

EVALUATION REPORT

Effectiveness and efficiency of the USAID PrevenSida Project in Nicaragua

APRIL 2015

This evaluation report on the effectiveness and efficiency of the USAID PrevenSida Project in Nicaragua was prepared by University Research Co., LLC (URC) for review by the United States Agency for International Development (USAID) and authored by Edward Broughton, Rafael Arana, Alexey Oviedo Rojas, and Oscar Nuñez of URC. The evaluation was implemented under the USAID PrevenSida Project, which is made possible by the generous support of the American people through USAID and its Mission in Nicaragua. USAID|Prevensida is funded by the U.S. President's Emergency Plan for AIDS Relief (PEPFAR).

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DISCLAIMER

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

Acknowledgements

This report was prepared by University Research Co., LLC (URC) for review by the United States Agency for International Development (USAID) under the USAID PrevenSida Project, which is funded by the American people through USAID Nicaragua. The project is managed by URC under the terms of Contract Number AID-524-A-10-00003.

Recommended citation

Broughton E, Arana R, Oviedo Rojas A, Nuñez O. 2015. Effectiveness and efficiency of the USAID PrevenSida Project in Nicaragua. *Evaluation Report*. Published by the USAID PrevenSida Project, Bethesda, MD: University Research Co., LLC (URC).

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Abbreviations

AIDS	Acquired Immunodeficiency Syndrome
DALY	Disability-adjusted Life Year
FSW	Female Sex Worker
FT	Female Transgender Person
HIV	Human Immunodeficiency Virus
KP	Key Population
MARP	Most at Risk Populations
MSM	Men who Have Sex with Men
NGO	Non-governmental Organization
PEPFAR	U.S. President's Emergency Plan for AIDS Relief
PrevenSida	Prevention of HIV/AIDS Transmission among High Risk Population Program
UNAIDS	Joint United Nations Program on HIV/AIDS
URC	University Research Co., LLC
URS	Unique Register System
US	United States
USAID	United States Agency for International Development
WHO	World Health Organization

EXECUTIVE SUMMARY

Introduction

Cases of HIV in Nicaragua are concentrated among groups of individuals referred to as key populations (KPs), such as men who have sex with men (MSM), female sex workers (FSW), and female transgender people. Prevalence among these groups is 600 to 4000 times higher than the general population. To control the country's HIV epidemic, USAID Nicaragua has invested in the PrevenSida Project to reach KPs through building capacity and improving performance of Nicaraguan non-governmental organizations (NGOs) who provide services to KPs. USAID|PrevenSida is a six-year project aimed at increasing healthy behavior in populations most at risk of HIV/AIDS transmission using the continuum of care model, assuring combination HIV prevention and care. This study evaluated the cost-effectiveness of USAID|PrevenSida activities in terms of expenditure per additional KP individual receiving services from a supported NGO, per case of HIV averted and per disability-adjusted life year (DALY) averted.

Methods

This retrospective observational evaluation used the number of individuals in key populations covered by NGOs who received assistance from USAID|PrevenSida between 2012 and 2014. The study population is all KP individuals who received services from all NGOs that received support from USAID|PrevenSida in each fiscal year. Such analysis was possible because the project has an extensive database recording the preventive services delivered by NGOs through grants using an anonymous and unique code per individual served.

To determine the efficiency of KP coverage, cost-effectiveness analysis was conducted comparing the USAID|PrevenSida intervention with business-as-usual. Inputs into the model were generated from epidemiological modeling and data from project records. Cost data were collected from the accounting records of USAID|PrevenSida. Participating NGOs had cost-sharing arrangements to provide services – using in-kind office space, equipment, test kits and other consumables, and volunteer time – and these were not included in the cost-effectiveness calculations because the analysis was done from the perspective of USAID.

Results

By 2014, 24 NGOs were receiving grants and technical assistance as part of their involvement with USAID|PrevenSida, with a total of 72,955 people from KPs served by these NGOs at a cost per person of US\$11.32 (range US\$9.39 to US\$16.55 per person, depending on region). When comparing costs to USAID|PrevenSida for working with NGOs over a three-year period versus costs associated with supporting NGOs that only worked with the project for one year, the costs per recipient for less experienced NGOs were several times higher, even though the absolute costs were about half those of the experienced NGOs.

The cost-effectiveness of the USAID PrevenSida Project was estimated at \$50,700 per case of HIV averted or \$2,600 per DALY averted. Because of the uncertainty in the input variables, there was a 95% confidence interval between \$1,000 and \$99,000 per case of HIV averted and between \$50 and \$5,100 per DALY averted.

Conclusion and Recommendations

USAID|PrevenSida distributed about \$600,000 in grants and spent about \$230,000 for technical and administrative assistance to 24 HIV/AIDS NGOs in Nicaragua in 2014, at a cost per individual served of less than \$12. Its cost-effectiveness, compared to no program, was \$2,600 per DALY averted, which is slightly over half the Gross Domestic Product per capita and therefore considered highly cost-effective according to World Health Organization criteria. More experienced NGOs received a higher amount of absolute funding but because they provide services to more individuals, they were a third to three times less costly per capita. USAID|PrevenSida administrative costs were approximately the same per NGO receiving the technical assistance; therefore, the number of KP beneficiaries the NGOs provide services to is the main driver of the efficiency of the assistance to each NGO's program. The cost and efficiency varied substantially by region, mainly as a reflection of the number of people in KPs that the NGOs were providing services for.

Study limitations include some data deficiencies requiring assumptions to be made. Cost-sharing by NGOs substantially improves the cost-effectiveness from the USAID perspective and likely promotes sustainability.

Technical support given by USAID|PrevenSida appears to be cost-effective by WHO standards compared to the status quo, and therefore it is recommended that this form of capacity development be continued. These findings show that focused interventions aimed at KP service provision organizations can be acceptably efficient in this setting.

I. INTRODUCTION

Cases of HIV in Nicaragua are concentrated among groups of individuals now referred to as key populations (KPs). In 2013, HIV prevalence in Nicaragua among men who have sex with men (MSM) was 7.5%, among female sex workers (FSW) was 1.9% and among female transgender people (FT) was 13.8% [1], whereas in the general population it was 0.003% [2].

To control the country's epidemic, the United States Agency for International Development (USAID) Mission in Nicaragua has invested in the USAID PrevenSida Project to reach KPs through building the capacity and improving the performance of Nicaraguan non-governmental organizations (NGOs) who provide services support to key populations.

USAID|PrevenSida is a six-year contract awarded to University Research Co., LLC (URC). The project is aimed at increasing healthy behavior in populations most at risk of HIV/AIDS transmission. Its four goals are:

- 1) Strengthened institutional capacity of NGOs working with KPs,
- 2) Improved access to and quality of HIV/AIDS preventive services,
- 3) Reduction of stigma and discrimination among key populations, and
- 4) Improved participation of NGOs working with KPs.

Key populations include MSM, FSW, FT and people with HIV. The project grants funds to a diversity of KP NGOs and works to improve data quality and the continuum of care assuring combination HIV prevention and care, thus contributing to more effective management of positive cases and ensuring adherence to avoid treatment failure.

USAID|PrevenSida requires that NGOs participating in the project utilize material support from sources other than the project. This cost-sharing was considered important because NGOs needed to learn to solicit and manage other funding, thereby making their operations more likely to be sustained once funding from other sources diminishes as expected. The cost-share included in-kind donations of goods such as HIV test kits, condoms and lubricants, administrative resources use such as buildings and capital equipment procured prior to USAID|PrevenSida involvement, and in-kind donations of labor.

It is important for external funders such as USAID and the Ministry of Health to know the efficiency and effectiveness of the activities implemented by USAID|PrevenSida. An external evaluation of bilateral USAID programming, which included assessment of the USAID PrevenSida Project, was commissioned by USAID and conducted in 2014[1]. It showed success in capacity-building for key organizations involved with the response to HIV and good communication and coordination between them. However, there was no examination of the cost of the combination prevention model delivered to key populations and no evaluation of the efficiency of developing the capacity of NGOs with several years of experience with USAID|PrevenSida versus those more recently starting with project support. Furthermore, the difference in efficiency between service delivery to the Pacific versus the Caribbean Coast was also unknown.

This study evaluated the cost-effectiveness of USAID|PrevenSida activities in terms of expenditure per additional KP individual receiving services from a supported NGO, per case on HIV averted and per disability-adjusted life year (DALY) averted. It estimates the cost and efficiency of nationwide expansion and consolidation of this prevention approach and also informs the U.S. President's Emergency Plan for AIDS Relief (PEPFAR) in the Central American Region of the cost-effectiveness of this model.

A. Research Questions

The primary question for this evaluation is, What is the cost and efficiency of the prevention program implemented by USAID|PrevenSida in terms of the projected proportion of HIV infections averted?

Secondary questions include:

- How much does it cost to deliver preventive services at a non-governmental organization recently entered (one year) into USAID|PrevenSida's technical assistance compared to those with over two years of receiving technical assistance?
- What is the cost-effectiveness in terms of disability-adjusted life years averted for the USAID|PrevenSida program?
- How much does it cost to implement the combination prevention model in the Pacific Coast Region compared to the Caribbean Coast?

USAID|PrevenSida concentrated its efforts on overcoming accessibility gaps in key populations and was clearly aligned with the strategic national plan for HIV/AIDS 2011-2015. It developed a combined prevention model based on working with the civil society organizations network in their own social life spaces, working in a complementary way with public services [3].

Compliance with global quality standards: The main factor to comply with quality standards at an institutional level derives from the development of human resource competencies. USAID|PrevenSida was also innovative due to the commitment acquired with the implementing NGOs to facilitate development of competencies during the periods they participate in the project.

The project achieved its targets and showed progressive increases in coverage of most at-risk populations (MARPs) during the first three years of implementation, based on widening the base of implementing NGOs from 12 during the first two years to 18 by the third year.

Another important rationale for the was to confirm its capacity to learn from experience and make needed adjustments to perfect the implementation of the combination prevention operational model for assuring KP access to HIV services. The project initially addressed the challenge to operationalize the combination prevention model, creating local capacities and reducing stigma and discrimination in a very complex environment, scaling up the experience nationwide.

The initial design of the project had a target of four contacts per KP beneficiary served, considering that only one service was going to be provided in each contact. Once the combination prevention model was developed, it was evident that more than one service was provided per contact, and USAID oriented the project to focus on people reached rather than number of contacts. During the second year, when adjustments to the URS allowed for differentiating people covered and the number of contacts provided to each person, it became evident that in each contact, two or more interpersonal activities were recorded, so it was considered that only two contacts were required per person. The program made internal adjustments for assigning funds-per-capita in sub-grants, setting the cost at two contacts per person for grants as a criterion for planning.

II. METHODOLOGY

A. Study Design

This retrospective observational evaluation of the USAID PrevenSida Project used the number of individuals in KPs covered by the NGOs who received technical assistance from USAID|PrevenSida between 2012 and 2014.

B. Variables of Interest

- Budget provided through grants to each NGO for institutional strengthening and prevention activities from 2012 to 2014
- Population reached with prevention services by each NGO
- Proportion of key populations changing their risk behavior
- Estimates of the incidence of HIV in the populations of interest from 2010 and 2014.

C. Sampling

The study population is all of the key populations receiving services from all NGOs that are receiving support from USAID|PrevenSida in each fiscal year. Data on 100% of the universe is available from the participating NGOs that received funding during the 2012 to 2014 fiscal period. Nationwide, this included:

- Fiscal year 2012: 12 NGOs
- Fiscal year 2013: 17 NGOs
- Fiscal year 2014: 24 NGOs

Inclusion: All KP members who received services from NGOs that received grants with PEPFAR and Key Populations Challenge Fund resources for HIV prevention among KPs.

Exclusion: The sample does not include NGOs that only received institutional strengthening through training and/or coaching. NGOs receiving funds different from HIV prevention are not included either, such as Human Rights Lesbian/Gay/Bisexual/Transgender funds.

D. Data Collection

USAID|PrevenSida has an extensive database recording the preventive services delivered by NGOs through grants using an anonymous and unique code to protect the privacy of service recipients. No additional information was required for this study – it was done entirely with the routine data collected. The data examined included reports generated by the unique recording system that collected information by age, gender, population type, service received, number of contacts, geographical site where the service was delivered and HIV test results.

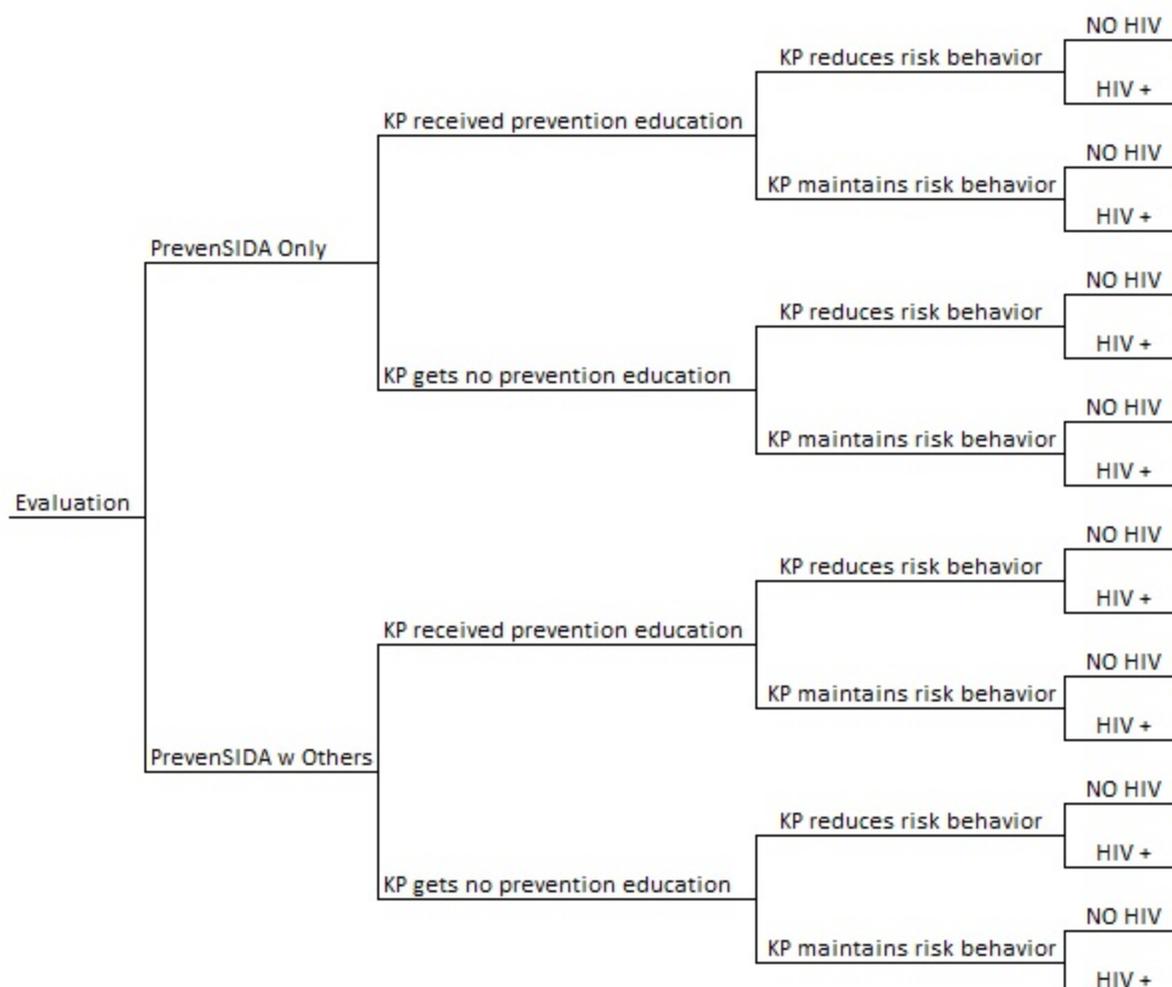
Other sources of information were USAID|PrevenSida's financial records, which tracked grant payments to NGOs, and USAID|PrevenSida staff costs for activities directly related to providing support services to the NGOs. The perspective for the cost-effectiveness evaluation is that of the project funder, USAID. In taking this perspective, the cost-sharing that was mandated for the NGOs involved in the project were not included in the cost-effectiveness analysis. It is worthwhile to note that such cost-sharing by NGOs substantially improves the cost-effectiveness from the USAID perspective, even though it is not quantified in this analysis.

Ethical considerations: Information generated by the recording system was anonymous and encoded for security. No additional primary data were collected from clients or health care providers, and all data presented are de-identified except for the region within the country. Therefore the research presented no risks to the population it involves.

E. Analysis

To determine the efficiency of coverage of key populations, cost-effectiveness analysis was conducted using decision-tree analysis comparing the USAID|PrevenSida intervention with business-as-usual. Inputs into the model in terms of the change in the risk of HIV were generated from the "Transmission Model" from UNAIDS [4] which used data from USAID|PrevenSida records as inputs to estimate the number of new patients expected to develop HIV infections. Decision-tree analysis was used to determine the incremental cost-effectiveness of the intervention compared to the business-as-usual counter-factual (Figure 1). The results were expressed in cost per additional person tested for HIV, or cost/case of HIV infection averted and cost per KP receiving services.

Figure 1: Decision tree analysis for determination of USAID|PrevenSida's cost-effectiveness



III. RESULTS

By 2014, 24 NGOs were receiving grants and technical assistance as part of their involvement with USAID|PrevenSida, with a total of 72,955 people in key populations served by them. The total cost per person in the key population reached was US\$11.32, with a range of US\$9.39 to US\$16.55 per person, depending on the region in which the NGO operated (Table 1).

Table 1: 2014 Costs and coverage of NGOs supported by USAID|PrevenSida by region

Region	NGOs	Project costs	Cost per NGO (US\$)	Grant total (US\$)	Number reached		Cost/ person reached (US\$)
					KP (at risk)	Persons with HIV	
Caribbean	5	70,363	14,073	133,673	12,280	49	16.55
Pacific	14	121,962	8,712	349,205	44,049	1,076	10.44
Central	4	23,454	5,864	93,979	12,510	-	9.39
Rio San Juan	1	18,763	18,763	26,918	4,116	-	11.10
TOTAL	24	234,542	9,773	603,775	72,955	1,125	11.32

We compared the cost of grants and administrative costs for technical assistance provided by USAID|PrevenSida between NGOs that had been working with the project for three years to those working for only one year. For comparability, they were chosen from the same regions. There was a difference in the number of people the NGOs were providing services to in the two categories, with the more experienced NGOs serving four or more times as many people in KPs. Therefore, the costs per capita for less experienced NGOs were several time higher both for the grants and for the USAID|PrevenSida administrative costs, even though the absolute costs were about half those of the experienced NGOs (Table 2). All costs were considered from the perspective of the funder of the project, USAID.

The costs reported here do not include those part of the cost-sharing requirement of the participating NGOs. These amounted to \$700,000 between 2012 and 2014. Approximately 40% was on in-kind donations, 28% was for administrative and capital costs such as rental of buildings and depreciation of vehicles and the remaining 32% was for in-kind labor from volunteer staff. Sources for cost-share resources include the Global Fund for HIV, TB and Malaria, UNAIDS and other multilateral donors.

Table 2: Grants and administrative costs for NGOs by region

NGO	Region	Grants	Admin Costs	People reached	Admin cost per capita	Per capita total cost
Experienced						
A	Central	33902	5864	6766	0.87	5.88
B	Pacific	33502	8712	4695	1.86	8.99
C	Pacific	33098	8712	4076	2.14	10.26
Inexperienced						
F	Central	16634	5864	1318	4.45	17.07
D	Pacific	15452	8712	2001	4.35	12.08
E	Pacific	11074	8712	784	11.11	25.24

The inputs for the decision-tree model used to estimate cost-effectiveness are listed in Table 3. Values were obtained from the USAID|PrevenSida database directly or those data were used in the UNAIDS transmission model to estimate the number of new cases occurring before and after USAID|PrevenSida was operating. These were entered into the model with binomial distributions corresponding to the degree of uncertainty.

Outcomes were considered both in terms of HIV infections averted and disability-adjusted life years (DALYs) averted. The latter were calculated using the standard method for burden of disease [9, 10], and the sources used for the inputs for the calculations are presented in Table 4.

Monte Carlo simulations were used to calculate the incremental cost-effectiveness of the USAID|PrevenSida intervention in 2014 compared to the situation for HIV prevention activities before the project began its work. The results are presented in 2014 international dollars. Given that this analysis was conducted solely from the perspective of the funder of the USAID PrevenSida Project, we did not include the cost of treating HIV/AIDS or other medical costs associated with the changes in behavior that may be attributed to prevention messages delivered with the support of USAID|PrevenSida.

The cost-effectiveness of the USAID PrevenSida Project was estimated at US\$50,700 per case of HIV averted or US\$2,600 per DALY averted. Because of the uncertainty in the input variables, there was a 95% confidence interval between US\$1,000 and US\$99,000 per case of HIV averted and between US\$50 and US\$5,100 per DALY averted.

Table 3: Key epidemiological inputs for cost-effectiveness model

		Value	Source
Probability of becoming HIV+ if risk behavior reduced, 2014	N	2765	[4-6]
	D	3265000	[7]
Probability that KP gets NGO services, 2014	N	42271	[5, 6]
	D	80280	[8]
Probability of risk behavior reduction when exposed to NGO, 2014	N	57%	[7]
	D	-	[8]
Probability of HIV infection if no change in risk behavior in KP	N	3387	[4-6]
	D	3265000	[5]
Probability of risk behavior reduction if KP not exposed to NGO. 2014	N	38%	[4-6]
	D	-	[5, 6]
Probability that KP gets NGO services, 2010	N	3065	[5, 6]
	D	74280	[8]
Probability of reduced risk behavior with NGO, 2010	N	38%	[8]
		-	

N: Numerator, D: Denominator

Table 4: Sources and results for DALY calculations

Description	HIV with ART	HIV with no ART	AIDS with no ART	Source
Discount rate	0.03	0.03	0.03	Assumed
Disability weight (1 for death)	0.053	0.221	0.547	[10, 11]
Age at death (YLL)	60	36	36	[3, 6]
Life expectancy at age of death	21	42	42	[3, 6]
Years between onset and death	30	10	2	[3, 6]
Age at onset	26	26	26	[3, 6]
Years with disability	30	8	2	[10, 11]
Years of Life Lost	4.58	18.88	24.00	Calculated
Years of Life Lost to Disability	1.41	2.35	1.61	Calculated
DALYs lost	5.98	21.23	25.61	Calculated
Percent of people with HIV in group	67	33	33	Calculated
DALYs lost overall illness	4.01	7.01	8.45	Calculated
Total Estimated DALY burden of cases of HIV in Nicaragua			19.46	Calculated

IV. DISCUSSION

The USAID PrevenSida Project distributed about US\$600,000 in grants and spent about US\$230,000 to provide technical and administrative assistance to 24 HIV/AIDS NGOs throughout Nicaragua in 2014. In the same year, the number of individuals considered in KPs served by NGOs involved in the project was just over 72,955, for a total cost per individual served of less than \$12, which is 0.26% of Gross Domestic Product per capita (purchasing power parity). In terms of efficiency, the project cost approximately \$2,600 per DALY averted, which is a little over half the GDP per capita and therefore is considered highly cost-effective according to World Health Organization (WHO) criteria for efficient health interventions [12].

The NGOs themselves organized and managed cost-sharing outside the USAID|PrevenSida mechanism, and these costs were not included in this cost-effectiveness analysis because the perspective was of the project funder, USAID, and not the NGOs or society at large. The amount of cost-sharing was approximately \$233,000 per year; more than half of this amount was the utilization of volunteer labor and the share of office expenses in situations where the NGO had negotiated shared office space in which to operate along with other organizations. This model was promoted by USAID|PrevenSida to develop a greater degree of engagement among the NGOs and to help develop a model for sustainability of the activities beyond the project's involvement (Personal communication; April 10, 2015).

Comparing the costs and efficiency in terms of spending per recipient of services, more experienced NGOs received a higher amount of absolute funding, but because they were providing services to substantially more individuals, they were a third to three times less costly per capita. The USAID|PrevenSida administrative costs were approximately the same per NGO receiving the technical assistance; therefore, the number of KP beneficiaries the NGOs provide services to is the main driver of the efficiency of their programs. Given that the larger NGOs were the first to be included in the project, they look more efficient.

Some of the technical assistance provided by USAID|PrevenSida was to improve management capacity in the NGO, and it was seen that fewer inputs were required over time for this. It can be expected that if other NGOs providing services to KPs are added to the program in the future, they will appear less efficient because they will likely be serving fewer individuals in KPs and require more capacity-building inputs than NGOs already part of the project. However, both equity and efficiency issues should be addressed when implementing programs aimed at HIV services, because always deferring to efficiency may lead to greater and more problematic inequities [13].

The cost and efficiency of the combination prevention model as implemented by NGOs receiving support from USAID|PrevenSida varied substantially by region, again more as a reflection of the number of people in KPs that the NGOs were providing services for. The five NGOs in the Caribbean Region served about 10,000 people in KPs using grants totaling about \$134,000, while the four in the Central Region served 20% more people with 42% less in grant funding. However, the biggest difference was in the cost of providing administrative and technical support, which was three times as much in the Caribbean Region as in the Central. Again, the issue of equity versus efficiency must be considered when making decisions in light of these data.

This study had limitations, some common to economic and epidemiological modeling and some due to data deficiencies. Several assumptions were made with the cost-effectiveness model. The discount rate of 3% per year is standard in this type of analysis. It could be argued that age weighting should have been used to account for the fact that the highest incidence of HIV occurs in those who are generally the most productive members of society. Doing so would have improved the cost-effectiveness of the project; instead, we produced a more conservative estimate.

We also assumed that those members of KPs who received services from the NGOs cost approximately the same regardless of their age, but this may not have been the case. We also assumed that the new cases averted due to the intervention would have occurred at the same average age of those who have so far contracted HIV in Nicaragua. However, it is unlikely that changes in these assumptions would have made much of a difference in the overall result. Many figures used in the cost-effective model were based on epidemiological estimation using the calculations given by UNAIDS. While these are widely used in such projections, it would have been preferable to have enough follow-up time to collect actual outcome data.

For the cost data, some of the USAID|PrevenSida accounting records were not subdivided into the same categories as shown here. For example, the costs incurred for headquarters activities necessary to

support other regions were not necessarily divided by NGO or by region. Therefore, estimations were based on approximations of the level of effort required to conduct the activities. However, costs to provide technical assistance, such as per diems and transport, could be attributed to specific NGOs and regions. Therefore, some of the USAID|PrevenSida cost data may not be divided completely accurately, although the totals are accurate.

The technical support given by USAID|PrevenSida appears to be cost-effective by WHO standards compared to the status quo, and therefore it is recommended that implementation of this form of capacity development be continued. While this technical assistance model appears to be less efficient for new NGOs that provide services to fewer people in KPs, it is still likely to be cost-effective by international standards. These findings show that such targeted capacity development interventions aimed at organizations that provides services to KPs where the HIV epidemic has the greatest effect can be acceptably efficient, at least in this setting.

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