO  World Health Organization
EXECUTIVE SUMMARY

An initial evaluation of the quality of care and treatment for persons living with HIV (PLHIV) was conducted from July – August 2008 in 33 health care centers throughout Cote d'Ivoire in order to draw attention to the need for improvements among different components of care and treatment services.

Following this, the National Program for the Medical Management of People Living with HIV/AIDS (PNPEC), the Ministry of Health and Public Hygiene, and the USAID Health Care Improvement Project (HCI) in Cote d'Ivoire, along with other partners, agreed to implement an improvement collaborative in order to improve the quality of HIV services.

After the restitution of the results of the initial evaluation and the establishment of the elements of an improvement collaborative, 41 sites were selected to participate in the demonstration phase of the collaborative. Of these 41 sites, 34 provide prevention of mother to child transmission of HIV (PMTCT) services, and 38 provide anti-retroviral (ARV) treatment services. These sites represented 28 health districts and 13 administrative regions.

The training sessions led by HCI/Cote d'Ivoire, with technical assistance provided by HCI/Niger, provided training for 25 participants from national structures and other implementing partners (PNPEC, public health pharmacies, the office of planning and evaluation, the general directorate of health, ACONDA, CARE, Columbia University's International Center for AIDS Care and Treatment Programs, and Elizabeth Glaser Pediatric AIDS Foundation) and 13 national coaches. The technical assistance provided to quality improvement teams at health facility sites was carried out through learning sessions and coaching visits.

All of the participating sites tracked the same monthly indicators. The teams tested changes and assessed their effect on the indicators. The results presented in the following document demonstrate the overall improvements achieved across the sites.

For the medical care of PLHIV, the percentage of items registered in patient files increased from 12% in July 2008 to 88% in June 2010. For patients who were lost to follow-up, the percentage decreased from 27% in July 2008 to 16% in June 2010. For PMTCT, the percentage of clients with complete patient files increased from 21% in July 2008 to 87% in June 2010. The percentage HIV-exposed infants that received HIV testing increased from 17% in October 2008 to 67% in June 2010. The actions taken to achieve these results included awareness raising, capacity building, monitoring, and modification of processes.
I. INTRODUCTION

In Côte d’Ivoire, the HIV prevalence in the general population is 3.9% (UNAIDS 2008), which is the highest in West Africa. This high prevalence has motivated the development of multiple national strategies, one of which is universal access to care for persons living with HIV (PLHIV). To this end, Côte d’Ivoire has opted for decentralization of services and integration of support services in horizontal health services. This has allowed for the development of support activities in many health structures on the part of medical and public health personnel. These health structures, through the financing of The President’s Emergency Plan for AIDS Relief (PEPFAR) receive the support of implementing partners for the development of activities for care and support of PLHIV.

An initial evaluation of the quality of care and treatment for PLHIV was carried out from July – August, 2008 in 33 health structures throughout the country. This assessment highlighted many important opportunities to improve the various components of care and treatment activities.

Therefore, the National Program for the Medical Management of People Living with HIV /AIDS (PNPEC), the Ministry of Health (MOH), the United States Agency for International Development (USAID) Health Care Improvement Project (HCI) and many other partners convened to implement an improvement collaborative to address gaps in services and improve the quality of care provided to PLHIV.

This collaborative approach was designed to run in two phases: a demonstration phase implemented from January 2009 to June 2010. It was conducted with 41 sites at both public and private health structures engaged in care for PLHIV. The second phase is a spread collaborative whereby successful changes are introduced in new sites in order to expand the reach of improvements made during the demonstration phase. The second phase is currently underway. This report presents the results achieved during the demonstration phase.

A. The USAID Health Care Improvement Project

The USAID Health Care Improvement Project (HCI) is a five year project funded by USAID and managed by University Research Co., LLC (URC). It is designed to help countries improve the quality and the impact of their health services and is guided by the concept that the quality of health care can be improved significantly through the adoption of approaches and specific techniques that have already been proven to be effective in the field of quality assurance (QA). The HCI project assists programs in-country to implement interventions that have demonstrated impacts in child health, maternal and newborn care, HIV/AIDS, tuberculosis, malaria, and reproductive health.

The HCI project also assists countries to expand coverage of essential services to better respond to needs of populations not already being served (in particular, women) to increase the efficiency of care and to reduce the costs related to poor quality services, and to improve the capacity, motivation, and retention of health care personnel. The HCI project is based on the success of its predecessor, the Quality Assurance Project (QAP, 1990 – 2007) which adopted approaches of QA and tailored them to the needs of countries receiving assistance from USAID, such as continuous quality improvement, improvement collaboratives, systems of accreditation, and the implementation of contracts tied to performance.

In Côte d’Ivoire, at the request of USAID/Côte d’Ivoire and of PEPFAR, HCI has the following objectives:

- Support and reinforce PNPEC to develop and implement a program for quality improvement (QI) of services and care;
- Provide technical assistance to the National Program for Orphans and Vulnerable Children (PNOEV) and its implementing partners to improve the quality of services provided to orphans and vulnerable children (OVC);
- Provide technical assistance to improve the quality of HIV prevention programs, including abstinence, fidelity, and other types of prevention.

B. HCI’s Strategic Approach in Côte d’Ivoire

The strategy for QI used by HCI in Cote d’Ivoire is the improvement collaborative. This is a system of shared learning that involves creating multiple QI teams from different hospitals and health centers. Sharing a common objective, the QI teams work together in healthy competition using QI methods. In the improvement collaborative, the QI teams use shared indicators to measure their progress against fixed objectives.

The QI teams apply changes to local processes to ensure effective implementation of standards. These changes could include clinical practices based on scientific evidence, or social practices based off locally appropriate best practices for improved delivery of services. These changes make up the change package of the collaborative. Improvement collaboratives are a time limited improvement strategy, typically attaining significant results in 9 to 18 months, although improvements can often be seen sooner. However, in cases of rearrangement of complex systems (for example, in the case of chronic illness) collaboratives can continue beyond this time frame.

After the collaborative, the QI teams and service providers definitively adopt the good practices that led to improvements resulting from the collaborative. The activities of a collaborative are conducted in alternating cycles of learning sessions followed by action periods. The action periods are supplemented by coaching visits. The implementation of the collaborative is done in two phases; one phase of demonstration during which sites share and implement changes, which are then synthesized; and a spread phase during which new sites build off the achievements made in the first phase.
II. INTERVENTION

A. Initial Assessment of Quality at Sites

From July 8, 2008 until August 12, 2008 the initial evaluation of the quality of services was carried out at 33 sites chosen as a random sample (locations are highlighted in the map below). The evaluation was conducted by a team comprised of members from PNPEC and HCI as well as members from implementing partners including Aconda-VS-CI, Elizabeth Glaser Pediatric AIDS Foundation (EGPAF), CARE, Columbia University’s International Center for AIDS Care and Treatment Programs (ICAP), United Nations Children’s Fund (UNICEF), and Ensemble de Solidarité Thérapeutique Hospitalière en Réseau (ESTHER). Following the data collection at the sites, the data was cleaned and analyzed by statisticians.

The return of results of the situational analysis of quality of services was done in two steps. The first step consisted of providing the results to the cabinet of the Minister of Health and Public Hygiene on October 6, 2008. This presentation was done by PNPEC and HCI with participation from all the implementing partners and Dr. Maina Boucar from HCI/Niger. The following results were presented:

Concerning patients not eligible for ARV:
- 67% of ineligible patients were lost to follow-up after six months and less than 20% were still receiving services after 12 months.
- CD4 counts were taken for 85% of patients in their first month, but after six months only 59% of patients had their CD4 counts taken.

For patients receiving ARV:
- 44% were lost to follow-up after six months.
- Initial CD4 counts were taken for 96% of the patients, and weight was measured for 90% of patients.
- After six months, CD4 counts were taken for only 76.7% of patients and weight was measured for 92.2% of patients. For ARV treatment, it was found that during a 12 month period, less than 40% of the patients received 10 – 12 monthly doses.

The second step consisted of presenting the results to the specific sites according to implementing partner. The presentations were done in their localities, with the presentation to EGPAF held on October 1, 2008; Aconda-VS-CI on October 7, 2008; and ICAP on October 7, 2008.

B. Preparatory Activities for the Demonstration Phase

In order to initiate activities after the baseline assessments, HCI carried out...
advocacy activities with key stakeholders and implementers working in programs for care and treatment of PLHIV.

The first meeting of the coordinating committee for the collaborative was led by the Ministry of Health (MOH) on November 19, 2008. The objective of this meeting was to validate the organizational structures of the collaborative, which included:

- The steering committee of the collaborative, which serves as the focal point of the collaborative at the national level. It meets quarterly and is composed of members from the MOH, PNPEC, INSP, the World Health Organization (WHO), and HCI. It is chaired by the General Directorate of Health (DGS).
- The collaborative secretariat which is the day-to-day management structure and is managed by PNPEC.
- The technical committee of the collaborative which carries out the planning of activities and technical assistance to the sites and is led by HCI personnel.
- The scientific support group which provides assistance on an ad-hoc basis and is composed of national HIV/AIDS experts.
- The site-level QI teams which are the pivotal center of the operation. The QI teams implement the changes for improvement and are made up of site-level health care providers. The members of the QI teams work together to better understand their clients, analyze their processes, test and implement changes, restructure themselves to improve performance, and monitor results.

During this meeting, and with the assistance of PNPEC, the 41 pilot sites were chosen for the demonstration phase of the improvement collaborative. These sites were selected based on the suggestions from the implementing partners, including Aconda-VS-CI, CARE, EGPAF, ICAP, and UNICEF.

The pilot phase of the collaborative of 41 sites was made up of six urban health centers, 15 general hospitals, seven regional hospitals, four community urban health facilities, one anti-tuberculosis center, four mother and infant protection (PMI) centers, four specialized centers and one national blood transfusion center.

Among these sites, 34 offered PMTCT services and 38 sites offered care and treatment. Furthermore, 31 sites offered both services. Three sites offered only PMTCT services, including the PMI of Bouafle, the PMI of Yamoussoukro, and the PMI of Gagnoa. Seven sites offered only ARV services, including the clinic Confiance, the national blood transfusion center, the urban dispensary Divo, the Center for Support for Research and Training (CePres), the anti-tuberculosis center of Daloa, the Mission Christ the King hospital of Sinfra, and the Student Health Services (SSSU) of Abengourou.

The 41 sites involved in the collaborative covered 28 health districts and 13 administrative regions.
C. Training Activities

A training workshop and orientation on conducting an improvement collaborative was held December 4 – 6, 2008 in Abidjan. During this workshop, there were 25 participants from both national government offices and development partners PNPEC, the national central pharmacy, the Ministry of Health for Information, Planning, and Evaluation (DIPE), MOH, ACONDA, CARE, ICAP, EGPAF, ESTHER. The concepts of QA, QI, the change package, and the collaborative were explained to participants.

The implementation of the collaborative necessitates the development of a team of national coaches. These coaches were selected based on suggestions made by implementing partners and institutions involved in the care and treatment of PLHIV. These coaches received training on quality processes, the elements of an improvement collaborative, and coaching techniques from January 28 – 30, 2009 in Abidjan. Following this training, 13 coaches (DGS, PNPEC, PSP, DIPE, Cocody University Hospital, CARE, Aconda-VS-CI, and HCI) had reinforced their competencies in the techniques of QI and provision of technical assistance to site teams. This training session was conducted by HCI/Cote d’Ivoire with technical assistance from HCI/Niger personnel.

D. Learning Sessions

During this demonstration collaborative, four learning sessions were held. The first was held January 14 – 16, 2009 in Abidjan with 20 QI teams, totaling 50 people from Abidjan and surrounding areas, and in Gagnoa with 20 QI teams from the interior of the country. Furthermore, this session brought together PMTCT service providers as well as care and treatment providers. The participants were trained in concepts of quality, QA, and improvement collaboratives.

The second learning session was held in Abidjan and Yamoussoukro in March 2009. There were 20 QI teams from the zone of Abidjan and 20 QI teams from the rest of the country. These sessions were attended by 48 people in Abidjan and 50 in Yamoussoukro.

The third learning session was held in Daloa in August 2009 with 60 care and support providers and in Agboville with 43 personnel from PMTCT services.

The last learning session was held in March 2010 in Yamoussoukro for 36 PMTCT service providers and in Gagnoa for 37 care and treatment providers.

The learning sessions were an occasion for the QI teams to share their knowledge and their experiences with their counterparts and to learn about potential practices to put in place in order to improve their services.

E. Coaching Visits

Three coaching visits were conducted from February 2009 to January 2010. These coaching visits were conducted by national coaches. The goal of the visits was to provide technical assistance to the QI teams at their facilities. These visits were conducted with the participation of the implementing partners. All of the QI teams were visited during each of the coaching visits. Beyond the planned coaching visits, targeted technical assistance was also provided to the hospital of Bouaflé to allow the new QI team to better manage the process.
F. Restitution of the First Phase

On May 26, 2010, the workshop for the restitution of the first phase of the collaborative was held. This included the participating sites, members of the MOH, PEPFAR representatives, implementing partners, and other organizations. The six best sites, as selected during the previous learning session, presented their work and received diplomas of recognition. During the workshop, the participants were divided into working groups to revise the change package.

III. RESULTS

Common indicators were defined for the sites in relation to the nature of their activities: care and treatment or PMTCT. All of the sites followed the indicators monthly. The teams, depending on the initial level of their indicators, tested the changes and noted them in their journals to assess their effect. In sharing these changes, the sites learned together. The following results demonstrate the improvements achieved across the sites involved in the demonstration phase.

A. ARV Treatment

1. Documentation

The retrospective analysis of the completeness of documentation in patients’ files shows that before the first learning session of the collaborative, only 19% of patients’ files were complete, as shown in Figure 1. After the second learning session and the implementation of changes at the sites, which included daily and weekly monitoring of files and registers to verify their completeness, training the heads of the health centers on the importance of complete filing, and effective control of the files before returning them to storage, and through support provided during coaching visits, the percentage of complete files was 79% in July 2009.

The collaborative allowed us to find a better way to complete our documents. For example, we didn’t have a way to measure patients’ height, so we started marking their height on the wall of the clinic.

- Comment from Abobo Health Center

Figure 1: Percent of patients with complete files

<table>
<thead>
<tr>
<th>Percentage</th>
<th>Number of sites</th>
</tr>
</thead>
<tbody>
<tr>
<td>5%</td>
<td>2</td>
</tr>
<tr>
<td>12%</td>
<td>8</td>
</tr>
<tr>
<td>6%</td>
<td>8</td>
</tr>
<tr>
<td>18%</td>
<td>9</td>
</tr>
<tr>
<td>14%</td>
<td>24</td>
</tr>
<tr>
<td>19%</td>
<td>25</td>
</tr>
<tr>
<td>21%</td>
<td>27</td>
</tr>
<tr>
<td>26%</td>
<td>31</td>
</tr>
<tr>
<td>55%</td>
<td>32</td>
</tr>
<tr>
<td>67%</td>
<td>34</td>
</tr>
<tr>
<td>65%</td>
<td>32</td>
</tr>
<tr>
<td>79%</td>
<td>31</td>
</tr>
<tr>
<td>82%</td>
<td>33</td>
</tr>
<tr>
<td>83%</td>
<td>32</td>
</tr>
<tr>
<td>83%</td>
<td>34</td>
</tr>
<tr>
<td>85%</td>
<td>34</td>
</tr>
<tr>
<td>84%</td>
<td>32</td>
</tr>
<tr>
<td>89%</td>
<td>33</td>
</tr>
<tr>
<td>84%</td>
<td>33</td>
</tr>
<tr>
<td>88%</td>
<td>31</td>
</tr>
</tbody>
</table>

6 • Results from the Pilot Phase of an ART/PMTCT Improvement Collaborative in Côte d’Ivoire
By September 2009, 82% of files were found to be complete, and by June 2010, 87% of files were complete. Figure One shows the increases in complete documentation through the implementation of QI activities. A complete list of changes implemented by teams is presented in Table 1.

Table 1: Changes implemented to improve documentation for ARV treatment

<table>
<thead>
<tr>
<th>Category for change</th>
<th>Changes Implemented</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capacity Building</td>
<td>- Organize periodic meetings for all service providers on the importance of completeness of files.</td>
</tr>
</tbody>
</table>
| Control Activities  | - Train the director in information gathering and effective control of patient files before returning them to the archives.  
- Regular verification of the client files and registers by the medical “focal point.”  
- Check files on a daily and weekly basis to ensure that all items are filled in.  
- Train health providers internally on correct completion of patient files.  
- Establish a registry to track patient files coming in and out of the voluntary counseling and testing (VCT) archives.  
- Establish a registry to record patients’ files that are not found during the patient’s visit. |
| Process Modification| - Systematically make the items missing from files accessible for Doctors in order to complete the information.  
- Make information about patients’ clinical status for the Doctor to complete and socio-demographic information for the community counselor or social workers to complete.  
- Assign a health assistant to complete all information related to VCT in patients’ files.  
- Systematically take patients’ weight at reception in the clinic.  
- Put blood pressure and measuring tape in each consultation room.  
- Mark on the wall in the reception area to measure patients’ height. |

2. Retention
The percentage of patients lost to follow up during the course of ARV treatment before the project began working to improve quality of services oscillated between 25% and 36% (as seen in Figure 2). In January 2009, when the QI activities began with the learning sessions and implementation of changes, the percentage of clients lost to follow-up gradually declined, reaching 16% by June 2010. The first change made was to use local NGOs to find patients that were late for appointments, and the second change was to establish a log to track patient appointments. All of the changes are included in Table 2 below.
Table 2: Changes implemented to improve patient retention

<table>
<thead>
<tr>
<th>Change Category</th>
<th>Changes Implemented</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capacity Building</td>
<td>- Inform the client of the date of their next appointment at each point of contact during their visits.</td>
</tr>
<tr>
<td></td>
<td>- Create a community group of PLHIV with contributions to all aspects of care and treatment, including adherence support, psychosocial support, and home visits.</td>
</tr>
<tr>
<td></td>
<td>- Train nurses to renew prescriptions.</td>
</tr>
<tr>
<td>Control Activities</td>
<td>- Use registers and appointment book to identify patients who missed their appointments.</td>
</tr>
<tr>
<td></td>
<td>- Establish a register to identify patients who tested HIV positive at VCT sites where initial assessments were conducted.</td>
</tr>
<tr>
<td></td>
<td>- Track patient appointments through the Data Collection Assistants and Community Health Agents.</td>
</tr>
<tr>
<td></td>
<td>- Establish an appointment card for PLHIV.</td>
</tr>
<tr>
<td></td>
<td>- Establish a weekly or monthly list of patients considered to be lost to follow-up.</td>
</tr>
<tr>
<td>Process Modification</td>
<td>- Automatically call back patients who miss their follow-up appointments.</td>
</tr>
<tr>
<td></td>
<td>- Create a list of all PLHIV that includes their phone numbers and/or addresses.</td>
</tr>
<tr>
<td></td>
<td>- Set hours during which services will be offered in order to reduce waiting times.</td>
</tr>
</tbody>
</table>
B. Prevention of Mother to Child Transmission of HIV

1. Documentation

The percentage of clients with complete PMTCT files began to improve in May 2009 upon the introduction of assigning responsibility for the management of data to review the indicators and check medical records. This increased from 25% in January 2009 to 88% in July 2009. In June 2010, the percent of patients with complete files for PMTCT was 87%. Figure 3 shows that the QI process allowed for improved documentation for PMTCT files.

Since the introduction of the collaborative, we have noticed that we pay more attention to things we neglected before.

- QI Team Member, Espace Médical Clinique Confiance

![Figure 3: Percentage of clients with complete PMTCT files]

All changes made are listed in Table 3 below.

### Table 3: Changes implemented to improve PMTCT documentation

<table>
<thead>
<tr>
<th>Change Category</th>
<th>Changes Implemented</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capacity Building</td>
<td>- Organization of working sessions with midwives on routine completion of PMTCT registers.</td>
</tr>
<tr>
<td>Control Activities</td>
<td>- Verification of the completion of PMTCT registers after pre-natal consultation by a QI team member.</td>
</tr>
<tr>
<td></td>
<td>- Introduce and teach personnel about the management tools.</td>
</tr>
<tr>
<td></td>
<td>- The lead midwife is to check files at the end of the week to ensure they have been completed.</td>
</tr>
<tr>
<td></td>
<td>- Creation of a notebook to be shared between the pre-natal consultation office and the delivery room to identify the women who are HIV positive when they come to give birth.</td>
</tr>
</tbody>
</table>
2. Retention

As shown in Figure 4, the percentage of HIV-exposed infants that received HIV testing increased over time, reaching 67% by June 2010. These results followed the simultaneous implementation of three changes at the sites, including:

**Change 1:** Searching for infants born to women who are HIV positive in order to test them during routine immunizations;

**Change 2:** Engaging local NGOs to help find infants who are lost to follow-up;

**Change 3:** Improvements in counseling and testing.

Progress made declined from October to December 2009 due to health personnel strikes. All of the changes made are listed in Table 4.

![Figure 4: Percentage of HIV-exposed infants who are tested for HIV](image)

| Process Modification | - Write “invite” in the column for partner testing when they have not yet been tested.  
| - Do systematic sampling for initial assessments and enroll all HIV positive patients. |

**The collaborative allowed us to notice the high number of HIV exposed infants who were lost to follow-up at our clinic, which helped us work to ensure follow-up of infants born to HIV-positive mothers.**

- Participant in learning session
Table 4: Changes implemented to improve testing of HIV-exposed infants

<table>
<thead>
<tr>
<th>Change Category</th>
<th>Changes Implemented</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capacity Building</td>
<td>- During departmental meetings remind personnel of the importance of collecting the contact information of clients they are following.</td>
</tr>
<tr>
<td></td>
<td>- Training in the collection of dry blood spots.</td>
</tr>
<tr>
<td></td>
<td>- Reinforce information, education, and counseling (IEC) for HIV positive women so they can teach their partners in order to encourage them to come for VCT.</td>
</tr>
<tr>
<td></td>
<td>- Reinforce IEC for HIV positive women to encourage them to inform midwives of the HIV status when they come to give birth.</td>
</tr>
<tr>
<td>Control Activities</td>
<td>- Track daily women who are HIV positive who have given birth and give them appointments for co-trimoxazole and infant HIV testing at six weeks.</td>
</tr>
<tr>
<td></td>
<td>- Establish a daily calendar for visits in order to anticipate patients who will be lost to follow-up.</td>
</tr>
<tr>
<td>Process Modification</td>
<td>- Introduction of a longitudinal register to follow mothers and their infants.</td>
</tr>
<tr>
<td></td>
<td>- Establish a register to improve tracking of all women to the point of delivery and for improved tracking of babies after birth.</td>
</tr>
<tr>
<td></td>
<td>- Take daily polymerase chain reaction (PCR) samples.</td>
</tr>
<tr>
<td></td>
<td>- Installment of two community agents at each site in order to follow women at home.</td>
</tr>
<tr>
<td></td>
<td>- Creation of a map to locate patients.</td>
</tr>
<tr>
<td></td>
<td>- Engage the vaccination and weighing personnel to help identify children born to women with HIV during their first postpartum visits.</td>
</tr>
<tr>
<td></td>
<td>- Note in registers the delivery dates for women with HIV and the dates of appointments for their infants to receive HIV testing.</td>
</tr>
<tr>
<td></td>
<td>- Establish a register of sharing between PMTCT services and care and treatment services.</td>
</tr>
<tr>
<td></td>
<td>- Calling mothers when they miss their appointment for their infant’s HIV testing.</td>
</tr>
<tr>
<td></td>
<td>- Engaging social workers to provide renewal prescriptions.</td>
</tr>
<tr>
<td></td>
<td>- Identify pregnant women who are HIV positive and should be giving birth during the month using a calendar.</td>
</tr>
<tr>
<td></td>
<td>- The head of PCR should track all women with HIV who have given birth.</td>
</tr>
</tbody>
</table>
IV. DISCUSSION

The following success stories are comprised of testimonials reported by the QI teams during coaching visits and learning sessions, highlighting the benefits of the improvement collaborative:

- Finding our patients who were lost to follow-up allowed us to bring 35 patients back in March 2009, making a total of 69 (16 had died and 8 transferred facilities).
- The collaborative allowed us to find a better way to register patient information. For example, the lack of equipment to measure height was offset by marking patient height on the wall of the reception room.
- This showed us that in our facility the documentation was not a priority but once HCI showed us the negative impacts of that, it attracted our attention. We implemented changes which gave us excellent results regarding patients lost to follow-up at our site and we decreased from 29% to 0% today.
- The collaborative reinforced exchanges between the voluntary counseling and testing site Alliance and the health center.
- The collaborative allowed us to realize the high number of children lost-to-follow-up at our facility, and allowed us to assure the follow up of children born to mothers who are HIV positive.
- The management of data was the preoccupation of our partners, but not us. With the QI team, we are more interested in this aspect as well as national tools in order to properly track patients.
- Among 20 mothers who are HIV positive and have infants who were tested, only one infant has tested positive for HIV, thanks to PMTCT services.
- Since the introduction of the collaborative, we have noted that we pay more attention to items that we neglected previously.
- Another site that understood the work well helped us to do ours.
- The collaborative allowed us to find our patients who are HIV positive and their children after they had been lost-to-follow-up.
- The site began to track our numbers better, which has allowed us to provide better services to our clients.
- We found individual motivation within the QI team because every member is important and plays an essential role in obtaining results.

The implementation of the first phase of the collaborative had some obstacles that hindered the rapid development of activities. Removing these obstacles could help to receive better results. This includes:

- Increase functionality of QI Teams by including the active participation of all of the members from the site.
- Advocate for health managers to listen to requests made by QI teams.
- Increase the involvement of implementing partners in the improvement process.
- Ensure more intense and closer monitoring of QI teams in the development of their activities.
V. CONCLUSIONS AND RECOMMENDATIONS

Three major perspectives emerged after the implementation of the activities of the first phase of the collaborative:

- The spread of the process of quality improvement to other aspects of health. To this end, the number of sites involved in the collaborative will increase from 41 sites to 120.
- The training of regional coaches responsible for providing leadership in the regions for QI teams.
- The importance of institutionalization of achievements in the health system.

Initiated in 2008 by a situational analysis that demonstrated multiple opportunities for improvements, the improvement collaborative implemented in Cote d’Ivoire was aimed at PMTCT services and ARV services for PLHIV. For each technical area, the improvement activities placed importance upon documentation and retention and integration of patients in the system of care. The results were demonstrable improvements in documentation in individual patient files and in PMTCT registers. For retention and integration, the changes implemented at the sites reduced the number of patients lost-to-follow-up after their enrollment in the system of care and increased the number of HIV-exposed infants who did not receive HIV testing.

Given these encouraging results, the improvement collaborative process to improve the quality of health services should be spread to other sites and applied to other technical domains in order to benefit the entire health system in Cote d’Ivoire.