

**Interventions to Enhance Use of VCT and PMTCT Services:
How to Improve Adherence to ART—A Survey of Developing
Countries' Experience**

Alexandra Beith
Abiola Johnson

Printed March 2006

Rational Pharmaceutical Management Plus
Center for Pharmaceutical Management
Management Sciences for Health
4301 North Fairfax Drive, Suite 400
Arlington, VA 22203 USA
Phone: 703-524-6575
Fax: 703-524-7898
E-mail: rpmpplus@msh.org

Supported by the U.S. Agency for
International Development

This report was made possible through support provided by the U.S. Agency for International Development, under the terms of Cooperative Agreement Number HRN-A-00-00-00016-00. The opinions expressed herein are those of the authors and do not necessarily reflect the views of the U.S. Agency for International Development.

About RPM Plus

RPM Plus works in more than 20 developing and transitional countries to provide technical assistance to strengthen medicine and health commodity management systems. The program offers technical guidance and assists in strategy development and program implementation both in improving the availability of health commodities—pharmaceuticals, vaccines, supplies, and basic medical equipment—of assured quality for maternal and child health, HIV/AIDS, infectious diseases, and family planning and in promoting the appropriate use of health commodities in the public and private sectors.

Recommended Citation

This report may be reproduced if credit is given to RPM Plus. Please use the following citation.

Beith, A., and A. Johnson. 2006. *Interventions to Enhance Use of VCT and PMTCT Services: How to Improve Adherence to ART—A Survey of Developing Countries' Experience*. Submitted to the U.S. Agency for International Development by the Rational Pharmaceutical Management Plus Program. Arlington, VA: Management Sciences for Health.

Rational Pharmaceutical Management Plus Program
Center for Pharmaceutical Management
Management Sciences for Health
4301 North Fairfax Drive, Suite 400
Arlington, VA 22203 USA
Phone: 703-524-6575
Fax: 703-524-7898
E-mail: rpmlushiv@msh.org
Web: www.msh.org/rpmlplus

CONTENTS

ACRONYMS	v
BACKGROUND	1
METHODS	3
SURVEY FINDINGS	5
Profile of Survey Respondents.....	5
ANALYSIS OF SURVEY FINDINGS	7
Direct Out-of-Pocket Service Costs to the Client: Possible Impact on Adherence Levels and Use of VCT and PMTCT Services.....	7
Planned and Ongoing Interventions to Improve ART Adherence and Enhance Use of VCT and PMTCT Services.....	7
DISCUSSION	15
Current Situation with Regard to VCT, PMTCT, and ART.....	15
Interventions to Improve Adherence to ART and Uptake of VCT and PMTCT Services.....	15
Survey Limitations.....	16
NEXT STEPS	17
CONCLUSION.....	19
REFERENCES	21

ACRONYMS

AIDS	acquired immunodeficiency syndrome
ART	antiretroviral therapy
ARV	antiretroviral
CBO	community-based organization
HIV	human immunodeficiency virus
I&E	incentives and enablers
MSH	Management Sciences for Health
MTRH	Moi Teaching and Referral Hospital [Kenya]
NGO	nongovernmental organization
PLWHA	people living with HIV/AIDS
PMTCT	prevention of mother-to-child transmission
RPM Plus	Rational Pharmaceutical Management Plus
USAID	U.S. Agency for International Development
VCT	voluntary counseling and testing

BACKGROUND

The advent of antiretroviral (ARV) medicines in developed countries in the mid-1990s radically transformed human immunodeficiency virus (HIV) infection from a fatal illness to a more manageable disease, thereby greatly improving the lives of people living with HIV/AIDS (PLWHA). However, for a number of reasons such as high medicine prices and lack of political motivation at national and international levels, advances made in treating the acquired immunodeficiency syndrome (AIDS) virus have taken a long time to translate into a reality for the majority of HIV patients in resource-constrained settings. It is only now, a decade later, that some of these barriers are being overcome and access to affordable antiretroviral therapy (ART) is slowly becoming more widely available.

Recent evidence from resource-constrained settings has revealed that ART provision, while often challenging, is possible (Bekker et al. 2003, Farmer et al. 2001, Laurent et al. 2002, Coetzee et al. 2004).¹ However, even when ART is physically available, geographically accessible, and in theory affordable,² there is evidence that other barriers (such as stigma³) may inhibit individuals coming forward for voluntary counseling and testing (VCT) (Day et al. 2003). Recent estimates indicate that at least 90 percent of HIV-positive individuals in resource-constrained settings are not aware of their status (Joint United Nations Programme on HIV/AIDS [UNAIDS]).

Barriers also exist which might inhibit uptake of short-term therapy for prevention of mother-to-child transmission (PMTCT) of HIV. One reason appears to be that high percentages of HIV-positive mothers are not delivering in locations where therapy is likely, though not assured, to be available (i.e., the home instead of a clinic setting⁴).

The importance of stringent adherence⁵ to long-term ART is well documented.⁶ What remains unclear is the extent to which ART adherence is a problem in resource-constrained settings.⁷

¹ Recent initiatives, such as the Global Fund to Fight AIDS, Tuberculosis and Malaria or The President's Emergency Plan for AIDS Relief, which provide ART in resource-constrained settings, further support this argument.

² There is evidence that cost continues to be one of the primary barriers to ART adherence in resource-constrained settings; see Kanya et al. 2004, for example.

³ See Associated Press, "HIV Positive SAfrica Woman Murdered," AIDS Education Global Information System (AEGiS), December 28, 1998, <http://www.aegis.com/news/ap/1998/AP981219.html> (accessed Mar. 1, 2006).

⁴ The World Health Organization (WHO) estimates that, in the developing world, 40 percent of deliveries take place in health facilities. See: WHO. *Coverage of Maternity Care: A Listing of Available Information*. WHO/RHT/MSM/96.28 (Geneva: WHO, 1996).

http://www.who.int/reproductive-health/publications/MSM_96_28/msm_96_28_5.html (accessed Mar. 1, 2006).

⁵ However, even in developed country settings researchers remain divided on the "ideal" adherence level. Some programs and researchers use an adherence standard of 80 percent of doses (which is the target commonly used for other diseases such as tuberculosis, hypertension, or diabetes when treatment is short-term), while most recommend ≥ 95 percent, and some even aim for a 100 percent of doses. In addition, a "gold standard" method for measuring adherence does not exist, further complicating attempts at comparison of the impact of different interventions seeking to improve adherence.

⁶ See Bartlett or Jani.

⁷ It is probably too soon to answer the questions of whether adherence is more, less, or a similar scale problem in resource-constrained settings as in the developed world. Findings from studies in a few resource-constrained countries reveal different degrees of difficulty with adherence—from adherence not being an issue in some cases (see Laurent et al. or Oyugi et al.) to adherence being a key challenge (see Kanya et al.).

However, ARVs must be taken for a patient's lifetime, and high levels of adherence are required to maintain the functionality of the individual's immune system and to slow the emergence of resistant strains. Therefore, in both individual and public health terms, HIV/AIDS treatment programs should measure and monitor adherence levels, and seek to identify ART clients with difficulties in adhering to treatment as early as possible. While evidence from resource-constrained settings on common barriers to adhering to ART exists,⁸ it is unclear what interventions, if any, are being used to overcome these barriers.

Available evidence from resource-constrained settings on client, caregiver, and provider interventions being planned or used in VCT, PMTCT, and ART programs is presented in this paper with the goal of encouraging more individuals to come forward for HIV testing and to persuade HIV-positive individuals to begin and adhere to treatment in settings where cost is not, or not supposed to be a barrier to treatment.

⁸ For an overview of common factors which inhibit adherence in resource-constrained settings, see Sabaté (2003). For input on developed country settings, see Murphy et al., Adam et al., Escobar et al., and Gordillo et al.

METHODS

In April 2004, an electronic survey was sent to at least 157 individuals and public and private organizations worldwide, principally in resource-constrained settings.^{9,10}

The following channels were used to disseminate the survey—

- MSH/RPM Plus website: survey information along with the actual survey were posted on the HIV/AIDS section of the RPM Plus website
- Civil society organizations: the survey was sent directly to organizations including public and private health institutions,¹¹ U.S. Agency for International Development (USAID) Cooperating Agencies,¹² academic institutions¹³ working on research projects on HIV/AIDS and implementing treatment projects, and others known to be working in HIV/AIDS in less developed countries
- International health-related listservs: e-drug@usa.healthnet.org, afro-nets@usa.healthnet.org, AIDS_ASIA@yahoogroups.com, and intaids@healthdev.net
- International health and development organizations: information on the survey (including the link) was posted on their websites¹⁴

Survey recipients were requested to submit their response electronically or send in a hard copy by May 15, 2004.

The survey used the terminology “incentives” and “enablers” (I&E) to classify interventions to improve adherence and enhance uptake of VCT and PMTCT services. This language was borrowed from previous work in tuberculosis control.¹⁵ After reviewing the survey results, the authors recognize that it would have been more appropriate to use terms such as “adherence enhancers” or “adherence aids” to capture interventions to improve adherence to ART. The following analysis, however, uses the original survey terms I&E on which the survey responses were based.

⁹ The 157 recipients included listservs; therefore the survey was sent to more than 157 end users (organizations and individuals), but the exact number cannot be known.

¹⁰ For a complete list of individuals, organizations, and listservs that the survey was sent to, and the channels used to disseminate the survey, please contact the authors at ajohnson@msh.org.

¹¹ Government hospitals, other national authorities involved in HIV/AIDS activities, NGOs, CBOs, private sector health facilities, etc.

¹² These are organizations similar to MSH which have a project funded by USAID such as Family Health International.

¹³ These include U.S.-based academic institutions working in resource-constrained settings and providing treatment programs and institutions based in developed countries.

¹⁴ For example: The Synergy Project for USAID, <http://www.synergyaids.com>; The International AIDS Economics Network, <http://www.iaen.org>.

¹⁵ See www.msh.org/rpmpplus/tb (and click on “incentives and enablers”).

SURVEY FINDINGS

Profile of Survey Respondents

Sixteen responses were received, of which 12 were included in the analysis. The other four were disregarded—two stated that they did not provide ART, VCT, or PMTCT services and two were duplicate responses.

All 12 responses were from resource-constrained settings: ten from sub-Saharan Africa (Botswana, Cameroon, Kenya (N = 3), Nigeria (N = 2), Rwanda, South Africa (N = 2), and two from South-East Asia (Indonesia and Thailand).

A variety of organizations responded to the survey: nongovernmental organizations (NGOs) (N = 3), district hospitals (N = 2), private providers (N = 2), a community-based organization (CBO) (N = 1), and a provincial hospital (N = 1), in addition to collaborative efforts (see examples from Kenya and Thailand in Table 1).

The majority of organizations provide some combination of HIV/AIDS-related services (VCT, PMTCT, and ART); a few provide only one service (three provide ART, for example) while almost half (N = 5) provide all three services.

Table 1 gives a detailed profile of survey respondents, by country, type of organization, and HIV/AIDS service(s) provided.

Table 1. Profile of Survey Respondents

	Country	Name of Organization	Type of Organization	Type(s) of Service Provided
Africa				
1	Botswana	Infectious Diseases Care Center, Maun General Hospital	District hospital	ART
2	Cameroon	Actors 4 STI and Suicide	CBO	VCT, PMTCT
3	Kenya	Moi Teaching and Referral Hospital (MTRH) HIV Program	National hospital, CBO, and workplace program	VCT, PMTCT, ART
4	Kenya	Port Reitz District Hospital	District hospital	VCT, PMTCT, ART
5	Kenya	Rift Valley Provincial Hospital	Provincial hospital	VCT, PMTCT, ART
6	Nigeria	Ten-to-Teens HIV Prevention Project, Afrihealth Information Projects, Afrihealth Optonet Association	NGO	VCT, PMTCT
7	Nigeria	HIV/AIDS Rehabilitation for Rural Widows and Orphans	NGO	VCT, PMTCT
8	Rwanda	Family Health International/IMPACT	NGO	VCT, PMTCT, ART
9	South Africa	On Cue	Private organization	ART
10	South Africa	BMW	Private automobile manufacturer	VCT, ART
Asia				
11	Indonesia	Aksi Stop AIDS Program	Bilateral USAID and Indonesian government project managed by Family Health International	VCT, PMTCT, ART
12	Thailand	Population Council	NGO in collaboration with CBO, district hospital, local health authority, and national HIV/AIDS program	ART

ANALYSIS OF SURVEY FINDINGS

Direct Out-of-Pocket Service Costs to the Client: Possible Impact on Adherence Levels and Use of VCT and PMTCT Services

Survey participants were asked whether the services they provide are free of charge or whether a charge is levied. Most respondents stated that services are provided free of charge. When a charge is levied, it is more often when ART is provided—this is not surprising given the high costs of ART when compared with VCT or PMTCT services.

Eight of nine survey respondents who provided VCT did not charge for the service, while the respondent from Rwanda reported charging a fee of 0.17–1.00 U.S. dollar (USD). Of the nine respondents who provided PMTCT, eight supplied the service free of charge; the Rwandan survey respondent reported that a fee was levied. Among the nine respondents who provided ART, five supplied the medicines free of charge. In the four cases where a charge was levied, prices varied from USD 6.1 to USD 62.3 per month. Other indirect client costs, such as loss of income due to taking time off work, costs of monitoring tests, and costs of travel to the clinic, were not captured by the survey. These, however, may considerably affect a client's ability to maintain optimal levels of adherence to ART, to present for VCT services, or to access PMTCT services.

Planned and Ongoing Interventions to Improve ART Adherence and Enhance Use of VCT and PMTCT Services

Purpose of Interventions

Nearly all organizations that responded to the survey (N = 12) are presently (N = 7) or plan to implement (N = 3) some sort of incentive or enabler intervention to improve adherence to ART (N = 7) and/or to enhance uptake of VCT or PMTCT services (N = 3). In two cases, it was unclear what service the intervention was aiming to improve. Organizations that provided the ten clear responses are divided almost evenly among different types of service providers: four organizations provide all three services (VCT, PMTCT, and ART), while three each provide ART only or PMTCT/VCT only. Of the seven organizations aiming to improve adherence to ART, four provide all three services, while three only provide ART. All three organizations seeking to enhance uptake of VCT/PMTCT services provide only VCT/PMTCT services.

See Table 2 for country-specific information for purpose of ongoing or planned intervention implementation.

Table 2. Purpose of Planned or Ongoing Interventions

Country/ Organization	Services Provided	Intervention (Planned or Ongoing)	Target Behavior	Reason Implemented
BOTSWANA (Maun General Hospital)	ART	Ongoing	To improve adherence to ART	<ul style="list-style-type: none"> To increase the number of individuals on ART who consistently adhere to the treatment regimen
CAMEROON (Actors 4 STI and Suicide)	VCT, PMTCT	Ongoing	To enhance uptake of VCT/PMTCT	<ul style="list-style-type: none"> To encourage individuals to come forward for HIV testing To increase the number of HIV-positive pregnant women who accept therapy for the prevention of HIV transmission to their child
KENYA (MTRH)	VCT, PMTCT, ART	Ongoing	To improve adherence to ART	<ul style="list-style-type: none"> To encourage more individuals to come forward for HIV testing To increase the number of HIV-positive pregnant women who accept therapy for the prevention of HIV transmission to their child To encourage newly diagnosed HIV-positive individuals who meet the criteria for ART to begin ART treatment programs To increase the number of individuals on ART who consistently adhere to the treatment regimen To increase the number of newborns who receive preventive therapy at birth
KENYA (Port Reitz District Hospital)	VCT, PMTCT, ART	Planned	To improve adherence to ART	<ul style="list-style-type: none"> To encourage more individuals to come forward for HIV testing To increase the number of HIV-positive pregnant women who accept therapy for the prevention of HIV transmission to their child To encourage newly diagnosed HIV-positive individuals who meet the criteria for ART to begin ART treatment programs To increase the number of individuals on ART who consistently adhere to the treatment regimen

Country/ Organization	Services Provided	Intervention (Planned or Ongoing)	Target Behavior	Reason Implemented
KENYA (Rift Valley Provincial Hospital)	VCT, PMTCT, ART	Ongoing	To improve adherence to ART	<ul style="list-style-type: none"> To encourage individuals to come forward for HIV testing To increase the number of HIV-positive pregnant women who accept therapy for the prevention of HIV transmission to their child To encourage newly diagnosed HIV-positive individuals who meet the criteria for ART to begin ART treatment programs To increase the number of individuals on ART who consistently adhere to the treatment regimen To increase the number of newborns who receive preventive therapy at birth
NIGERIA (Ten-to-Teens)	VCT, PMTCT	Planned	To enhance uptake of VCT/PMTCT	<ul style="list-style-type: none"> To encourage individuals to come forward for HIV testing To increase the number of HIV-positive pregnant women who accept therapy for the prevention of HIV transmission to their child To increase the number of newborns who receive preventive therapy at birth
NIGERIA (HIV/AIDS Rehabilitation for Rural Widows and Orphans)	VCT, PMTCT	Ongoing	To enhance uptake of VCT/PMTCT	<ul style="list-style-type: none"> To encourage more individuals to come forward for HIV testing To increase the number of HIV-positive pregnant women who accept therapy for the prevention of HIV transmission to their child To create more awareness on HIV/AIDS diseases
SOUTH AFRICA (On Cue)	ART	Planned	To improve adherence to ART	<ul style="list-style-type: none"> To increase the number of individuals on ART who consistently adhere to the treatment regimen
INDONESIA (Aksi Stop AIDS Program)	VCT, PMTCT, ART	Ongoing	To improve adherence to ART	<ul style="list-style-type: none"> To encourage more individuals to come forward for HIV testing To encourage more newly diagnosed HIV-positive individuals who meet the criteria for ART to begin ART treatment programs
THAILAND (Population Council)	ART	Ongoing	To improve adherence to ART	<ul style="list-style-type: none"> To increase the number of individuals on ART who consistently adhere to the treatment regimen

Types of Interventions

Interventions to Improve ART Adherence

Interventions being planned or used to improve adherence to ART in resource-constrained settings included travel support, adherence aids such as pill boxes, or patient education interventions such as adherence counseling prior to commencing treatment (Table 3). All but one adherence intervention captured by the survey targeted the client. Only two adherence interventions were clearly performance-based,¹⁶ meaning that the client, caregiver, or provider must perform a certain action in order to receive the benefit. For example, at Botswana's Maun General Hospital, to begin ART, the client must attend pretreatment ART drug adherence counseling and be able to present an adherence partner in addition to not having any critical potential non-adherence predictors. If the caregivers and providers wish to receive the same support they must accompany clients for monthly routine check ups and ensure client adherence to ART. At MTRH in Kenya, provision of food support and other material goods for clients was dependent on client adherence to ARVs; if caregivers and providers wish to receive the same support, they must carry out home visits and provide clients with transportation when needed.

While none of the survey respondents evaluated the impact or cost-effectiveness of adherence interventions, Maun in Botswana and the Kenyan MTRH program had observed some changes since the introduction of the adherence intervention. Maun General Hospital pointed out that patients always brought their pill boxes for pill counts during review/refill visits and that average adherence was relatively high at 83 percent. However, it is difficult to determine whether this adherence rate can be attributed to the intervention, as no baseline comparison is available.^{17,18} The Kenya MTRH also noted a 90 percent adherence level, but it is unclear from the survey whether this represents a change and whether this change can be attributed to pill box use.

It was unclear how survey respondents were measuring adherence. Only two responses made this explicit: Maun General Hospital in Botswana was using a combination of pill count, pill identification test, seven-day recall questionnaire, and provider assessment; while the MTRH, in Kenya was using a combination of monthly assessments (the nature of which was not described) and statistics kept (a description of these statistics was not provided).

¹⁶ Unfortunately, the survey design was such that it was not possible to infer whether other interventions might have been performance-based. Only in two cases did survey participants respond that the intervention was performance-based (it was a close ended question).

¹⁷ It may seem confusing that "changes were detected" yet "no baseline data is available." This is again due to the way the survey was designed: it asked whether there was any observed change and the survey participant responded "yes" and described the change. However the survey did not capture baseline data.

¹⁸ The survey respondent mentioned that Maun General Hospital intends to conduct an evaluation of the intervention by mid-2004, so information on whether and to what extent the rates are due to the intervention may be forthcoming.

Table 3. Interventions to Improve ART Adherence

Country (Organization)	Individual (Client, Caregiver, or Provider) Targeted by Intervention	Intervention Type	Description of Intervention	Performance- based (P)/ Unclear (U)
Planned Intervention				
KENYA (Port Reitz District Hospital)	Not specified, but can assume client, given nature of I&E intervention	Support service	Adherence aids such as pill boxes	U
SOUTH AFRICA (On Cue)	Client	Support services	Adherence aids such as pill boxes A “smart pill box” which, in real time, monitors adherence and, via a central server, notifies care givers if adherence becomes a problem Text message reminders are sent to targeted patients with a variety of information contained in them	U
Ongoing Intervention				
BOTSWANA (Maun General Hospital)	Client	Support service Patient (and buddy) education	Monthly adherence calendar Pre-treatment ART drug adherence counseling	P
KENYA (MTRH)	Client Caregiver Provider	Support service	Adherence aids such as pill boxes Food support Travel support Other material goods (not described)	P

Country (Organization)	Individual (Client, Caregiver, or Provider) Targeted by Intervention	Intervention Type	Description of Intervention	Performance-based (P)/ Unclear (U)
KENYA (Rift Valley Provincial Hospital)	Client	Patient education	Adherence counseling prior to commencing treatment	U
		Support service	Outreach program to follow up defaulters through NGOs and community outreach programs	
INDONESIA (Aksi Stop AIDS Program)	Client	Support service (possibly including education)	HIV/AIDS case management ¹⁹	U
THAILAND (Population council)	Client	Support services	Adherence aids such as pill boxes	U
			Travel support	

Interventions to Enhance Use of VCT and/or PMTCT Services

The three interventions captured by the survey to enhance VCT and PMTCT service use in resource-constrained settings were support-service interventions (e.g., travel/food/financial support, provision of medical and nutritional support) and patient and provider education interventions (such as HIV/AIDS awareness seminars).

Interventions seeking to improve adherence, interventions to enhance use of VCT, and PMTCT services seemed to target the caregiver and the provider more than the patient. Two of the three interventions were performance-based. In the case of Cameroon's "Actors 4 STI and Suicide," providers must attend education sessions to receive travel, food, and other material goods. Caregivers must also undertake some action to receive the support; however, the respondent did not explain what this action was. Nigeria's "Rehabilitation for Rural Widows and Orphans" NGO also used a performance-based intervention—to receive travel and/or monetary support, clients and providers must attend seminars on HIV/AIDS awareness to receive incentives.

While none of the survey respondents evaluated the impact or cost-effectiveness of the intervention(s), the NGOs "Actors 4 STI and Suicide" in Cameroon and "Rehabilitation for Rural Widows and Orphans" in Nigeria noted that they observed some changes since the interventions' introduction. The respondent from Cameroon stated that, "People were gradually accepting AIDS and HIV as a common infection and there was no room for stigma to be an insult." The survey respondent from Nigeria similarly noted that provision of the [travel and

¹⁹ The survey response did not specify whether this service was provided for VCT, PMTCT, and/or ART clients. Given that "case management" usually implies an ongoing relationship with a patient/client, the authors made the assumption that this intervention targeted improving adherence to ART.

financial support and educational] intervention resulted in “regular attendance.” When more incentives were given out, more people participated than when there were no incentives.

Table 4. Interventions to Improve Use of VCT and PMTCT Services

Country (Organization)	Intervention Type	Description of Intervention	Country (Organization)	Performance-based (P)/ Unclear (U)
Planned Intervention				
NIGERIA (Ten-To-Teens HIV Prevention Project)	Client	Support service	Medical and nutritional support—routine medicines and vitamin A capsules	U
	Caregiver		Travel support	
Ongoing Intervention				
CAMEROON (Actors 4 STI and Suicide)	Client	Support services	Travel support	P
	Caregiver		Food support	
	Provider		Other material goods (not described)	
NIGERIA (Rehabilitation for Rural Widows and Orphans)	Client	Patient education	Seminars and conferences on HIV/AIDS awareness	P
	Caregiver	Support service		
	Provider	Provider education	Travel support	
			Money	
			Seminars and conferences on HIV/AIDS awareness	

Interventions with an Unclear Purpose

In two cases, it was unclear from responses whether the ongoing intervention aimed to improve ART adherence and/or use of VCT and/or PMTCT services.

In both cases, the interventions described are non-performance-based support service interventions (travel support and food support) targeting the caregiver, provider and client; a financial reward is also being used in one case, as additional honoraria on top of normal salaries for providers.

While neither of these two survey respondents evaluated the intervention’s impact or cost-effectiveness, the Indonesian “Aksi Stop AIDS Program” noted that “health care providers were

unwilling to provide care, support, and treatment (CS&T) services as part of their regular regimen without fiscal incentives.” The implication is that, in the absence of provider honoraria, these CS&T services would not be provided.

Table 5. Ongoing Interventions—Target Behavior Unclear

Institution and Location	Service Provided	Target Individual (Client, Caregiver, or Provider)	Incentive/Enabler Intervention Type²⁰	Description of Incentive/Enabler Intervention
INDONESIA (Aksi Stop AIDS Program)	VCT, PMTCT, ART	Client Provider	Support services Financial reward	Travel support: on a “need-basis,” reimbursement for transportation to clinic services Food support Honorarium on top of normal salaries
KENYA (Rift Valley Provincial Hospital)	VCT, PMTCT, ART	Client Caregiver Provider	Support service	Centralizing services under one roof and providing the expertise required to deal with HIV-positive clients Scaling up programs—taking the services closer to the community Reducing costs of lab tests and ART to a level which is likely to see more people affording ART

²⁰ Classified as patient education intervention, provider education intervention, support services intervention, or patient selection intervention.

DISCUSSION

Current Situation with Regard to VCT, PMTCT, and ART

Despite the low survey response rate, survey findings reveal a diverse array of VCT, PMTCT, and ART service providers in resource-constrained settings. This diversity suggests that availability of HIV/AIDS services is increasing, with many different types of institutions and organizations beginning to respond to the pandemic. Over time, the hope is that this increase in availability will translate into increased access to services, which will help decrease stigma and lead to more individuals coming forward for testing, more women receiving therapy for prevention of HIV transmission to their child, and more HIV-positive individuals accessing long-term ART.

Survey findings also suggest that direct financial costs may be becoming less of a barrier to VCT, PMTCT, and ART service access in resource-constrained settings. In almost all cases, survey respondents stated that they provide VCT and PMTCT free of charge, while more than half of those who offer ART services indicated that they provide ART at no charge to the client. While the survey had a very low response level, it is encouraging that services (especially ART) were provided free of charge in the settings surveyed.

Interventions to Improve Adherence to ART and Uptake of VCT and PMTCT Services

HIV/AIDS program personnel are aware of possible barriers to VCT and PMTCT uptake and to ART adherence, and are seeking to overcome these barriers through a variety of interventions. Interventions identified by the survey can be classified as support service or education interventions and range from travel support and outreach to provision of devices (messaging tools, pill boxes, adherence calendars) to facilitate ART adherence. The fact that these interventions are being planned or implemented reveals that HIV/AIDS treatment programs are aware of the barriers that exist for possible clients to access and to continue to access HIV/AIDS services and therapy. It is encouraging to find that many survey participants report having included a mechanism to promote and maintain high levels of ART adherence from the initiation of an ART treatment program, especially given that it has been argued that “the most important time to intervene to improve adherence is before actually starting therapy.”²¹

Little can be concluded about the individual or cumulative impact of different interventions on VCT/PMTCT use or adherence to ART. No survey response described a program that measured impact or cost-effectiveness of the given intervention. Nonetheless, a few survey responses identified interventions—including food support, adherence aids, financial support, travel support, and educational interventions such as adherence counseling and other material support—which the respondent felt improved ART adherence and use of VCT and PMTCT services.

²¹ As stated by Diane Havlir in Wu A. 2001. “Report From Buenos Aires: Lessons on Adherence,” *The Hopkins HIV Report*, September 2001.

Survey Limitations

Poor Response Level

As indicated earlier, only 16 responses were received, despite efforts to disseminate the survey to as broad an audience as possible. However, the result should still give a reasonable estimate of the situation as most responses were institutional rather than individual. The poor response level also highlights problems with electronic surveys. A postal questionnaire might have yielded better results but in some of the target countries, ordinary mail is either erratic or non-existent. One possible reason for the poor response rate is the terminology used, primarily the key terms “incentives” and “enablers.” With the benefit of hindsight, the authors realize that terms such as “adherence aids” or “adherence enhancers” may have been more appropriate and could have contributed to a higher response level.²²

Survey Design Flaws

Unfortunately the survey did not adequately address or capture the process of intervention implementation or assess country ART/VCT or PMTCT situations. This was partly due to the closed-ended nature of most questions. In all cases where the response was not perfectly clear, clarification was sought. In a few cases, clarification was received; unfortunately, the majority of queries were not answered and the authors made the most logical interpretation of the information at hand in the survey response. These flaws will be kept in mind and the survey will be adapted accordingly when it is redesigned and distributed again in the future.

²² Despite the fact that definitions were provided, a few responses suggest that there may have been additional confusion over the terms “care giver” versus “provider.”

NEXT STEPS

Given increasing access to ART in developing countries, the authors intend to modify the survey language and administer the survey again in the near future to more fully capture country-specific experience with interventions to improve access to VCT and PMTCT services and adherence to long-term ART.²³

²³ If you are interested in completing the revised survey, please send an e-mail to ajohnson@msh.org to ensure you are on the mailing list.

CONCLUSION

This paper is a first attempt to understand and catalogue the evidence on interventions being used in resource-constrained settings to encourage individuals to come forward for HIV testing, to increase the number of HIV-positive pregnant women who receive therapy for the prevention of HIV transmission to their child, and to improve long-term adherence to ART.

Survey findings suggest that HIV/AIDS services are being provided by an increasingly diverse array of public and private, governmental and non-governmental organizations in resource-constrained settings. Findings also suggest that direct financial costs may be becoming less of a barrier to VCT, PMTCT, and ART service access in these settings. Finally, it is encouraging to note that a wide variety of innovative interventions are being implemented or planned for by HIV/AIDS treatment programs—to increase use of VCT or PMTCT services or to improve adherence to ART—which demonstrates the level of recognition that HIV/AIDS treatment programs have of the barriers that exist for possible clients to access and continue accessing services and/or therapy.

As ART becomes more widely available, we call on all those considering design and implementation of similar interventions to document these experiences, and to the extent possible, rigorously evaluate them, and disseminate this information widely so that we will be able to say with confidence which interventions have most impact and are most cost-effective under what circumstances. The end result will be more people managing their lives successfully while living with HIV/AIDS.

REFERENCES

- Adam, B. D., E. Maticka-Tyndale and J. J. Cohen. 2003. Adherence Practices Among People Living with HIV. *AIDS Care* 15, no. 2:263–274.
- Bartlett, J. A. 2002. Addressing the Challenges of Adherence. *Journal of Acquired Immune Deficiency Syndrome* 29:S2–S10
- Bekker, L.-G., C. Orrell, L. Reader, et al. 2003. Antiretroviral Therapy in a Community Clinic: Early Lessons from a Pilot Project. *South African Medical Journal* 93(6):458–62
- Coetzee, D., A. Boulle, K. Hildebrand, et al. 2004. Outcomes at 24 Months in a Primary Care Antiretroviral Treatment Programme in South Africa. *AIDS* 18:1–9
- Day, J. H., K. Miyamura, A. D. Grant, et al. 2003. Attitudes to HIV Voluntary Counseling and Testing Among Mineworkers in South Africa: Will Availability of Antiretroviral Therapy Encourage Testing? *AIDS Care* 15, no 5:665–72
- Escobar, I., M. Campo, J. Martin, et al. 2003. Factors Affecting Patient Adherence to Highly Active Antiretroviral Therapy. *The Annals of Pharmacotherapy* 37:775–81
- Farmer, P., F. Leandre, J. S. Mukherjee, et al. 2001. Community-based Approaches to HIV Treatment in Resource-poor Settings. *Lancet* 358:404–409
- Gordillo, V., J. del Alamo, V. Soriano, et al. 1999. Sociodemographic and Psychological Variables Influencing Adherence to Antiretroviral Therapy. *AIDS* 13:1763–1769
- Jani, A. A., ed. 2002. *Adherence to HIV Treatment Regimens: Recommendations for Best Practices*. Washington, DC: American Public Health Association (APHA).
<http://www.apha.org/ppp/hiv/Best_Practices.pdf> (accessed Feb. 27, 2006).
- Joint United Nations Programme on HIV/AIDS (UNAIDS). 2004. *2004 Report on the Global HIV/AIDS Epidemic: 4th Global Report*. Geneva: UNAIDS.
- Kanya, M. R., L. A. Spacek, H. M. Shihab, et al. 2004. *Treatment Outcomes for Antiretroviral Therapy in a Routine Clinical Setting in Kampala, Uganda*. Paper presented at conference, 7th International Congress on Drug Therapy in HIV Infection, November 14–18, Glasgow. Abstract PL4.4.
- Laurent, C, N. Diakhate, Ndeye Fatou Ngom Gueye, et al. 2002. The Senegalese Government HAART Initiative: An 18 Month Follow-up Study *AIDS* 16:1363–1370
- Murphy, D. A., K. Johnston Roberts, D. Hoffman, et al. 2003. Barriers and Successful Strategies to Antiretroviral Adherence Among HIV-infected Monolingual Spanish-speaking Patients. *AIDS Care* 15, no. 2:217–230.

Murphy, D. A., L. Greenwell, and D. Hoffman. 2002. Factors Associated with Antiretroviral Adherence Among HIV-infected Women with Children. *Women Health* 36(1):97–111

Oyugi, J. H., J. T. Byakika, K. Ragland, et al. 2004. *Treatment Outcomes and Adherence to Generic Triomune[®] and Maxivir[®] Therapy in Kampala, Uganda*. Paper, XV International AIDS conference, July 11–16, Bangkok. Abstract WeOrB1323.

Sabaté, E., ed. 2003. Human Immunodeficiency Virus and Acquired Immunodeficiency Syndrome. In *Adherence to Long-term Therapies: Evidence for Action*. Geneva: World Health Organization.

WHO. 1996. Coverage of Maternity Care: A Listing of Available Information. WHO/RHT/MSM/96.28. Geneva: WHO.