



PILOT CO-TRIMOXAZOLE TOOLS ASSESSMENT

GULU, UGANDA



DECEMBER 2012

This publication was made possible through the support of the U.S. President's Emergency Plan for AIDS Relief (PEPFAR) through the U.S. Agency for International Development under contract number GHH-I-00-07-00059-00, AIDS Support and Technical Assistance Resources (AIDSTAR-One) Project, Sector I, Task Order I.

PILOT CO-TRIMOXAZOLE TOOLS ASSESSMENT

GULU, UGANDA

The authors' views expressed in this publication do not necessarily reflect the views of the U.S. Agency for International Development or the United States Government.

AIDS Support and Technical Assistance Resources Project

AIDS Support and Technical Assistance Resources, Sector I, Task Order 1 (AIDSTAR-One) is funded by the U.S. President's Emergency Plan for AIDS Relief (PEPFAR) through the U.S. Agency for International Development (USAID) under contract no. GHH-I-00–07–00059–00, funded January 31, 2008. AIDSTAR-One is implemented by John Snow, Inc., in collaboration with Broad Reach Healthcare, Encompass, LLC, International Center for Research on Women, MAP International, Mothers 2 Mothers, Social and Scientific Systems, Inc., University of Alabama at Birmingham, the White Ribbon Alliance for Safe Motherhood, and World Education. The project provides technical assistance services to the Office of HIV/AIDS and USG country teams in knowledge management, technical leadership, program sustainability, strategic planning, and program implementation support.

Recommended Citation

Pearson, Jennifer, Daniel Cothran, Helen Cornman, and Malia H. Duffy. 2012. *Pilot Co-trimoxazole Tools Assessment, Gulu, Uganda*. Arlington, VA: USAID's AIDS Support and Technical Assistance Resources, AIDSTAR-One, Task Order 1.

Acknowledgments

With the high level of participation, support, and leadership from the Uganda Ministry of Health, AIDSTAR-One was able to ensure country ownership throughout all phases of this effort. Thank you especially to Dr. Alex Riolexus Ario, AIDS Control Program, and Dr. Christopher Oleke, Health Promotion Specialist, for their support and leadership. Thank you also to Sam Enginyu, Sr. Health Educationist, MOH, and to the Gulu District Health team, especially Dr. Onek Awil, District Health Officer, Celestino Ojok, District Health Education Officer, and John Opwonya. Thank you to the Gulu data collection team: Michael Ochora, Bernard Odong, Francis Opoka, Esther Atto, and Fred Owara. Thank you to the NUMAT team, especially Christine Oryema Lalobo, Andrew Ocero, Luigi Ciccio, and Med Makumbi. Thank you to USAID/Uganda especially Jackie Calnan, Julius Kalamya, Gerald Mwima, Grace Namayanja, Seyoum Dejene, and Fred Magala, for their input and support. Thank you to Ilana Lapidos-Salaiz, USAID, and to Melissa Sharer, Peace Corps.

AIDSTAR-One

John Snow, Inc. 1616 Fort Myer Drive, 16th Floor Arlington, VA 22209 USA Phone: 703-528-7474 Fax: 703-528-7480 E-mail: info@aidstar-one.com Internet: aidstar-one.com

CONTENTS

CONTENTS	iii
Acronyms	. v
Executive Summary	vii
INTRODUCTION	. I
Background	I
AIDSTAR-One Pilot Tools	2
Pilot Country Selection	2
Assessment Objectives	3
METHODOLOGY	. 5
Methods	5
Pilot Facilities	6
FINDINGS	. 9
Prescription/Recommendation of Co-trimoxazole	9
Provider Knowledge	9
Client Knowledge of Potential Side Effects	II.
Self-Reported Client Non-adherence	11
Baseline Client Feedback	12
Follow-up Assessment	14
Pharmacy Record Review	18
COUNTRY OWNERSHIP	19
LIMITATIONS	21
RECOMMENDATIONS	23
CONCLUSION	25
Effectiveness of Tools	25
Feasibility of Integration	25
References	27
ANNEX A	29
Revisions to the Pilot Co-trimoxazole Tools	29
ANNEX B	31
Revised Co-trimoxazole Clinical and Community Poster	31

Figures

Figure I. Assessment Methodology	5
Figure 2. Prescription/Recommendation of Co-trimoxazole, Provider Self-Report	9
Figure 3. Provider Self-Report of Knowledge of Co-trimoxazole Benefits	10
Figure 4. Provider Correct Identification of Potential Side Effects of Co-trimoxazole	10
Figure 5. Client Correct Identification of Potential Side Effects of Co-trimoxazole	
Figure 6. Client Co-trimoxazole Adherence – Previous Week	12
Figure 7. Provider Satisfaction with Co-trimoxazole Tools Post-Pilot	14
Figure 8. Frequency of Client Understanding of Co-trimoxazole Tools, Provider Report	16
Figure 9. Recommendation of Pilot Co-trimoxazole Tools	16
Figure 10. Percent of Clients Reporting Having Seen Pilot Tools at Follow-up	17

ACRONYMS

ACP	Uganda AIDS Control Program
ART	antiretroviral therapy
CDC	U.S. Centers for Disease Control and Prevention
CME	continuing medical education
СТХр	co-trimoxazole prophylaxis
HMIS	health information management systems
IRC	internal review committee
LTFU	lost to follow-up
MOH	ministry of health
NMS	Uganda National Medical Stores
PLHIV	people living with HIV
WHO	World Health Organization

EXECUTIVE SUMMARY

Co-trimoxazole is a well-tolerated, inexpensive, and cost-effective antimicrobial that has been shown to reduce the risk of pneumonia, diarrhea, malaria, and other opportunistic infections among people living with HIV (PLHIV). However, limited awareness of the benefits of co-trimoxazole use among health care providers and service recipients continues to be a key barrier to its use (Anand et al. 2010). AIDSTAR-One developed provider and patient educational tools to increase appropriate prescription and use of co-trimoxazole for PLHIV eligible for its use and piloted these tools in Northern Uganda between May and August 2012. AIDSTAR-One conducted a mixed-methods assessment pre- and post-pilot to analyze the effectiveness and acceptability of the co-trimoxazole tools.

The pilot began with introduction of the tools as well as baseline data collection. At baseline both providers and clients were able to easily identify the messages in the co-trimoxazole tools. They indicated the text and the images were simple, clear, and concise. Feedback provided by health providers, clients, and stakeholders was taken into account and small revisions were made to further increase the cultural relevance of the tools in Uganda.

Prior to introduction of the tools, providers reported heavy client loads prevented them from providing adequate counseling related to co-trimoxazole to all patients. Clients indicated that, although they utilize co-trimoxazole, most had not received counseling beyond being instructed to take co-trimoxazole daily. At baseline, 31 percent of adults reported missing doses, and 37 percent of caregivers reported failing to administer doses of co-trimoxazole to children/infants in their care in the previous week, emphasizing the need for tools to improve adherence. At follow-up, adult clients reported higher levels of adherence to their co-trimoxazole prescriptions (only 20 percent reported missing doses in the previous week). Almost all clients (97 percent) who reported viewing the co-trimoxazole pilot tools reported they would be more likely to remember to take co-trimoxazole each day because of the tools.

Both provider self-assessment of knowledge level and correct identification of side effects of cotrimoxazole increased after introduction of the tools. At follow-up, identification of vomiting as a side effect increased 36 percent and identification of jaundice (yellow eye) more than doubled. In comparison, only 83 percent of control site providers could identify skin rash as a potential side effect and even lower numbers could identify vomiting (50 percent) and yellow eye (27 percent). Among clients, correct identification of skin rash, the most common side effect reported, increased from 45 to 64 percent (a 42 percent increase). The percentage of clients who correctly identified vomiting and yellow eye as potential side effects of co-trimoxazole more than doubled (106 percent increase).

Providers expressed satisfaction with the time-saving that the pilot tools provide. Providers reported that formulation changes are challenging for clients who have difficulty understanding changes in tablet size, shape, and color. By providing a job aid with clear counseling points, providers rely less on their memories for information, and the images provide clients with visual cues that supplement the verbal counseling received. Although many clients are illiterate, the images removed the necessity of reading, and providers counseled using the photos as a guide. Less time per client lead to more

clients counseled. Providers also reported that clients were better able to understand the messages improving the quality of counseling provided. Because of this, 100 percent of the providers reported they would recommend the pilot co-trimoxazole tools to other providers.

However, even with access to the co-trimoxazole tools, provider counseling efforts were frustrated by stock-outs in some health facilities. These stock-outs require examination to determine the cause. Increased focus on adequate and timely record keeping is recommended. The inconsistent availability and quality of pharmacy records did not permit the use of pharmacy records as a method of measuring the number of clients receiving/refilling co-trimoxazole prescriptions before and after introduction of the co-trimoxazole tools.

This pilot, although small in sample size, demonstrated that the co-trimoxazole job aids and client educational tools were both effective and feasible to integrate. The tools were well-received among providers, clients, as well as Ugandan Ministry of Health representatives who recommended scale-up of the tools throughout the country. Ministry of Health representatives agreed that inclusion of the client trifold brochures with distribution of co-trimoxazole tablets to the health facilities could be an effective method of stocking health facilities throughout Uganda with the AIDSTAR-One tools.

In a recent study in Uganda, co-trimoxazole, when taken daily by persons with HIV, reduced death by 46 percent, malaria by 72 percent, diarrhea by 35 percent, and hospitalizations by 31 percent. It also slowed the rate of CD4 decline and the rate of viral load increase (Mermin et al. 2004). Adoption and scale up of the tools by the Ugandan Ministry of Health is recommended, and as the tools were designed for a general audience, they can be scaled up outside of Uganda as well.

INTRODUCTION

BACKGROUND

Co-trimoxazole (trimethoprim plus sulfamethoxazole) is a well-tolerated, inexpensive, and costeffective antimicrobial that is commonly used to reduce the risk of Pneumocystis jiroveci pneumonia (PCP) and toxoplasmosis among people living with HIV (PLHIV) (Abimbola and Marston 2012; World Health Organization [WHO] 2006). Within developed countries, this drug had long been a standard part of HIV care; however, until 2006, there were no WHO or Joint United Nations Programme on HIV/AIDS (UNAIDS) guidelines for HIV-related co-trimoxazole prophylaxis (CTXp) in resource-limited settings (Mermin et al. 2004).

In 2006, WHO published guidelines on co-trimoxazole prophylaxis for HIV-related infections among children, adolescents, and adults living in low-resource settings. These guidelines recommended that HIV-exposed infants and all clinically eligible children and adults living with HIV should take co-trimoxazole prophylaxis unless contraindicated (WHO 2006). Soon afterward, Uganda incorporated these guidelines in its own policy, stating: "Co-trimoxazole prophylaxis should be given to all HIV-infected adults and children in Uganda regardless of whether they are on antiretroviral therapy (ART) or not" (Ministry of Health [MOH] 2006). In a recent study in Uganda, co-trimoxazole, when taken daily by persons with HIV, reduced death by 46 percent, malaria by 72 percent, diarrhea by 35 percent, and hospitalizations by 31 percent. It also slowed the rate of CD4 decline and the rate of viral load increase (Mermin et al. 2004).

One study evaluated the effect of co-trimoxazole on ART initiation within the first year (following CD4 count and staging) at primary health care sites in Johannesburg. Of 491 patients who initiated co-trimoxazole, approximately 96 percent later enrolled in ART; however, 91 percent of patients who did not initiate co-trimoxazole (138 of 151) did not later initiate ART (three-quarters were lost to follow-up [LTFU] and 17 percent died). Co-trimoxazole may improve patient retention and probability of initiated ART, and may be a cost-effective intervention to improve retention among HIV-positive patients (Clouse et al. 2012).

With the global scale-up of HIV treatment and care programs, substantial funding has been committed to guarantee an uninterrupted supply of co-trimoxazole prophylaxis for people living with HIV (PLHIV) but access to this important intervention remains inconsistent in developing countries (Anand et al. 2010). A 2007 study of 41 countries (representing 82 percent of the global burden of HIV infection) found supply chain challenges to be the major barrier to co-trimoxazole access/administration, along with limited awareness of the benefits of co-trimoxazole use among health care providers and service recipients, as well as perceived low priority of CTXp because of the lack of integration of TB/HIV services and fear that co-trimoxazole prescription would identify patients as infected with HIV, being other important barriers (MOH 2006). In 2011, AIDSTAR-One conducted a 15-country study examining the availability and management of co-trimoxazole supplies (Nersesian, Fullem, and Sharer 2011). From the findings revealed through the country desk reviews, it is apparent that there are many supply chain challenges posing obstacles to ensure co-trimoxazole availability for all uses. And, conversely, there are many innovative approaches being developed and implemented to help ensure its availability. The AIDSTAR-One co-trimoxazole tools

were developed to address the issue of limited awareness and to increase use of and adherence to this life-saving medicine.

AIDSTAR-ONE PILOT TOOLS

Based on the WHO recommendations, AIDSTAR-One worked with the Ugandan MOH, USAID, U.S. Centers for Disease Control and Prevention (CDC), and behavior change specialists to develop provider and patient educational tools to increase appropriate prescription and use of co-trimoxazole for PLHIV eligible for its use.

Tools for providers—including a wall poster and handheld counseling tool—emphasize the benefits of cotrimoxazole and include information about how and when it should be administered, the details of eligibility, and potential reactions related to use. It can serve as a tool for educating, reminding, and stimulating demand at the facility level. A set of complementary educational brochures was developed for clients to take home. The brochures focus on increasing the demand for, use of, and adherence to co-trimoxazole among PLHIV. The tools include depictions of male, female, child, and infant clients.

Designed to be used in low-literacy settings, the tools rely heavily on illustrations that were designed by Kwikpoint and extensively pilot-tested in six countries across three continents. Kwikpoint is a designer of innovative and simple visual communication tools that solve language and training challenges. The tools, although developed with input from the Ugandan MOH, were intended to remain general enough to be adapted for use across sub-Saharan Africa.



The tools were translated into Acholi and Kiswahili for the pilot; however, at the request of the MOH, when revisions were made to the tools, they were converted back to English. The tools can be found on the AIDSTAR-One website at http://www.aidstar-

one.com/focus_areas/care_and_support/resources/tools_and_curricula/cotrim_tools

PILOT COUNTRY SELECTION

To determine the feasibility of integrating the co-trimoxazole tools into clinical settings and practices, and to evaluate the effect of the tools on provider and client behaviors, AIDSTAR-One designed a pilot assessment. The team selected Uganda based on expressed need and the availability of structures through which to conduct the assessment—namely, the presence of the Northern Uganda Malaria, AIDS, and Tuberculosis (NUMAT) program, a USAID-funded program implemented by John Snow Inc. (JSI), that worked to expand access to and utilization of HIV, tuberculosis, and malaria prevention, treatment, and care and support activities in northern Uganda.

AIDSTAR-One received internal review committee (IRC) approval from the Uganda National Council for Science and Technology (UNCST) on January 11, 2012; the Ugandan Ministry of Health Department of Health Education and Promotion on March 15, 2012; and the Ugandan President's Office on March 19, 2012, to conduct a pilot assessment of these tools in Gulu District, Uganda, with active support from NUMAT.

ASSESSMENT OBJECTIVES

- 1. Pilot the integration of provider and patient educational tools on co-trimoxazole into health care facilities in northern Uganda.
- 2. Assess the feasibility of fully integrating the co-trimoxazole tools through provider acceptability, satisfaction, and adaptation of the tools into national policy.
- 3. Assess the effectiveness of the co-trimoxazole tools on increasing demand for, use of, and adherence to co-trimoxazole prophylaxis among people living with HIV in northern Uganda.

METHODOLOGY

METHODS

AIDSTAR-One conducted a mixed-methods assessment with the support of the Gulu District Health Office to analyze the effectiveness and acceptability of the co-trimoxazole tools. The assessment team included two AIDSTAR-One researchers, two consultants, and three enumerators (data collectors). The co-trimoxazole tools were piloted in May 2012 in 10 health facilities in Gulu and 10 control sites were also selected.

Figure I. Assessment Methodology



The assessment utilized a pre-post-post design. A pre-test of health providers captured cotrimoxazole knowledge before introduction of the tools at the intervention facilities. The pre-test was followed by a brief orientation to the co-trimoxazole tools for the health providers. A post-test of health providers was administered to reassess co-trimoxazole knowledge immediately after introduction of the tools; the post-test also included questions related to satisfaction with the draft (pilot) tools.

At baseline, 33 health providers (including doctors, clinical officers, nurses, and midwives) participated in the introduction of the AIDSTAR-One tools at all intervention facilities (10) in May 2012. Focus group discussions were conducted with providers that covered topics such as how they currently prescribe co-trimoxazole, how they perceive clients reacting to the tools, how they could use the tools, and how (or if) they would change them to make them better. Facility management was notified prior to the site visit and asked to invite approximately 10 HIV-positive clients, or caregivers of HIV-positive children, to participate in data collection. In several of the sites, more clients participated in the focus groups, demonstrating strong interest in the topic. In total 116 clients provided baseline data, with 73 clients participating in the focus group discussions at five facilities that covered issues such as client experiences with co-trimoxazole and asked participants to critique the pilot tools. In addition, 43 clients participated in the client knowledge and use assessment (24 adult clients and 19 caregivers on behalf of their child/infant) at five facilities. The knowledge and use assessment included questions related to adherence, self-assessment of co-trimoxazole knowledge level, and side effects.

At follow-up (August 2012), qualitative interviews were conducted with providers and facility heads to assess usability and satisfaction with the tools. In total, 24 health providers at 9 of the 10 intervention facilities participated in a post-post-test of co-trimoxazole knowledge, behavior, and satisfaction with the pilot tools. Due to low staff turnover, many of the providers interviewed and tested at baseline participated in the follow-up assessment. Client knowledge and use assessments were also administered. A total of 49 clients participated in a post-test of co-trimoxazole knowledge and behavior (45 adult clients and 4 caregivers on behalf of their child/infant) at the 9 follow-up facilities. At follow-up, participating clients were present at the health facility HIV clinic when the assessment team arrived and had not been notified or invited in advance. The provider knowledge assessment was also administered at the 10 control facilities. Where available, the assessment team examined pharmacy records in an effort to ascertain the number of clients utilizing co-trimoxazole at both the intervention and control sites.

PILOT FACILITIES

All 17 health facilities in Gulu District (both rural and urban) that operated at, or above, level III, were randomly assigned to intervention or control. Three level II facilities were also included.

Intervention Sites:

- 1. Lalogi Health Center Level IV Facility
- 2. Bobi Health Center Level III Facility
- 3. Gulu Referral Hospital Level V Facility
- 4. 4th Div Military Hospital Level V Facility
- 5. Patiko Health Center Level III Facility
- 6. Odek Health Center Level II Facility

- 7. Ongako Health Center Level III Facility
- 8. Pabwor Health Center Level II Facility
- 9. Bardege Health Center Level III Facility
- 10. Layibi Health Center Level III Facility

Control Sites:

- 1. Gulu Independent Hospital Level V Facility
- 2. The AIDS Support Organization (TASO) Hospital Level V Facility
- 3. Awach Health Center Level IV Facility
- 4. Lapainat Health Center Level III Facility
- 5. Lanenober Health Center Level III Facility
- 6. Cwero Health Center Level III Facility
- 7. Labworomor Health Center Level II
- 8. Laroo Health Center Level III Facility
- 9. Aywe Health Center Level III Facility
- 10. Gulu Prison Health Center Level III Facility

FINDINGS

PRESCRIPTION/RECOMMENDATION OF CO-TRIMOXAZOLE

More providers reported prescribing/recommending co-trimoxazole to eligible clients at follow-up compared to before introduction of the pilot tools. At baseline, 79 percent of providers reported always recommending co-trimoxazole to eligible HIV-positive clients compared to 87 percent at follow-up, a 10 percent increase in providers reporting always recommending co-trimoxazole to their eligible clients. In comparison, 76 percent of control site providers reported always recommending co-trimoxazole to eligible HIV-positive clients. See Figure 2.





PROVIDER KNOWLEDGE

Although most providers did report always prescribing co-trimoxazole to eligible clients, provider self-assessment of their knowledge of co-trimoxazole varied. Nearly a quarter of providers (21 percent) rated their knowledge of co-trimoxazole benefits as "medium" at baseline. After introduction and use of the tools, provider reports of "very high" knowledge of co-trimoxazole benefits increased from 36 percent to 50 percent (a 39 percent increase). In order to gather additional information, specific knowledge questions were also included in the pre- and post-test.

At baseline, over half of providers rated their knowledge of co-trimoxazole side effects as less than high (24 percent medium, 30 percent low). After use of the co-trimoxazole tools, nearly threequarters of providers (71 percent) rated their knowledge of the side effects of co-trimoxazole as high to very high (a 58 percent increase). Providers at control sites rated their knowledge of cotrimoxazole side effects as lower than providers who were introduced to the tools: only 37 percent of control providers rated their knowledge as high to very high. This increase in confidence in knowledge was reflected in their improved identification of potential side effects.





Before introduction of the tools, providers were aware of skin rash as a possible side effect of cotrimoxazole use; however, knowledge of other potential side effects was lower. Over 60 percent of providers could not identify vomiting and yellow eye as potential side effects.

At follow-up, three months after introduction of the tools, providers were more likely to correctly identify the potential side effects of co-trimoxazole. Identification of vomiting increased 36 percent and identification of yellow eye more than doubled (106 percent increase). In comparison, only 83 percent of control site providers could identify skin rash as a potential side effect and even lower numbers could identify vomiting (50 percent) and yellow eye (27 percent).



Figure 4. Provider Correct Identification of Potential Side Effects of Co-trimoxazole

Although providers reported that they do observe side effects in clients related to co-trimoxazole use, they reported observation of side effects was rare. Approximately 20 percent of the providers reported seeing a client during the previous three months with a side effect due to co-trimoxazole use. Skin reactions were most commonly observed and ranged from minor (and controllable with medication) to severe (requiring discontinuation of co-trimoxazole). Some providers reported prescribing Dapsone, the second-line therapy when severe skin reactions occur, but they noted Dapsone can be more difficult to obtain than co-trimoxazole.

CLIENT KNOWLEDGE OF POTENTIAL SIDE EFFECTS

After the tools were introduced at the pilot facilities, clients' knowledge of the potential side effects of co-trimoxazole increased. Correct identification of skin rash, the most common side effect reported, increased from 45 to 64 percent (a 42 percent increase). The percentage of clients who correctly identified vomiting and yellow eye as potential side effects of co-trimoxazole more than doubled.



Figure 5. Client Correct Identification of Potential Side Effects of Co-trimoxazole

SELF-REPORTED CLIENT NON-ADHERENCE

Results of the client focus groups at baseline indicated a need for the co-trimoxazole educational tools, which emphasize that co-trimoxazole is to be taken daily and highlight the consequences of non-adherence. Clients who participated in the knowledge and use assessment reported missing/forgetting co-trimoxazole doses.

- Forty-six percent of adult clients reported forgetting to take co-trimoxazole (ever).
- Thirty-one percent of adults reported missing doses of co-trimoxazole in the previous week.

- Thirty-seven percent of caregivers reported failing to administer doses of co-trimoxazole to children/infants in their care in the previous week.
- Twenty-one percent of caregivers reported stopping administration of co-trimoxazole to children/infants in their care if the child appeared to feel worse.

This reported non-adherence reinforced the need for tools that emphasize both dosage and consequences of non-adherence.

CLIENT ADHERENCE AT FOLLOW-UP

Almost all clients (97 percent) who reported viewing the co-trimoxazole pilot tools reported they would be more likely to remember to take co-trimoxazole each day because of the tools.

At follow-up, clients reported higher levels of adherence to their co-trimoxazole (80 percent reported not missing any doses in the previous week) compared to baseline (65 percent) before introduction of the co-trimoxazole tools. This represents a 23 percent increase in self-reported adherence.



Figure 6. Client Co-trimoxazole Adherence – Previous Week

BASELINE CLIENT FEEDBACK

Clients interviewed were able to interpret the images correctly and reported strong understanding of the purpose and messages of the tools: to encourage appropriate use of, and adherence to, cotrimoxazole (commonly referred to by clients as "Septrin"). As strong endorsement and further demonstration of this understanding, clients in many of the focus group discussions expressed interest in taking the client brochures home, where they said they would use them to encourage friends and/or family to either take their prescription or to visit the health facility for a prescription. Women repeatedly remarked that they would like to share the brochure with their male partner to encourage him to avoid becoming sick and recognize the importance of co-trimoxazole. Many female clients reported that their male partners are unwilling to visit the health center and some reported their male partners "steal" co-trimoxazole from them even if the males have not been tested for HIV. One female client reported she hides her co-trimoxazole from her male partner by carrying the tablets with her at all times.

Clients (and providers) were often observed interpreting the tools based on the images rather than reading the text which further demonstrates the necessity of clear messaging through the images. Clients could clearly identify the behaviors/action steps in the tools. The client consensus was that the messages are simple to understand even when utilizing the photos and not relying on the text.

Before the pilot, most clients reported previously being given information on co-trimoxazole orally but were never given reference or reading tools to view or to take home. Some clients reported receiving little to no information about co-trimoxazole beyond being told they needed to take cotrimoxazole daily.

Clients agreed that the tools were appropriate for them, and that the tools increased their knowledge about co-trimoxazole. There appeared to be hope that the tools would influence community opinion about the value of co-trimoxazole, to the point where people would risk the potential for stigma in order to access this important drug. It was also verbalized that the tools eventually may increase the overall community understanding of the benefits of co-trimoxazole to overcome the barrier of stigma that remains. By increasing awareness of the drug's importance and increasing conversations at the community level and between providers and clients, fear of stigma may decrease leading to increased uptake and use of co-trimoxazole. Clients reported that, in general, co-trimoxazole use is currently associated with HIV status, although co-trimoxazole is prescribed by health providers to HIV-negative clients as well. Direct client feedback included:

- "We should take these tools to our friends and spouse at home so that they stop living in denial and come out to take Septrin because of the benefits shown in the material."
- "What I like from this material is the message that if you take your Septrin consistently for your HIV care, you will remain healthy and be a living testimony to others."
- "I see that people who are taking Septrin for their HIV care are healthy and looking happy and this gives us morale to take our Septrin."

REVISIONS TO PILOT CO-TRIMOXAZOLE TOOLS

At baseline, almost all providers (97 percent) reported high satisfaction with the pilot co-trimoxazole tools, of which 27 percent reported very high satisfaction. At baseline, all providers reported the tools would be easy (43 percent) to very easy (57 percent) to integrate into their daily routine. All providers also reported at baseline they would recommend the tools to colleagues/other health providers, most (87 percent) would highly recommend the tools.

Overall clients and providers expressed very strong satisfaction with, and understanding of, the pilot tools; however, suggestions were offered for minor revisions to increase relevance in the Ugandan context. These included changing the references to the drug from "co-trimoxazole" to "Septrin"— the term clients are most familiar with; changing the representation of the pill bottle; and changing the color of the clothing of the nurse from white to pink, and the female client's clothing from pink to blue to reduce confusion. The full list of revisions is listed in Annex I.

FOLLOW-UP ASSESSMENT

PROVIDER FEEDBACK

Providers reported that the co-trimoxazole tools had been utilized during individual counseling sessions, mother support groups, group health education sessions, HIV-positive support groups, and provider continuing medical education (CME) sessions.

At follow-up, providers reported distributing take-home brochures to clients; however, sufficient copies were not available for all clients, and take-home brochures were exhausted before the pilot period ended. At facilities with larger client loads, providers reported that client take-home copies were exhausted in approximately the first six to eight weeks. Providers reported that clients appreciated the take-home copies, and repeatedly stressed the need for a continuous supply of tools. However, providers stressed that a take-home tool is not enough, recognizing the importance of their own role in counseling and walking clients through the tools prior to distribution.

Providers reported high satisfaction with use of the tools, commenting that they were "very systematic" and improved the quality of counseling. The tools were described by providers as an important job aid, serving as both visual and written cues to remember each point that must be conveyed to clients. Overall, at post-pilot, provider satisfaction with the co-trimoxazole tools was high (96 percent)—31 percent of providers reported very high satisfaction with the tools.



Figure 7. Provider Satisfaction with Co-trimoxazole Tools Post-Pilot

Some providers commented that often in the past they viewed co-trimoxazole as a simple intervention that did not require counseling beyond instructing clients to take their co-trimoxazole daily. Limited counseling time instead often focused on ART regimens and adherence messaging when applicable, or for PLHIV not on ART, or other important health messages. However, stock-outs highlighted the importance of continuous counseling on co-trimoxazole for all HIV-positive clients, regardless of ART usage, not just counseling for new clients. In order to fill co-trimoxazole prescriptions in the case of a stock-out at the health facility, clients could resort to other public facilities (assuming they were close enough), or private facilities/pharmacies; however, the incentive to take this extra effort is diminished if the client does not understand the importance of adherence to their prescription.

Providers reported that formulation changes continued to provide a challenge for clients and that clients struggle to understand how many tablets to take when switched back and forth between 960-mg and 480-mg tablets. Providers also reported difficulties clients have with changes in tablet size, shape, and color. Clients often doubt the authenticity of tablets that are different than those they have taken in the past and report non-adherence, asking for the co-trimoxazole they "used to take."

Providers repeatedly noted that the tools made counseling faster and easier. One provider reported, "Before, I had to explain. The client would not understand, so I would start again. Sometimes I had to explain some things three times." The co-trimoxazole tools focus on images, and providers reported their appreciation with being able to explain as clients follow along with the visuals. Many job aids currently available to providers are text-based, often algorithms that do not inform clients, confuse clients, or require reading aloud to clients. Providers emphasized that clients learn best when they can both look at the photos and have someone explain to them. These findings are supported by research that demonstrates that pictures accompanied by written or spoken text can increase attention to and recall of health education information compared to text alone (Houts et al. 2006). One provider reported that he was able to observe that clients appeared to pay more attention during counseling when the co-trimoxazole pilot tools were utilized, "Visuals create more interest; they really are better than just talking."

Providers reported that clients increasingly recognized the importance of co-trimoxazole with increased counseling that utilized the co-trimoxazole tools. In particular, the image of the sick person in bed (due to non-adherence to co-trimoxazole) was very clear to clients. Not wanting to be sick in bed, the clients understood that they should adhere to their co-trimoxazole.

Providers agreed that clients understood the tools (96 percent reported "always" or "almost always"). Although many clients are illiterate, the images removed the necessity of reading, and providers counseled using the photos as a guide. Providers also reported that the pilot tools were comprehensive and provided all of the information that clients need related to co-trimoxazole use.





Heavy client loads are a reality for providers. Providers admitted that counseling each client that visits the health center on co-trimoxazole use as well as other health messages is often impossible. Providers expressed satisfaction with the time saving the pilot tools provide. Less time per client leads to more clients counseled. Because of this, all providers reported they would recommend the pilot co-trimoxazole tools to other providers. Most providers (78 percent) indicated they would strongly recommend the tools. Providers reported that the pilot tools made their work easier, but, more importantly, they can "feel satisfied that my clients really do understand what I am counseling about."



Figure 9. Recommendation of Pilot Co-trimoxazole Tools

Even with access to the co-trimoxazole tools, however, provider counseling efforts were frustrated by stock-outs in some health facilities. One provider remarked, "We tell our clients co-trimoxazole is so important, and these are the consequences of non-adherence so take it every day, but then we have none to give them. We have failed our clients."

INTEGRATION

Usability of the co-trimoxazole pilot tools was also measured by proxy through assessment of how many of the clients reported viewing or receiving counseling with the tools at follow-up. Nearly three-quarters of the clients (72 percent) interviewed at the pilot health facilities reported viewing the tools. Most clients who recognized the tools reported a health provider utilized the tools during counseling, some of which reported receipt of a take home copy in addition to counseling. Only 11 percent of clients reporting recognition of the tools indicated that they viewed the tools without also receiving counseling from a provider.



Figure 10. Percent of Clients Reporting Having Seen Pilot Tools at Follow-up

PHARMACY RECORD REVIEW

The inconsistent availability and quality of pharmacy records did not permit the use of pharmacy records as a method of measuring the number of clients receiving/refilling co-trimoxazole prescriptions.

The pilot facilities included both ART and pre-ART care sites. ART sites are responsible for ordering co-trimoxazole, whereas pre-ART sites receive a set amount of co-trimoxazole as a part of a basic services package and are not responsible for submitting order forms. Overall, most facilities struggled with record keeping. Common problems observed included days or even weeks with no data available, as well as records that were not updated regularly. Stock cards were also observed to be of questionable accuracy. At most of the facilities, co-trimoxazole consumption was recorded in multiples of 1000 each month (i.e., exactly 1000, 2000, or 3000 tablets consumed every month) which is likely a data quality issue.

Because of stock-outs, a facility might have reported no co-trimoxazole consumed the month before the pilot and a large consumption in the month post pilot; however, this is not necessarily an accurate increase, simply a reflection of a stock-out. Changes in formulation also create false increases and decreases. A large increase in 480-mg tablet consumption was seen to reflect a stock-out of 960-mg tablets (requiring a double dosage per client) rather than a true increase in clients or client adherence.

Stock-outs were not the only cause of quality issues. A staff member in at least one facility expressed challenges translating the lessons learned during off-site training to his work within the facility without follow-up supervision.

COUNTRY OWNERSHIP

The piloted co-trimoxazole tools received a very positive response from the Uganda MOH at the district and national levels. The MOH emphasized the importance of integrated messaging, as providers need to counsel clients on a variety of health behaviors and was satisfied by the inclusion of secondary messages related to male partner involvement, healthy eating, and the use of insecticide-treated bed nets within the AIDSTAR-One tools.

A representative of the Uganda AIDS Control Program (ACP) commented that the tools are "clear," "straight-forward," "give the message right away," and "don't require interpretation." The tools were received as useful for adoption by the MOH through integration into the current Positive Living Profiling Tool for Health Care Workers (available at http://archive.k4health.org/toolkits/uganda-positivelivingcommunication/health-care-workers-positive-living-profiling-tool) in order to ensure sustainability and impact.

The Uganda National Medical Store (NMS) is responsible for ensuring continuous distribution of pharmaceutical products in a financially viable and sustainable manner. NMS distributes essential drug kits, family planning commodities, and MOH-direct distributions to the districts. MOH representatives agreed that inclusion of the client trifold brochures with distribution of co-trimoxazole tablets to the health facilities could be an effective method of stocking health facilities throughout Uganda with the AIDSTAR-One tools.

LIMITATIONS

After a short pilot period (approximately three months), the assessment sought to measure the effects of the co-trimoxazole tools through the use of pharmacy and/or enrollment records to determine how many clients refilled their tablets, or how many tablets were consumed before and after the tools were introduced. However, due to data quality issues, the pharmacy and enrollment data could not be effectively utilized to associate use of tools with increased use of co-trimoxazole at the facility level.

Co-trimoxazole adherence at baseline and follow-up was measured through client self-report, which may not be accurate, but was the best available option.

Participants in client focus groups represented a convenience sample of PLHIV eligible for cotrimoxazole use or caretakers of children eligible for co-trimoxazole use. This convenience sample represents a population that is already seeking health care.

The assessment included all appropriate health facilities in Gulu District. Although it gives important information about Gulu District, the results of this study may not be representative of other districts in Uganda.

RECOMMENDATIONS

Scale-up throughout Uganda: The pilot results indicated that the co-trimoxazole tools increase the reported frequency and quality of provider counseling and are well understood by clients. Because these tools were associated with improved adherence and because no other stand-alone tools exist in Uganda, scale-up of the co-trimoxazole tools throughout Uganda is recommended. Due to the large client load, especially at level IV and level V facilities, scale-up will require a commitment to the provision of a large quantity of the client take home tools, as well as a sustainability plan to guarantee continuous supply at the facility level. As suggested by MOH representatives, inclusion of the client trifold brochures with distribution of co-trimoxazole tablets to the health facilities could be an effective method of stocking health facilities throughout Uganda with the tools. The tools should be made available in English and other applicable local languages. Providers indicated a preference for English language tools for their own use, but that translations into local languages would benefit clients and facilitate community-level use by community health workers. Scale-up of the tools to increase and sustain use and adherence among PLHIV requires full country ownership including stocking and distributing supplies of co-trimoxazole throughout the country as well as continuously supplying facilities with standalone educational materials related to co-trimoxazole use.

Scale-up beyond HIV clinic use: Use of the tools should not be limited to the facility HIV clinic, community-based clinics that provide pre-ART and ART care could also benefit from their availability and use. Providers recommended that the poster should be posted and copies of the client brochures should be available in the outpatient department of facilities to increase awareness and help clients overcome fear of stigma. The take-home copies may also help to increase new usage of co-trimoxazole among those who are not currently enrolled in clinical care through improved awareness and prioritization of health over stigma in the community. Preventing mother-to-child transmission clinics could also benefit from use of these tools, and the MOH or other organizations working in Uganda may consider adapting the tools to create a tool for use with pregnant women.

Explore supply chain challenges: Regardless of the usefulness and usability of the co-trimoxazole job aids/client education tools, without constant drug availability use and adherence will be negatively impacted. The MOH should explore the reasons for the stock-outs at the facility level to determine what immediate changes could improve supply, such as possibly increasing focus on accurate ordering where applicable.

Stress importance of record keeping: Facility-level reporting quality impeded the assessment's ability to associate the pilot tools with increased use of co-trimoxazole. In at least one case, a health facility staff member did report receiving training on record keeping, but the training was off-site, and the staff member had trouble remembering the lessons and figuring out how to operationalize them in their facility. Stressing the importance of accurate and timely records paired with training and follow-up supervision is essential to increase the quality of services provided to clients. The tools may serve as a reminder to providers to order co-trimoxazole in timely manner (where applicable) and improve record keeping as use increases.

Providers reported that some clients may be visiting multiple clinics and receiving co-trimoxazole from each. This duplication is possible because current health information management systems (HMIS) and record keeping are not set up to effectively track prescriptions. Although the scale of this issue is probably small, improvements in record keeping and HMIS will be valuable in helping the government understand retention to co-trimoxazole and to prevent fraudulent sale of tablets to private pharmacies or other PLHIV.

Study how to improve retention in care: Many PLHIV are likely to need co-trimoxazole for the rest of their lives. Keeping them on treatment could be a daunting challenge. The MOH could investigate different methods for improving and maintaining high retention rates—this could include assessing the impact of co-trimoxazole tools after they are widely disseminated and used throughout Uganda to provide more information beyond the pilot.

Continue to work to change gender norms: Many adult men living with HIV are not visiting health facilities, and, because of norms about strength and health, some men are taking co-trimoxazole intended for their partners or children. This is dangerous and it will hamper government efforts to increase the number of eligible people taking co-trimoxazole if not addressed. The underlying norms about men should be the target of behavior change campaigns that reach both genders.

Consider impact of formulation changes: Intermittent formulation changes at the facility level are confusing to clients and may negatively impact adherence. The MOH should consider this challenge to adherence when procuring and supplying co-trimoxazole to both ART and pre-ART sites. An NMS representative indicated that the MOH is planning to phase in 120-mg dispersible tablets (in place of the co-trimoxazole suspension syrup [for infants/children]) and may reserve 960-mg tablets exclusively at ART sites, sending pre-ART sites only 480-mg tablets. However, clients and providers consistently reported that breaking adult dosage tablets for infants and children is difficult, provides a possibly imprecise dosage, and may lead to contamination. Although the syrup may be easier, dispersible tablets are a better solution than breaking adult tablets. Clients and providers also reported that adult clients often prefer 960-mg tablets to reduce the number of tablets they must take daily, although some clients did express fear of choking on the larger tablets. Further studies are recommended to explore client preferences that may affect use and adherence.

Scale-up beyond Uganda: Given the success of the pilot in northern Uganda, other countries may benefit from the use of these tools and should consider their adoption (with adaptations where necessary). However, scale up requires champions for co-trimoxazole education within the government and Ministry of Health.

CONCLUSION

EFFECTIVENESS OF TOOLS

Providers stated that the co-trimoxazole tools improved the quality of their counseling, providing a counseling cue. They reported that because of the job aids, they no longer had to rely on their memory of what points to cover during counseling. Simple, image-reinforced messages ensure that providers can convey the essential information quickly and easily, and in a way that clients are better able to learn and remember. Both providers and clients reported that the images are simple, clear, and provide the necessary information. After introduction of the tools, providers and clients were better able to identify possible side effects of co-trimoxazole. Clients also reported improved adherence after introduction of the tools in the pilot facilities.

Distribution of the client take home tool may serve to increase co-trimoxazole use by reducing stigma at the community level. Clients repeatedly requested the take-home tools, citing that in addition to serving as a reminder to themselves, they can help partners, family members, and neighbors to understand the importance of co-trimoxazole, and therefore of HIV testing.

FEASIBILITY OF INTEGRATION

The pilot demonstrated the ease of integration of the co-trimoxazole tools in a clinical setting. Providers reported that, rather than creating an additional task or burden for them, the clear, imagebased job aids increased counseling frequency due to decreased time required for counseling. Providers also reported high satisfaction with the tools and indicated that they would highly recommend them to other providers.

MOH officials who were introduced to the tools were enthusiastic about both the clarity and usefulness of the tools, as well as the potential ease of integration within Ministry systems, such as distribution via the NMS and inclusion within the existing Positive Living profiling tool.

REFERENCES

- Abimbola, TO, and BJ Marston. 2012. "The Cost-Effectiveness of Co-trimoxazole in People With Advanced HIV Infection Initiating Antiretroviral Therapy in Sub-Saharan Africa." *Journal of Acquired Immune Deficiency Syndromes* 60(1):e8–e14.
- Anand, A, et al. 2010. "Implementation of Co-trimoxazole Prophylaxis and Isoniazid Preventive Therapy for People Living With HIV." *Bulletin World Health Organization* 88(4). Available at <u>http://www.scielosp.org/scielo.php?script=sci_arttext&pid=S0042-</u> <u>96862010000400010&lng=en&nrm=iso</u> (accessed December 20, 2012)
- Clouse, Kate, Kate Shearer, Jean Bassett, Mhairi Maskew, and Matthew P. Fox. "Reduced loss to ART initiation among patients initiating cotrimoxazole prophylaxis therapy in Johannesburg, South Africa." 19th International AIDS Conference: Abstract no. TUPE737. Available at http://www.iasociety.org/Abstracts/A200744787.aspx (accessed December 20, 2012)
- Houts, PS, CC Doak, LG Doak, and MJ Loscalzo. 2006. "The Role of Pictures in Improving Health Communication: A Review of Research on Attention, Comprehension, Recall, and Adherence." *Patient Education and Counseling* 61(2):173-90.
- Mermin, J, J Lule, JP Ekwaru, et al. 2004. "Effect of Cotrimoxazole Prophylaxis on Morbidity, Mortality, CD4 Cell Count, and HIV Viral Load Among Persons with HIV in Rural Uganda." *The Lancet* 364(9443):1428-34.
- Ministry of Health (MOH). 2006. National Policy Guidelines for TB/HIV Collaborative Activities in Uganda. Nakasero, Uganda: MOH.
- Nersesian, Paula, Andrew Fullem, and Melissa Sharer. 2011. Co-Trimoxazole Management and Availability: Logistics and Supply Chain Experience in 15 U.S. President's Emergency Plan for AIDS Relief Countries. Arlington, VA.: USAID's AIDS Support and Technical Assistance Resources, AIDSTAR-One, Task Order 1. Available at <u>http://aidstarone.com/focus_areas/care_and_support/resources/report/co_trimoxazole_mana_gement_and_availability</u> (accessed December 20, 2012)
- World Health Organization (WHO). 2006. Guidelines on Co-trimoxazole Prophylaxis for HIV-related Infections Among Children, Adolescents and Adults. Geneva: WHO.

ANNEX A

REVISIONS TO THE PILOT CO-TRIMOXAZOLE TOOLS

Revision	Rationale
Changed language from co-trimoxazole to Septrin (all tools)	Clients know co-trimoxazole as Septrin
Changed pill bottle to representation of tin (all tools)	Recommendation for improved identification; tins are used by all health centers
Labeled tin as "Septrin" (all tools)	Recommendation for clarification
Added appointment reminders to accompany dosage reminder (client brochures)	Suggestion from USAID/Uganda to help track/improve client adherence and retention
Darkened skin and hair of clients (all tools)	Suggestion from Gulu District Health Education office for better representation of Ugandans
Changed female shirt color in various pictures from pink (female and child tools)	Pink clothing is often associated with nurses in Uganda
Removed tea cups from men's hands, added soccer ball (male tool)	Drinking tea is not a common social activity for Ugandans
Changed shovel to hoe, removed helmet and toolbox (male tool)	Shovels are associated with digging graves; hoes are more appropriate work tools
Moved text "Stop Septrin only" to under side effects (client brochure)	Placement with side effects is more intuitive; previous placement did not match images
Added roof to health center, labeled health center, changed cross to blue (all tools)	Previous structure with no roof "looked like a latrine," blue cross to prevent confusion with Red Cross, labeling adds clarity
Changed nurse's uniform to pink, added cap, removed stethoscope (all tools)	More recognizable representation of nurse uniform
Added "Take Septrin with or without food" text	Suggestion from DHE/Gulu stakeholders to address challenge of food insecurity and Septrin non-adherence
Added representation of dispersible tablets to infant tools in addition to Septrin syrup	Many health facilities are using dispersible tablets for infant dosage rather than syrup
Removed red arrows indicating taking tablet	MOH stakeholders agreed the arrows were unnecessary and potentially confusing
Added representation of bed net over sleeping client	Integrated messaging is important, co-trimoxazole counseling using the tools is also an opportunity to discuss other healthy behaviors
Added language encouraging use of safe water	Stakeholders, including USAID/Uganda, recommended including an emphasis on the use of clean drinking water

Changed dosage information for infants from 0–6 months to 6 weeks–6 months, added alternative titles for the different formulations (e.g., "Suspension" became "Suspension/syrup" and "Child tablet" became "Child dispersible tablet") (clinic poster dosage chart)	Change reflects Uganda co-trimoxazole dosage guidelines
Changed language about consequences of non- adherence from "If you don't take Co- trimoxazole, you may become sick or die." to "If you do not continue taking Septrin, you may become sick or die" (all tools)	Stakeholders felt it was important to stress retention

ANNEX B

REVISED CO-TRIMOXAZOLE CLINICAL AND COMMUNITY POSTER

USAID

Septrin Dosage Formulations and Dosage for Infants, Children, and Adults Living with or Exposed to HIV*

	4		1	
Recommended daily dosage*	Suspension/syrup (Sml of syrup 200 mg/40 mg)	Child (dispersible) tablet (100mg/20mg)	Single-strength adult tablet (400mg/80mg)	Double-strength adult table (800mg/160mg)
6 weeks-6 months (<5 kg) 100 mg sulfamethoxazole/20 mg trimethoprim	2.5ml	One tablet	Q is tablet, possibly mixed with feeding*	
6 months-5 years (S-ISkg) 200mg sulfamethoxazole/40mg trimethoprim	Smit	Two tablets	Q Half tablet	-
6–14 years (15–30kg) 400mg sulfamethoxazole/80mg trimethoprim	10 m²	COSD Four tablets	One tables	All tables
>14 years (>30kg) 00mg suffamethoxazole/160mg trimethoprim	-	-	Two tablets	One tablet
Mar.	N ²	Frequencyonce a day		



For more information, please visit aidstar-one.com.

AIDSTAR-One

John Snow, Inc. 1616 Fort Myer Drive, 16th Floor Arlington, VA 22209 USA Phone: 703-528-7474 Fax: 703-528-7480 Email: info@aidstar-one.com Internet: aidstar-one.com