Improving the Identification of HIV-positive Children in Uganda: 
Tested changes and how they were implemented
Improving the identification of HIV-positive children in Uganda: Tested changes and how they were implemented

NOVEMBER 2016

Flavia Nakanwagi, University Research Co, LLC
Michael Musani Mwanga, University Research Co., LLC
Juliet Tumwikirize, University Research Co., LLC
Connie Namajji, University Research Co., LLC
George Aluma, University Research Co., LLC
Bernard Ayebazibwe, University Research Co., LLC
Herbert Kisamba, University Research Co., LLC
Esther Karamagi, University Research Co., LLC
Mirwais Rahimzai, University Research Co., LLC

DISCLAIMER
The contents of this report are the sole responsibility of University Research Co., LLC (URC) and do not necessarily reflect the views of the United States Agency for International Development or the United States Government.
Acknowledgements

The change package for improving the identification of HIV-positive children in Uganda was compiled for the United States Agency for International Development (USAID) by the USAID Applying Science to Strengthen and Improve Systems (ASSIST) Project.

The authors pass on their gratitude to Angella Kigonya and Bryan Tumusiime of University Research Co., LLC (URC) for their support in presenting the changes in this package in a format that enables further learning. We also acknowledge the 45 staff (doctors, nurses, midwives, laboratory technicians, clinical officers, counselors, etc.) at the 25 USAID ASSIST-supported health facilities for endeavoring to improve identification of HIV-positive children through the tested changes and accepting to share this knowledge with us for further learning.

ASSIST acknowledges the role of the Ministry of Health and other implementing partners that enabled this improvement work, including: Supporting Public Sector Work Places to Expand Action and Responses to HIV/AIDS (SPEAR); Makerere University Walter Reed Project (MUWRP); Strengthening TB and HIV responses in the Eastern Region (STAR E), STAR Eastern and Central Region (STAR EC), and STAR South Western Region (STAR SW); Inter-Religious Council of Uganda (IRCU); Mildmay Uganda; and Uganda Private Health Support Program (UPHS). We thank them.

The USAID ASSIST Project is made possible by the generous support of the American people through USAID’s Bureau for Global Health, Office of Health Systems. The USAID ASSIST Project is managed by URC under the terms of Cooperative Agreement Number AID-OAA-A-12-00101. URC’s global partners for the USAID ASSIST Project include: Encompass LLC; FHI 360; Harvard T. H. Chan School of Public Health; HEALTHQUAL International; Initiatives Inc.; Institute for Healthcare Improvement; Johns Hopkins Center for Communications Programs; and WI-HER, LLC.

For more information on the work of the USAID ASSIST Project, please visit www.usaidassist.org or send an e-mail to assist-info@urc-chs.com.

Recommended citation

TABLE OF CONTENTS

Acronyms ........................................................................................................................................... i
Operational definitions .................................................................................................................. ii

Introduction ........................................................................................................................................ 1
Why focus on paediatric HIV counselling and testing? ................................................................. 1
Developing the change package .................................................................................................... 1
How to use this change package .................................................................................................. 2

Implementing Quality Improvement Work to Improve Paediatric HCT ......................................... 2

Recommendations for Improving the Identification of HIV-positive Children .................................. 3
Lessons learnt in identifying HIV-positive children ....................................................................... 5

Appendices ......................................................................................................................................... 6
Appendix 1. Detailed Change Package for Improving Paediatric HCT ........................................ 6
Appendix 2. Paediatric HIV Screening Tool for Children and Adolescents ..................................... 10

Acronyms

ART Antiretroviral therapy
ARVs Antiretroviral drugs
ASSIST Applying Science to Strengthen and Improve System Project
CD4 Cluster of Differentiation 4
CME Continuous medical education
COR Continuum of Response
EID Early infant diagnosis
HCT HIV counselling and testing
HIV Human immunodeficiency virus
IRCU Inter-Religious Council of Uganda
MAM Moderate acute malnutrition
MOH Ministry of Health
MUWRP Makerere University Walter Reed Project
OPD Out Patient Department
OVC Orphans and vulnerable children
PCR Polymerase chain reaction
PEPFAR U.S. President’s Emergency Plan for AIDS Relief
PITC Provider-initiated testing and counselling
PMTCT Prevention of mother-to-child transmission
QI Quality improvement
SAM Severe acute malnutrition
SPEAR Supporting Public Sector Work Places to Expand Action and Responses to HIV/AIDS
STAR E Strengthening TB and HIV responses in the Eastern Region
STAR EC Strengthening TB and HIV responses in the East Central Region
STAR SW Strengthening TB and HIV responses in the South Western Region
TB Tuberculosis
UPHS Uganda Private Health Support Program
URC University Research Co., LLC
USAID United States Agency for International Development
VHT Village health team
YCC Young child clinic
Operational definitions

**ART initiation:** The actions involved in starting a client on antiretroviral therapy.

**Change concept:** A category of changes, ideas, or solutions that are similar and have a common underlying thought.

**Change idea:** Specific actions which improvement teams have taken that are expected to lead to improvement. Changes need to be tested to see if they will actually lead to improvement.

**Children:** Anyone whose age is under 15 years or 0-14 years (as per MOH guidelines).

**Collaborative:** A quality improvement effort that involves a number of quality improvement teams that work and learn together to rapidly achieve significant improvement towards a common goal. Collaborative improvement often has the explicit intention of scaling up changes that the initial teams have found to be successful, to other teams.

**Enrolment:** The action of being enrolled in HIV care. A newly diagnosed HIV-positive client is typically assigned a pre-ART number upon enrolment.

**HIV testing:** Providing the opportunity for clients to know their HIV status with quality counselling support to help them cope with a positive or a negative test result.

**Linkage:** The action of linking an identified HIV-positive client to care or the state of being linked and documented in the HIV counselling and testing register.

**Linkage facilitator:** A trained volunteer who is paid by an implementing partner to support health workers with updating of the registers and simple tasks like escorting clients from one unit to another. They work under the supervision of a trained health worker.
Introduction

The USAID Applying Science to Strengthen and Improve Systems (ASSIST) Project is working with the Ministry of Health (MOH), districts, implementing partners, and health facilities in Uganda by applying improvement methods to improve HIV care and family health services in primary care and referral facilities and apply lessons from pilot facilities to other sites. ASSIST Uganda is also working with the Ministry of Gender, Labor and Social Development and implementing partners to apply standards to improve services for vulnerable children and families.

This document summarizes learning from 25 sites located in several districts in Uganda where ASSIST provided support to improve HIV counselling and testing (HCT) for children under 15 years of age.

Why focus on paediatric HIV counselling and testing?

Uganda continues to experience a generalized HIV epidemic with a prevalence of 7.3% in adults and 0.7% in children. An estimated 147,000 children (0-14 years) and 110,000 adolescents (10-19 years) are living with HIV in Uganda. The current prevention of mother to child transmission of HIV (PMTCT) coverage at 80% has played a big role in reducing new HIV infections in children, from 27,660 in 2011 to 9,629 in 2013. UNAIDS estimates that 66% of children living with HIV in Uganda are over 5 years and outside the PMTCT service cascade. And yet, up to 68% of children living with HIV have not been identified. Support supervision findings by the MOH Pediatric and Adolescent Unit indicate that only 8% of children under 5 years and only 15% of children 5-15 years are being tested for HIV at outpatient department (OPD) wards.

In order to identify these children, we must conduct targeted HCT. To align ourselves with the UNAIDS 90-90-90 global targets, knowing very well that HCT is the entry point to care, HCT services for children and adolescents are critical to assure the paediatric HIV Continuum of Response (COR). Increasing opportunities for early identification of HIV-infected children and linking them into care requires increasing HIV testing at key entry points within health care facilities.

Developing the change package

The change ideas shared in the paediatric HCT change package are a compilation of actions taken by quality improvement teams to change important processes leading to the improvement in provision of HCT services for children under 15 years of age in Uganda. These change ideas were implemented through the innovative efforts of health facility staff with the support of quality improvement coaches at 25 health facilities across several districts in Uganda where ASSIST has provided technical support to the MOH to improve the quality of HIV care services. These change ideas were developed and implemented using the quality improvement approach.

A quality improvement team was formed in each of the 25 sites that participated in the HIV COR paediatric improvement collaborative. The MOH and ASSIST set two objectives for the paediatric HCT improvement work:

- Increase the number of children tested to reach 80% of the expected number within 12 months.
- Generate, develop, and disseminate knowledge products, including a change package, describing how to redesign paediatric HIV care to achieve improvements in the quality of services.

Each team met and identified their gaps in providing paediatric HCT and came up with service innovations (changes) which they tested to increase the identification of HIV-positive children. ASSIST

---

1 Annual Health Sector Performance Report 2014/2015
also supported the health service providers through monthly onsite coaching (site visits made jointly with the implementing partner) to monitor progress and support the team in their improvement efforts. To facilitate the sharing of the change ideas, peer-to-peer learning sessions were conducted on 28th–30th July 2015 and a harvest meeting held on 20th–21st August 2015 to collect and share changes tested that led to the attainment of the improvement aim of increasing the percentage of HIV-positive children identified at pediatric and OPD wards.

**How to use this change package**

This change package is intended to provide other quality improvement teams that will be starting on improvement work in paediatric HCT a general idea and act as a guide for issues that have to be considered and innovations that can be done to improve paediatric HCT. Teams are urged to adapt these changes to suit their clinic settings and not to simply replicate these change ideas.

**Implementing Quality Improvement Work to Improve Paediatric HCT**

Applying the quality improvement approach to improve paediatric HCT involves engaging the health unit staff in identifying and addressing gaps in the HIV Continuum of Response model shown in Figure 1. Such gaps usually relate to the flow of clients within the health facility and the division of roles and responsibilities among health team members.

**Figure 1. HIV Continuum of Response**

Health care service providers are encouraged to begin by forming a quality improvement team that will focus on improving paediatric HCT. The team might include providers from both the ART and Young Child Clinic (YCC) as well as laboratory staff.

The HIV COR model focuses improvement efforts on HIV testing as the primary entry for all clients done through provider-initiated testing and counselling (PITC). Once confirmed positive or negative, a client is then initiated into the HIV continuum of response which includes linkage to prevention services (for HIV-negative outcome) and HIV care and treatment (for HIV-positive outcome).

The teams that participated in the initial paediatric HCT improvement collaborative found that there were four main conditions that needed to be met to increase the testing of children for HIV:
1) Improving knowledge and skills of health workers regarding paediatric HCT;
2) Increasing access to paediatric HCT services;
3) Availing resources for paediatric HCT services, such as test kits;
4) Improving the documentation of children’s HIV status and children eligible for HIV testing.

In improvement work, these conditions can be thought of as the primary drivers of reaching the improvement aim of increasing the percentage of children under 15 years of unknown HIV status who are tested and counseled for HIV in paediatric and OPD wards. Each primary driver, in turn, is affected by secondary drivers or steps that can help to achieve the condition stated in each primary driver. This chain of conditions and steps to achieve them can be displayed in a driver diagram, shown in Figure 2 below.

**Figure 2: Driver diagram for improving paediatric HCT**

Improvement teams tested changes to affect the primary drivers; these changes are shown as secondary drivers in Figure 2.

**Recommendations for Improving the Identification of HIV-positive Children**

Based on the work with 25 sites in Uganda, we recommend that health facilities aiming to improve identification of HIV-positive children implement changes in each of the following areas:

1. Changes that improve the knowledge and skills of health workers to offer paediatric HCT;
2. Changes that improve the availability of paediatric HCT services within the health facility;
3. Changes that ensure availability of HCT supplies to encourage paediatric HCT;

These changes are recommended because all the health facilities that tested and implemented these changes reported significant improvement in paediatric HCT and hence identification of HIV-positive children. Table 1 summarizes the change ideas tested by teams and why each change is recommended. Appendix 1 contains a detailed list of changes that the 25 sites tested, the logic for the change, and how the change was introduced.

Table 1. Summary of paediatric HCT change ideas tested

<table>
<thead>
<tr>
<th>Change concept</th>
<th>Change idea</th>
<th>No. of sites</th>
<th>Evaluation of change idea</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improving health workers’ knowledge and skills to offer paediatric HCT</td>
<td>Conducting on-job mentorship of health workers on paediatric HCT</td>
<td>11</td>
<td>Resulted into improvement at more than one site when implemented alone, it was implemented with ease since it required resources by just the QI team and was affordable</td>
</tr>
<tr>
<td></td>
<td>Holding a continuing medical education (CME) on HCT for new staff to the department or health facility</td>
<td>8</td>
<td>It resulted into improvement when implemented with other changes, was simple since the majority of the teams utilized the existing human resource of the QI teams and was affordable since it didn’t require resources from outside the facility</td>
</tr>
<tr>
<td>Improving availability of paediatric HIV testing services within the health facility</td>
<td>Assigning specific counselors to provide HCT for children</td>
<td>3</td>
<td>Ease in implementation as it only required resources from within the facility</td>
</tr>
<tr>
<td></td>
<td>Creating HCT service points at paediatric care services points within the facility</td>
<td>7</td>
<td>This was simple since it required only stakeholders within the health facility to implement the change</td>
</tr>
<tr>
<td>Improving availability of HCT logistics and supplies for pediatric</td>
<td>Assigning a specific staff to order and track stock of HCT logistics in the facility</td>
<td>10</td>
<td>Ease in implementation as it only required resources from within the facility</td>
</tr>
<tr>
<td></td>
<td>Regularly allocate HCT logistics to pediatric testing points</td>
<td>13</td>
<td>It was not difficult to redistribute the kits, however, it could require external support in case of stock-outs</td>
</tr>
<tr>
<td>Improving identification of HCT eligible children</td>
<td>Daily review of paediatric ward register to identify children eligible for testing</td>
<td>10</td>
<td>It resulted in improvement when implemented with other changes, and it was implemented easily because it required just the QI team</td>
</tr>
<tr>
<td></td>
<td>Talking points on benefits of HCT for children during all health education sessions at OPD and paediatric wards</td>
<td>5</td>
<td>This was simple to implement because rotations of the health workers was done to conduct the talks and they were availed with talking points</td>
</tr>
</tbody>
</table>

Improvement work should be preceded by review and improvements in data quality to assure that the team is able to collect and monitor data to show achievement of the improvement aim. Each improvement team needs to know and understand the gap in the care provided before it can begin to improve the process of care. It should be noted that this cannot be done unless data is complete and accurate.
Lessons learned in identifying HIV-positive children

Some of the lessons identified by improvement teams at the harvest meeting include the following:

- Creating more HCT points makes the service more accessible and cuts on waiting time, especially HCT points in high-yield service areas.
- Improvising a column in the HCT register allows you to easily capture those children with unknown status and subsequently offer the service to them.
- Use of the paediatric HCT screening tool (see Appendix 2) identifies those children eligible for testing and avoids wastage of HIV test kits amidst the low supplies of HIV test kits.
- Offering health education at the waiting areas to sensitise mothers/care takers to test their children for HIV makes the services more appealing to the mothers. By identifying focal persons (health workers, peer educators, village health teams [VHTs], religious leaders, etc.) and provide these focal persons with key messages to conduct the health education in a bid to improve the knowledge of mothers/care takers about HCT for children.

Teams also have suggestions for improving improvement work:

- Members of the quality improvement team should make specific efforts to share what they found out in peer-to-peer learning session with other staff in the health unit.
- Identify and assign a focal person to improve particular areas in order to better share responsibilities and assure an even workload for improvement work.
- Proper documentation is key in quality improvement work.
- Team work is a core principle in quality improvement work.

Teams also identified a number of challenges in carrying out their paediatric improvement projects:

- It was noted that some mothers refused to consent for the HIV test for their children, however, with proper counselling they have been persuaded of the value of HIV testing for children.
- Some children are sent to the health facility unaccompanied, especially adolescents. Health workers have addressed this by intensifying health education to the guardians and parents in OPD.
- There was a knowledge gap among the health workers about HCT for children <15 years. This was addressed by conducting a continuing medical education (CME) session about the MOH Paediatric Guidelines and Policy which have recently been revised.
- Stock-out of HIV test kits: health workers have been supported to understand their stock and make appropriate stock checking and requests. Facilities were supported to improve on test kits quantification for better results and to also avoid the constant stock-outs.
- The challenge of frequent rotation of health workers within the health facility, erratic transfer of staff by the district authorities, and inconsistent availability of volunteers in the health unit also challenged efforts to increase paediatric HCT. The implementing partners were informed, and they are supporting the health facilities in this area.
## Annex

### Appendix 1. Detailed Change Package for Improving Paediatric HCT

#### AIM 1

**Improving health workers knowledge and skills for paediatric HCT**

<table>
<thead>
<tr>
<th>Change idea</th>
<th>Logic for change</th>
<th>Change successful? Yes/No? Evidence of successful change</th>
<th>How the change happened</th>
</tr>
</thead>
<tbody>
<tr>
<td>On-job mentorship of health workers on paediatric HCT</td>
<td>Departments lacked staff to carry out HCT. Also, those that had received training in the past lacked the hands-on experience.</td>
<td>11 sites implemented this, example of results include: Ishaka: 7% (June '15) to 47.8% (July '15). Itojo: 0% (early June '15) to 85% (2nd week June '15) Kabwohe: 0% (May '15) to 100% (August '15)</td>
<td>Staff not knowledgeable with HCT was identified. Members with the practical experience of HCT were assigned to work with the staff demonstrating to them the process of conducting HCT.</td>
</tr>
<tr>
<td>CME on HCT for new staff to department or health facility</td>
<td>Time and again, transfer of health workers happens at health facilities, with some new staff coming in without skills for paediatric HCT.</td>
<td>8 sites implemented this, example of results include: Kayunga: 13% (April '15) to 15% (May '15) Lunyo: 1.6% (August '14) to 5.3% (September '14)</td>
<td>New members are notified about the improvement project of the facility and a CME on conducting HCT done for them by the old staff in the department/health facility. CME involves guidance on use of the necessary tools. This was combined with reminders designed with key information on HIV testing for children under 15 years which were printed and placed at each entry point.</td>
</tr>
</tbody>
</table>

#### AIM 2

**Improving availability of paediatric HIV testing services within the health facility**

<table>
<thead>
<tr>
<th>Change idea</th>
<th>Logic for change</th>
<th>Change successful? Yes/No? Evidence of successful change</th>
<th>How the change happened</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assigning specific counsellors to provide HCT for children</td>
<td>Having a few health workers providing HCT for everybody leads to long waiting time that may affect paediatric HCT. Adults who</td>
<td>10 sites implemented this, example of results include: Kabwohe 0% (May '15) to 100% (August '15) Mengo 33% (January '15) to 45.9% (May '15) Lunyo improved from 19% (October '14) to</td>
<td>Identify a specific person to offer counselling and testing for children. Repackage HCT information with a focus on children. Assign the staff to a particular HIV testing point to handle children as a priority.</td>
</tr>
</tbody>
</table>
### Changing idea

<table>
<thead>
<tr>
<th>Logic for change</th>
<th>Change successful? Yes/No? Evidence of successful change</th>
<th>How the change happened</th>
</tr>
</thead>
<tbody>
<tr>
<td>accompany children lose patience.</td>
<td>42% by (November ’14) Kaproron improved from 11% (May ’15) to 92% (June ’15)</td>
<td></td>
</tr>
<tr>
<td>Pediatric care points within the facility lack HCT services leading to referral of children to other care points; some children get lost or wait for a long time before getting the service.</td>
<td>7 sites implemented this, results include: Kamuli 15% (June ’14) to 32% (July ’14) Kabwohe 0% (May ’15) to 100% (August ’15) Kakira improved from 47% in (May ’15) to 66% by (June ’15)</td>
<td>Paediatric care points in the facility (including wards, YCC, OPD) without HCT services were identified and necessary arrangements made to initiate HCT at these points.</td>
</tr>
<tr>
<td>Assign a specific staff to order and track stock of HCT logistics in the facility</td>
<td>Frequent stock-outs of HIV testing logistics, especially HIV test kits, due to delayed orders and inaccurate quantification.</td>
<td>10 sites implemented this, example of results include: Namwiwa 0.3% (July ’14) to 78% (August ’14) Ishaka 55% (early August ’15) to 98% (mid-August ’15) Kitwe 76.2% (October ’14) to 91% (November ’14)</td>
</tr>
<tr>
<td>Change idea</td>
<td>Logic for change</td>
<td>Change successful? Yes/No? Evidence of successful change</td>
</tr>
<tr>
<td>---------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------------------</td>
<td>--------------------------------------------------------</td>
</tr>
</tbody>
</table>
| **Regularly allocate HCT logistics to paediatric test points**            | HCT logistics may be irrationally utilized, leaving none for paediatric care points. | 13 sites: Ishaka 55% (early August '15) to 98% (end August '15)  
Kitwe 10% (January '14) to 100% (July '15)  
Kihhi improved from 0% (May '15) to 70.3% (July '15)  
Namwiwa 0.3% (July '14) to 78% (August '14)  
Kamuli 0% (January '15) to (March '15)  
Kabwohe 0% (January '15) to 78% (August '15)  
Irongo 48% (August '14) to 80% (February '15)  
Ruhoko 80% (June '15) to 83% (July '15)  
Dabani 99% (June '15) to 81% (July '15)  
Kaproron improved from 11% (May '15) to 92% (June '15)  
Masafu 28% (4th week May '15) to 59% (1st week June '15)  
Mengo 33% (January '15) to 45.9% (May '15)  
Kakira improved from 47% (May '15) to 66% (June '15) | Based on consumption levels of HCT test kits, these are allocated to paediatric care points each time HCT stock is replenished at the health facility. This was combined with Identify person to offer counselling and testing plus repackaging HCT information with a focus on children. |
<table>
<thead>
<tr>
<th>Change idea</th>
<th>Logic for change</th>
<th>Change successful?</th>
<th>Evidence of successful change</th>
<th>How the change happened</th>
</tr>
</thead>
</table>
| Daily review of paediatric ward register to identify children eligible for testing | Finding children eligible for testing is necessary to ensure that children of known status are not retested. | 10 sites implemented this, example of results include: | Ruhoko 0% (May ’15) to 80% (June ’15)  
Magada 55% (September ’14) to 87% (May ’15)  
Dabani 34% (October ’14) to 92% (February ’15) | A column was created in the inpatient register to document HIV status of all children admitted on the children’s ward. On a daily basis this register was reviewed to identify all those without a documented HIV status. The column indicates “K” for Known Status and “U” for Unknown Status but does not show the test results. |
| Talking points on benefits of HCT for children during all health education sessions at OPD and paediatric wards | Some guardians were reluctant to have their children tested because they did not appreciate the importance of testing the children. | 5 sites implemented this, example of results include: | Kitwe 45.8% (August ’14) to 98.7% (September ’14)  
Kamuli 60% (March ’15) to 73% (April ’15) | Talking points on benefits of paediatric HCT were developed and shared with the health workers responsible for health education. The talking points were mentioned during all health education sessions conducted in OPD and at the paediatric service points. |
Appendix 2. Paediatric HIV Screening Tool for Children and Adolescents

HCT guidance for children and adolescents (18mo-18 years)
- Is mother HIV positive?
- Is the child symptomatic for HIV?
- Is the child malnourished (MAM or SAM)?
- Is child hospitalized or was hospitalized in the last 6 months?
- Is the child diagnosed with TB (presumptive or confirmed) or child has history of TB treatment?
- Does child have history of sexual abuse or sexual activity?
- Has child had accidental exposure, needlestick injury, and other sharps?
- Does child abuse drugs/alcohol?
- Is child an OVC?

Any yes
Test child

Positive
Provide routine clinical care
Positive
Test child

Negative

Link to care/ART

All No
Test Mother

Positive
Provide routine clinical care
Positive

All children below 18 months whose exposure status is determined using rapid testing should be re-tested using PCR following the National EID algorithm

Retesting for children and adolescents
Children testing Negative should be retested in the following situations: specific incident of HIV exposure within the three months prior to HIV testing, any form of exposure after the previous Negative test, have STIs or TB, are symptomatic of HIV infection, are receiving PEP

The following categories of children should not be subjected to an HIV rapid test:
1. Unaccompanied minors (children less than 12 years); unless for diagnostic or mandatory testing
2. Children and adolescents with known HIV negative status who have not had HIV risk exposure within the last 3 months and do not fall under the categories described above.
3. Known HIV Positive children/adolescents