

ENHAT-CS – Collection of Technical Briefs and Recommendations

Management Sciences for Health

March 2015

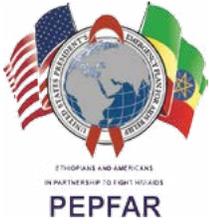
Development objective: This booklet contains 14 technical briefs based on eight years of United States Government investment to make comprehensive HIV/AIDS services available at public health centers and communities in Ethiopia.

The first six reports address HIV service uptake related to pregnant women and their infants, such as prevention of mother-to-child transmission of HIV. The next four reports review select aspects of the health system, including the capacity of laboratory services, the efficacy of referral services, and the role of community service organizations in making comprehensive services available to HIV-infected patients and their families. The last four reports examine treatment services for HIV-infected patients, covering antiretroviral therapy, tuberculosis, and mental health.

Keywords: Technical Briefs, End of Project Reports

This report was made possible through support provided by the US Agency for International Development under the terms of Cooperative Agreement Number 663-C-00-07-00408-00. The opinions expressed herein are those of the author(s) and do not necessarily reflect the views of the US Agency for International Development.

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A COLLECTION OF TECHNICAL BRIEFS AND RECOMMENDATIONS

EXPANDING HIV SERVICES IN ETHIOPIA

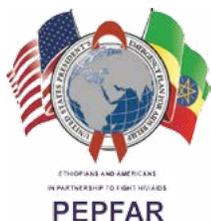


ETHIOPIA NETWORK FOR HIV/AIDS TREATMENT, CARE, & SUPPORT

EXPANDING HIV SERVICES IN ETHIOPIA

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ABOUT ENHAT-CS

The Ethiopia Network for HIV/AIDS Treatment, Care, and Support (ENHAT-CS) program is a USAID initiative funded by PEPFAR and implemented by a Management Sciences for Health (MSH)-led consortium of national and international partners. The program works in the Amhara and Tigray regions and supports the Regional Health Bureaus, *woreda* (district) health offices, health centers, and communities to deliver quality, comprehensive HIV services that are integrated with and strengthen other services, including: maternal, newborn and child health; family planning; tuberculosis; sexually transmitted diseases; malaria; neglected tropical diseases; nutrition; mental health; and laboratory services.

ENHAT-CS supports the Government of Ethiopia to scale up the provision of comprehensive HIV services, including antiretroviral treatment, by training nurses and health officers at health centers to perform services previously provided only by physicians at hospitals. This practice of task shifting is endorsed by the World Health Organization and has been shown to be an effective way to address shortages of human resources without compromising the quality of care.¹ ENHAT-CS continued support to 152 health centers supported by its predecessor, the HIV Care and Support Program (HCSP), and expanded comprehensive HIV service delivery to an additional 124 health centers, for a total of 276 by 2014.

1. Mike Callaghan, Nathan Ford, and Helen Schneider. "A systematic review of task-shifting for HIV treatment and care in Africa" *Human Resources for Health*, 2010. <http://www.human-resources-health.com/content/8/1/8> (accessed 8/1/14).

ABOUT THIS COLLECTION

This booklet contains 14 technical briefs based on eight years of United States Government investment to make comprehensive HIV/AIDS services available at public health centers and in communities in Ethiopia. HCSP covered four regions and Addis Ababa. ENHAT-CS covered the Amhara and Tigray regions only, and they are the focus of these briefs. The booklet supplements the ENHAT-CS and HCSP end-of-project reports.

The first six reports address HIV service uptake related to pregnant women and their infants, such as prevention of mother-to-child transmission of HIV. The next four reports review select aspects of the health system, including the capacity of laboratory services, the efficacy of referral services, and the role of community service organizations in making comprehensive services available to HIV-infected patients and their families. The last four reports examine treatment services for HIV-infected patients, covering antiretroviral therapy, tuberculosis, and mental health.

During implementation, ENHAT-CS devoted 25% of its resources to an operations research approach to provide evidence for decision-making on key issues. USAID provided an extension of the project to analyze and publish the results of its most important operations research—included here as technical briefs. The recommendations will be of particular relevance to public health professionals and managers in Ethiopia and other low-income countries as they continue to expand and integrate comprehensive HIV services into sustainable health programming and apply them to other health areas in resource-poor settings. ■

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Please note throughout:

Project and fiscal year dates are based on the USAID October–September fiscal year.



Photo by Warren Zelman

Evolution of Prevention of Mother-to-Child Transmission of HIV Services at Health Centers in Amhara and Tigray

Background

The Global Plan Toward the Elimination of New HIV Infections Among Children by 2015 and Keeping Their Mothers Alive aims to decrease the number of new pediatric infections by 90% and halve maternal deaths from AIDS. Most HIV-infected children acquire the virus from their HIV-infected mothers during pregnancy, birth, or breastfeeding, and 91% of the 3.2 million children under the age of 15 with HIV live in sub-Saharan Africa.¹

Ethiopia started its program for prevention of mother-to-child transmission (PMTCT) of HIV in 2001 as a pilot project using single dose nevirapine (SDN). The Federal Ministry of Health (FMOH) adopted a more comprehensive approach in 2007 of offering either SDN or dual antiretroviral (ARV) prophylaxis,

starting at 28 weeks of gestational age and putting pregnant women with a CD4 count of < 200 on antiretroviral therapy (ART).² That same year, the HIV/AIDS Care and Support Program (HCSP) began to expand these PMTCT services to health centers. In early 2012, Ethiopia adopted Option A, recommended by the World Health Organization (WHO), which initiates prophylaxis at 14 weeks of gestational age and offers ART to women with a CD4 count < 350.

These options for PMTCT required a CD4 count for all HIV-infected pregnant women, which proved difficult to implement, not only in Ethiopia, but in the rest of the developing world as well. In light of further international evidence and WHO guidance, Ethiopia moved to Option B+ in late 2012. Option B+

1. UNAIDS. *GAP Report 2014*. People left behind: Children and pregnant women living with HIV. http://www.unaids.org/sites/default/files/media/images/gap_report_popn_09_childrenpregnantwomenwh_2014july-sept.pdf

2. CD4 cells, or T-cells, are white blood cells that help protect the body against infection. HIV attacks and destroys these cells, and uses the cell machinery to multiply and spread throughout the body. The CD4 count of a healthy adult or adolescent ranges from 500 cells/mm³ to 1,200 cells/mm³.

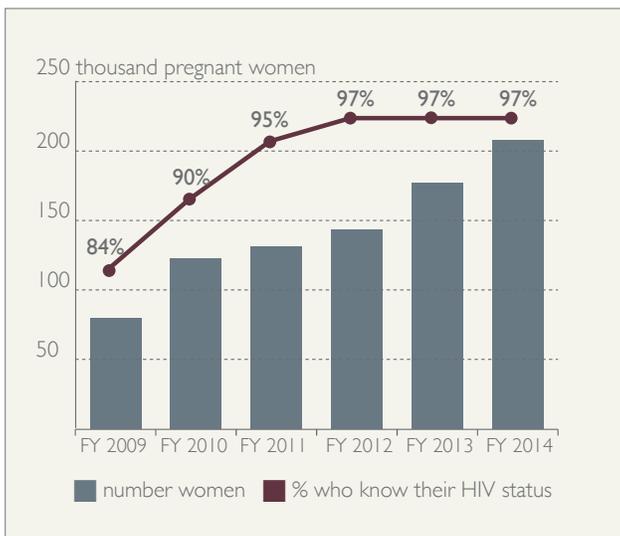


Figure 1. Pregnant women at program-supported health centers and the proportion knowing their HIV status, 2009–2014³

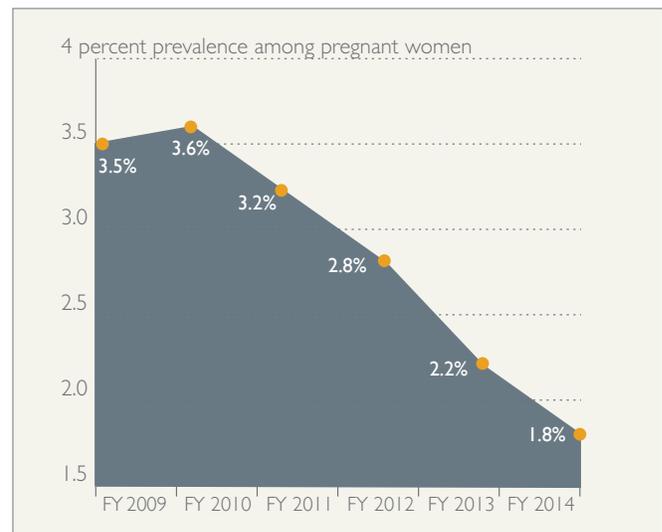


Figure 2. HIV prevalence among pregnant women at program-supported health centers, 2009–2014³

recommends triple highly active ART for life for all HIV-infected pregnant women regardless of gestational age or CD4 count, using tenofovir (TDF)/lamivudine (3TC)/efavirenz (EFV) taken as one daily pill as the preferred regimen. The move to Option B+ was accompanied by a national accelerated plan to aggressively expand antenatal care (ANC), including PMTCT services, and Ethiopia's adoption of the 2013 to 2015 strategic plan for the elimination of mother-to-child transmission (eMTCT) of HIV.

How did the adoption of these improved policies impact PMTCT service uptake over time? This technical brief analyzes the trend in PMTCT service uptake among pregnant women seen at USAID program-supported health centers in Ethiopia's Amhara and Tigray regions and identifies the interventions that contributed to reducing MTCT of HIV among women and babies at the health centers.

Methods

ENHAT-CS analyzed trends using annual data on PMTCT service delivery and uptake from HCSP and its successor, ENHAT-CS, from October 2009 through September 2014.³ Data included indicators on the number of pregnant women seen at program-supported health centers, uptake of HIV testing among them, and uptake of ARVs for PMTCT among those who tested HIV positive. The analysis also included data from mother support groups (MSGs), program operations research, and results of focus group discussions conducted with staff at a sample of health centers in the two regions in the last quarter of the ENHAT-CS program.

The programs' main strategies to support PMTCT service provision and uptake included promotion in the community of ANC and HIV testing for pregnant women and provider-initiated HIV testing and counseling at ANC and labor and delivery (L&D) clinics. The programs supported integration of PMTCT services for HIV-infected pregnant women in ANC and L&D clinics through:

- provider training on PMTCT guidelines, using FMOH training curricula and trainers;
- monthly on-site mentorship of ANC, L&D, and HIV clinic providers;
- supportive supervision assessing compliance with standards of care;
- support to mother mentors and the MSGs that they run;
- development and distribution of management tools for PMTCT services at ANC, L&D, and MSGs;
- education and raising awareness by community health volunteers, nongovernmental organization (NGO) volunteers, and community and religious leaders to promote ANC and HIV testing for all pregnant women;
- education and counseling for clients within the health centers, both in waiting areas (group) and through individual counseling during ANC visits;
- development and distribution of educational materials about the importance of PMTCT.

The number of pregnant women seen annually at program-supported health centers increased from just under 80,000 in 2009 (371 per health center) to over 208,000 in 2014 (959 per health center), a dramatic nearly threefold increase showing the results of efforts to increase utilization of ANC services. Among the pregnant women, the proportion who knew their HIV status increased from 84 to 97% (Figure 1).

3. These project dates are based on USAID's fiscal calendar, which runs from October 1 through September 30. This note applies to figures throughout.

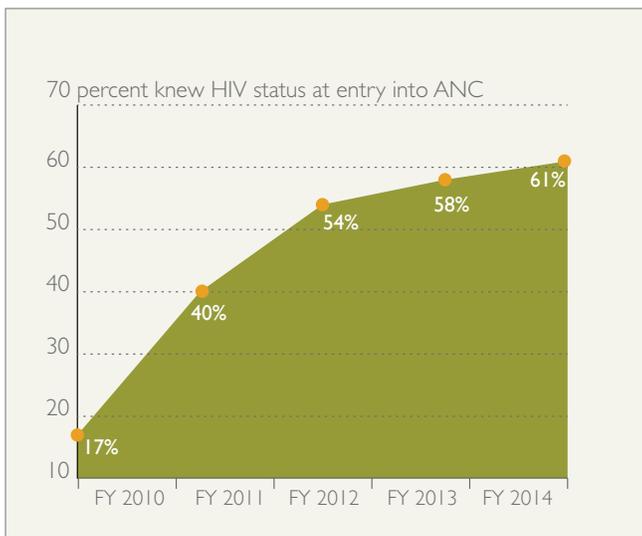


Figure 3. Ratio of pregnant women with known HIV status to newly identified (per 100), 2010–2014³

The proportion of HIV-infected pregnant women, including both women who knew their status before becoming pregnant and women who tested positive at the ANC or L&D clinics, declined slowly over time, dropping from 3.5% in 2009 to 1.8% in 2014 (Figure 2). This reflects a slow decline in population HIV prevalence during the same period, from 2.4 to 1.2%.

Among HIV-infected pregnant women, 61% knew their HIV status at entry into ANC in 2014, compared to only 17% in 2010 (Figure 3), reflecting the effects of widespread HIV counseling and testing in the regions.

Uptake of ARV for PMTCT among HIV-infected pregnant women increased from less than 50% in 2010 to close to 90% in 2014 (Figure 4). The type of prophylaxis that was used also changed during this period, with 100% using TDF-based ART under Option B+ in 2014.

The increased uptake of PMTCT over time among HIV-infected pregnant women and the transition to TDF-based ART with Option B+ coincides with decreases in MTCT rates (Figure 5).

MTCT rates were consistently lower among babies whose mothers had taken TDF-based ART (Figure 6) and among those whose mothers belonged to an MSG, with the odds of a baby testing positive being 57% lower compared to babies whose mothers did not participate in an MSG.

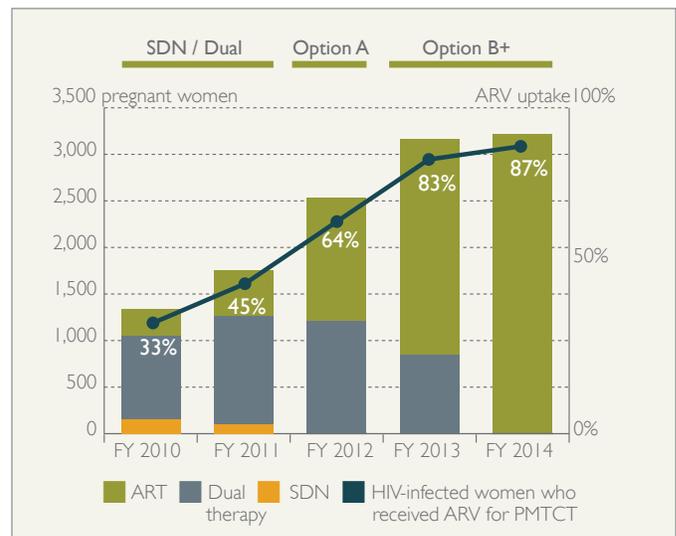


Figure 4. ARV uptake for PMTCT, by type, among HIV-infected pregnant women seen at program-supported health centers, 2010–2014³

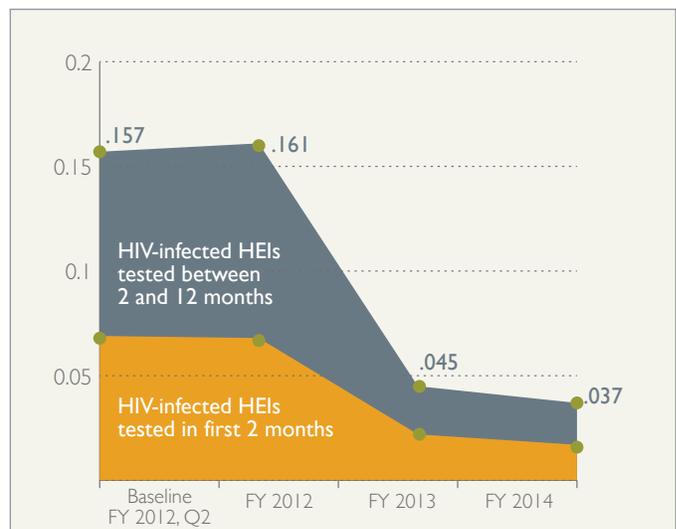


Figure 5. Vertical HIV transmission rates among HIV-exposed infants (HEIs), by age, 2012–2014³

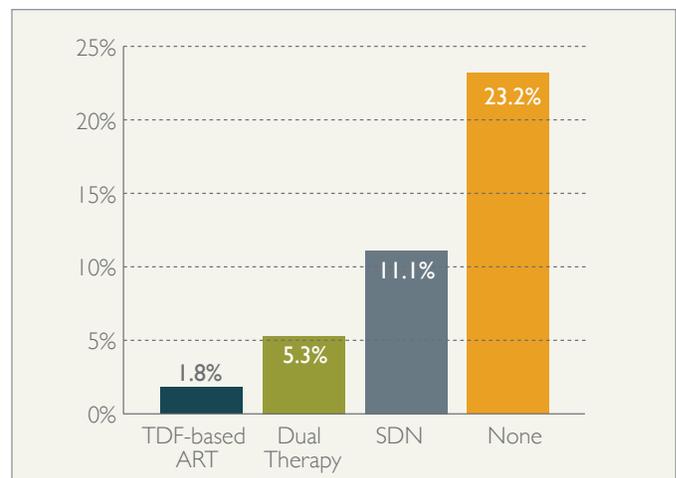


Figure 6. HIV infection among HEIs by maternal prophylaxis, 2013 (n=1,684)

The HCSP and ENHAT-CS experiences have shown that PMTCT services can rapidly expand, reach more women, and benefit more babies in a relatively short time.

Focus Group Results

The focus groups said these main factors contributed to the achievements on PMTCT:

1. HIV testing at ANC clinics has become universal practice. “The community has become aware that HIV testing is part of routine ANC care, and pregnant mothers come to health centers expecting that they will be tested for HIV. This has allowed ENHAT-CS to test 100% of mothers following ANC,” said one group representative.
2. The introduction of monthly MSG meetings has reduced home deliveries and improved birth preparedness planning.
3. The Health Development Army, health extension workers (HEWs), MSGs, and case managers carried out effective networking. All groups emphasized their role in the tracking of mothers and HEIs lost to follow-up, provision of psychosocial support, and linkage to care and support services. All focus groups noted the role of MSG mentors and the benefits of MSG membership.
4. Staff have endorsed improved PMTCT service provision. “All staff working on PMTCT and HEI services agree that, given the extraordinary PMTCT outcomes seen in the last few years, it is up to us to determine whether an infant is born HIV infected or not,” said the representative of one group.
5. Observing HIV-infected mothers successfully deliver an HIV-uninfected child has motivated other mothers to seek HIV testing and, if infected, enroll in care and support.

Implications

The HCSP and ENHAT-CS experiences have shown that PMTCT services can rapidly expand, reach more women, and benefit more babies in a relatively short time. Five major points emerge from the above data on PMTCT service provision and uptake at USAID-supported health centers in the Amhara and Tigray regions from 2009 to 2014.

1. **ARV service provision and uptake rapidly expanded at the program-supported health centers.** Health centers increased ANC service use nearly threefold during this period and tested more women for HIV. Among the HIV-infected pregnant women more took up ART for PMTCT over time.
2. **Uptake of ART for PMTCT greatly increased as a result of national policies,** with Option B+ leading to almost 90% documented uptake among HIV-infected pregnant women who accessed care, and among them, 100% being on a TDF-based ART.

3. **Program-supported health centers in Tigray and Amhara achieved 90% coverage** of HIV-infected pregnant women with ART, far exceeding the 2014 national ARV coverage of PMTCT of 40%.
4. The improved policies, the program's intense focus on PMTCT, and its multiple interventions including routine on-site mentorship, support to mother mentors, and education of both the community and health providers have resulted in **increased uptake of PMTCT among HIV-infected pregnant women** and also a marked decrease in vertical transmission rates.
5. **Community engagement** through outreach, use of local women's organizations, including the Health Development Army, and support to MSGs were essential to the growth and effective utilization of PMTCT services.

These successes are due to the programs' close partnership with the Government of Ethiopia, decentralizing PMTCT services to health centers for easier access by pregnant women and their babies, and task shifting and integration of these services with all health center services. The success of the PMTCT program in Amhara and Tigray is also due to the effective roll-out of the government's evolving PMTCT policies through training, followed by systematic support to service providers and mother mentors, all combined with intensive community engagement.

RECOMMENDATIONS

- Integration of Option B+ at ANC and L&D must be maintained.
- Regular on-site mentorship is essential to assure the quality of PMTCT service delivery.
- Mother mentor services should be formally integrated into health facility HIV care and support services, and the network between MSG, ANC, and health extension workers strengthened to effectively trace women who are lost to follow-up or miss appointments.
- ANC and L&D services should be supported to have adequate supplies of ART drugs and patient management and reporting tools.
- Community engagement and outreach is essential to the continuing success of PMTCT programs. ■



Photo by Genaye Eshetu

Social Barriers to Antenatal Care and Prevention of Mother-to-Child Transmission Services

Background

In Ethiopia, male-dominated gender dynamics and health care provider attitudes lead many women to avoid or not fully utilize antenatal care (ANC) and prevention of mother-to-child transmission (PMTCT) services, creating barriers to women's access to care and to interrupting vertical transmission of HIV. To identify the issues that hinder HIV-infected women's acceptance of and access to HIV care and treatment, ENHAT-CS examined the needs and perceptions of health providers and HIV-infected clients at ENHAT-CS-supported health centers.

Methods

ENHAT-CS conducted 36 focus group discussions with a convenience sample of 668 clients (60% female) enrolled at nine high-patient-load health centers. To assess the health centers' views, the program asked 36 members of these health centers'

management teams to rate the importance of each item in a list of ANC and PMTCT best practices on a scale of one to three. To analyze the data, ENHAT-CS identified relevant and representative statements from transcripts of the focus groups and grouped them into categories. The analysis further classified the statements according to their meaning and relevance to the study's objectives.

Results

Focus group discussions identified three main reasons that Ethiopian women choose to avoid or not fully utilize ANC and PMTCT services.

- First, because they had been counseled not to get pregnant without consulting their HIV provider; HIV-infected women felt stigmatized by health care workers when they got pregnant, resulting in self-reported guilt and depression.



Photo by Warren Zelman

- Secondly, participants reported that men were not allowed to witness the birth of their children, despite health centers sending invitation letters to men to accompany their spouses. Men thus pressure their partners to give birth at home so that they can be present.
- Finally, participants preferred to link their appointments to market days, religious holidays, or other convenient times, which did not always coincide with health centers' hours of operation.

The survey showed that all health center management teams ranked these issues as the lowest priorities for making changes and identified other areas such as working more with mother mentors and mother support groups (peer support groups for HIV-infected mothers) as important.

Recommendations

In this study, HIV-infected women's and health center management team's perceptions of gender-related issues were directly opposed, underscoring the importance of educating providers about their clients' needs and equipping them with tools to improve services. Closer collaboration between health center management teams and mother support groups should be explored. ■

In this study, clients' and providers' perceptions of gender-related issues were directly opposed, underscoring the importance of educating providers about their clients' needs and equipping them with tools to improve services.



Photo by Genaye Eshetu

Antiretroviral Therapy Shown to be the Most Effective Prevention of Mother-to-Child Transmission Strategy

Background

Following the World Health Organization's 2013 guidelines endorsing antiretroviral therapy (ART) for all HIV-infected pregnant women, Ethiopia adopted Option B+ (initiation of triple regimen ART for the duration of breastfeeding or for life regardless of a pregnant woman's CD4 count) as the national standard for prevention of mother-to-child transmission (PMTCT) of HIV in 2012. Prior to initiation of Option B+, pregnant HIV-infected Ethiopian women were provided with Option A, which provided mothers with dual ART prophylaxis beginning at 14 weeks of gestation, or immediate initiation of ART for women with a CD4 count < 350. ENHAT-CS examined vertical transmission rates by mothers' PMTCT regimens in the Tigray region of Ethiopia.

Methods

Using data from Tigray's regional database, ENHAT-CS calculated HIV infection rates among HIV-exposed infants by their mother's PMTCT regimen between September 2009 and December 2012 and determined the relative risk of a baby acquiring HIV by age of testing and the mother's PMTCT regimen.

Results

There was a significant difference in HIV rates between babies tested at zero to two months (4%) and two to eight months (9%),¹ and babies tested past eight months (16%).² Just

1. Relative risk (RR)=0.43, CI=0.28,0.65; p=0.0001

2. Compared to testing at 0–2 months RR=0.23, CI=0.14,0.38; p<0.0001 and compared to testing at 2–8 months RR=0.55, CI=0.36,0.86; p=0.005

Over a three-year period, as PMTCT regimens became more widely available, more used, and more effective, the percentage of HIV-exposed infants testing positive declined, demonstrating the importance of educating all pregnant women on PMTCT during ANC visits.

2% of babies born to mothers on triple ART tested positive for HIV, an excellent outcome compared to the other scenarios shown in Figure 1.³ The study also demonstrated that the rate of vertical transmission decreased 40% from September 2009 to December 2012, as PMTCT became more accepted and effective (Figure 2).

Implications

Triple ART regimens were found to be the most effective PMTCT regimen, whether the child received prophylaxis or not. Our study showed a 50% reduction in vertical HIV transmission from 2009 to 2012 as coverage of effective PMTCT services expanded. The effectiveness of triple ART is particularly important in Ethiopia, where most women give birth at home and may not be able to give the right prophylaxis medication to their baby at the right

time. These data concur with other studies showing that triple ART taken during pregnancy is the most effective maternal prophylaxis in a real world setting. Over a three-year period, as PMTCT regimens became more widely available, more used, and more effective, the percentage of HIV-exposed infants testing positive declined, demonstrating the importance of educating all pregnant women on PMTCT during ANC visits.

The fact that babies' chances of testing positive for HIV increased with age makes sense from an epidemiologic point of view; HIV-exposed infants remain at risk throughout the breastfeeding period. While it's important to test these infants as early as possible, it is equally important to continue to monitor their exposure, ensure that mothers remain on ART, and continue to test the child throughout for the duration of the exposure. ■

3. RR=0.37; CI=0.19,0.74; p=0.006

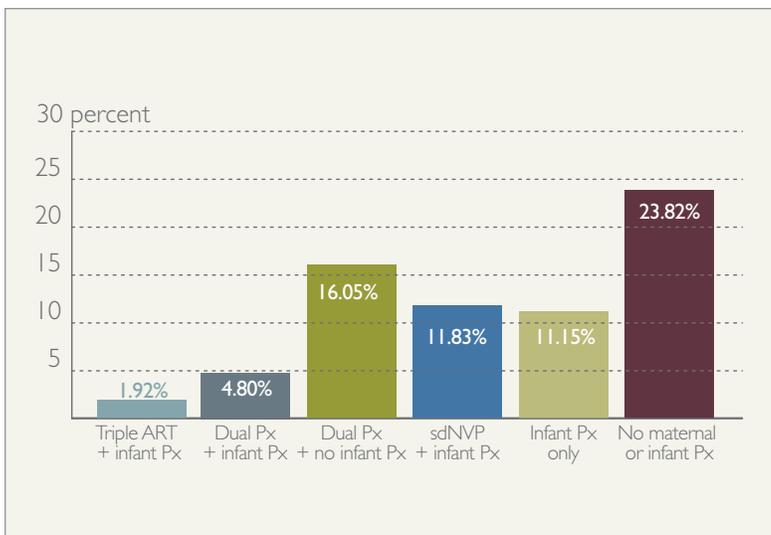


Figure 1. HIV infection among HIV-exposed infants by type of prophylaxis (Px) (n=1,671)

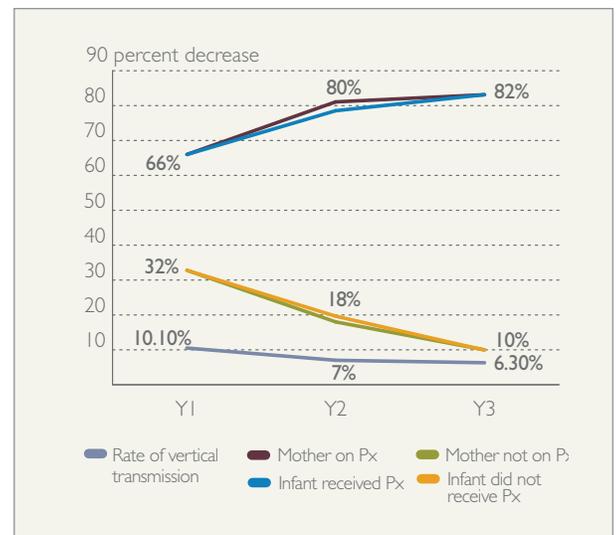


Figure 2. Decrease in vertical transmission rates by mother and infant Px over time



Photo by Genaye Eshetu

Pregnancy and Family Planning Among HIV-Infected Women at Health Centers in Amhara and Tigray

Background

Almost all new HIV infections in children occur through mother-to-child transmission (MTCT). Prevention of unintended pregnancy among HIV-infected women is therefore a key component of prevention of mother-to-child transmission (PMTCT) programs around the world, including those in Ethiopia.

Since the start of PMTCT service expansion at health centers in the Amhara and Tigray regions of northern Ethiopia in 2008, the HIV prevalence among pregnant women seen at these health centers has steadily declined from 3.5% in 2009 to 1.8% in 2014. The proportion of HIV-infected pregnant women who knew they were infected before they got pregnant has steadily increased from 17 to 61% in the same time period. This dramatic increase may reflect the success of keeping these women in the system once they get pregnant, or may indicate

reduced stigma, enabling more pregnant women to disclose their status at entry into antenatal care (ANC).

The increase may also reflect the success of the PMTCT program, creating hope for more infected women to have uninfected babies and thus enabling them to fulfill their reproductive desires. However, it is also possible that this increase indicates an unmet need for family planning (FP).

Methods

To determine if HIV-infected women became pregnant intentionally or because they had an unmet need for FP, ENHAT-CS conducted a cross-sectional survey among known HIV-infected pregnant and lactating women at health centers in Amhara and Tigray from April through June 2014. ENHAT-CS used routine program data to select the health center with the highest number of reported known infected pregnant women

“I strongly oppose positive pregnancy.... Pregnancy, labor, and then breastfeeding are all very difficult for a positive mother. You cannot be sure of the baby’s status until two years.... There were two children who were tested negative in the first instance and later tested positive. This is very painful for the family. You see, a positive child needs to live on ART for a lifetime from the very beginning. This is despairing.”

—Nurse, 39, who has been serving as an ART provider for six years

in each of the 17 administrative zones in these regions. Program staff interviewed all known infected women at these health centers who had been or still were pregnant within the 12 months prior to data collection, using a structured questionnaire administered by the PMTCT focal person.

ENHAT-CS identified the women from clinic registers and patient medical cards at the health centers and obtained informed consent. Participation was anonymous and voluntary. Program staff conducted qualitative in-depth interviews with health center HIV service providers. Data was entered into EpiInfo and exported to SPSS20 for bivariate and multivariate analysis. ENHAT-CS used crude and adjusted odds ratios at 95% confidence interval and considered a result significant at a p value of < 0.05. Qualitative data was analyzed using thematic framework analysis and triangulated with quantitative findings. The Ethical Review Board of the Ethiopian Public Health Association provided clearance for this study prior to data collection, and regional health bureaus provided letters of support.

Results

The program identified 392 HIV-infected women at the 17 selected health centers who were or had been pregnant in the 12 months prior to the survey and all agreed to participate in the study. They ranged in age from 17 to 44 years (mean of 29 years, with standard deviation of 4.6). Forty percent had no formal education and 39% had attended primary school; the remaining 21% had attended secondary school or higher. Fifty-five percent were housewives, 23% were self-employed, 13% were daily laborers, 3% were formally employed, and 7% reported being unemployed. Eighty-five percent were married and 6% were cohabiting at the time of survey. The remaining 9% were divorced or single.

The majority (80.5%) had known their HIV status for two or more years and 92% were on antiretroviral therapy (ART) before their pregnancy. The World Health Organization (WHO) stage at or just prior to conception was either stage 1 or 2 for 83% and at stage 3 for 14%.¹ Among 384 mothers (98%) for whom disclosure status of partners was reported, 325 (85%)

1. WHO staging is based on clinical findings that guide the diagnosis, evaluation, and management of HIV/AIDS, and it does not require a CD4 cell count. Many countries use this staging system to determine eligibility for ART, particularly in settings in which CD4 testing is not available.

Figure 1. Desirability of pregnancy among HIV-infected women (n=392)

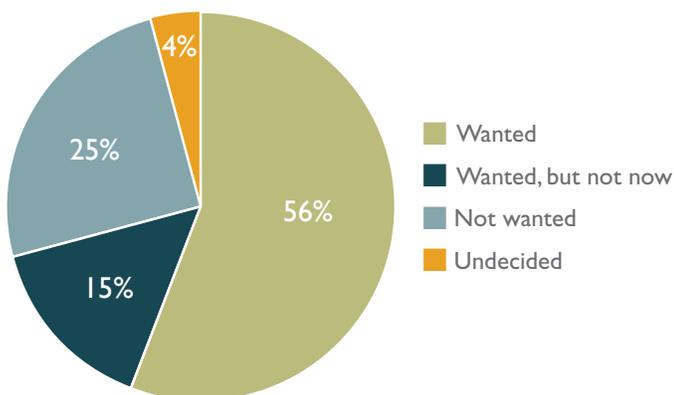


Figure 2. Proportion with preconception counseling and main reasons for not consulting with HIV service providers among women who wanted their pregnancy (n=219)

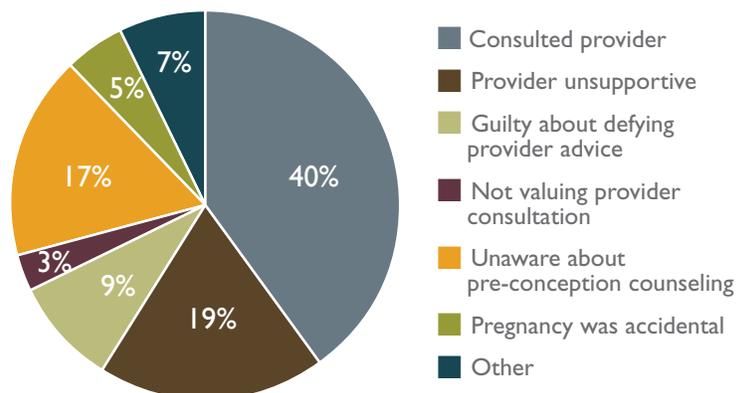


Table 1. Multivariate analysis related to the timing of the most recent pregnancy or birth

Characteristics		Most recent pregnancy/childbirth		Crude Odds Ratio		Adjusted Odds Ratio	
		Wanted	Not wanted	95% CI	p	95% CI	p
Residence	Urban	203	147	1		1	
	Rural	15	22	2.0 (1.0, 4.0)	0.045	2.2 (1.0, 4.9)	0.043
Age	17 – 34	198	139	1		1	
	35 – 44	21	34	2.3 (1.3, 4.1)	0.005	2.4 (1.3, 4.6)	0.007
Education	No schooling	70	80	11.4 (1.4, 91.5)	0.022	5.5 (0.5, 54.5)	0.148
	Primary	84	60	7.1 (0.9, 57.3)	0.064	3.5 (0.4, 35.0)	0.285
	Secondary	44	24	5.5 (0.7, 45.2)	0.116	3.6 (0.4, 35.9)	0.278
	Tertiary	10	1	1			
Occupation	House wife	116	92	1		1	
	Self-employed	53	33	0.8 (0.5, 1.3)	0.356	0.8 (0.4, 1.3)	0.354
	Daily laborer	16	32	2.5 (1.3, 4.9)	0.006	2.2 (1.1, 4.6)	0.032
	Employed	11	2	0.2 (0.05, 1.1)	0.059	0.5 (0.08, 2.6)	0.383
	Unemployed	15	10	0.8 (0.4, 2.0)	0.687	0.9 (0.4, 2.2)	0.771

had disclosed their status. Among those 325, 66% reported their partner was also infected, the majority (88%) of whom were on ART.

Among the 392 study participants, all were aware of various FP methods and 82% had ever used contraception. All health centers reported continuous stocks of condoms, oral contraceptive pills, and injectables, but rarely any other methods. Contraception was available at both the HIV clinic and the FP clinic. Fifty-seven percent of the study participants were members of a mother support group (MSG) or a people living with HIV (PLHIV) support group.

Fifty-six percent of the study participants wanted the recent or current pregnancy, 25% did not, 15% said it was ill-timed but wanted, and the remaining 4% were undecided (Figure 1).

WANTED PREGNANCY

Even though the majority was enrolled in care, only 40% of the 219 study participants who reported that their pregnancy was wanted had talked to their HIV service provider about their intention to become pregnant (Figure 2). The remaining 131 women said they had not discussed their desire to become pregnant because they perceived their provider as unsupportive (32%), felt guilty about defying their provider's advice to not get pregnant (15%), did not value consultation (5%), were unaware

of the need or possibility for preconception counseling (29%), the pregnancy was accidental (9%), and other reasons (11%).

HIV service providers confirmed in qualitative in-depth interviews that they had unsupportive attitudes toward pregnancy in HIV-infected women. Most providers said they did not think HIV-infected women should have babies (see text box).

UNWANTED AND ILL-TIMED PREGNANCY

A total of 157 pregnancies were either not wanted or not wanted at the time. Multivariate analysis showed that factors significantly associated with unwanted pregnancy were rural residence, maternal age above 34 years, and being a daily laborer (Table 1).

Recommendations

This study showed that a majority (56%) of infected women wanted their current or most recent pregnancy. This finding is supported by one of the key results of our focus group discussions in six health centers in the Amhara and Tigray regions: HIV-infected mothers successfully delivering an HIV-uninfected child has motivated other mothers to seek HIV testing, treatment, care, and support.

Misperception and lack of awareness of the reproductive rights of HIV-infected women can lead to missed opportunities both for preventing pregnancy among women who do not want one, and for properly managing the health of HIV-infected women in preparation for and during pregnancy.

However, 40% of pregnant women did not want the pregnancy at all, or did not want it at the time. While the rising percentage over time of pregnant women who know they are HIV-infected suggests confidence in the PMTCT program, the percentage of unwanted or mistimed pregnancies is significant, especially considering that these women were aware of FP and already in the health system.

The study also showed that the majority (60%) of infected women who wanted their pregnancy had not discussed this desire with their HIV service provider, largely because of the provider's negative attitude toward pregnancy among HIV-infected women. These findings are similar to those of studies from other parts of Africa, showing that most HIV-infected women refrain from discussing their fertility desires with their HIV service provider because of anticipated negative reactions.²

2. Coopera, D., et al., *Reproductive intentions and choices among HIV-infected individuals in Cape Town, South Africa: Lessons for reproductive policy and service provision from a qualitative study*. 2005.

Misperception and lack of awareness of the reproductive rights of HIV-infected women can lead to missed opportunities both for preventing pregnancy among women who do not want one, and for properly managing the health of HIV-infected women in preparation for and during pregnancy. Educational and behavioral interventions are therefore needed to improve provider attitudes and to help them support HIV-infected women in Amhara and Tigray who want a baby. ■

Moodley, J., et al., *Health care provider perspectives on pregnancy and parenting in HIV-positive individuals in South Africa*. BMC Health Services Research, 2014. 14(1): p. 384.



Photo by Genaye Eshetu

Gestational Diabetes: A Risk Factor for Maternal Death in Tigray

Introduction

In the developed world, pregnant women are routinely screened for gestational diabetes. As a result, in the United States, about 9% of pregnant women are diagnosed with gestational diabetes, a condition that if left untreated can have devastating effects on both the mother and baby. In the United States, however, as in the rest of the developed world, the vast majority of these women work with their physician or midwife to manage their blood sugar and go on to safely deliver healthy babies.

But in Ethiopia, like most other developing countries, women are rarely screened for gestational diabetes mellitus (GDM). In the rare event that they are screened and diagnosed, they have few options for managing the disease. Diabetes services, if available, are based at urban hospitals, where less than 10% of pregnant women seek antenatal care. Providers at these facilities typically follow international guidelines,

which require multiple blood tests per day and thus are of limited practical use in resource-poor environments.¹

Estimated at 676 deaths per 100,000 live births, maternal mortality in Ethiopia is more than three times the worldwide average.² The most common causes of maternal death in Ethiopia are hemorrhage, eclampsia, hypertension, and obstructed labor. Interventions to improve maternal health have rightfully focused on preventing and treating these specific complications.

GDM, however, though it is never listed as a cause of maternal death, significantly increases the risk for all four of these maternal killers and yet is rarely addressed in resource-constrained settings.

1. International Diabetes Federation. *Global Guidelines for Type 2 Diabetes*, 2012

2. Hogan et al. "Maternal mortality for 181 countries, 1980–2008: A systematic analysis of progress towards Millennium Development Goal 5." *The Lancet* 375 (9726): 1609–1623, 2010.

Identifying women with GDM provides an opportunity not just to improve pregnancy outcomes, but for women to make changes in lifestyle to help prevent development of diabetes later in life.

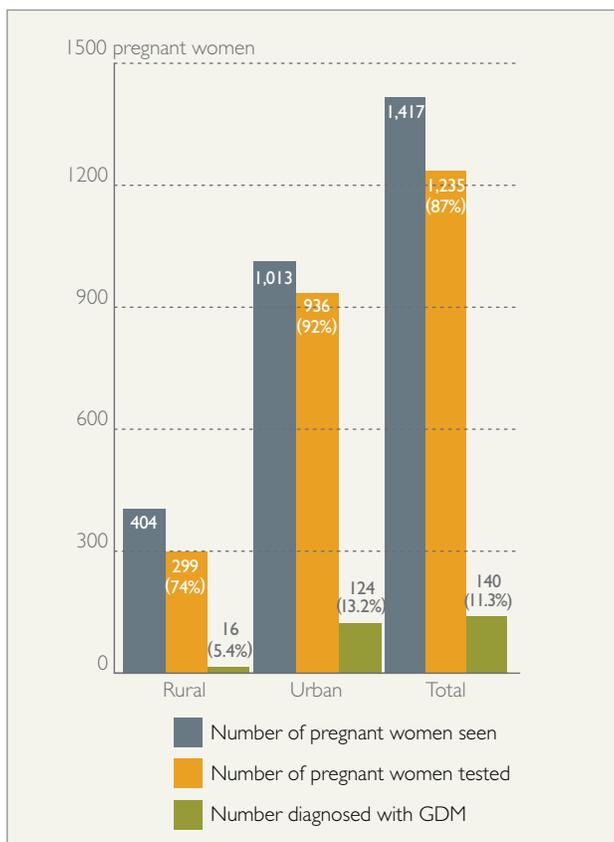
Diabetes is on the rise in Ethiopia, where it is estimated that 1.4 million people are living with the disease, twice the number of people living with HIV. Identifying women with GDM provides an opportunity not just to improve pregnancy outcomes, but for women to make changes in their lifestyle to help prevent development of diabetes later in life.

It was previously estimated that gestational diabetes occurs in four to nine percent of pregnant women in Ethiopia, but these data are scant and old.³ An estimated 80% of cases remain undiagnosed.⁴ Therefore, Management Sciences for Health (MSH) set out to assess the prevalence of gestational diabetes among women served at the public health centers in Tigray, Ethiopia and determine whether or not providers at these facilities could provide adequate care for diabetic pregnant women. MSH funded the study through its Innovation Challenge Fund and implemented it in collaboration with ENHAT-CS.

3. Seymour et al, 1999; Hailu et al, 1994; Haile et al, 1994.

4. International Diabetes Federation, *Global Diabetes Atlas*, 2012.

Figure 1. GDM testing and prevalence among pregnant women at the three health centers, Tigray, January–April 2014



Methods

MSH collected data at three public health centers supported by ENHAT-CS in Tigray, two of which were in urban areas and one rural. The study included all pregnant women aged 16 years or older attending the clinics between January 15 and April 15, 2014.

After receiving a urine dip stick, random plasma glucose (RPG) test, and an HIV test during the initial visit, pregnant women were asked to return for a second blood draw early in the morning, either the next day or soon thereafter, following 8 to 14 hours of overnight fasting.

Health center providers diagnosed women with GDM at any time of pregnancy if their fasting plasma glucose (FPG) or RPG level was high and they exhibited classic signs of diabetes such as weight loss, excessive thirst, and excessive urination. International guidelines recommend performing an additional two-hour oral glucose tolerance. This study, however, excluded this criterion, as it is not feasible in low-resource settings.

Results

Prevalence of GDM and associated factors

The three health centers served 1,417 pregnant women during the study period. Among them, 88% received a FPG test (Figure 1).

The study found no significant difference between women with GDM and women without GDM in age, occupation, education, or marital status. However, the prevalence of GDM (13%) among urban women was two and a half times higher than that of women in rural areas (5%).

Interestingly, the study also found that the prevalence of gestational diabetes among HIV-infected women was 22% compared to 11% among women not infected with the virus. Also, though 81% of HIV-uninfected women with GDM responded well to behavioral interventions, only 43% of HIV-infected women were able to control their GDM with diet and exercise. The difference was not statistically significant, probably because of the relatively small number of HIV-infected women in the study, but it warrants further investigation.

As has been found in other studies, high body mass and a family history of diabetes were both associated with greater likelihood of developing gestational diabetes. Twenty-one percent of women with a body mass index (BMI) greater than 25 were

diagnosed with gestational diabetes, while just five percent of women with a BMI lower than 18.5 had the disease. GDM prevalence among those who reported having a first degree family member with diabetes was almost three times greater than those who did not report such a history. This is a significant finding given that an estimated 1.4 million Ethiopians are living with diabetes and the number continues to grow.

Management of Pregnant Women with GDM

Health center staff trained by MSH advised all of the women diagnosed with GDM on management of the condition with diet and exercise, using educational materials from the Ethiopian Diabetes Association. Among the women diagnosed with GDM and actively followed, 79% responded to behavioral changes in diet and exercise. Women who did not respond were referred to the diabetes center at Ayder Referral Hospital for further evaluation and management by obstetricians.

Discussion and Conclusion

This pilot intervention showed that:

1. **Gestational diabetes is a larger problem in northern Ethiopia than previously thought.** The prevalence of GDM in our study population was higher than that cited by earlier studies in Ethiopia and higher than the US Centers for Disease Control and Prevention estimate of nine percent in the US.⁵ Considering that the classic risk factors for diabetes, obesity and lack of exercise, are much less common in Ethiopia than in the US, this level of GDM in Ethiopia is of grave concern.
2. **The majority of clients diagnosed with GDM responded well to simple behavioral interventions.** Eighty-one percent of HIV-negative women with GDM responded well to changes in diet and exercise, however; only 43% of HIV-infected women were able to control their GDM with these measures,

5. DeSisto, CL, Kim, SY, Sharma, AJ. *Prevalence Estimates of Gestational Diabetes Mellitus in the United States, Pregnancy Risk Assessment Monitoring System (PRAMS), 2007–2010.* *Prev Chronic Dis* 2014;11:130415. DOI: <http://dx.doi.org/10.5888/pcd11.130415>.



Photo by Genaye Eshetu

The prevalence of GDM in our study population was higher than that cited by earlier studies in Ethiopia and higher than the US Centers for Disease Control and Prevention estimate of nine percent in the US.

Integrating behavioral counseling on nutrition and exercise into ANC services is a low-cost intervention that can reduce women's risk of developing the most common causes of maternal mortality.

suggesting already-compromised health due to HIV. Further studies are needed to examine if HIV-positive pregnant women have higher levels of GDM and how well they respond to low-cost interventions.

3. Health center-level service providers can acquire the skills to effectively screen for, diagnose, and manage GDM.

Simple, low-cost training of health providers in primary health care settings, as well as a nearby referral hospital for more complicated management, was feasible and effective.

4. International protocols and guidelines that were adapted to the Ethiopian context worked well in detecting and managing GDM. Broad participation of Ethiopian endocrinologists, obstetricians, counsellors, and others ensured appropriate adaptation of international guidelines and protocols to the realities of the Ethiopian health care system.

In conclusion, the findings and success of this study underscore the importance and urgency of scaling-up GDM screening and management throughout Ethiopia. Integrating behavioral counseling on nutrition and exercise into ANC services is a low-cost intervention that can reduce women's risk of developing the most common causes of maternal mortality.

Ethiopia is a vast and diverse country. The findings of this study may or may not apply to other parts and populations of Ethiopia. However, this low-cost study is well worth replicating, and at larger scale, to other parts of the country and in other resource-constrained environments. Further, our pilot successfully developed and introduced Ethiopia-specific GDM service guidelines that can be adapted for wider use.

We recommend replicating and expanding this experience to follow the mothers with GDM after they give birth and assess outcomes among them and their babies compared to mother-baby pairs without GDM. Further studies will be needed to examine if HIV-infected pregnant women are more likely to develop GDM and if they also have higher rates of type 2 diabetes; if so, it will be necessary to tailor interventions to their unique needs. ■



Photo by Genaye Eshetu

Assessment of the Care and Treatment of HIV-Exposed Infants Born at ENHAT-CS-Supported Health Centers

Introduction

Mother-to-Child Transmission of HIV and Early Infant Diagnosis: The Global Situation

An estimated 3.2 million children were living with HIV at the end of 2013; 91% of them were in sub-Saharan Africa.¹ Without prevention of mother-to-child transmission (PMTCT) interventions, 30 to 35% of infants born to HIV-infected women will acquire HIV in utero, during birth, or during breastfeeding.² With effective interventions, however, the risk of mother-to-child transmission can be reduced to 2% or less.

Though much progress has been made in prevention and treatment of HIV, a large proportion of HIV-infected pregnant

women do not access antenatal care (ANC), and are neither tested for HIV nor receive antiretroviral therapy (ART) during pregnancy. Moreover, many who start ART are not followed after delivery.

Prevention of Mother-to-Child Transmission of HIV and Early Infant Diagnosis in Ethiopia

In the beginning of 2012, the Government of Ethiopia embarked on an accelerated plan for PMTCT focusing on creating demand for, increasing access to, and improving the quality of PMTCT services. The same year, the Federal Ministry of Health introduced a manual to guide program managers on the planning, implementation, coordination, monitoring, and evaluation of early infant diagnosis and treatment services. Many programs, including ENHAT-CS, have been involved in the implementation of this manual and the initiation of care programs for HIV-exposed infants (HEIs) at the primary health care level in Ethiopia. Yet between October 1, 2012 and

1. World Health Organization, *Treatment of Children Living with HIV* <http://www.who.int/hiv/topics/paediatric/en/> (accessed 10/15/14).

2. World Health Organization, *Antiretroviral Therapy for HIV Infection in Infants and Children: Towards Universal Access; Recommendations for a public health approach; 2010 revision.*

ENHAT-CS estimates that about half of all HEIs in these two regions were born in health centers. The birth of an HEI at a health center is an opportunity to enroll the baby in HEI care.

September 30, 2013, only half of HEIs in Amhara and Tigray, the regions supported by ENHAT-CS, had been tested for HIV within two months of birth. Among the HEIs tested, 10% were HIV-infected and just 72% of those who tested positive were enrolled on ART care and support.

ENHAT-CS estimates that about 50% of all HEIs in these two regions were born in health centers. The birth of an HEI at a health center is an opportunity to enroll the baby in HEI care, which includes early infant diagnosis, infant prophylactic treatment, other treatments to prevent HIV and other infections, promotion of healthy feeding practices, and routine infant services such as growth monitoring and immunizations. However, routine service data reports on all HEIs registered at the health center does not readily show enrollment rates and subsequent health outcomes specifically among HEIs who were born in health facilities. The program therefore assessed enrollment and clinical outcomes of HEIs born at ENHAT-CS-supported health centers between October 2011 and September 2013.

Methodology

ENHAT-CS collected data on 711 HEIs born in 23 health centers in Amhara and Tigray (73% were from Amhara and 27% from Tigray) to determine:

- % of HEIs enrolled into HEI care at birth
- % of HEIs tested for HIV within two months of birth
- % of HIV-infected infants immediately linked to ART services
- % of HEIs receiving cotrimoxazole prophylaxis starting at two months of age
- Infant feeding type in the first six months of life
- % of HEIs whose growth has been monitored and recorded
- % of HEIs whose development has been assessed and recorded using growth charts
- % of HEIs who have been assessed for opportunistic infections
- % of HEIs appropriately immunized for their age and their immunization status recorded

Results

Registration in HEI Care

Of the 711 HEIs studied, 688 infants were found on the HEI register at the HIV clinics. Data for the other 23 children were retrieved from labor and delivery and mother support group records. Among the 711 infants, 96% were being actively followed in the respective health centers. Three (0.4%) had been transferred to nearby hospitals after being delivered at the health centers. Three percent were lost to follow up and four (0.6%) infants had died (Figure 1).

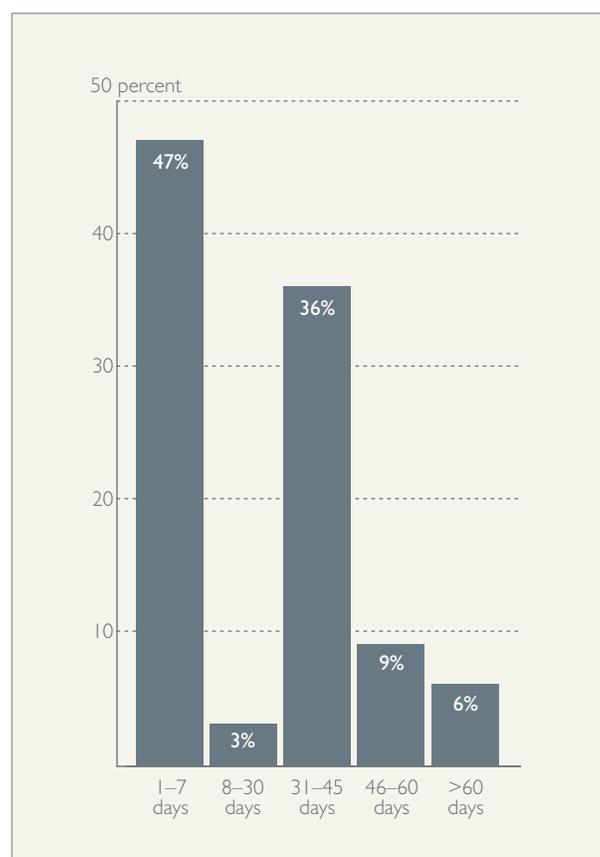
Of the 681 infants whose age at enrollment was recorded, the mean age at enrollment was 30.5 days. Most (47%) of the infants were enrolled within seven days of birth and the next most frequent enrollment period was from 31 to 45 days (Figure 1).

DNA PCR HIV Test

Of the 711 HIV exposed infants, 93% received a DNA PCR test. Of these, 71% received their first PCR test at 45 days/6 weeks of age. Ninety-six percent tested negative. Nine infants (1.4%) tested positive. The result for eight infants was recorded as pending and 11 infants' results had not been recorded or retrieved.

Twenty-four of the 682 children who had been on active follow-up had not been tested. Records for 12 of the infants cited unavailability of health personnel to take the sample, missed appointment, lost to follow-up, negligence of health worker, refusal by the mother, and transfer out as reasons why the test had not been given. The reason was not documented for the other half of the infants.

Figure 1. Age of infants at the time of enrollment into HEI care



Age at Initiation of ART

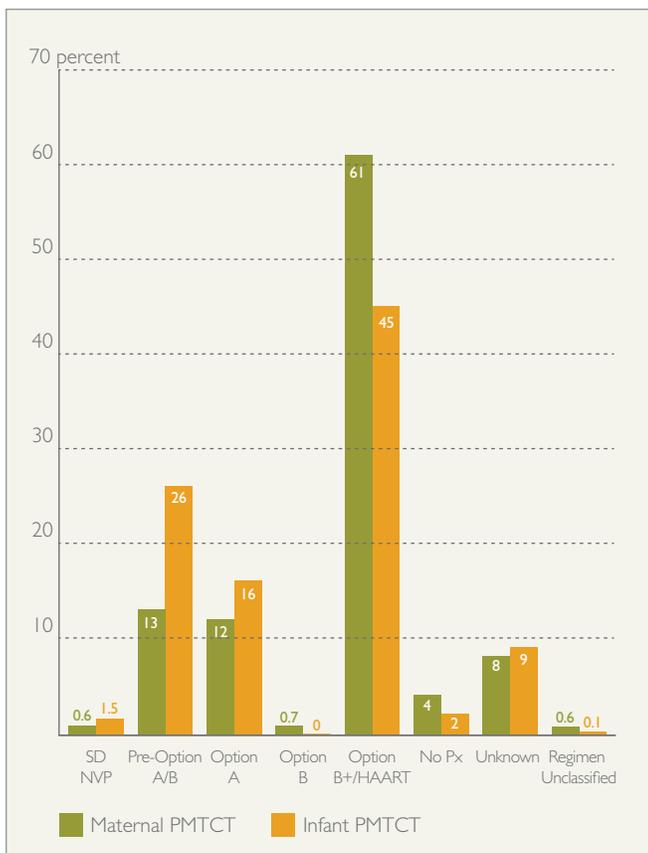
Each of the nine children identified as HIV infected was six weeks old. Six had been started on ART at a health center. Three had been referred to a hospital. One baby had initiated ART when he was two months old but subsequently died. Two babies were started on ART when they were three months old. The remaining three infants were started on ART, one each in the fourth, fifth, and sixth months of their lives.

Maternal PMTCT Intervention

The mothers of 624 (88%) of the 711 HEIs had received PMTCT services. Most of these mothers (58%) were on ART before and/or during pregnancy prior to the introduction of Option B+.³ The second most common regimen (13%) was maternal AZT from 28 weeks of pregnancy.⁴ In addition, 12% of mothers were on Option A and another 4% on Option B+.⁵ Four mothers took unclassified/incomplete regimens. Four percent of mothers did not take any prophylaxis. PMTCT status was not documented for 8% of mothers (Figure 2).

3. ART regardless of CD4 or WHO Staging for Life.
4. AZT from 28 weeks followed by AZT+3TC+sdNVP in labor and then AZT+3TC for one week post-partum.
5. Zidovudine during pregnancy/infant NVP during breastfeeding for women without advanced HIV disease; lifelong three-drug ART for women with advanced disease.

Figure 2. Comparison of maternal and infant PMTCT prophylaxis (n=711)



Infant PMTCT Regimen

Of the 711 infants, 89% had received PMTCT services. The most common infant PMTCT prophylaxis regimen provided was daily nevirapine or AZT from birth through six weeks of age, which was given to 45% of the infants. The second most common regimen was provision of sdNVP + AZT for one week, which was given to 24% of infants and the third was daily nevirapine until one week after cessation of breast feeding, which accounted for 14% of cases. Two percent of infants did not receive any form of prophylaxis. Data were not documented for 9% of infants. One infant took an unclassified regimen (Figure 2).

Cotrimoxazole Prophylaxis

Of the 711 HEIs assessed, 95% were receiving cotrimoxazole prophylaxis. Four infants were not provided with cotrimoxazole and the records for 29 infants did not specify this information. Most (86%) started cotrimoxazole between 45 and 60 days of birth.

Infant Feeding Status

Most (91%) of the HEIs were exclusively breastfed, as recommended by the WHO. Two percent received replacement feeding and 0.8% were fed both breast milk and formula milk in the first six months of their lives. The feeding status of 6% of infants was not recorded. Of the nine HIV-positive infants, seven were exclusively breastfed and two experienced mixed feeding.

Final Confirmatory Test for HIV-Positive Infants

Among the five PCR-positive babies managed at the health centers, two had a repeat test, which was also positive, and three had not yet received a second test.

Final Confirmatory Test for HIV-Negative Infants

Of the 630 infants whose first PCR test was negative, 211 received a second, confirmatory test. Of these, two infants who had been breast feeding tested positive and started on ART treatment and 209 were confirmed negative. Among the negative babies, 202 were discharged when they were 12 months of age or older. Two were discharged prematurely.

Growth Assessment

Seventy-three percent of the 711 HEIs had their weight for age curves recorded, 69% had their height for age curves recorded, and 67% had their head circumference curves recorded.

Developmental Assessment

The developmental assessments, using growth charts and other criteria, were normal for 59% of HEIs. Five children's records (1%) showed developmental failure. Results of a developmental assessment were not recorded for 40% of the infants.

Immunization Status

The overall appropriateness of immunization status for age was 76%. The break down for the age groups is indicated in Figure 3. Immunization status was not recorded for 6% of the infants.

Recommendations

HEIs born in ENHAT-CS-supported health centers had excellent follow-up care, including HIV testing. Their HIV infection rate was low at 1.4%. This was likely due at least in part to the increased resources that ENHAT-CS brought to these clinics. Identifying these HIV-exposed children and linking them to care was a particular focus of ENHAT-CS. While this analysis does not compare these results with results of mother-infant pairs attending non-EHHAT-CS clinics, it does suggest that ENHAT-CS interventions were beneficial in improving the care of these children. Further, while encouraging, this study did not consider outcomes of infants born to mothers who never accessed ANC and therefore were never able to benefit from PMTCT interventions, including facility-based delivery.

The fact that 82% of infants born at the health centers were enrolled in HEI care within the first 45 days of life and that 93% of them received a DNA PCR test within 60 days of birth (compared to 71% of all HEIs enrolled at program-supported health centers in fiscal year 2014) underscores the importance of facility-based delivery and the increased focus on HEI follow-up services.

By providing a comprehensive continuum of care between ANC and PMTCT services, facility-based delivery, and HEI care and support, health centers can effectively lower the rate of mother-to-child transmission of HIV among their clients and provide life-saving care and treatment to HIV-infected infants as soon as

possible. It is therefore critical that HIV-infected pregnant mothers are reached, identified, and retained in the system through ANC services. Increasing ANC coverage—a key component of the 2012 national accelerated plan for PMTCT and Ethiopia’s 2013-2015 strategic plan for the elimination of mother-to-child transmission of HIV—must therefore be coupled with strategies to sustain the high rates of HIV testing and counseling during ANC at health centers (currently 97% in ENHAT-CS supported health centers), follow-up, retention, and adherence. Case-managers, mother mentors, mother support groups, and community volunteers all play a role in these strategies.

Overall, the care HEIs received in health centers adhered to national guidelines, however some gaps were found. Many HEIs’ growth was not assessed properly; 27% of charts were missing weight-for-age assessments, 31% were missing height-for-age assessments, and 43% were missing head circumference-for-age assessments. Similarly, 40% of the infants did not have developmental assessments documented in their charts. The critical gaps in immunization must be addressed; 19% of infants were not up to date on their vaccinations and data were not recorded for 6% of the infants. Furthermore, of the 630 children whose first PCR test was negative, just 211 received a second, confirmatory test.

It is possible that many of these services were actually provided but that due to other factors, such as over-burden or demotivation, providers neglected to record the data. Nevertheless, while the key outcomes among HEIs born at health centers were excellent—high HIV testing within the first two months and low HIV-infection rate—these other infant care services warrant special attention so that the babies will grow well and receive all the services they need. ■

Figure 3. Immunization status of HEIs

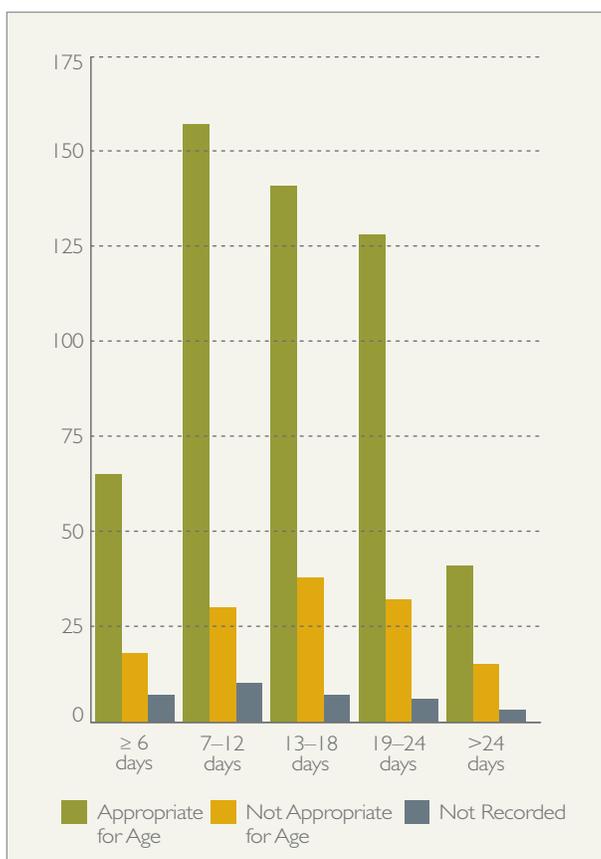




Photo by Genaye Eshetu

An Examination of Slowing Enrollment of New ART Patients Despite a Higher CD4 Threshold for Treatment

Background

When the World Health Organization (WHO) in 2010 raised the threshold for initiating HIV-infected patients on antiretroviral therapy (ART) from a CD4 count of <200 to <350 there was a surge in new enrollment of ART patients in Ethiopia as soon as the government adopted the guidelines.¹ After the adoption of the latest WHO guidelines in 2013, which raised the CD4 threshold even higher, to <500, another major increase in the number of patients on ART was expected to follow but this did not happen.

1. CD4 cells, or T-cells, are white blood cells that help protect the body against infection. HIV attacks and destroys these cells, and uses the cell machinery to multiply and spread throughout the body. The lower the CD4 count the greater the risk of developing symptoms of HIV infection or HIV-related illnesses.

Objective

This review assesses the trend of ART enrollment in ENHAT-CS-supported facilities over time and examines why enrollment of new ART patients has slowed down despite a higher CD4 threshold for treatment.

Methodology

ENHAT-CS analyzed secondary data from the facility-based program reports and cross sectional surveys of selected facilities between October 1, 2011 and September 30, 2014.

Findings and Discussion

After adopting the 2013 WHO guidelines on ART and new CD4 threshold, Ethiopia's Federal Ministry of Health (FMOH) assumed that the number of patients on ART would increase by around 25%, based on the experience following WHO's



Figure 1. HIV-infected patients, by quarter, identified through HIV counseling and testing (HCT) at health centers, 2011–2014 (Project years run October through September)

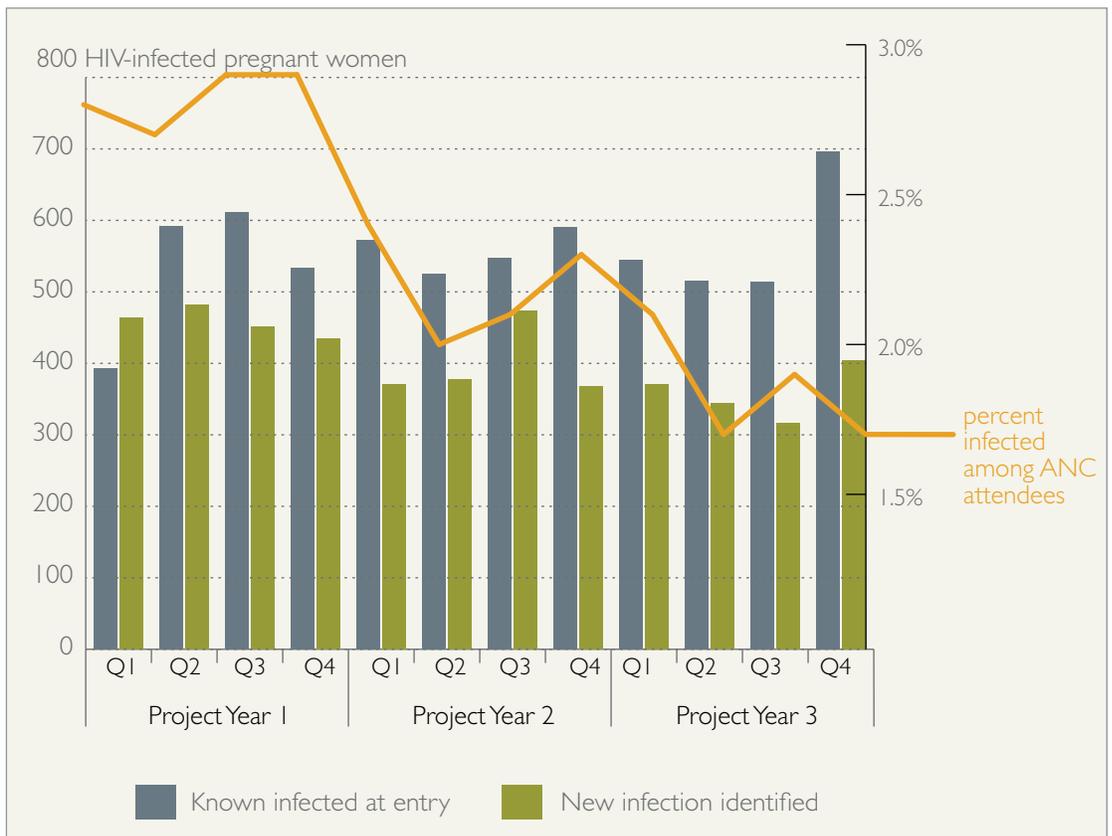


Figure 2. Trends in HIV-infected pregnant women

New enrollments on ART have shown a continuous improvement with a significant jump in the first quarter of 2013 after implementation of the 2010 WHO ART guidelines. However, most HIV-infected clients enter care late in their disease when they have lower CD4 counts. One reason may be that HIV-infected people might not know they have HIV and therefore do not seek health care until they begin to feel ill.

previous recommendations in 2010. However, a review of the experience of ENHAT-CS with voluntary counseling and testing for HIV shows an interesting trend.

The number of HIV-infected individuals identified has decreased each quarter over the life of the project, and the overall facility HIV-infection rate has decreased 50%, from 1.6 to 0.8% over the same period (Figure 1). In other words, ENHAT-CS has identified fewer new HIV-infected individuals as the overall population HIV prevalence continues to drop. This trend is expected to continue and will result in fewer new patients entering ART. Furthermore, ENHAT-CS analyzed the distribution of CD4 counts on initial evaluation of HIV-infected patients in 23 health centers and found that 90% of those newly diagnosed had CD4 counts < 500, so increasing the eligibility criteria will not dramatically increase the number of new patients entering treatment.

Figure 2 shows a decreasing number of newly identified HIV-infected pregnant women during the program period and a steadily increasing number of known infected at entry. This means that most of the clients receiving prevention of mother-to-child transmission (PMTCT) of HIV services have previously been diagnosed.

A related ENHAT-CS study regarding pregnancy in HIV-infected women showed that 56% wanted the pregnancy. Overall, the percentage of HIV-infected women followed in antenatal care clinics declined from 2.8% in 2011 to 1.7% in 2014 while the number of people receiving ART increased during the same period (Figure 3). This shows the effect of revisions of the national guideline to initiate HIV-infected persons at higher CD4 counts on ART.

New enrollments on ART have shown a continuous improvement with a significant jump in the first quarter of 2013 after implementation of the 2010 WHO ART guidelines (Figure 4). A similar trend was expected when the eligibility guideline was increased further in 2013. However, most HIV-infected clients enter care late in their disease when they have lower CD4 counts. One reason may be that HIV-infected people might not know they have HIV and therefore do not seek health care until they begin to feel ill. In recent years, the incidence of new HIV infections has also been on the decline, possibly because of safer

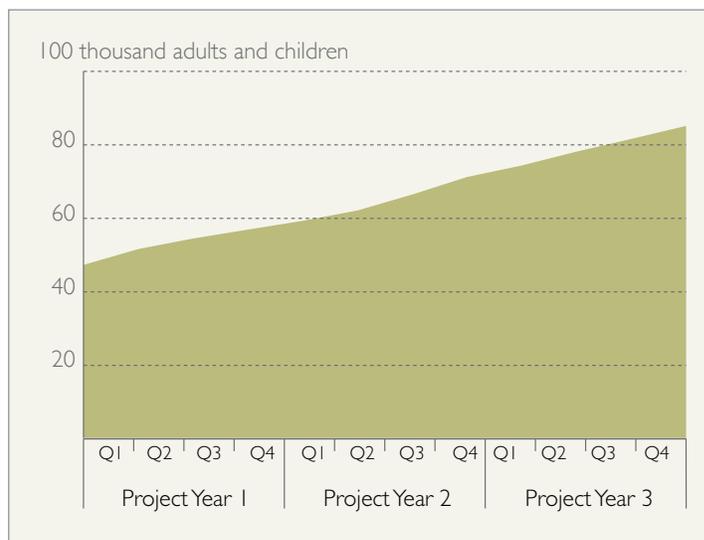


Figure 3. Number of adults and children with HIV infection receiving ART

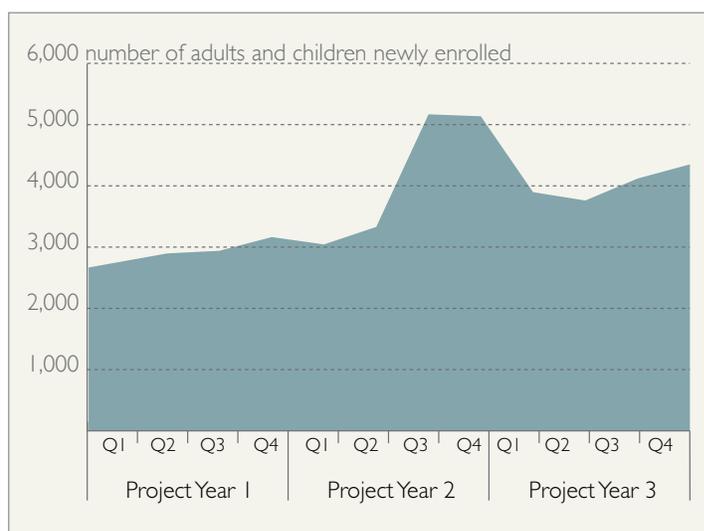


Figure 4. Number of adults and children with advanced HIV infection newly enrolled on ART

The number of newly HIV-infected patients is falling due to declining HIV incidence in the population, and the majority of eligible HIV-infected patients are already on treatment.

sexual practices due to education and because ART is successfully reducing the likelihood of transmission. As a result, the number of new patients enrolled in treatment is slowing down.

During focus group discussions conducted at six selected health centers, all participants agreed that new HIV cases have declined. ENHAT-CS confirmed this qualitative assessment by a document review of the pre-ART register in each facility. The documents showed that there were few eligible pre-ART patients waiting to be enrolled on ART, except in a very few cases where the patients had decided not to enroll in ART even though they would be eligible.

Conclusion

Implementation of the WHO 2010 and 2013 ART guidelines that increased eligibility for ART in line with a CD4 count of <350 and <500 respectively has led to a steady expansion in enrollment of new patients. However, the number of newly HIV-infected patients is falling due to declining HIV incidence in the population, and the majority of eligible HIV-infected patients are already on treatment. Unlike the past several years, only very few patients are on pre-ART care with CD4 above 500. ■

Photo by Genaye Eshetu





Photo by Genaye Eshetu

Improving HIV/AIDS Treatment, Care, and Support Referral Services in Amhara and Tigray

Background

Comprehensive treatment, care, and support services are critical for the general well-being of HIV-infected people, their families, and communities. However, a study conducted in 2008 by Ethiopia's HIV/AIDS Prevention and Control Office (HAPCO) on HIV/AIDS service linkage revealed that 39% of people who tested infected for HIV were not enrolled in chronic care services.¹ To increase service reach, the Federal Ministry of Health (FMOH) developed referral guidelines across the public and private sector, within different levels of the health care system, and among grassroots communities for people living with HIV (PLHIV).

ENHAT-CS worked to strengthen the continuum of care provided for HIV-infected patients seen at public health centers

1. FHAPCO. *HIV Services Linkage in Ethiopia (Analysis of Factors Contributing to Weak Linkage HCT to Chronic Care Service at Facility Level, June, 2008)*

(HCs) in the Amhara and Tigray regions of Ethiopia. The program established a bidirectional, closed-loop referral system connecting clients with different medical and social needs to a wide range of community and hospital services. This study analyzes the effectiveness of the referral process at ENHAT-CS-supported public HCs, examining common reasons for referral and associated challenges.

To link PLHIV and their families to comprehensive treatment, care, and support services, ENHAT-CS focused on:

- Developing a bidirectional, closed-loop referral system. Bidirectional refers to a system where HIV-infected clients and their families with different clinical, psychosocial, and economic needs are referred and/or linked from community services to health facilities and vice versa. The system also encompasses the referrals and/or linkages between hospitals and HCs and referrals within a given facility for various clinical

and nonclinical services. Closed loop in this context refers to a system where different treatment, care, and support providers exchange confidential and updated information about each client to avoid loss to follow-up (LTFU).

- Strengthening the capacity of *woreda*, or district, health offices to manage and coordinate their *woreda* network of HCs, health posts, and community health services.
- Harmonizing documents to properly process and document completed referrals.
- Strengthening monthly *woreda* health network meetings involving all actors, including *woreda* health offices, local nongovernmental organizations (NGOs), civil society organizations (CSOs), faith-based organizations (FBOs), and PLHIV associations.
- Supporting regular multidisciplinary team (MDT) meetings in which all clinical and nonclinical staff in a facility (clinicians, pharmacists, case managers, data clerks, mother support group [MSG] leaders, and lab technologists), participate and make management decisions regarding services and referrals.
- Active involvement of various community health cadres, including community referral network mobilizers (CRNMs), case managers, MSGs, Health Development Armies (HDAs) volunteers, and health extension workers (HEWs).

Methods

ENHAT-CS reviewed existing documents, such as annual reports, operations research studies, and performance monitoring plans, and used focus group discussions (FGDs) to document various perspectives and experiences. These included those of HC leaders, antiretroviral therapy (ART) clinic service providers, prevention of mother-to-child transmission (PMTCT) of HIV service providers, ART pharmacists, case managers, data clerks, and MSGs at a convenience sample of six ENHAT-CS-supported HCs in the Amhara and Tigray regions. The program also reviewed existing documents and performance reviews compiled during the HIV Care and Support Program (HCSP).

HCSP supported 550 HCs in Addis Ababa; Amhara; Oromia; the Southern National, Nationalities, and People's Region; and Tigray between 2007 and 2011, and ENHAT-CS supported 206 HCs in Amhara and Tigray. A major effort focused on strengthening inter-facility and intra-facility referrals from 2011 to 2014. The ENHAT-CS team took this variation into consideration in our analysis.

Results

REFERRALS

The foundation of HCSP's continuum of care was linking HIV patients at supported HCs with community care and support cadres through HC-based case managers. Case managers were themselves PLHIV who received training on the skills needed to support their assigned patients to follow a personal care plan.

Table 1. Referrals made at HCSP-supported facilities

Period	June 2007- June 2010	2011 half year
Community to HC	170,000	95,391
HC to Community	4,178	2,900
Inter-facility	59,734	26,848
Total	230,425	123,457

HCSP trained and deployed volunteers, called *kebele*-oriented outreach workers (KOOOWs), to conduct community outreach, including mapping and linking PLHIVs and their families to community resources and services appropriate to their needs.²

The KOOOWs, along with other community workers functioning under the *woreda* health office/HAPCO coordination, formed the *woreda* team for implementation of the continuum care. HDAs eventually replaced the KOOOWs, incorporating most of them. The number of referrals from the community to the HCs increased after HCSP started supporting this network in 2007. While the total number of community to HC referrals made in three years (between June 2007 and June 2010) was 170,000, more than 95,000 referrals were made in the first half of 2011. The trends were the same for referrals made from HC to community and inter-facility referrals (Table 1).

As depicted in Figure 1, the number of documented referrals of all types rose from 2012 to 2013, then declined from 2013 to 2014. This was the pattern for HC to community, community to HC, and intra-facility referrals. The FGD informants and

2. *Kebele* is Amharic for neighborhood or community.

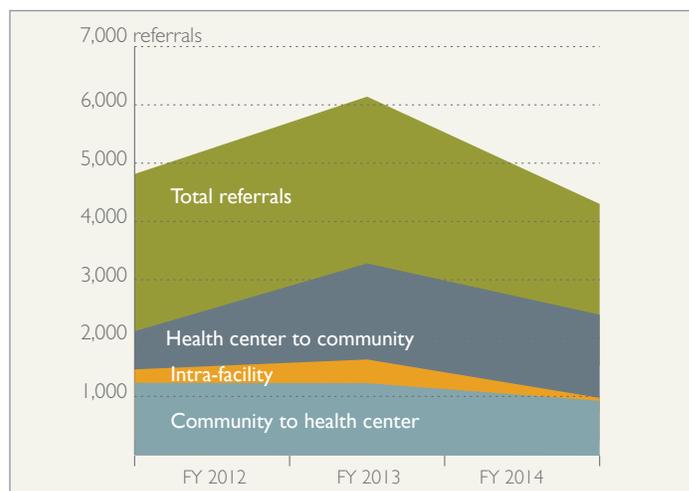


Figure 1. Number of referrals made at ENHAT-CS-supported facilities 2012–2014

documents reviewed indicated that food support was the major reason for HC to community referrals. Project closures prevented community organizations from being able to continue this support in 2014. In addition, the ENHAT-CS project ended two years early, in December 2014. All of the subgrants to the CSOs that provided the community “safety net” for care and support were terminated in June 2014. These factors most certainly impacted the referral system for 2014.

LINKAGE, ADHERENCE, AND RETENTION

The percentage of newly identified HIV-infected pregnant women at antenatal care (ANC) who were linked to treatment, care, and support services significantly increased, from 66% in 2011 to 90% in 2014 (Figure 2). This percentage is much higher than national levels, which showed only 46% of HIV-infected pregnant women were linked to treatment services. This increase during ENHAT-CS implementation shows the effective outcomes of the program’s referral components.

Nationally, 70.3% of individuals who ever started ART remained on treatment, indicating challenges in patient retention.³ The 12-month retention rate at program-supported HCs remained above 80% during the project, showing good retention and reduced need for referral (Figure 3).

The percentage of adults and children known to be alive and on treatment 12 months after initiation of ART increased during the project periods at HCSP- and ENHAT-CS-supported facilities, from 78% in 2010 to 89% in 2014 (Figure 4). The result suggests that HCs can manage patients effectively and do not need to refer them elsewhere.

The proportion of patients who were LTFU at ENHAT-CS-supported HCs dropped from 9% in 2011 to 7.4% in 2014 (Figure 5). FGD participants said ENHAT-CS-deployed data

3. FHAPCO. 2005 EFY Multisectoral HIV/AIDS Response Annual Report. July 2012 to June 2013. September 2013. Ethiopia.

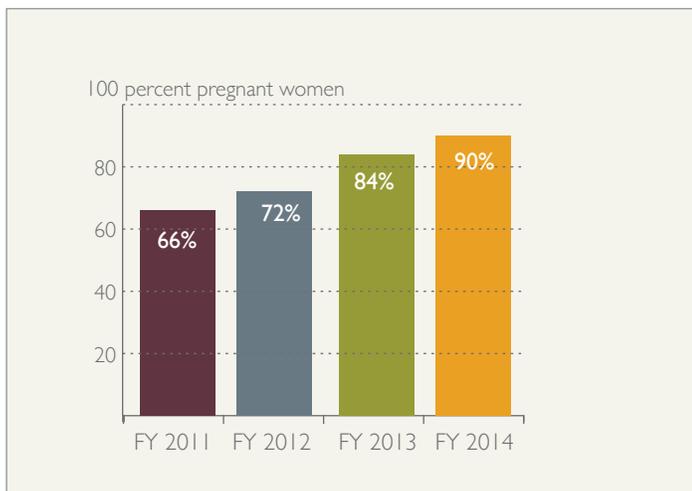


Figure 2. Percentage of newly identified HIV-infected pregnant women linked to care and support at HCSP- and ENHAT-CS-supported health facilities 2011–2014

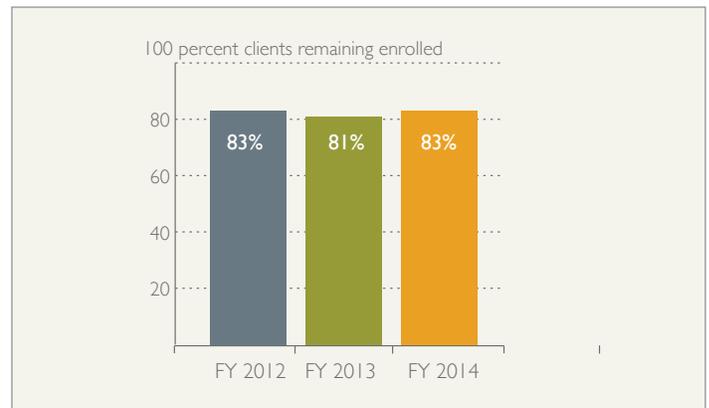


Figure 3. Percentage of clients who remained in care or treatment one year after enrolment at ENHAT-CS-supported health centers 2012–2014

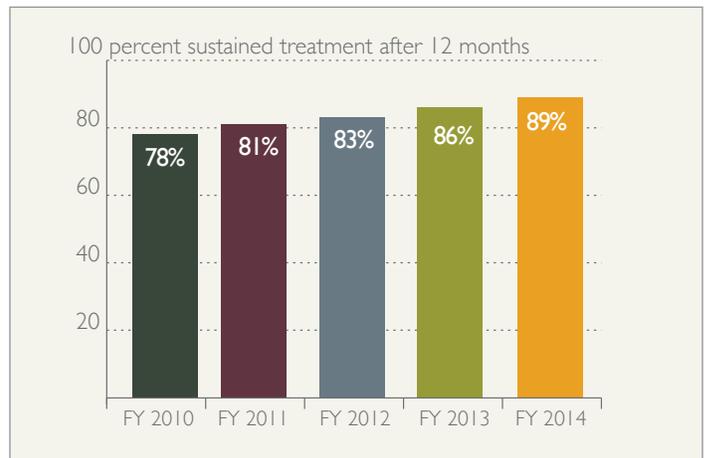


Figure 4. Percentage of adults and children known to be alive and on treatment 12 months after initiation of ART at ENHAT-CS-supported health centers 2010–2014

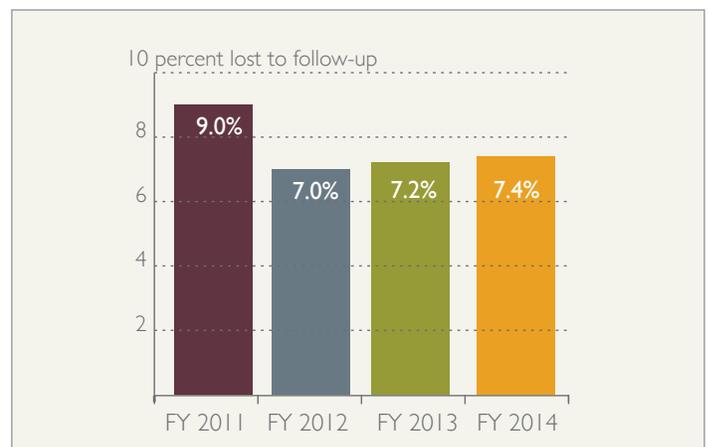


Figure 5. The trend of LTFU at ENHAT-CS-supported health centers 2011–2014

clerks played a significant role in keeping proper patient information as part of the referral process. When patients on ART did not show up during the scheduled refill time, ENHAT-CS data clerks alerted the case managers to track the status of the patients. If the case managers could not reach them they contacted the MSG, HEW, or CHAs as appropriate to contact the defaulting patient to communicate the need to continue ART. The data clerks also sent the list of LTFU patients to ART providers and case managers to take action.

REASONS FOR REFERRALS

Based on the information obtained from qualitative informants and documents reviewed at visited health centers, the main reasons for referrals included:

- HIV testing including pre- and posttest counseling
- Outpatient or inpatient treatment of opportunistic infections, preventive therapies for opportunistic infections, including tuberculosis and sexually transmitted infections (STIs)
- Antiretroviral therapy
- Referral to health facilities for family planning counseling, facility delivery, and adherence support
- Psychosocial services, including emotional and spiritual support from support groups and PLHIV associations;
- Socioeconomic support from CSOs and FBOs that offer shelter, food, financial support, income-generating activities clothing, and school fees for the HIV infected and affected. Community volunteers have also been involved in promoting social inclusion of PLHIVs by linking them to various community support groups, including PLHIV associations.

Qualitative study participants cited a number of factors for strengthening the referral and linkage network. These included: regular *woreda* health network meetings involving all actors, including *woreda* health offices, local NGOs, CSOs, FBOs, and PLHIV associations; regular MDT meetings involving all facility clinical and nonclinical staff, including clinicians, pharmacists, case managers, data clerks, MSGs, and lab technologists; active involvement of various health cadres, including CRNMs, case managers, MSGs, HDAs, and HEWs; harmonization of working referral documents; and updating service provider directories.

Qualitative study participants attributed the observed effectiveness, efficiency, and sustainability of the referral system to good partnerships between the government, private sector, CSOs, FBOs, PLHIV associations, *Idirs* (a traditional social support institution), and other NGOs, with each entity playing an important and unique role based on its core competencies to respond to multiple needs of PLHIV and their families (see the technical brief on the role of CSOs).

Challenges

Some of the reported barriers are simple to address and require only local response. For example, the *woredas* can work closely with religious leaders to convince those clients who prefer to use holy water to use both holy water and ART. The program's experience shows this is a very effective approach that can be replicated nationwide. Similarly, local resources can frequently be used to meet the nutritional needs of PLHIV.

However, some of the reported barriers and challenges that can negatively impact the referral process are more complex and require further investigation and proper response. These include a lack of adequate economic and food support, long distance from health facilities, transport cost, feeling healthy and better, misconception about antiretroviral drugs, and lack of feedback from a receiving partner on the outcome of a referral.

Recommendations

- The percentage of HIV-infected patients enrolled in care at ENHAT-CS-supported health centers on ART at 12 months is high at 89%, and this has been consistent over the course of the project. This success is linked to the program's consistently low LTFU rate of 7.4%. These outcomes reflect the program's success in managing proper referrals.
- Generally, the number of referrals made during the HCSP implementation period was much higher compared to the referrals made during ENHAT-CS implementation period. As suggested by qualitative work, this may reflect the existing shortage of resources for food support. However, it could also reflect the paradigm shift from dependency to self-support as the number of HIV-infected people who are leading healthier and more productive lives is increasing as a result of the overall HIV/AIDS control and prevention effort, including increased access to ART. Nevertheless, some of the reported local initiatives should be strengthened to benefit needy PLHIVs and their families. These include involving PLHIVs in safety net programs and in small business and credit schemes, and mobilizing private restaurant owners and others for improving food support.
- All visited ENHAT-CS-supported HCs have systems for recording HIV/AIDS care and support and reasons for inter-facility and intra-facility referrals. However, lack of feedback from referral receiving organizations was a major gap the FGDs identified during the program's qualitative assessment. This barrier needs to be better addressed.
- Government ownership is critical for ensuring sustainability. This greatly depends on promoting the factors that contributed to strengthening the referral system: *woreda* health network meetings, MDT meetings, active involvement of various health cadres, and maintaining good partnerships among all stakeholders. ■



Photo by Warren Zelman

The Role of Civil Society Organizations in Improved Coverage and Reduction of Loss to Follow-Up

Background

Two decades after the first HIV case was identified in Ethiopia in 1984, the prevalence of the disease continued to increase. Often, those who knew their status were isolated from families and communities and did not seek treatment because of fear, stigma, and discrimination. Many people lost their lives and many more were bedridden. Understaffed and overstretched hospitals were generally ill-equipped to deal with the AIDS epidemic. Malaria care, well-child clinics, and other routine services were difficult to provide given the overwhelming need for AIDS care.

In 2006, a small number of health centers (HCs) in each of Ethiopia's nine regions pioneered the integration of comprehensive HIV/AIDS services, including the provision of antiretroviral therapy (ART) by nonphysicians, proving that these complex services could be decentralized. The big push for

making comprehensive HIV/AIDS services available at HCs came in 2007 when the Government of Ethiopia received support from the HIV/AIDS Care and Support Program (HCSP).

HCSP became Ethiopia's main partner in making comprehensive HIV/AIDS services available at public HCs in Addis Ababa and Amhara; Oromia; the Southern Nations, Nationalities, People's Region (SNNPR), and Tigray. Covering less than 50% of Ethiopia's land, Addis Ababa and the four regions are home to more than 80% of Ethiopia's population and more than 90% of its estimated 1.2 million people living with HIV (PLHIV). At the start of HCSP, only 115 HCs in these regions provided ART services. None of them offered the full continuum of care mandated by national policy, which links health services to referral hospitals and community-based follow-up care and support services.

Family-Focused Approach

The HCSP program was based on a family-focused approach. Figure 1 depicts the multisectoral flow and relationships involved in providing comprehensive services between families and households, the community, HCs, and hospitals, supported by nongovernmental organizations (NGOs) and the public and private sectors. The main components involved in treatment, care, and support appear in the concentric circles, starting from the family. The health extension workers (HEWs), based at community health posts, are the key component at the community level. They provide primary health care services and serve as the link between the community and the formal health system for all community-based health services.

The HEWs worked with a coordinated group of volunteers, including community leaders and women leaders from model households, all of whom helped assure that HIV-affected families received the wide range of services available from a network of civil society organizations (CSOs), community-based organizations, faith-based organizations (FBOs), and NGOs. Families infected and affected by HIV were identified via these organizations as well as *kebeles* (neighborhoods); village and subcities leaders; village health teams; women leaders; and other religious, business, traditional, and elected leaders in urban settings. HCSP supported this “safety net” to mobilize community resources to assist families with services covered

under basic palliative care and comprehensive community-based HIV and tuberculosis services, especially adherence to treatment regimens and helping patients deal with side effects.

When HCSP ended in 2011 it was followed by ENHAT-CS but only covering the regions of Tigray and Amhara. In order to ensure continued effectiveness of the community safety net supported by HCSP, ENHAT-CS incorporated a number of local organizations into the program as sustainability and collaborating partners (Table 1). This study aims to relate the contribution of CSOs to the outcomes of the programs.

Methodology

ENHAT-CS conducted a descriptive trend analysis using annual data on prevention, volunteer counseling and testing (VCT), prevention of mother-to-child transmission (PMTCT) of HIV, care and support, and loss to follow-up (LTFU) of cases from HCSP- and ENHAT-CS-supported HCs between October 2006 and September 2014. The program also assessed regional and national annual reports, project publications, and results of operational research. ENHAT-CS gathered qualitative information from the regional health offices of Tigray and Amhara during interviews conducted in January 2015. In addition, focus group discussions were conducted at six HCs in the two regions, including the HC leaders; ART PMTCT, and antenatal care (ANC) nurses, case managers, data clerks, and leaders of mother support groups (MSGs).

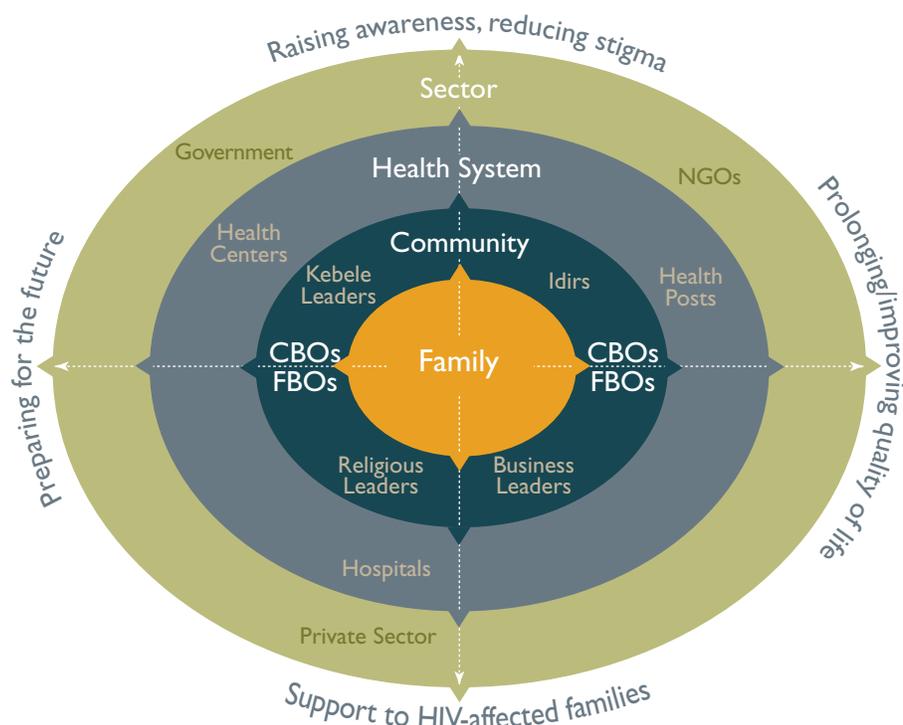


Figure 1. The Family-Focused Approach

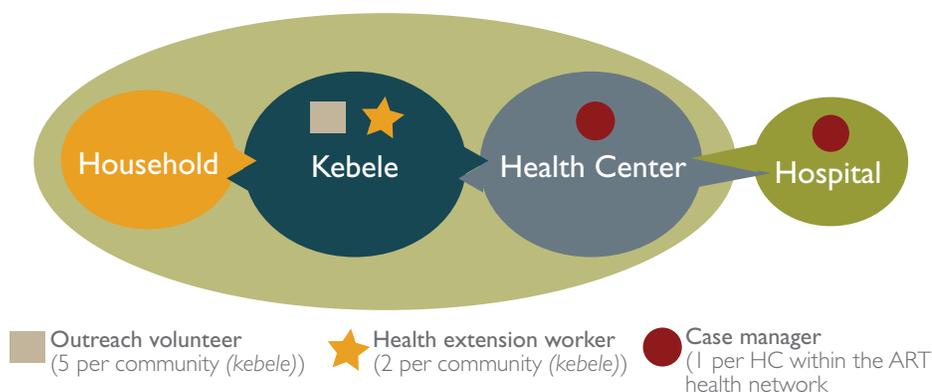


Figure 2. The continuum of care in the district, or *woreda*, primary health network

Results

PREVENTION, VCT, AND PROVIDER-INITIATED TESTING AND COUNSELING (PITC)

As part of the overall HIV/AIDS treatment, care, and support package, reaching and testing as many people as possible through health workers was a challenge given the stigma attached to testing. HCSP and ENHAT-CS developed a different strategy, organizing volunteers, called *kebele*-oriented outreach workers (KOOWS), and members of civil society in order to reach as many community members as possible and encourage people to participate in PMTCT/VCT and/or PITC programs. The continuum of care outlined in Figure 2 shows the interactions within the network.

Community meetings, outreach by religious leaders, and distribution of educational materials on HIV/AIDS resulted in referral of thousands of individuals from different localities to testing centers. The joint efforts of the CSOs and health personnel more than doubled the number of people tested for HIV and who received their results. Although the number of health facilities providing VCT services increased by 50%, from

1,336 in 2007-08 to over 2,000 in 2010, the number of people who were tested for HIV more than doubled, from 4,559,954 in 2007-08 to 9,445,618 in 2010. The average number of people tested per HC also increased, from 2,347 in 2007-08 to 6,286 in 2009-10. This dramatic increase in the number of people tested for HIV was mainly due to the community mobilization efforts, usually led by volunteers and CSOs, encouraging families and contacts to be tested. The distribution of job aids and educational materials on VCT and PITC by the 6,969 KOOWS also contributed to the results. The role of religious leaders was vital; HCSP and ENHAT-CS trained and supported them to focus on key messages designed to reduce stigma and discrimination and encourage acceptance of VCT.

Because of poor turnout for mass VCT, the government changed its strategy to testing high-risk groups from early 2011. Those most at risk and pregnant women received more attention from the ENHAT-CS network of CSOs. The CSOs all received subgrants from Management Sciences for Health to provide care and support; their roles are described in more detail in Table 1 on the next page.

Community meetings, outreach by religious leaders, and distribution of educational materials on HIV/AIDS resulted in referral of thousands of individuals from different localities to testing centers. The joint efforts of the CSOs and health personnel more than doubled the number of people tested for HIV and who received their results.

Table I. Role of international organizations and CSOs

Partners	Key Areas of Expertise	Core responsibility
Core Partners		
Management Sciences for Health (MSH)	Lead on overall project management; integration of HIV with other health services; health systems strengthening vertically along the continuum of care; and capacity-building at the regional, <i>woreda</i> , and <i>kebele</i> levels	Coordination
Save the Children US	Lead on community-level work, encompassing strengthening <i>woredas'</i> community health network, NGO capacity-building, orphans and vulnerable children, gender-based violence (GBV), MSGs; linkages for water, sanitation and hygiene; economic livelihoods	Coordinating community-level activities
International Training and Education Center for Health (I-TECH)	Hospitals, laboratories, and mental health services; linkages with Gonder and Mekelle universities for training, operations research, and knowledge dissemination	Coordinating and training
Sustainability Partners		
Impact Association for Social Services & Development (IMPACT)	Lead NGO for ongoing, sustainable capacity-building of the Ethiopian Government's <i>woreda</i> and <i>kebele</i> health network, building capacity of local CSOs and FBOs for service provision through training and mentoring	Field support and supervision
Ethiopian Public Health Association (EPHA)	Lead NGO for ongoing, sustainable capacity-building to develop planning, management, and monitoring and evaluation (M&E) capacities for health and HIV plans, and to provide ongoing capacity-building for planning and managing health networks. Support for university development of planning and management skills	Coordination of research and evaluation activities
HST Consulting	Support for hiring, management, and administrative oversight for data clerks and case managers at health facilities	Administrative support to case managers and data clerks
Ethiopian Interfaith Forum for Development Dialogue and Action (EIFFDA)	Work with faith leaders to assist with individual and community-level mass education, including reduction of stigma and discrimination, awareness-raising about GBV, gender mainstreaming, and health promotion	Household and local-level support to infected and affected families
Dawn of Hope	Mobilization of PLHIV; education and consciousness-raising; production and dissemination of <i>Libona</i> , a monthly newsletter for PLHIV read nation-wide	Support to PLHIV
National Network of Positive Women Ethiopians (NNPWE)	Community mobilization and advocacy for stigma reduction and ART adherence, integration of community services with the <i>kebele</i> health network through HEWs and women leaders; service delivery in homes and communities, MSGs linking PLHIV to income-generating activities and other services; promotion of services for women and children; mentoring for care and support linkages to communities and households	Community outreach and support, MSGs, testimonials for positive living
African Network for Care of Children Affected by HIV/AIDS (ANECCA)	Support for development and expansion of high-quality, comprehensive, integrated pediatric HIV/AIDS services (prevention, diagnosis, care, treatment, and support) at health facilities and linked to communities, in tandem with other community partners	Pediatric HIV

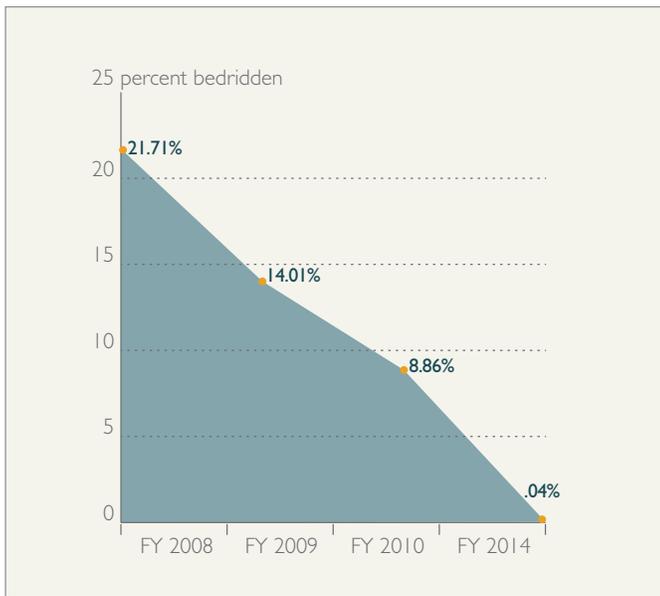


Figure 3. Gradual decline of the proportion of bedridden HIV patients

CARE AND SUPPORT

To maximize coverage, HCSP partnered with several local organizations and associations of PLHIV and supported their community outreach volunteers.

The program supported six national and regional NGOs to deploy 858 outreach workers, typically in *kebeles* without KOOWs. Like KOOWs, these NGO outreach workers conducted house-to-house visits of about 20 households each, and their key responsibilities mirrored those of the KOOWs.

In addition to home visits, the range of services provided by the NGO volunteers included testimonials, youth peer-to-peer outreach, community outreach and mobilization through coffee ceremonies, and income-generating activities.

In 2008-10, many HIV-infected individuals were bedridden and unable to seek medical care. With the support of volunteers and local organizations, called *Idirs*, many of them were brought to facilities. With the introduction of ART, many of those previously bedridden recovered enough to lead their daily lives with mobility (Figure 3). The proportion of HIV-infected individuals who were bedridden dropped from 22% in 2008 to less than 0.4% in 2014. This decrease is a significant program accomplishment, largely made possible by the community safety net supported by the program.

Although KOOWs always referred clients to food support and income-generating activities, the program did not start recording these services separately until October 2010. Since then, 11,826 individuals were referred for food support and another 5,967 were referred or helped to engage in income-generating activities.

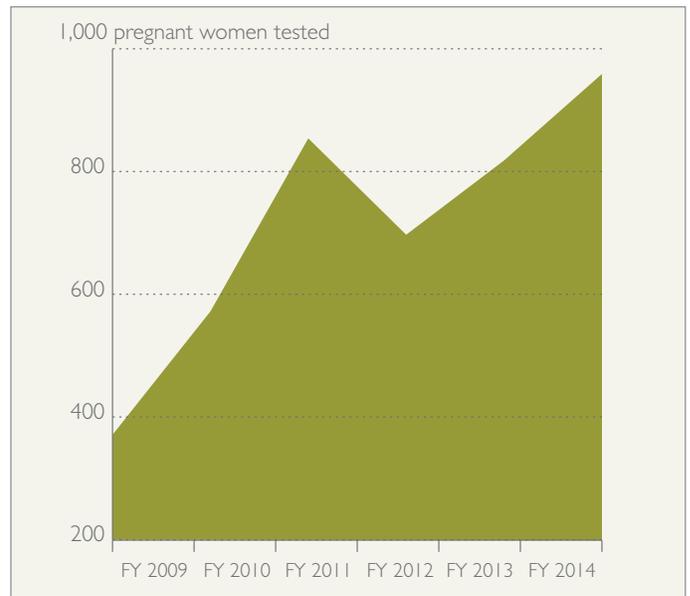


Figure 4. Average number of pregnant women per HC tested for HIV at program-supported HCs, 2009–2014

PMTCT

In early 2010, PMTCT had been integrated in all 550 HCSP-supported HCs. Based on a fertility rate of 5.4, Ethiopia's age and sex distribution, and an estimated population coverage of the 550 supported HCs of around 33 million people (those within 5 to 10 km of an HCSP-supported public HC), almost 1.5 million women in the HCSP catchment area would have been pregnant during 2010.¹² Of these women, 123,019 attended ANC services compared to 56,505 seen at the end of 2008. The number of pregnant women per HC who received ANC services increased from 371/HC to 959/HC, showing success of the community outreach efforts (Figure 4). The proportion among them who were counseled and offered testing for HIV went from 86% in 2008 to 97% in 2010, and those who accepted to be tested and received their result rose from 83 to 96%. By the end of 2010, 93% of all ANC clients took an HIV test and received the results, up from 71% in December 2008.

Most importantly, the percentage of pregnant women testing HIV infected dropped from 4.7% in 2008 to 1.2% by the first quarter of 2011. This was related to the selection of high-prevalence HCs early in the program and the expansion to more rural HCs with lower prevalence towards the latter part of the program.

1. Ethiopia Demographic Health Survey. 2005.

2. USAID Country Health Statistical Report. 2009.

Case Study: CSO Volunteers Prevent LTFU

Two HCs lost about half of their AIDS patients on ART because they believed holy water, which was located nearby, was the most effective treatment. Faith-based volunteers from EIFFDA contacted the HIV-infected patients who had not returned for treatment to educate them about the value of ART along with holy water. They managed to convince all those who had terminated their treatment to return to the HCs and continue ART without giving up holy water, essentially communicating to them that it was not a question of one choice or the other. In ways such as this the LTFU rate improved.

The unique strategy used by HCSP and ENHAT-CS in partnering with CSOs has significantly contributed to the reduction of LTFU and overall success of the two programs.

LTFU

One of the Ethiopian Government's biggest concerns in providing ART at the HC level was the possibility of resistance developing due to lack of adherence or LTFU. The few hospitals that started ART in 2005-06 showed a high LTFU rate. Bearing that in mind, HCSP designed the family-centered strategy so that HC case managers linked to the safety net of CSOs would play a major role in tracking patients LTFU and in improving treatment adherence. As a result, the program LTFU rates continue to be lower compared to the national figures (Figure 5).

Health facility personnel are too overwhelmed providing services to track defaulters. Without the support of CSOs, the ENHAT-CS LTFU rate would be higher. It was, however, higher at hospitals, possibly because they lack community linkages through CSOs.

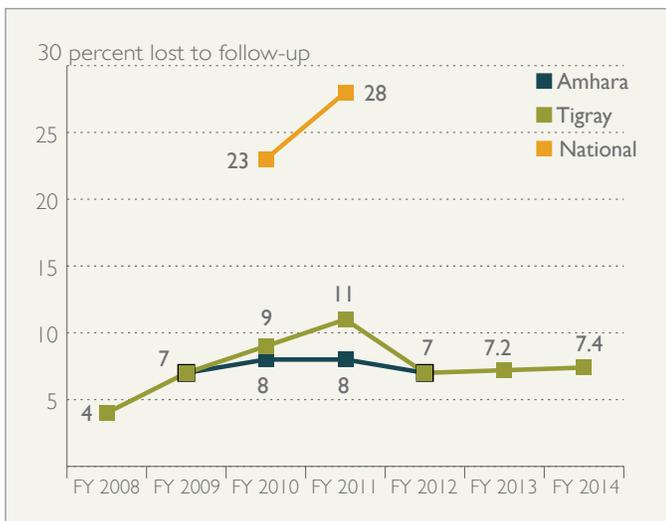


Figure 5. Annual LTFU rate at HCs

The unique strategy used by HCSP and ENHAT-CS in partnering with CSOs has significantly contributed to the reduction of LTFU and overall success of the two programs. Conversely, the programs strengthened the CSOs involved by providing technical assistance and financial support throughout the life of the project.

Recommendations

- Partnering with CSOs to create a safety net has proven very successful in reducing the LTFU rate and dramatically reducing the number of bedridden patients when case managers link patients directly to HC services.
- This model could be used in other programs, such as noncommunicable chronic disease management. To maintain the achievements of the two programs to date, CSOs will need continued technical and financial support.
- The established systems of networking between health facilities and CSOs must continue to ensure treatment and prevention success.
- CSOs must continue to conduct monthly conferences involving health personnel, MSGs, HEWs, and other volunteers.
- The health service systems must have a unit with a sole responsibility of supporting and guiding CSOs at the *woreda* level. ■



Photo by Warren Zelman

Ensuring Quality in Provision of Laboratory Services at Health Centers in Amhara and Tigray

Background

Successful implementation of a comprehensive HIV/AIDS treatment, care, and support program requires direct access to laboratory services or access through an effective referral system. ENHAT-CS scaled up the provision of comprehensive HIV/AIDS services in the Amhara and Tigray regions of Ethiopia from October 2011 through September 2014, and improving the quality of laboratory services at health centers (HCs) was a critical component of the program.

Methods

ENHAT-CS used a questionnaire and direct observation to conduct a baseline assessment to identify HC laboratory services and identify gaps in terms of quality, practices,

infrastructure, staffing, equipment, supplies, and reagents.¹ The assessment involved 204 HCs in the Amhara and Tigray regions in 2012. Based on the assessment findings and gaps identified during subsequent supportive supervisions, the program developed action plans to improve the quality of laboratory services in the two regions over the course of the project. This report documents the improvements noted as a result of these interventions.

ENHAT-CS compared the results of the baseline assessment with the program outcomes documented in annual activity reports and the performance monitoring plan. In addition, focus group discussions were conducted in six HCs in the two regions to collect qualitative data and feedback on program performance.

1. Reagents are products used in labs to use in blood or urine specimens that help show test results.

Results

IDENTIFYING CAPACITY GAPS

To obtain up-to-date information on laboratory service gaps at HCs, ENHAT-CS used a questionnaire and direct observation to conduct a baseline assessment of 204 HCs in the two regions. The identified gaps included lack of:

- Compliance to national laboratory standard operating procedures (SOPs)
- Guidelines and working documents
- An internal quality assurance system
- Functioning equipment
- Adequate stocks of reagent
- Trained lab professionals
- Reasonable turnaround time (TAT) for CD4 and dried blood spot (DBS) results
- Regular mentorship
- A consistent water and power supply

The program disseminated the results of the baseline assessment to relevant stakeholders and program staff to help them guide their future support, and developed individual action plans for each laboratory to improve services in line with national standards.

ENHAT-CS Approach and Achievements

Based on the gaps identified in the baseline assessment, the ENHAT-CS program implemented the following laboratory quality improvement plans.

STANDARDIZATION OF PROCEDURES

To ensure compliance with national procedure standards, ENHAT-CS customized and distributed 28 different SOPs for various lab test menus and safety practices. The program distributed the SOPs to all 276 ENHAT-CS-supported HCs and trained staff in their application. Mentorship and supportive supervision every quarter to each lab ensured support for training and implementation of further on-the-job improvements.

TRAINING

In collaboration with the Ethiopian Health and Nutrition Research Institute (EHNRI), regional laboratories, US Centers for Disease Control and Prevention (CDC)-Ethiopia, the Clinton Health Access Initiative (CHAI), and Help Ethiopia Achieve Low Tuberculosis Performance (HEAL-TB), ENHAT-CS provided four in-service trainings to 109 health care professionals to help improve service provision. Participants included selected HC laboratory professionals, ENHAT-CS mentors, and hospital and regional lab staff.

Table 1. Major in-service laboratory trainings provided by ENHAT-CS

Topic	# of trainees
PIMA CD4 regional roll-out training	58
Laboratory ART automachine training	23
HIV panel sample preparation techniques	24
LED-based fluorescence microscope and external quality assurance (EQA)	28

MENTORSHIP

ENHAT-CS lab mentors provided regular mentorship to laboratory professionals at least once each quarter, reaching all 276 (100%) program-supported HCs with the use of a structured checklist. It addressed the following areas:

- Laboratory work station and design revision
- Distribution of different lab logs and formats
- On-site orientation on record-keeping
- Preventive maintenance for common lab equipment
- Internal quality control for rapid HIV screening at each testing point using panel sera
- Onsite orientation on DBS sample collection
- Revision of CD4 sample transportation path flow system
- DBS sample collection
- Distribution of HIV kits to the new ART sites
- Technical support on CD4, hematology, and chemistry sample collection
- Introduction of essential quality assurance components
- Provision of technical support for laboratory supplies and logistics management

As they provided continuous technical support, ENHAT-CS lab mentors ensured that all 276 ENHAT-CS-supported HC laboratories complied with the SOPs for reliable, accurate, and quality testing; proper waste management; and preventive maintenance of lab equipment. They also ensured that there was proper documentation and data management, internal quality control, inventory and supply chain management, laboratory arrangement, and work flow at all facilities. In addition, the facilities were prepared for EQA participation.

LOGISTICS AND TECHNICAL SUPPORT

ENHAT-CS collaborated with Amhara and Tigray regional laboratories and the Pharmaceuticals Fund and Supply Agency (PFSA) to improve the continuous supply of lab reagents, including hematology and chemistry machine reagents, to all program-supported HCs. The program helped support facilities with trouble-shooting easy machine-related problems, preventive maintenance, and machine restoration (see Table 2).

Table 2. Material support provided by the program

All 276 HCs
23 various recording and monitoring log books and formats for use in internal quality control, equipment preventive maintenance, occurrence management, and TAT monitoring
Colored atlases on intestinal parasites, hemoparasites, and urine sediments (casts) which will assist laboratory personnel in their day-to-day activities
IQC log books for HIV, TB, and malaria
CD4 sample transport log books
25 surveillance sites in Amhara
Surveillance materials and supplies
24 EQA and potential “hub” testing sites
Desktop computer, printer with toners, office tables, swivel chair, and standard laboratory tables

STRENGTHENING QUALITY ASSURANCE

ENHAT-CS supported the decentralization of an EQA program to hospitals and selected HCs in Amhara and Tigray, and all ENHAT-CS-supported HCs in the region were linked to one of the EQA centers.

HIV EQA

In Amhara, the program carried out two rounds of HIV EQAs involving 299 health facilities, of which 230 were ENHAT-CS-supported HCs. The other facilities were hospitals and other nonsupported HCs. Each regional laboratory developed a panel of sample sera to be tested at each HC lab, and only the regional lab knew the results. The EQA team assessed 1,346 HIV panels. The overall discordance rate was 6.3% while the discordance rate for ENHAT-CS-supported HCs was 4.8% (Table 3).

Similarly, two rounds of HIV EQAs were conducted in Tigray involving 53 ENHAT-CS-supported health facilities. Overall, 83 (3.5%) panels were found discordant of 1,792 assessed. The regional labs have adopted <5% discordance as acceptable, and therefore the performance of the HC labs in the region meets national standards, reflecting the program’s continuous support of EQA.

TB EQA

In Tigray, the program conducted two EQA assessments for TB, encompassing 60 ENHAT-CS-supported HCs. Similarly, two rounds of TB EQA were carried out in Amhara with HEAL-TB on a quarterly basis involving an average of 231 health facilities, including program-supported HCs. (Figure 1 and Table 4, next page, show the results). Both the Amhara and Tigray regions meet national standards.

Table 3. Comparison of HIV EQA results at ENHAT-CS-supported and other facilities in Amhara

Facilities	# facilities	# panels tested	Discordance rate
ENHAT-CS HCs	230	934	45(4.8%)
Non-ENHAT-CS HCs	61	358	32(8.9%)
Hospitals	8	54	8(14.8%)

IMPROVED TURNAROUND TIME

Qualitative participants in all six HCs reported a significant improvement on TAT for DBS results during the ENHAT-CS implementation period. In Amhara, the 24-week baseline TAT was reduced to one week by the end of the project. In Tigray, the 10-week baseline TAT was reduced to four weeks. The focus group participants said the improvement in TAT of DBS results showed a spillover effect on uptake of prevention of mother-to-child transmission of HIV services, giving HIV-infected women greater hope to have uninfected children.

INCREASED CAPACITY FOR SAMPLE TRANSFER AND DIAGNOSTIC TESTS

The number of HCs capable of performing clinical laboratory tests and malaria parasite diagnosis—and did so in the past three months—increased during program implementation.

Similarly, the number of DBS/DNA-PCR tests performed or referred for diagnosis of HIV-exposed infants increased during program implementation (see Figures 2 and 3, next page).

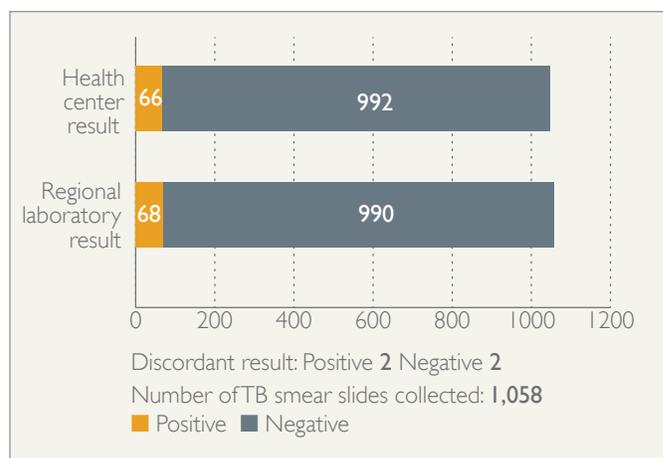


Figure 1. Concordance between HC and regional laboratory TB test results, EQA, Tigray, 2013

Table 4. Acid-fast bacilli microscopy EQA result for ENHAT-CS/HEAL-TB-supported zones, April 2012-June 2014

Indicator	April-June 2012	July-Sept 2012	Oct-Dec 2012	Jan-Mar 2013	April-June 2013	July-Sept 2013	Oct-Dec 2013	Jan-Mar 2014	April-June 2014	July-Sept 2014
Total number of health facilities participating in EQA random blinded rechecking	353	411	533	607	583	773	872	957	899	918
Total number of slides collected for EQA	13,354	16,184	21,682	27,450	23,507	30,673	37,114	41,332	36,954	38,041
Number of positive slides sampled	912	994	1,189	1,308	1,147	1,598	1,822	1,830	1,565	1,884
Number of negative slides sampled	12,442	15,190	20,493	26,142	22,318	29,099	35,297	39,493	35,389	36,157
Percentage agreement of positive slides	92.40%	91.05%	93.40%	93%	94.1%	96%	97%	95.2%	94.44%	92.50%
Percentage agreement of negative slides	99.47%	99.41%	99.66%	99.8%	98.30%	99.5%	99.80%	99.7%	99.72%	99.80%
Percentage of health facilities with > 95% concordant result	90.3%	94.2%	95.4%	97%	97.3%	95%	97%	97%	96%	96.60%

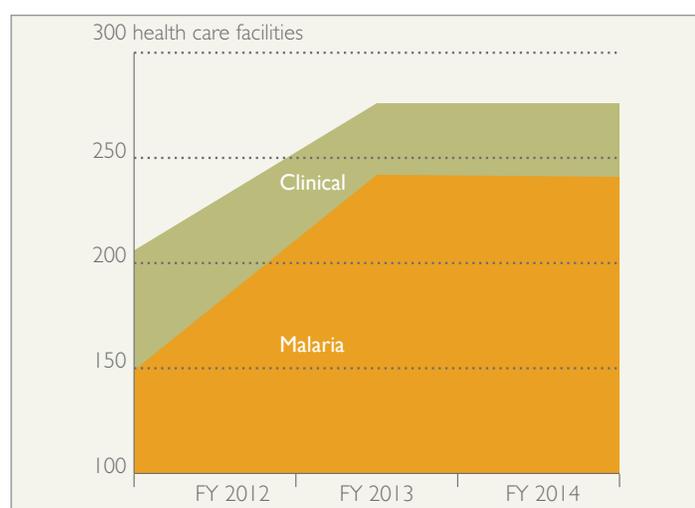


Figure 2. Number of HCs with the capacity to provide clinical laboratory and malaria tests

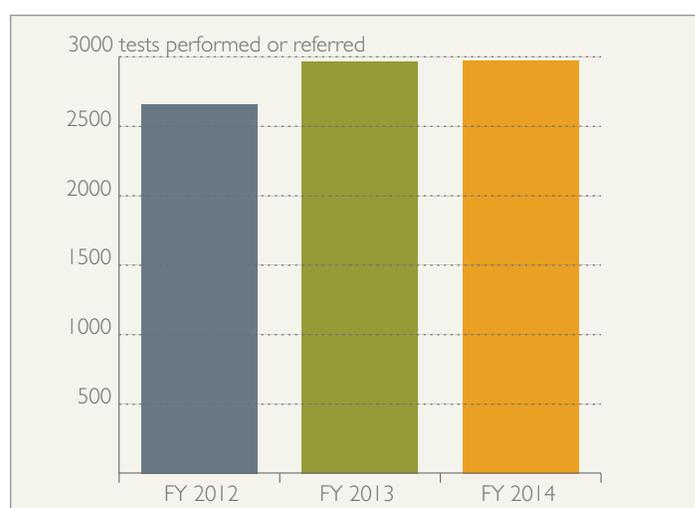


Figure 3. Number of DBS/DNA-PCR tests performed or referred

Recommendations

Conducting a baseline assessment with a gap analysis was key to helping the program identify major gaps and prioritize evidence-based interventions. The support provided by ENHAT-CS helped improve the capacity of HCs to perform clinical laboratory tests and improve the quality outcome of test results for TB and HIV, thus supporting more effective case detection and treatment initiation.

ENHAT-CS worked closely with both national and international organizations focusing on laboratory improvement, including EHNRI, PFSA, regional laboratories, CDC-Ethiopia, CHIA, and HEAL-TB, showing that strategic partnerships are critical to strengthening HC laboratory services.

Improved laboratory services for HIV/AIDS and TB depends on providing comprehensive and consistent support that addresses the system as a whole: personnel, equipment, procedures, and infrastructure. Training of staff is not enough. Regular mentorship and follow-up supervision is essential to ensure that critical skills are learned and used in everyday practice. ■

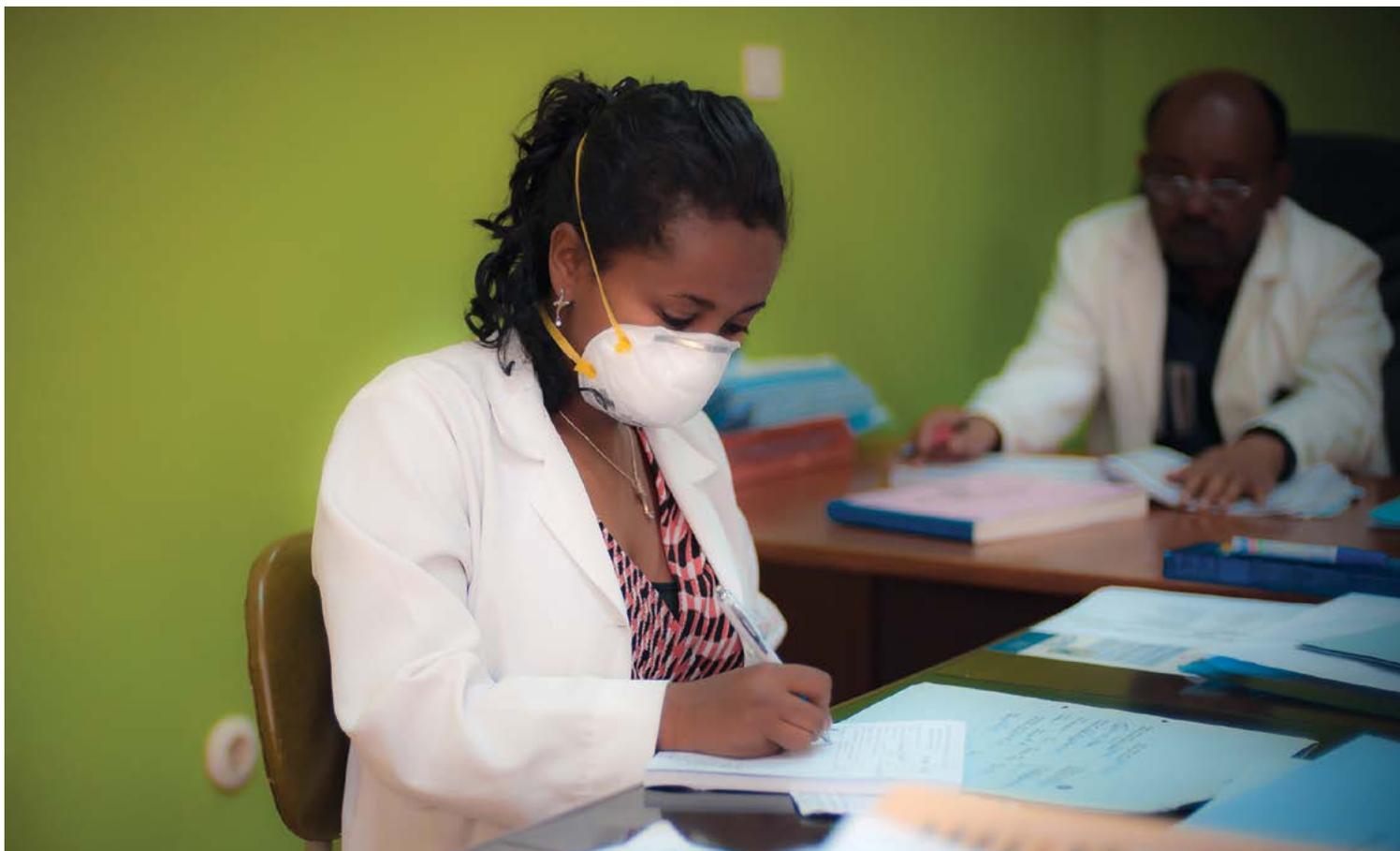


Photo by Warren Zelman

Outcomes of Screening HIV-Infected Patients for Tuberculosis at Public Health Centers in Ethiopia

Background

Tuberculosis (TB) is the leading killer of people infected with HIV. The lifetime risk of developing the disease is 20 to 37 times greater for those infected with HIV, especially in sub-Saharan Africa, where it causes up to half of all AIDS deaths.^{1,2} In a population where TB and HIV coinfection is common, Ethiopia's health services struggle to address this dual health threat. Working in the northern Amhara and Tigray regions, the ENHAT-CS team collaborated with both the national and regional HIV and TB programs to improve the services and outcomes for coinfecting patients.³

1. Federal Ministry of Health. *Guidelines for Clinical and Programmatic Management of TB, TB/HIV, and Leprosy in Ethiopia*. 2013. p. 154.

2. TB Alliance. <http://www.tballiance.org/why/tb-hiv.php>

3. Federal HIV/AIDS Prevention and Control Office (FHAPCO), and Regional HIV/AIDS Prevention and Control Office (RHAPCO), and National TB Control Program (NTCP).

The World Health Organization (WHO) recommends routine TB screening for adults and adolescents living with HIV by evaluating cough, fever, and weight loss. WHO advises that HIV-infected patients who screen negative for TB and do not have symptoms of active TB should be offered isoniazid preventive therapy (IPT), while those with symptoms should be further evaluated for active TB.

ENHAT-CS program data showed that 87% of HIV patients seen at public health center HIV clinics in Amhara and Tigray between October 2011 and March 2012 were routinely screened for TB. Routine data reporting by all health facilities did not include documentation of uptake of recommended TB services among HIV patients who screened positive.

ENHAT-CS wanted to better understand the outcomes of HIV-infected persons who screened positive for TB and to identify how they accessed treatment.

Methods

ENHAT-CS conducted a facility-based cross-sectional survey of a convenience sample of HIV-infected patients attending 12 high-patient-load ENHAT-CS-supported health centers in Amhara and Tigray between May and August 2013 to determine what happened after the patients screened positive for TB symptoms. In this study, screening for TB included asking the patients whether they had:

- A cough for more than two weeks
- A fever for more than two weeks
- Night sweats for more than two weeks
- Weight loss
- Contact with someone over the past year who had TB

To screen positive a patient had to answer “yes” to the first question or “no” to the first question and “yes” to two or more of the other questions. Screening was carried out as routine practice every time a patient visited a health center, in compliance with the recommendations of the Federal Ministry of Health (FMOH) and WHO.⁴

Results

The 12 clinics screened 12,260 HIV-infected patients for TB symptoms during the study period. Among them, 98% screened negative and 2% screened positive (Figure 1).

The clinics performed sputum smear acid fast bacilli (AFB) tests on 78% of the 250 HIV patients who screened positive. Eight percent were sent for further evaluation, such as chest X-ray, fine needle aspiration (FNA), or AFB smear retest. The remaining 36 (14%) who screened positive did not undergo lab investigation because of an inability to produce sputum for AFB or due to financial constraints for X-ray evaluation. No further information was available at the time of the data collection on these patients although, following the study, the program continued to trace and manage them through the case managers and antiretroviral therapy (ART) and TB care providers.

Among the 195 AFB smear examinations, 83.5% were smear negative, 3.5% were smear positive, and the remaining 13% failed to return to the HIV clinic for their testing during the data collection period. This brings the total number of patients who screened positive but had no follow-up to 61, or 24% of the 250 patients who screened positive for TB.

4. World Health Organization. *Adapting WHO Normative HIV Guidelines for National Programs: Essential Principles and Processes*. 2011, World Health Organization. p. 108.

Of the 163 smear negative patients, 78.5% were treated for other illnesses, such as pneumonia. Thirteen percent were referred for further evaluation, and 8.5% did not receive immediate treatment but were put under close follow-up.

Of the 40 patients referred for further investigation, 28 were sent for an X-ray, three for FNA, three for AFB smear or culture, and there was no feedback on the remaining 6 at the time of data collection. The results found that 40% of those referred were positive for TB, 25% were negative, and 35% did not receive their results during the data collection period. Thus, among the 250 patients who screened positive for TB, 61 (24%) had no follow-up while 23 patients were diagnosed with active TB—representing 0.19% of all HIV clinic patients.

In total, 52% of the confirmed TB cases were identified by X-ray, 39% by AFB smear, and 9% by FNA. National TB Control Program (NTCP) data showed that 4.5% of HIV-infected patients had active TB, a figure considerably higher than ENHAT-CS data showed. There are several explanations for this discrepancy. NTCP data includes a large number of hospital-based HIV-infected patients who have access to X-rays and GeneXpert cultures, which increase the rate of positive TB diagnosis. As an alternative explanation, South African data show that 3.5% of HIV-infected patients not on ART will have active TB, but the percent decreases with each year that someone is on ART, reaching 1% when the HIV-infected patient is on ART four or more years.⁵ The South African study concluded that widespread use of ART in HIV-infected patients considerably reduces the risk of developing active TB. ENHAT-CS provided ART for seven years in the Amhara and Tigray regions, and most HIV patients had been on ART for at least three years, thus decreasing the risk of developing active TB. The South African hypothesis is consistent with the findings of ENHAT-CS.

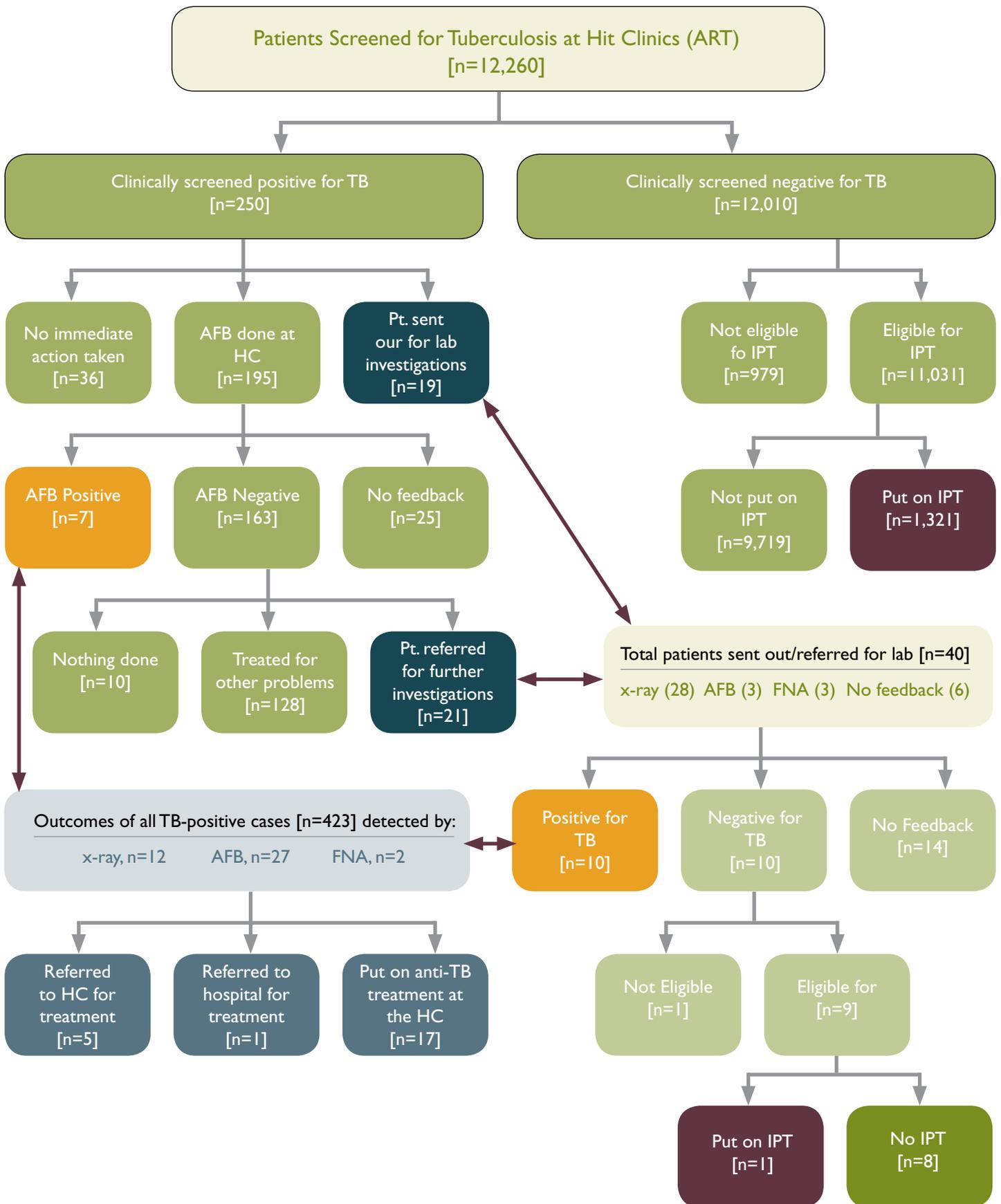
All of the confirmed TB cases in the ENHAT-CS study were actively managed: 74% received treatment at the health center where they were diagnosed, 22% were referred to other health centers, and 4% were referred to a hospital.

Recommendations

All ENHAT-CS-supported health centers evaluated in Amhara and Tigray screened their HIV patients using the survey recommended by the FMOH. Overall, 87% of HIV-infected patients were screened for TB by the end of the program.

5. Stephen D. Lawn, Motasim Badrind, Robin Wood. *Tuberculosis among HIV-infected patients receiving HAART [highly active retroviral therapy]: long-term incidence and risk factors in a South African cohort*. AIDS 2005, 19:2109–2116

Figure 1. Outcome of HIV-infected clients screened for TB at HIV clinics, Amhara and Tigray regions, 2013



Among HIV patients who screened positive for TB, 24% were lost to follow-up. Although this represents less than 0.5% of all HIV patients, it is a significant number of potential HIV/TB patients who are missed by the system. If all of these lost patients were confirmed TB cases, the overall proportion of TB cases among HIV patients seen at program-supported health centers would remain low at 0.7%.

The proportion of HIV-infected patients who screened positive for TB was low (2%). This may be because the current TB screening guidelines have poor sensitivity, especially among patients on ART, since common clinical symptoms of TB are uncommon in HIV-infected patients with TB.^{6,7} Another possibility may be that health centers are practicing routine case finding through screening HIV-infected clients at every visit and immediately treating those with symptoms, thereby reducing the cases with overt symptoms at subsequent visits.

Overall, the proportion of all HIV-infected patients found to be TB infected was low at 0.19%. This finding is consistent with ENHAT-CS data that was routinely collected through the health management information system, which found a 0.18% TB infection rate between October 2012 and September 2013. While TB/HIV coinfection in the general population of people living with HIV may reach 4%, the TB rate in the subpopulation of HIV-infected patients seen at health centers appears to be much lower.⁸ ENHAT-CS estimated that nearly 50% of the HIV-infected population in Ethiopia is on ART, likely contributing to the low incidence of TB among these patients. Patients on ART tend to have higher CD4 counts and thus are less vulnerable to TB infection. As such, the results of this study suggest that a “test and treat” strategy whereby all HIV patients are put on ART upon diagnosis can also serve as a prevention strategy for TB.

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TB patients who are missed by the system. If all of these lost patients were confirmed TB cases, the overall proportion of TB cases among HIV patients seen at program-supported health centers would remain low at 0.7%. It is also possible that some of these patients lost to follow-up may have sought treatment elsewhere, and thus are not active TB patients capable of transmitting the disease. Programs need to ensure active tracking of these patients to minimize potential for further transmission.

The majority of eligible HIV-infected patients did not receive IPT. In Tigray, this was because the Regional Health Bureau had restricted health centers from prescribing IPT because of concern over development of isoniazid resistance. In Amhara, this was likely because of stock-outs of isoniazid supplements at health centers.

TB diagnostic testing in patients with HIV is challenging. AFB smear presents a simple and cheap diagnostic method, but the ENHAT-CS sample AFB smears only detected 39% of the active TB cases compared to 52% by X-ray. Extensive use of GeneXpert culture and increased access to X-rays will improve the diagnosis of active TB, but much of the active TB in HIV-infected patients is extrapulmonary TB and might not show even with those advance diagnostic techniques. Further research on TB diagnostic methods in HIV-infected individuals is vital to improving TB screening, diagnosis, and safe initiation of ART and TB preventive or curative therapy. ■

6. Ngowi, B., Et Al., *Pulmonary Tuberculosis Among People Living With HIV/AIDS Attending Care and Treatment in Rural Northern Tanzania*. BMC Public Health, 2008. 8(1): p. 341.

7. Rangaka, M.X., Et Al., *Effect of Antiretroviral Therapy on the Diagnostic Accuracy of Symptom Screening for Intensified Tuberculosis Case Finding in a South African HIV Clinic*. Clin Infect Dis, 2012. 55(12): p. 1698-706.

8. Federal Ministry of Health, Disease Prevention and Control Directorate. *Why TB: Evaluating the National TB Program: Challenges and Ways Forward*. October 2014



Photo by Warren Zeiman

Integration of Mental Health Care into Health Center HIV Clinic Services Improves Outcomes

Background

Mental, neurological, and substance use (MNS) disorders occur frequently in patients with HIV and are associated with negative outcomes, including reduced adherence to antiretroviral (ARV) medications, and diminished quality of life. The true prevalence of MNS disorders in HIV patients is unknown, but felt to be significant. The Ethiopia Federal Ministry of Health's (FMOH) National Mental Health Strategy (2013/14–2015/16) outlines a plan for scaling up mental health services in health centers throughout Ethiopia. The strategy identifies people living with HIV (PLHIV) as one of seven vulnerable population groups and is based on the World Health Organization's (WHO) Optimal Mix of Services, a five-tiered pyramid structure that advises health systems on how to structure mental health services within their continuum of care. Focusing on priority

MNS disorders and vulnerable groups, this pyramid structure seeks to use all existing human potential to play a role in mental health care, which includes mental health specialists, people with mental illness, and the community. The strategy relies heavily on the primary health care system to provide sustainable and quality integrated mental health treatment, with care provided at all levels of the health system. The goal of the strategy is to address the mental health needs of all Ethiopians through quality, culturally competent, evidence-based, equitable, and cost-effective care.

The FMOH's Health Sector Development Program aims to increase the proportion of health facilities providing integrated mental health services from 10 to 50%. The argument for integrating mental health care into primary health care is not only due to a limited number of mental health professionals, but also for the following benefits:

- Reduced stigma for people with mental disorders
- Improved access to physical health care
- Improved prevention and detection of mental disorders
- Better treatment and follow up
- Better human rights protection
- Better health outcomes
- Improved human resource capacity

Although there are benefits, there are also many challenges to integrating mental health care:

- Integration of mental health care into primary health care requires investment in staff training to detect and treat mental disorders
- Consistent availability and affordability of psychotropic medications is necessary and difficult in many settings
- Health care providers' time is further stretched
- Adequate supervision of primary care staff to ensure quality and sustainability of mental health care is necessary

The FMOH's strategy reports that although HIV services have increased significantly and have been integrated into primary health care, there is an urgent need for the scale up of comprehensive mental health services. Caregivers, PLHIV, and children affected by HIV experience significant mental health challenges. Mental disorders, such as depression and anxiety, in PLHIV are associated with impaired immune function, reduced quality of life, sub-optimal adherence to treatment, poor overall prognosis, and fear of premature death.

As noted above, ENHAT-CS was an MSH-led consortium of national and international partners. This consortium included the International Training and Education Center for Health (I-TECH), which took the lead in the program's piloting of the integration of mental health services into health center-based HIV clinics. This brief outlines lessons learned from two years of experience supporting integrated mental health services in health centers in the Amhara and Tigray regions of Ethiopia.

The specific objectives of this study were to:

- Identify the prevalence of MNS disorders in PLHIV;
- Demonstrate that the treatment of MNS disorders by health officers and nurses in health centers is feasible and effective; and
- Identify any benefits to or improved outcomes in PLHIV as a result of health center-based MNS services.

Methodology

Before initiating the pilot, the program engaged key policy and decision makers such as regional health bureaus and *woreda* health office heads and focal persons, representatives of the Pharmaceutical Fund and Supply Agency (both at headquarters

and regional offices), heads and key stakeholders from health centers, and health center pharmacists. Regional health bureaus assigned focal persons for mental health (and non-communicable diseases) to support the pilot and the overall goal of integrating mental health services at health centers.

To start the pilot, ENHAT-CS trained 96 staff, including health center HIV and outpatient clinic nurses and health officers and HIV clinic-based case managers to provide mental health services in 37 health centers in the Amhara and Tigray regions.

The case managers are all HIV-positive para-professionals who provide peer support to HIV clinic patients, including counseling, psycho-social and adherence support, and referral for community-level support. They were trained to screen patients for mental health problems and refer those with suspected problems to the HIV clinic nurse or health officer.

ENHAT-CS trained the nurses and health officers to diagnose mental health problems and to either treat patients with basic psychotropic medications or refer them to an area hospital that provides psychiatric services. The program used recently-developed FMOH protocols for health center management of MNS disorders.

The identified psychotropic medications from the essential drug list and targeted conditions were:

- Psychosis (antipsychotic): Haloperidol (tab, injection); Chlorpromazine (tab)
- Depression (antidepressant): Amitriptyline (tab); Fluoxetine (tab)
- Anxiety (anxiolytic): Diazepam (tab, injection); Bromazepam (tab)
- Epilepsy/Seizure (anticonvulsant): (Phenobarbital (tab); Phenytoin (tab); Carbamazepine (tab)

Two other mental health conditions were focused on, but were not eligible for treatment by psychotropic medications. These included memory loss/dementia, which was treated with ARVs, and substance abuse, which was treated with counseling. The psychiatric side effects of ARVs were dealt with according to the protocols for each disorder.

Recommendations

After training, the health care providers at the pilot HIV clinics initiated provision of mental health services, supported by ongoing mentorship by the program's mentors. Results from the initial group of participating 37 health centers, from January to June 2014, are described below.

The case managers screened 17,484 clients, of whom 5.4% (944) clients were identified with suspected mental health problems. Of these, 82% (773) were referred to the HIV clinic's nurse or health officer for further assessment.

The HIV clinic nurses and health officers diagnosed 616 clients with mental health problems. Among this group, the most common diagnosis was anxiety (33%), followed by depression (31%), and memory loss/dementia (14%). Specifics are listed in Table 1.

Of the above, 513 patients (83%) had mental health problems that could be treated by psychotropic medications available to the health center through the essential drug list.

Of the 372 clients either treated or referred, 87% (325) were treated at the health center. Specifics are listed in Table 2.

The availability of at least one psychotropic medication for each mental health disorder was assessed at the 27 pilot health centers in Tigray in March and June 2014. Table 3 shows the results.

Table 4 shows the treatment provided for the mental health conditions not treated by available psychotropic medications.

Recommendations

The above results show that MNS disorders in PLHIV are significant, but were suspected in only 5.4% of patients with HIV. We also show that the existing Ethiopian primary health care system has the capacity to effectively treat patients with mental illness in 87% of the patients diagnosed, which can significantly increase treatment coverage for people with mental disorders by introducing integrated outpatient mental health services at health centers, which are accessible and affordable.

Integration of mental health into primary care at health centers, which the development of a national mental health strategy (2013/14–2015/16) has contributed significantly to, will pay dividends, socially and economically, resulting in fewer relapses and less frequent hospital care. In addition, they remain integrated with families and friends and are able to start

Table 1. Summary of mental health diagnoses at pilot health centers

Diagnosis	Number	Percent of Total
Anxiety	203	33%
Depression	194	31%
Memory Loss/Dementia	88	14%
Psychosis	69	11%
Epilepsy/Seizure	47	8%
Substance Abuse	18	3%
TOTAL	619	

Table 2. Summary of treatment or referral by condition

Diagnosis	Total Treated or Referred		Of Treated or Referred	
	Condition and number	Number and percent	Treated at health center	Referred to area hospital
Anxiety	203	129 (64%)	116 (90%)	13 (20%)
Depression	194	141 (73%)	124 (88%)	17 (12%)
Psychosis	69	56 (81%)	40 (71%)	16 (23%)
Epilepsy/Seizure	47	46 (98%)	45 (96%)	1 (2%)
TOTAL	513	372 (73%)	325 (87%)	47 (13%)

Table 3. Percent of health centers that had at least one medication for the treatment of various conditions

Diagnosis	Percent
Anxiety	80%
Depression	61%
Psychosis	63%
Epilepsy/Seizure	96%

Table 4. Therapy provided for conditions not treated by psychotropic medications

Diagnosis	Total Treated or Referred		Of Treated or Referred	
	Condition and number	Number and percent	Treated at health center	Referred to area hospital
Memory Loss/Dementia	88	21 (24%)	20 (95%)	1 (5%)
Substance Abuse	18	10 (56%)	9 (90%)	1 (10%)

Integration of mental health into primary care at health centers, which the development of a national mental health strategy has contributed significantly to, will pay dividends, socially and economically, resulting in fewer relapses and less frequent hospital care.

income-generating projects. Many health care professionals who were interviewed supported this initiative by highlighting the importance of primary care for mental health and were enthusiastic about the overall reform.

With training and ongoing support and supervision, nurses and health officers working in health centers can be trained to provide effective mental health care, including prescription of psychotropic medications. While some patients require referral to psychiatrists, the vast majority can be successfully managed by nurses and health officers trained in mental health.

Involving case managers in mental health provision was found to be effective, with 82% of suspected cases referred to the HIV clinic nurse or health officer for diagnosis. In addition, it is likely that the involvement of case managers, who are HIV-positive peer counselors, helps HIV clinic patients better cope with stress, stigma, and drug side effects, thus preventing development of more serious mental health issues.

Psychotropic medications were generally available in clinics in the same way as other medicines, but making them free would significantly increase access among health center patients.

Ongoing support and supervision of the nurses and health officers by trained mental health professionals in area hospitals is essential to ensure quality treatment. As there is currently no system to support this, the roles of mental health professionals in regional, zonal, and

district hospitals need to include supervision and training.

ENHAT-CS found the current health management information system indicators insufficient to adequately monitor implementation, so priority mental disorders need to be added (e.g., psychosis, depression, alcohol use disorders, with epilepsy already included), which will also facilitate drug forecasting.

Improved outcomes for PLHIV treated for mental illness were difficult to measure in this descriptive study, but an improved sense of wellbeing and ability to cope were mentioned as important factors. Working closely with case managers who provide psychosocial support has been shown to significantly improve adherence to ARVs.

There is a low awareness about mental illness in Ethiopian communities and among primary health care workers, which means that many people with mental illness do not seek help. The increase in public awareness that integrating mental health services into primary care can provide is pivotal to reducing stigma and encouraging people to seek care. However, in addition to training health center case managers to screen for mental health problems and professional health care providers to provide treatment or referral, the engagement of community-based health extension workers is essential to ensure the detection of mental health problems and referral of persons with mental illness to health centers. ■



Photo by Warren Zelman

The Feasibility of the Test-and-Treat Approach to Manage HIV-Infected Patients

Background

The International AIDS Society and the US National Institutes of Health recommend antiretroviral therapy (ART) for life to all patients who test HIV positive, regardless of their pregnancy status or CD4 count.^{1,2} This strategy is known as “test and treat,” and it also reduces the likelihood of common opportunistic infections such as tuberculosis.^{3,4,5} The approach is associated with the “treatment as prevention” strategy because ART lowers a patient’s viral load significantly, in most cases to negligible levels, and therefore, early treatment reduces the probability of HIV transmission.

However, the World Health Organization (WHO) recommends that HIV patients in resource-poor countries receive ART only when their CD4 count are < 500 cells/mm³, or when the patient is pregnant or under the age of five years.^{6,7} But

resource-poor, high-prevalence countries might not be able to afford ART for all HIV-infected people seen in the health system, which may make governments reluctant to recommend test and treat.

To better understand this view, ENHAT-CS assessed the feasibility of a test-and-treat approach in Ethiopia. As of 2012, Ethiopia had an estimated overall HIV prevalence of 1.2% (3.3% urban, 0.5% rural) and an estimated 759,268 people living with HIV; of these, 344,344 are currently on ART.⁸ Ethiopia uses the 2013 WHO guidelines for ART initiation of HIV-infected patients with a CD4 count < 500, except for HIV-infected pregnant women who are put on ART for life regardless of CD4 count, which is Option B+.⁹ However, close to 40% of patients are lost to follow-up (LTFU) between testing HIV positive and enrolling in care and support, and after enrollment in pre-ART services, another 25% are LTFU.^{10,11} For those patients who remain in

the system, the Government of Ethiopia (GOE) faces huge challenges in making CD4 tests widely available to all HIV-infected patients.

A study by the US Centers for Disease Control and Prevention (CDC) showed that 22% of BD FACSCount™ machines are inoperable in Ethiopia at any given time, which further complicates obtaining CD4 counts for all HIV-infected patients.¹² This problem was a key reason that Malawi adopted Option B+, because it does not require CD4 testing. However, CD4 testing is essential to starting patients on ART to identify when their CD4 count is < 500, especially since patients with a CD4 count > 200 typically do not present symptoms for effective clinical staging.

Methods

To project the increase in patients on ART if Ethiopia were to adopt a test-and-treat strategy, ENHAT-CS used 2010 data on the distribution of HIV patients by CD4 count at 23 high-patient-load health centers (HCs) in Addis Ababa; the Southern Nations, Nationalities, and People's Region; and the regions of Amhara, Oromia, and Tigray.¹³ The program collected CD4 test results from pre-ART enrollment and ART registers and/or patient folders on all pre-ART and ART patients at these HCs between April and May 2010. The 23 HCs, which were among 350 HCs with ART services supported by ENHAT-CS, offered a large sample of patients on ART at HCs in Ethiopia.

To estimate how many patients would need ART at HCs if Ethiopia were to adopt a test-and-treat policy, the number of patients needing ART based on current guidelines (CD4 count < 500 cells/mm³ or symptomatic, WHO stages III or IV) was added to the number of asymptomatic patients enrolled in pre-ART with a CD4 count > 500. In Ethiopia, CD4 counts are performed with a fluorescence-activated cell sorter.¹⁴

To estimate the costs associated with a national test-and-treat strategy, ENHAT-CS used the median annual cost of ART per patient, including the cost of antiretrovirals (ARVs) (tenofovir disoproxil fumarate/lamivudine/ efavirenz [TDF/3TC/EFV] fixed-dose combination), personnel, lab tests, reagents, and consumables, which the GOE estimated at US\$184 in 2013.¹⁵

The program reviewed the data from the USAID Supply Chain Management System (SCMS) program on the cost of CD4 machines and tests in Ethiopia and applied it to government estimates of the current HIV patient load.¹⁶ The SCMS program, operating in Ethiopia since 2008, is the GOE's main partner supporting procurement of ARVs, CD4 machines, laboratory reagents, and supplies. ENHAT-CS then projected the costs associated with the increase in ARVs that would be needed and the savings accrued by a decrease in CD4 testing.

Results

Ethiopia's current policy puts all HIV-infected pregnant women and children under the age of one on ART, regardless of their CD4 count, and all HIV patients with a CD4 count < 500 on ART. Based on this, the number of patients on ART at the 23 HCs would be 5,534 (Table 1). Under test and treat, the nonpregnant patients and children over one year of age with a CD4 count > 500 would also receive ART and thus bring the total to 6,085. This switch to test and treat projects an increase in ART patient-load of 10% compared to that under current policy.

If these results applied to all HIV patients seen in the health system in Ethiopia, test and treat would require ART for all who currently have a CD4 count > 500 and not currently on ART, corresponding to a 10% increase in the 344,344 ART patients currently treated to 378,778. This implies an extra \$6,335,856 increase in cost per year over the current \$50,546,272 (344,344 * \$184 per year), for a total cost of \$56,882,128.

Applied to the entire HIV-infected population in Ethiopia, test and treat would bring the total number of patients on ART from the current 344,344 to 759,268, and the total cost per year would rise from \$56,682,128 to \$139,705,312. To meet this need, the GOE would need an extra \$83,023,184 per year. It is this calculation that inhibits the GOE, and other WHO low-resourced countries, from moving to a universal test and treat policy. Yet, it is not clear that the total number of HIV-infected people would ever be identified or agree to ART treatment.

If the GOE adopts the test-and-treat approach, the extra cost of the ARVs and associated support, such as personnel, labs, etc.,

Table 1. CD4 profile of patients with HIV and projected number on ART, 23 HCs, Ethiopia, May 2010

CD4 count	# of HIV patients	# of patients on ART per current guideline*	# of patients on ART with test & treat	Increase in total # of ART patients
≤ 500	5,508 (90%)	5,508	5,508	
500+	577 (10%)	26**	577	
Total	6,085 (100%)	5,534	6,085	10%

*WHO 2010, with cut-off point of CD4 count of > 500

**Assuming that 4.5% of patients are pregnant (based on data from HCSP)

Table 2. Estimated annual costs of routine CD4 testing of current ART patients under current ART guidelines in Ethiopia

Item	Unit cost	Annual maintenance	Total cost per year	Notes
CD4 BD FACSCount machine	\$33,349	\$3,300	\$2,409,672	Machine replacement every four years
CD4 test	\$6.80		\$4,683,078	Two tests/patient per year; 344,344 HIV patients currently on ART
Transport	\$21 for 15–20 tests (\$1.20/test)		\$728,897	40% of patients have blood sample taken at HCs; two tests/patient per year
Total cost of routine CD4 tests			\$7,821,647	

could be somewhat reduced by eliminating the need for an initial CD4 test, which is now required prior to initiating ART. Ethiopia primarily uses BD FACSCount machines to do CD4 testing, with 179 machines already deployed in health facilities and another 84 in the process of being deployed. According to SCMS, each machine costs \$33,349, the annual maintenance cost is estimated at \$3,300, and the machines are estimated to need replacement every four years. Thus, the total cost of all CD4 machines in Ethiopia is \$9,638,687. When depreciated over four years, the annual cost would be around \$2,409,672 (Table 2).

SCMS estimates the cost of a BD FACSCount CD4 test at \$6.80 in Ethiopia. With the current number of ART patients in the country estimated at 344,344, and Federal HIV/AIDS Prevention and Control Office regulations requiring two CD4 tests per HIV-infected patient per year, the annual cost would be \$4,683,078 for CD4 testing. In addition, there is the often the unseen cost of transporting whole blood samples to CD4 testing sites. Assuming 40% of all HIV-infected patients are served at HCs, then 40% of the tests involve both drawing a whole blood sample and transporting it to a CD4 testing facility within eight hours of the blood draw, a daunting challenge given the large distances between HCs and referral testing centers in Ethiopia.

Based on data from the Tigray Regional Health Bureau calculated during program implementation, ENHAT-CS estimated that the number of patient blood samples transported together ranges from 15 to 20, and the average cost of transport, which involves per diem for a HC staff member and public transport, is \$21. With 40% of HIV patients seen at HCs, another \$728,897 would be required for specimen transport. Hence, under current policy, the total estimated annual cost of CD4 testing is \$7,821,647. If all 759,268 persons living with HIV were in the system and on ART under a test and treat policy, the total annual cost for CD4 testing would be \$13,464,614.

Recommendations

The analysis shows that switching to a test-and-treat approach for HIV-infected patients currently seen in the health system in Ethiopia would increase the number of people on ART by 10%. This would require the GOE to dedicate an extra \$6.3 million per year to its current HIV program. The estimate does not take into account the costs that the government would save by averting new HIV infections, hospitalizations, and opportunistic infections as a result of more people being on ART and maintaining higher CD4 counts.

The percentage of patients already in the health system who have a CD4 count > 500 was estimated from a sample of HC patients who generally are healthier, and thus have a higher CD4 count, than hospital patients. Thus, the anticipated increase in cost presented in this analysis is probably higher than may be the case if CD4 count data on hospital patients were included.

If the HIV patient-load at health facilities would remain stable, a switch to test and treat seems, therefore, affordable and also beneficial in the long run for both patients and Ethiopia. The test-and-treat approach would extend the length and improve the quality of life for people living with HIV. By reducing viral load, this approach will prevent new infections and thus reduce future health care costs.

A test-and-treat approach could also have the added benefit of retaining patients who are LTFU, either upon diagnosis of HIV infection or while on pre-ART care and support services. While a test and treat approach could keep patients in the system, it could also significantly increase the number of HIV patients wanting to enroll, as was the case when Option B+ was introduced. This would then increase the overall cost because with a higher volume of HIV patients in the system, Ethiopia would need more ARVs and need to conduct more CD4 tests.

Switching to a test-and-treat approach for HIV-infected patients currently seen in the health system in Ethiopia would increase the number of people on ART by 10%. This would require an extra \$6.3 million per year to its current HIV program. However, this estimate does not take into account the costs that the government would save by averting new HIV infections, hospitalizations, and opportunistic infections as a result of more people being on ART and maintaining higher CD4 counts.

Under the current policy, routine CD4 testing is required for all ART patients. However, in reality, many patients do not obtain a CD4 test twice a year, often due to machine break-downs, lack of specimen transportation, or other reasons. A recent study in five centers in Africa showed that ART can be safely provided without routine CD4 testing, and this is, in fact, the norm in most African countries, given the barriers to obtaining routine CD4 counts.^{17,18} Should Ethiopia choose to adopt this approach, the real annual cost of CD4 testing would be substantially less and thus offset some of the increased costs associated with test and treat. While this recommendation remains controversial, it is perhaps more realistic for resource-poor countries. In the future, if Ethiopia moves to viral load testing, which is not yet available, the additional costs of doing these tests would need to be considered.

In conclusion, test and treat would not only improve the lives of many HIV patients, but also prevent many new infections and thus reduce future health care costs. Mathematical models have well established the potential for zero new HIV infections through a treatment-as-prevention approach.³⁻⁵ Test and treat would protect the health and maximize the longevity of those infected with HIV because in most cases their immunity would not be suppressed to a CD4 cell count < 500 while they await treatment. Furthermore, test and treat would eliminate the need for routine CD4 counts at enrolment, thereby offsetting some of the increase in cost for ART. By maximizing use of ART among HIV-infected people, treatment will act as prevention and potentially turn positive epidemic growth rates negative. The balance appears a net gain, and test and treat is both an ethical and economically feasible approach in Ethiopia. ■

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Photo by Warren Zelman

Client Satisfaction with Antiretroviral Clinic Services at Public Health Centers

Background

Ethiopia's HIV prevalence rate is approximately 1.2%, equating to about 700,000 HIV-infected people.¹ Since 2005, Ethiopia has been decentralizing free antiretroviral (ART) services from hospitals to health centers as a strategy to improve access to HIV care and treatment. Studies have shown that clients who have positive perceptions of the quality of care they receive, and of the ability of providers and facilities to meet their needs, are more likely to comply with treatment and remain in care.

Understanding the role of client satisfaction in patient uptake of HIV services, ENHAT-CS conducted a survey to assess clients' satisfaction with HIV service delivery at program-supported health centers in the Amhara and Tigray regions of Ethiopia.

1. Ethiopia Federal HIV/AIDS Prevention and Control Office, *National HIV/AIDS Estimates in Ethiopia*, June 2012

Methods

This study was a facility-based cross-sectional convenience survey among HIV clinic attendees at 152 (55%) of the 276 ENHAT-CS-supported health centers in the Amhara and Tigray regions. These health centers were chosen because they had a high HIV patient load and because they were relatively accessible. In October and November 2013, ENHAT-CS program staff spent one day collecting data at the exit points of each of the selected health centers, using an interviewer-administered questionnaire prepared in local languages. Data was entered into Epi Info Version 7.1, and analysis was performed using SPSS Version 2.0 statistical packages.

On the day of data collection, all HIV-positive clients aged 18 years and older attending HIV clinics in the selected health centers were invited to participate. The study excluded patients who were too ill to be interviewed or to respond, those who did not provide consent to participate, and clients with a language barrier.

Table I. Proportion of clients answering “almost always” to questions related to satisfaction with care.

Topic	%
Availability of antiretrovirals	99
Comfort	91
Respect	89
Availability of lab services	89
Overall satisfied with services on day of interview	89
Confidentiality	88
Waiting time to see a health provider	85
Overall satisfaction with previous two visits	83
Privacy	79
Time it took to receive lab results	70
Availability of drugs other than antiretrovirals	68
Availability of case managers for consultation on demand	66
Would recommend their health center to a friend who has HIV	66
Provision of a choice in health services	57

Prior to implementation, this survey was approved by the Ethiopian Public Health Association’s Internal Scientific and Research Committee (ISRC) as well as the health authorities in each region. Participation by health centers and clients was entirely voluntary and based on informed consent.

Results

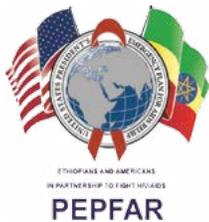
The program interviewed 1,924 HIV-infected clients at 152 health centers. Approximately two-thirds of the patients were female. Among the participants, 91% were on ART and 9% were pre-ART cases. Of the pre-ART clients, 44% had been on follow-up for 25 to 60 months.

ENHAT-CS asked clients to report their level of satisfaction with several aspects of their care at health facilities on a scale of one to three: 1) almost always, 2) sometimes, 3) almost never. For example, to assess confidentiality, the interviewer asked, “*Is your confidentiality respected when you are with your health care provider?*” The percent of clients who responded “almost always” is recorded in Table I.

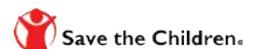
Overall, 89% reported that they were satisfied with the services they had received on the day of the interview. Eighty-three percent reported satisfaction with the previous two visits at the HIV clinics and 66% would recommend their respective health center to a friend who has HIV.

Recommendations

This survey showed that overall client satisfaction with HIV services provided at public health centers in Amhara and Tigray was high. For each evaluation item, more than half of patients rated their satisfaction as above average, suggesting that ENHAT-CS- supported health center-based HIV providers in northern Ethiopia met their clients’ perceived needs. However, a few areas of improvement were also identified. These included the need to ensure availability of medications other than antiretrovirals, greater privacy, and the need for more case managers to meet clients’ needs. While more research is needed to compare the actual quality of health services versus satisfaction with services, and to assess health center providers’ capacity to meet clients’ needs, this survey provided valuable information to help strengthen programming. ■



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This publication was funded by the generous support of the United States Agency for International Development (USAID) under contract number 663-C-00-07-00408-00. The contents are the responsibility of the authors and do not necessarily reflect the views of USAID or the United States Government.

Photography note: The people depicted in the photographs contained in this booklet do not necessarily have HIV or other diseases referenced in the text. Photographs are used for illustrative purposes only.

