

# THE NEW HIV/AIDS PROGRAM IN PERU: THE ROLE OF PRIORITIZING AND BUDGETING FOR RESULTS

DISCUSSION PAPER

JANUARY 2015

*Veronica Vargas*





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*The Role of Prioritizing and Budgeting for Results*

**Veronica Vargas**

**January 2015**

## Health, Nutrition and Population (HNP) Discussion Paper

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# Health, Nutrition and Population (HNP) Discussion Paper

## The New HIV/AIDS Program in Peru: *The Role of Prioritizing and Budgeting for Results*

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World Bank, Washington, DC, USA, September 2014  
Financed by the UNAIDS Unified Budget, Results and Accountability Framework  
(UBRAF) Trust Fund (TF013420)

### Abstract:

This study aims to evaluate and develop recommendations on how the HIV/AIDS program in Peru can achieve better Value for Money. In Peru, the HIV epidemic concentrates mostly among men who have sex with men (MSM), with AIDS being the first cause of death for men ages 30-49 in 2010 and the second cause of death for women aged 25-34 (BOD, 2013). UNAIDS (2013) estimates there were 76,000 people living with HIV/AIDS (PLWA) in 2012, and this study estimates 67,000 PLWA in 2013. The Ministry of Health reports that 27,502 PLWA currently receive ART, a 43-48 percent coverage of eligible people, and 66 percent coverage of all diagnosed eligible individuals (WHO, 2013 guidelines).

In 2011, there was a transition from international to domestic public funding, which increased from US\$17.7 million in 2005-10 to US\$57.8 million in 2011-13. The main achievements of the Peru HIV/AIDS program to date include: (i) collaboration with NGOs to provide ART; (ii) free provision of ART; (iii) educating poor women on mother to child HIV transmission; and (iv) access to reduced ARV prices through the PAHO Drug Fund. Major challenges include: (i) limited testing and laboratory capacity in the provinces; (ii) less than half of the budget is allocated to high-risk groups; (iii) wage bill issued by other programs and; (iv) limited number of community health workers (CHWs) for IEC.

This study recommends targeting high-risk groups with proactive testing, promotion of condom use, and supervised ART administration by CHWs to close the coverage gap. In addition, there is a need to expand coverage of rapid testing points through greater diversity of contractual arrangements with NGOs and the private sector, which can only be achieved with the support of a human resources plan that centrally positions CHWs in HIV prevention and ARV treatment.

**Keywords:** allocative efficiency, resource allocation, HIV/AIDS, health spending

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## ACRONYMS

AIDS	Acquired Immune Deficiency Syndrome
ART	Antiretroviral Therapy
ARVs	Antiretrovirals
CERITSS	AIDS and Sexually Transmitted Infections Reference Center
CHW	Community Health Worker
CONAMUSA	National Multisectoral Coordinating Committee on Health
CPPY	Cost per Patient Per year
DARES	General Directorate for Strategic Supplies
DIGEMIC	General Directorate of Drugs
DIRESA	Regional Health Bureau
DOTS	Directly Observed Treatment, Short-course
ENDES	Demographic and Family Health Survey
FSW	Female Sex Workers
GFATM	The Global Fund to Fight AIDS, Tuberculosis and Malaria
IEC	Information, Education and Communication
INEI	National Statistics and Information Institute
INS	National Institute of Health
LAC	Latin America and the Caribbean
MTC	Mother to Child Transmission of HIV
MEF	Ministry of Economy and Finance
MOH	Ministry of Health
MSM	Men who have Sex with Men
MSW	Male Sex Workers
MDR-TB	Multidrug-Resistant Tuberculosis
NGO	Non-Governmental Organizations
PAHO	Pan-American Health Organization
PECOS	Special Program of Control of AIDS
PEM	Multisectoral Strategic Plan for HIV/AIDS 2007-2011
PLWA	People Living with AIDS
PROCETSS	National Health Program Against Sexually Transmitted Diseases and AIDS
RBB	Results Based Budgeting
SIAF	Integrated Administrative Management System
STIs	Sexually Transmitted Infections
SW	Sex Worker
UNAIDS	Joint United National Programme on HIV/AIDS
UNGASS	United National General Assembly Special Session
WHO	World Health Organization



## FOREWORD

Though HIV/AIDS still places a great disease burden in countries around the globe, declining international funding and increasingly domestically funded national programs call for more judicious and targeted spending. Despite victories in the last decade in the fight against HIV/AIDS, the disease continues to infect over 100,000 individuals every year in Latin America and the Caribbean alone. The high costs of HIV/AIDS treatment regimens and the prolonged treatment duration of this chronic disease also add to the need for long-term budgetary planning and more efficient allocation and use of health resources.

This study is part of a series funded by the Global HIV/AIDS Partnership, in an effort to shine light onto the Latin America and Caribbean countries' responses to the HIV/AIDS epidemic through the years. This study, in particular, assesses current HIV/AIDS resource distribution in Peru, including the current level of funding and future resources needed to address the testing and treatment coverage gap. Efforts such as this one are and will become increasingly important, as the Region's leaders must make difficult decisions on how to allocate resources in the best health interests of their constituents.

I would like to recognize Andre Medici, who served as the Task Team Leader and coordinated the efforts involved in the development of this study. His efforts were supported by the World Bank peer reviewers Daniel Maceira, Eliana Zeballos, Rafael Cortez, and Jaime Bayona, who provided insightful comments to the author. Finally, I would like to recognize Marelize Gorgens, David Wilson, Fernando Lavadenz, and the entire HIV/AIDS team, whose support made this study possible.

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## ACKNOWLEDGMENTS

This report was prepared by Veronica Vargas, Senior Health Economist. The author would like to thank Andre Medici, the Task Team Leader, for his valuable comments and generous support; Dr. Graciela Meza, Epidemiologist at University of Iquitos, and Andrea Pineda, for her research assistance.

This report was produced in direct cooperation with the Ministry of Finance (MEF) and the Ministry of Health (MOH), including: Dr. Nelly Huamaní, Coordinator of Health Projects, MEF; Dr. Alfonso Gutierrez, Budget for Results Specialist, MEF; Oliver Olórtegui, MEF Resident in Loreto; Dr. Angel Gonzales, Manager of the HIV/AIDS program, MOH; Dr. Monica Pun, Epidemiologist, Department of Epidemiology MOH; and María Herrera, Coordinator of the HIV/AIDS program in Loreto, MOH. The author is grateful to César Antonio Núñez, Director of the UNAIDS Regional Support Team for Latin America, for his support.

Additionally, the author would like to thank the following for providing key information: Dr. Fernando Llanos, focal point for HIV/AIDS, PAHO-Peru; Dr. Carlos F. Cáceres, Director of the Unit of Health, Sexuality and Human Development, University Cayetano Heredia; and Dr. Robert de La Grecca, Researcher, NGO IMPACTA.

Thanks also go to Dr. Víctor Bocangel, Lead Health Specialist, MEF, and the following officials of the MOH: Dr. Carlos Benites, Coordinator HIV/AIDS program; Dr. Cesar Cabezas, Director National Health Institute; Dr. Lely Solán, Director Center of Public Health; Dr. Ada Valverde, Laboratory Coordinator NHI; and Dr. Casapiedra, ex-Hospital Director in Iquitos; Comprehensive Health Insurance officials Dr. Pedro Grillo, Director, Dr. Ana Carmela Vasquez and Karinma Cuellar, Medical Supervisors; Raul Diaz Villacorta, Representative in Loreto; Dr. Patricia García, Professor and Director of the School of Public Health, University Cayetano Heredia; and Ricardo Chuquimia, Coordinator, Global Fund TB component, PARSALUD.

The author would also like to thank Dr. Regina Castillo, UNAIDS Representative; Dr. Karl Dehne, Senior Adviser, UNAIDS/Genève; Dr. Alfredo Guzmán, Reproductive Health, PAHO; Dr. Leonid Lecca, Director, and Jerome Galea, Researcher, Partners in Health.

Constructive comments on the report were received from Dr. Angel Gonzalez, Ministry of Health, Peru HIV/AIDS program; Dr. Fernando Llanos, Focal point for HIV/AIDS, PAHO/Peru; Patricia Bracamonte, Monitoring and Evaluation Officer, UNAIDS/Peru; and Dr. José Luis Sebastian, Coordinator Peru AIDS Health Care Foundation. The World Bank peer reviewers were Daniel Maceira and Eliana Zeballos. We also received comments from Rafael Cortez, Dr. Jaime Bayona, Dr. Sonya Shin, and Sergio Poblete.

The author extends her gratitude to Joana Godinho, former LAC Health, Nutrition and Population Sector Manager, Fernando Lavadenz, Senior Health Specialist and

HIV/AIDS focal point, and Rory Narvaez, former Senior Operations Officer in the Peru Country Team, for their support during the preparation of the study. Finally, the author is grateful to the World Bank for publishing this report as an HNP Discussion Paper.



## EXECUTIVE SUMMARY

According to the Global Burden of Disease Studies produced by the Institute of Health Metrics and Evaluation (IHME 2013), AIDS was the number one cause of death in Peru in 2010 for men ages 30-49. For women ages 25-34, AIDS was the second greatest cause of death. The HIV epidemic in Peru is concentrated in certain populations (UNAIDS 2013). Data shows that the greatest rates of infection are among men who have sex with men (MSM), with much lower rates found in the general population. The prevalence of HIV in Peru is estimated at 0.4 percent, which is below the average of Latin American and Caribbean countries (UNAIDS 2013). UNAIDS estimates that around 76,000 people in Peru were living with HIV/AIDS in 2012; our simulation results estimate the 67,000 people were living with HIV/AIDS in 2013. Geographically, 76 percent of the reported cases of AIDS are from Lima-Callao area, with the remaining 24 percent distributed mainly in coastal and Amazon areas.

The program consists of a set of coordinated interventions distributed among the Ministry of Health, social security or Comprehensive Health Insurance, regional governments and non-governmental organizations (NGOs). The public health system—Ministry of Health (MOH) and Regional Health Bureaus—is the principal provider of HIV/AIDS services, including ART, to about 81 percent of the infected population, along with the support of NGOs. The remaining 19 percent is covered by social security.

This study sought to analyze the priorities and budget of the HIV/AIDS program launched in 2011, with the objective of developing recommendations for greater efficiency. HIV/AIDS funds allocation was examined across the following four dimensions: (i) appropriate budgetary allocation of financial resources to high risk groups; (ii) program effectiveness as measured by the decrease in number of premature AIDS-related deaths, the percentage of people diagnosed and living with AIDS receiving antiretroviral therapy (ART), and the increase in women’s knowledge of mother-to-child transmission of HIV/AIDS; (iii) average expenditure on ART per patient across provinces; and (iv) effective regional budget management.

Data was gathered across a range of sources, including interviews with key individuals and information from databases of the Ministry of Economy and Finance, the Department of Epidemiology, PAHO, UNAIDS, Unit of Health, Sexuality and Human Development of the University Cayetano Heredia, as well as the NGOs IMPACTA and *Socios en Salud*. A literature review and visits to The Global Fund and Care-Peru websites were conducted.

The report is divided into eight sections. The first section describes study objectives and methods, reviews the principles of Value for Money and states the four main indicators. The second describes current trends in the HIV/AIDS epidemic in Peru and at-risk populations. The third and fourth sections describe past and current intervention strategies. The fifth reviews national and regional program expenditures. The sixth and seventh sections evaluate the Value for Money of programs expenditures for 2014-2016. The eighth section presents conclusions and recommendations.

Over the past ten years, Peru has made great development strides, reaching a per capita Gross National Income (GNI) of US\$5,880. Its achievements include significant advances in social and development indicators (World Bank 2012). This study found that the HIV/AIDS program in Peru achieved important gains in reducing premature mortality following the free delivery of antiretroviral drugs (ARV) in 2004 and the successful execution of the Multisectoral Strategy 2007-2011. The Burden of Diseases Study reports a 54.7 percent reduction in deaths related to AIDS in Peru from the peak year to the present (Ortblad et al. 2013). A progressive decrease in premature AIDS deaths occurred in Lima, Callao, and the coastal areas after the initiation of the ART program. However, the number of premature AIDS deaths has increased in some regions of the Amazon (Alarcón, Pun, and Gutiérrez 2012).

Public financial resources are available for the HIV/AIDS program. The program received significant external support from international cooperation from 2005 to 2010—an average US\$24.3 million each year. The Global Fund contributed US\$41 million to support the successful execution of the Multisectoral Strategy 2007-2011. Today, the program belongs to one of the few prioritized public interventions in the health sector in Peru. The program's share of public funding has increased from US\$17.7 million per year from 2005-2010, to US\$57.8 million yearly from 2011-2013. As part of the government decentralization process, more than half of public resources have been allocated to regional governments, that is, outside Lima and Callao. Regarding allocation of financial resources by risk group, around 44 percent of the total budget was directed to pregnant women, infected children, adolescents, MSM and PLWA, while the remaining financial resources were allocated to the general population.

ART services coverage is at the medium level. In 2013, around 27,502 people received ART—or about 43 to 48 percent of the estimated number of people who are eligible for treatment and 66 percent of the diagnosed eligible group, under the WHO 2013 guidelines. Under the same guidelines, the percentage of ART coverage for estimated infected pregnant women has risen to 59 percent. However, alternative estimates based on health service data and WHO guidelines from 2010 reports ART coverage of about 92 percent (UNGASS 2012).

The results of our simulation show that about 49 percent of MSM and PLWA eligible for ARV treatment are receiving ART from the public sector, NGOs, or the social security system. However, health and social services are not appropriately following up with children infected through mother-to-child transmission, as the coverage of this population has been estimated to be a mere 18 percent. Some infected children are in need of both health services and foster care. Finally, the native communities of the Amazon are in need of urgent attention. These communities are an emerging risk group whose needs have not been addressed by the program.

Regarding equity of access, Silva-Santisteban et al. (2013) performed a study in four cities in Peru and reported that 82 percent of diagnosed PLWA receive free ART regardless of socioeconomic status. On a different dimension of equity, the Demographic

and Family Health Survey 2004-2012, shows that Peruvian women of child bearing age from quintiles 1-2 demonstrated an increase in accurate knowledge of mother-to-child transmission of HIV from 30 percent in 2004 to 46 percent in 2012. This may also reflect effective mass media and educational campaigns.

We now know that a fast response is an important element for successfully combating HIV/AIDS; countries that rapidly increase coverage of HIV treatment have faster decreases in the incidence of HIV/AIDS (UNAIDS 2013b). UNAIDS recommends a faster treatment scale-up to cover at least 60 percent of the appropriate population. The incremental cost of scaling up the program from 2014-2016 has been estimated by this study at about US\$32 million over three years.

Key interventions in scaling up the program include providing MSM with HIV testing services and full access to ART. The Ministry has access to low-priced ARVs obtained through an Alliance with PAHO Strategic Drug Fund, but has limited regional laboratory capacity. Currently, the network of regional laboratories is under hospital administration, and the organizational model seems to have reached its limit in meeting the program's needs. Additionally, there are not enough financial resources in the budget to expand diagnostic platforms during the fiscal year 2013. A financial plan that is aligned with program coverage targets is needed.

The case study revealed that a significant percentage of financial resources allocated for human resources are not reaching the HIV/AIDS program, but are being spent by other programs, some of which are related, such as the Sexually Transmitted Disease (STD) program. This issue is greatly affecting human resources availability for preventive activities directed to high-risk populations. The shifting resources have limited the number of community health workers dedicated to HIV/AIDS prevention and education, which threatens to undermine Peru's potential to accelerate progress on HIV/AIDS. Issues related to community health workers include: (i) whether they should become part of the formal health system, and (ii) how they should be compensated.

## Recommendations

- The public delivery system should target a greater percentage of its budget to interventions for high-risk populations, such as infected children and MSM. We recommend NGO partnerships to host infected children and adolescents, as well as association and private sector partnerships to perform HIV tests.
- Closing the coverage gap means active testing, promotion of condom use and proactive ART with the support of CHWs so that people are able to follow up after their diagnosis.
- Most of the financial resources needed to close the high-risk population coverage gap can be made available with a re-appropriation of existing financial resources allocated to the program.
- The development of a human resource strategy—where CHWs play a significant role for preventive and ART services—should clarify boundaries between related

programs. Cost-effective models for Peru's HIV/AIDS program include the community health workers program in controlling tuberculosis from Peru and the Brazilian community health agents program.

- Increasing laboratory capacity to regions and expanding rapid diagnostic testing to the maximum number of points of care would have the greatest impact on increasing program coverage. Coverage can be further expanded through rapid-tests procured through the PAHO Strategic Fund, collaborative agreements with private laboratories, and rapid-testing at diverse points of care, for example, shopping centers, festivals and gay pride events.
- Finally, it is important to open a dialogue on the needs of native Amazonian communities regarding the HIV/AIDS epidemic. The survival of the native communities of the Amazon is a “public good” and other public and national and international private institutions should be invited to contribute.

## PART I – OBJECTIVES AND METHODS

The objective of this study is to analyze the Value for Money of the HIV/AIDS program through the framework of prioritization and financial decentralization, as well as its new resource allocation approach, referred to as results-based budgeting (RBB). Value for Money is the allocation of limited resources and interventions to maximize results, in this case ensuring that resources are allocated to populations at increased risk of HIV transmission and in high transmission areas. This has proven to be highly cost-effective in the context of epidemics.

The primary concern of this study is “Value for Money” or the transformation of financial resources into outputs and outcome (Smith 2009), which is a multi-step process. First, government financial resources available to the HIV/AIDS program are used to purchase physical inputs, such as laboratory services and antiretroviral drugs (ARV). Second, the inputs are used to produce a series of activities that generate: (i) health care services such as ARV therapy, and (ii) outcomes such as improving and extending healthy life years due to the lower number of new infections.

This paper uses four indicators in order to demonstrate levels of Value for Money in the HIV/AIDS health program in Peru.

- Appropriate budgetary allocation of financial resources to the HIV/AIDS program as measured by the proportion of resources allocated to high risk groups, that is, populations with the highest HIV prevalence and identified as a priority, such as men who have sex with men (MSM) and mothers and children (World Bank 2012). This indicator measures the program’s cost effectiveness in targeting high-risk groups.
- Program effectiveness as measured by the percentage decrease in the number of premature deaths during the last decade and by knowledge among women of childbearing age, especially related to the transmission of HIV from mother to child during pregnancy in quintiles 1-2 (the poorest 40 percent). This knowledge is a precondition for behavioral change and increases the chance that infected mothers will adhere to treatment and thereby reduce the number of infected children.
- Average expenditure of ARV therapy per patient across provinces. This indicator offers a summary measure of cost efficiency and indicates the extent to which: (i) inputs are being purchased at minimum price; and (ii) the organization is deploying them in an optimal fashion.
- Effective management of human resources budget. This indicator allows for assessment of regional authorities and their ability to use and appropriately manage resources.

Data was gathered through interviews and databases. Program expenditures from 2011-2013 were extracted primarily from the information system of the Ministry of Economy and Finance (MEF), through its Integrated System of Financial Administration (SIEF) and the “Consulta Amigable” web system, MEF officials who provided access to unpublished supplementary data, the Ministry of Health and the IMPACTA NGO.<sup>1</sup> Data from the 2003-2010 international

cooperation was compiled from the AIDS health accounts developed by UNAIDS/Peru, and from the websites of Care-Peru and the Global Fund.

Data on planned and executed budgets was gathered and analyzed according to the following levels of aggregation: i) type of intervention, ii) governmental level, and iii) group of beneficiaries.<sup>2</sup>

Clinical and epidemiological information was provided by the HIV/AIDS program from MOH at the central and regional level, the Department of Epidemiology, PAHO, UNAIDS, the Unit of Health, Sexuality and Human Development of the Universidad Cayetano Heredia, and the NGOs IMPACTA and Socios en Salud.

Two visits to the Amazon province of Loreto—one of the regions where deaths are increasing—were conducted with the objective of understanding how the HIV/AIDS program and corresponding financial system function at the regional level. During the second visit, a case study was carried out to support analysis of the fourth indicator (the ability of local authorities to use and appropriately manage resources).

Finally, based on preliminary results of the efficiency analysis, policy and decision-making authorities were interviewed regarding the allocation of financial resources at national and regional levels. The purpose of these interviews was to better understand the underlying causes of some deficiencies.

## **PART II – THE HIV/AIDS EPIDEMIC IN PERU**

### **THE GLOBAL CONTEXT**

In the last 30 years, the HIV/AIDS epidemic has emerged as a major global public health challenge, beginning as a relatively small problem in the 1980s to one of the leading causes of mortality and burden of disease over the last decade. HIV/AIDS mortality was the fifth leading cause of global DALYs in 2010. However, the HIV/AIDS epidemic is heterogeneous among regions. There has been a decrease in the prevalence of HIV/AIDS in some areas, such as sub-Saharan Africa and Latin America, and an increase in others, such as Eastern Europe and Central Asia. In addition, the number of people living with HIV/AIDS continues to grow, in part due to the increasing availability of anti-retroviral (ART) treatments. Latin American and the Caribbean (LAC) is regarded as a low prevalence region, with an estimated 0.6 percent prevalence and 1.86 million people estimated to be living with HIV in the region (Teva et al. 2012).

### **TRENDS IN HIV/AIDS CASES IN PERU**

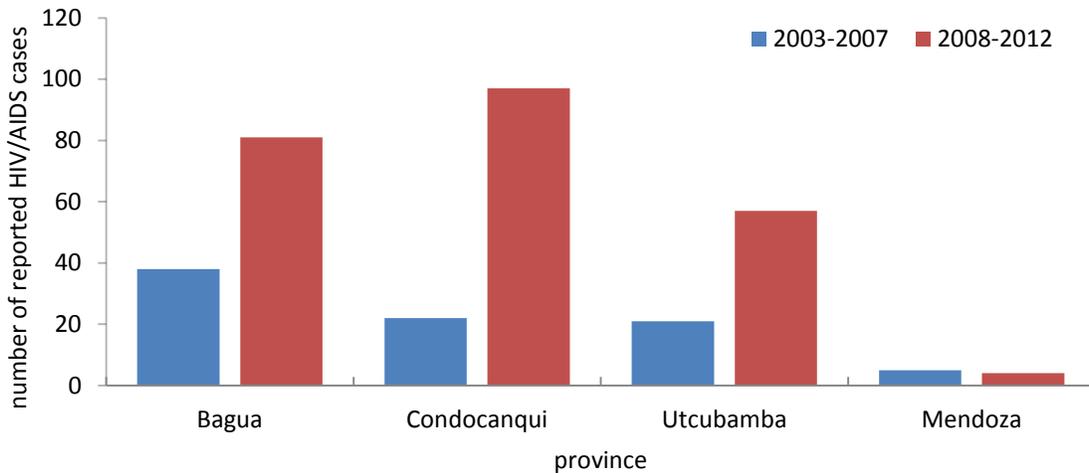
Peru is an upper-middle income country, with a per capita Gross National Income (GNI) of US\$5,880 (World Bank 2012). Over the past ten years, Peru has made great development achievements, including high growth rates, low inflation, macroeconomic stability, and significant advances in social and development indicators (World Bank 2013).

The prevalence of HIV in Peru is estimated at 0.4 percent, which is below the LAC regional average (UNAIDS 2012). Recent estimates from the Global Burden of Diseases study show that HIV accounts for 1.8 percent of the total burden of disease in Peru and 1.9 percent of the total number of deaths (Ortblad et al. 2013). Recent figures (as of December 31, 2012) from the Department of Epidemiology of the Peruvian Ministry of Health show that 48,809 cases of HIV and 29,454 cases of AIDS have been reported since 1983. This may be an underestimation, since many people with HIV do not know they have the disease. UNAIDS (2013), estimates that around 76,000 people (36,000-230,000) in Peru were living with HIV/AIDS in 2012. Our model estimates that around 67,000 people are living with HIV/AIDS in 2013. From 2001 to 2013, 56 percent of reported HIV cases were in the Lima-Callao area, with 10 percent in the mountain region, 15 percent in the Amazon region, and the remaining 16 percent in other coastal states. An estimate 3 percent of reported cases had no known location (MINSa, 2013a). Reported HIV/AIDS incidence among native communities of the Amazon has risen during the last decade (Box1).

### Box 1. HIV/AIDS and native communities of the Amazon: An epidemic in progress

The rising incidence of HIV/AIDS during the last decade, in conjunction with a number of socio-cultural factors, made the native communities of the Amazon a highly vulnerable group for HIV/AIDS. Data from a study in the Amazon region shows that cases increased rapidly since 2003, from 86 in 2003-2007 to 239 in 2008-2012—a 3.8 factor increase. The province of Condorcanqui had 22 cases in the period 2003-2007 and 97 cases in the period 2008-2012 (Figure B.1).

**Figure B.1. Reported HIV/AIDS cases in Indian communities of the Amazon region**



Source: Amazon Regional Health Bureau Amazon Laboratory, Nievas

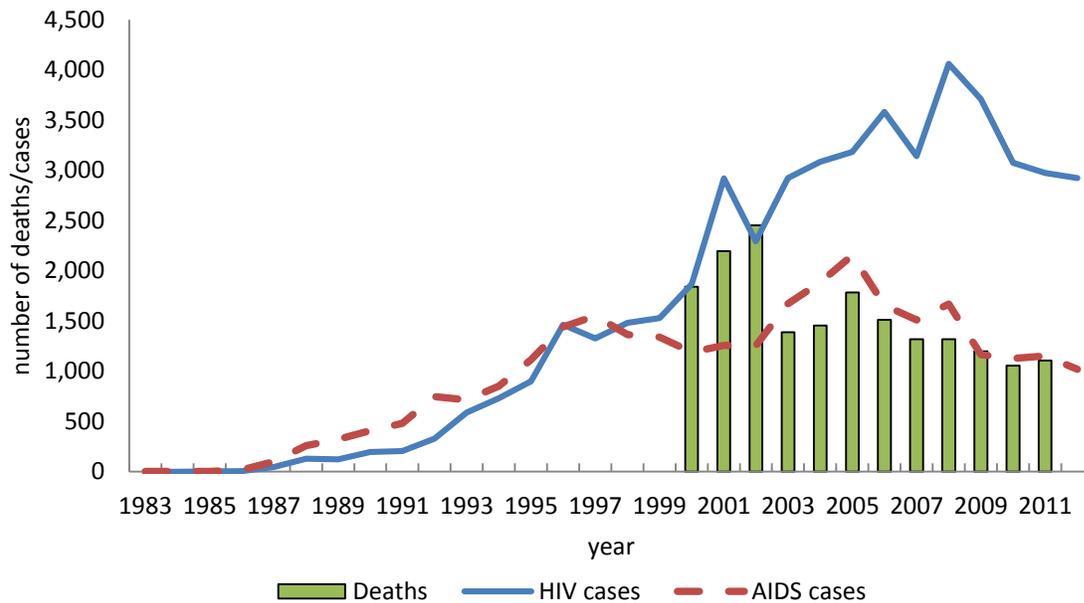
The socio-cultural context that fosters the rise of HIV/AIDS begins with the social and economic marginalization of the Amazonian peoples. Because the government has little control over the areas inhabited by indigenous communities, public programs and services are mostly absent. The area is also host to a number of illegal activities, such as drug trafficking, timber harvesting, and illegal mining. Initially, young people from indigenous communities migrated to urban centers for work and returned to their communities as HIV carriers. Adolescents have been subject to sexual exploitation in cities and illegal sites. An increasing number of women have left their communities and some cases of mother-to-child transmission have been reported recently.

Risk behaviors in the indigenous communities consist of early sexual initiation, multiple partners, and resistance to condom use. In some communities, male adolescents initiate their sexual activity with other males. Health issues associated with sexuality are not addressed and HIV/AIDS is regarded as a disease of homosexuals. Men who have sex with both men and women are not regarded as homosexuals. There is a lack of understanding that a person who may appear healthy can still be a carrier of HIV. Condoms are not considered a means of preventing the transmission of the virus.

Available health services can identify new cases with rapid diagnostic tests. However, preventive actions and ART are almost nonexistent.

Source: Fuller (2009) and Amazon Regional Health Bureau

**Figure 1. Peru: Number of HIV/AIDS cases and deaths, 1983-2012**



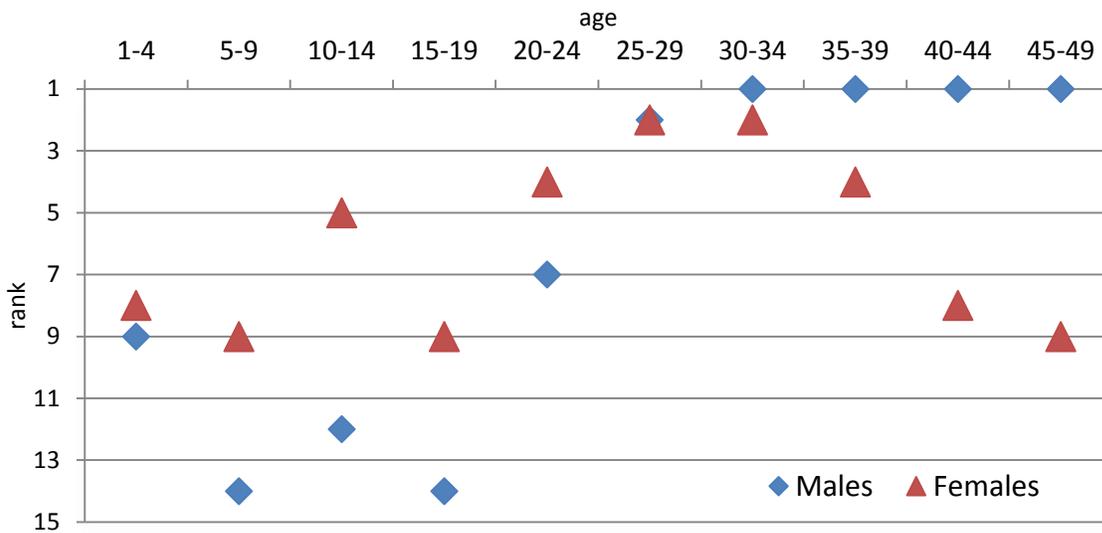
Source: MINSa 2012

There was a steady increase in cases from 1983, when the first case was reported, to 2008. From 2008 onwards, the MOH reports a decline of new cases as shown in Figure 1. However, the decline in new cases can be attributed to a decline in the number of screening tests performed, as testing is offered in a relatively small number of health centers (CERITSS).<sup>3</sup> Regarding infected children, the MOH reports that the total number has dropped over the last 10 years, from 5,600 cases in 2000 to 4,000 in 2010 and 3,200 in 2012 (MINSa 2013a). The decline of cases among children was reported by diagnostic and laboratory services.

### THE EPIDEMIC IN KEY POPULATIONS

Figure 2 illustrates a ranking of premature AIDS deaths by age and sex compared to other leading causes in Peru. Due to the nature of HIV/AIDS transmission and the timing of sexual contact, HIV/AIDS mostly burdens young adults. In fact, AIDS is the number one cause of death for men in the age group 30-49. For women aged 25-34 years, AIDS is the second cause of death. In children under 5, HIV/AIDS ranks eighth for girls and ninth for boys as a cause of mortality.

**Figure 2. Rank of premature AIDS deaths compared to all deaths, by age and sex 2010**



Source: Author’s elaboration based on data from IHME 2013

The HIV epidemic in Peru is concentrated in certain populations (UNAIDS 2013). The data show the greatest rates of infection are among men who have sex with men (MSM), with much lower rates found in female sex workers (FSW), and still lower rates among the general population. The UNAIDS (2013) results are consistent with the data from Figure 2, where HIV/AIDS is shown as the leading cause of premature death for males aged 30-49.

In Peru, the prevalence of HIV infection among pregnant women has remained stable. Table 1 shows the latest HIV prevalence among pregnant women in Peru was estimated at 0.28 percent, although the prevalence peaked at 0.44 percent in Lima in 2002. While 97 percent of HIV transmission is sexual, vertical transmission from mother to child also occurs. According to our estimates, around 370 infected children were born during 2013. Screening of pregnant women and timely initiation of prophylaxis and therapy are key interventions to control vertical transmission. With these interventions, transmission can be reduced from 30 percent to less than 2 percent (Dr. Llanos, PAHO personal interview, 2003 and De Vincenzi, 2011).

With HIV infection spreading through heterosexual intercourse, the ratio of men to women with HIV/AIDS has been stable for a decade, at around 15:3 (Bracamonte, UNAIDS, personal interview, 2013).

**Table 1. HIV prevalence in high-risk groups 2000-2011(%)**

Indicators	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Prevalence in pregnant women > 15 years old *	0.26	0.60	0.21			0.23	0.23		0.28			
Prevalence in accessible MSM**	10.48		13.9				11.1	10.8	10.5			12.4
Prevalence in MSW ***			29.20				4.05					14.6
Prevalence in transgender women****	44.8		32.2							29.6		20.8

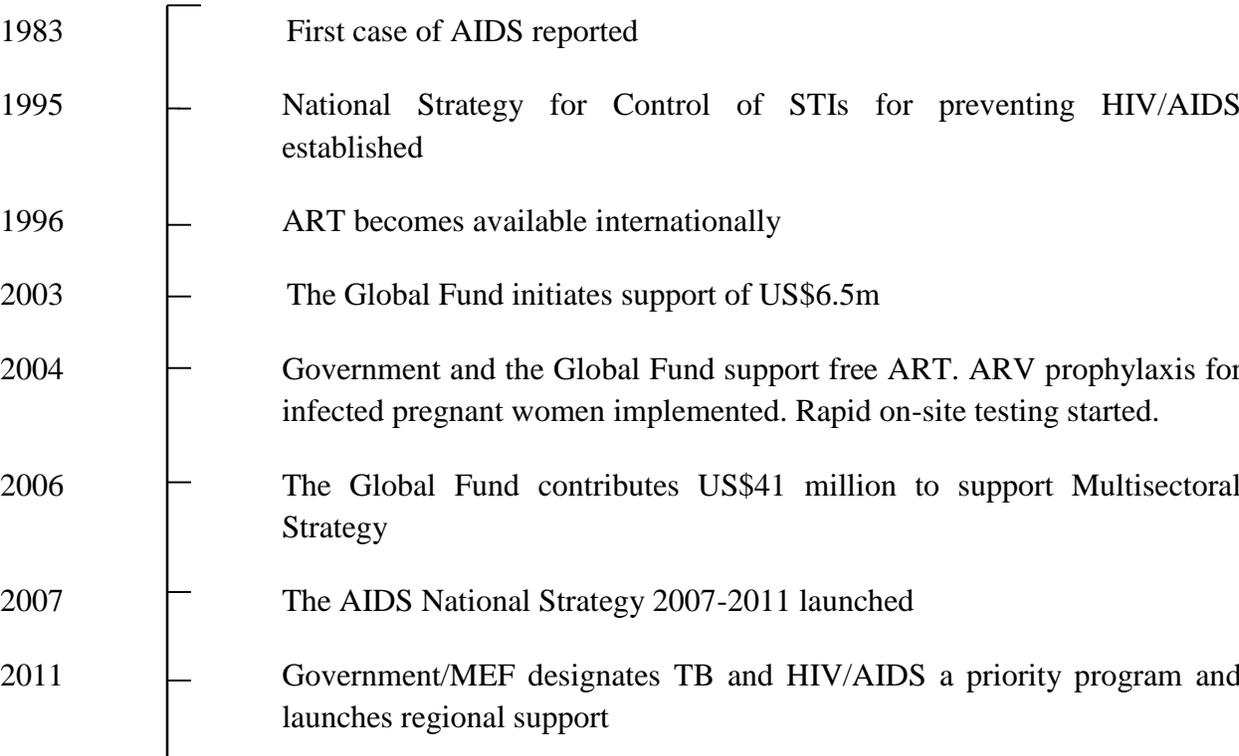
*Source:* \*Suarez-Ognio & Pun-Chinarro 2008; \*\* Sanchez et al. 2007, Tabet et al. 2002; \*\*\*Fondo Global Estudio de Vigilancia Epidemiológica de ITS y VIH en HSH 2011; \*\*\*\*MINSa 2013a.

The HIV prevalence among MSM was estimated to be around 12.4 percent in 2012, but higher for transgendered women, at 20.8 percent (Table 1). On the other hand, for the sub-population of male sex workers (MSW), prevalence was estimated at 14.6 percent, while for female sex workers (FSWs), HIV prevalence is estimated at 3 percent in Lima. Results of the research carried out by Cáceres et al. (2009) suggest that incidence among MSW and transgendered women actually decreased during the period 2000-2012 (Table 1). However, according to UNAIDS (2012), MSM still represent the largest source of new infections in Peru, reaching 56 percent.

# PART III – THE FIRST PHASE RESPONSE TO THE HIV/AIDS EPIDEMIC IN PERU

The first response to the epidemic occurred during the 1990s, with the establishment of the National Strategy for Control of STIs for preventing HIV/AIDS (PROCETSS). From 2002 to 2010, the response was a combination of efforts by the government, the Global Fund, USAID, NGOs, academic and research communities, and civil society. The current response is being led by the government, and is supported by the Global Fund and UN technical agencies such as PAHO and UNAIDS. (Figure 3)

**Figure 3. Critical events in Peru in the response to HIV/AIDS, 1983-2013**



*Source:* Author’s elaboration based on literature review and interviews

## THE NATIONAL STRATEGY FOR PREVENTION AND CONTROL OF STDS, 1995

The Multisectoral Commission against AIDS was established in 1983 following reports of the first AIDS case. In 1995, the Special Program for Control of AIDS (PECOS) was created with the aim of developing prevention strategies to target youth and to train staff on counseling. Initially, the approach was to treat STIs as a way of preventing HIV/AIDS transmission.

From 2002 to 2013, Peru received US\$75.9 million from the Global Fund solely for the HIV/AIDS program (the TB program received additional funding). As the implementer of

Global Fund activities, CARE-Peru was involved in grant Rounds 2, 5 and 6. This grant has been one of the largest in the Latin American region (Annexes A and B).

For the second round in 2002, the Global Fund selected Peru to receive a US\$6.5 million grant. These resources were used to expand coverage of the HIV/AIDS program at the hospital level, and to establish technical standards. In 2005, Peru obtained financing for the proposal “Closing gaps: towards the achievement of the objectives of development of the Millennium in TB and HIV/AIDS in Peru.” The main focus of this proposal was the regional expansion of program activities.

## **THE GLOBAL FUND AND THE MULTISECTORAL STRATEGIC PLAN, 2007-2011**

In 2006, the Global Fund approved a US\$41 million contribution that was used to support the first Multisectoral Strategic Plan, 2007-2011. The plan’s objectives included the following interventions directed to both general and at-risk populations:

- Reducing vertical transmission. In 2005, technical standards were enacted for the prevention of vertical transmission of HIV from mother to child (MCT). The first protocol was defined for the diagnosis of HIV in pregnant women, ART prophylaxis, and clinical management of HIV-exposed neonates and positive mothers. Starting from the sixth round, the strategy of prevention of MTC transmission was institutionalized. In addition, HIV tests were implemented at a massive scale for women of childbearing age.<sup>4</sup>
- Increasing HIV testing, counseling and condom distribution. The promotion of safe behaviors to avoid contracting STI-HIV/AIDS targeting FSW, MSW, and MSM included increased access to—and uptake of—HIV testing, counseling, and condoms. In the period 2006-2008, educational activities were directed to high-risk groups, 54 percent to FSWs and 21 percent to MSM.
- Diagnosis and early treatment of HIV. The Global Fund, along with other UN organizations, such as PAHO and UNAIDS, and various NGO programs, have been key in raising national policy awareness of the need to scale up access to ART. In 2006, the government started ART support for adults. The program included giving the CD4 viral cell count/viral load test to people living with HIV/AIDS (PLWA) and according to an established schedule.<sup>5</sup> Initially, the program was established solely in hospitals but has been expanded to selected health centers. Since 2004, ART therapy has been provided free of charge.

Finally, in 2010 Peru was awarded US\$12 million for the project “Building social capital for HIV prevention and access to comprehensive health for transsexuals, gays, and MSM populations.” These groups have high HIV/AIDS prevalence and low coverage. The grant was awarded to the NGO INPARES but was recently reallocated to PARSALUD. The project targets eight regions that account for 80 percent of reported HIV/AIDS cases: Coastal areas, including Lambayeque, La Libertad, Lima, Callao, Ica; and Jungle areas, including Loreto, San Martín, and Ucayali.

## CIVIL SOCIETY AND THE SCIENTIFIC COMMUNITY

In the 1990s, various civil associations were created to operate as self-help groups in the absence of effective treatment. During the 2000s, the Global Fund and the National Multisectoral Coordination (CONAMUSA) brought together civil society organizations and PLWA. The time period saw the appearance of new organizations, including *Peruanos Positivos*, the first national network of people living with AIDS. Later, the arrival of the coalition *Vida* led to legal changes regarding the provision of treatment. In addition, these organizations participated in the implementation of projects financed by the Global Fund and have been key players in HIV policy making. Further, these organizations have led to greater national recognition of the rights of those affected by the epidemic.

Religious communities and churches have also shown commitment to human rights in health. For example, the Anglican Church of Peru and the Rosa Blanca Ecumenical Parochial Center and have been involved in the support of people living with AIDS.

Finally, in Peru, there is a large body of HIV/AIDS research. Approximately 250 articles on HIV/AIDS —with clinical and epidemiological focus— were published between 1985 and 2010 (Caballero 2011), released mainly in the last decade. Research on HIV in academic centers has enabled the characterization of the epidemic and the identification of more vulnerable subgroups, such as MSM. Also, clinical research provided empirical evidence for the new guidelines, asserting that ART can serve as HIV prophylaxis for heterosexual men and women (Cáceres 2013 personal interview). The studies have been conducted by a group of researchers from the universities San Marcos and Cayetano Heredia in collaboration with the Universidad Católica, NGOs, and economic research centers.

Despite these notable accomplishments, there is a gap between research and government policy, which is being addressed through various efforts. For example, well-known researchers are participating in panel discussions focusing on emerging strategic discussions, such as “Getting to Zero.”

## PART IV – THE CURRENT RESPONSE TO THE HIV/AIDS EPIDEMIC

### MAIN PUBLIC AND PRIVATE NOT-FOR-PROFIT STAKEHOLDERS

Regarding the provision of HIV/AIDS services, the Peruvian health system has a public and a private not-for-profit sector. The public sector consists of a tax-funded system and a contributory social security scheme. The tax funded system supports the Ministry of Health, Comprehensive Health Insurance (SIS), and the Regional Directorates for Health (DIRESAs). SIS covers people without health insurance and gives priority to those living in poverty and extreme poverty.

The state provides HIV/AIDS services to about 70 percent of the infected population, mainly through the public health system (MOH/DIRESAs). With the support of the MOH, various not-for-profit NGOs provide HIV/AIDS services to about 10 percent of the patients. The MOH supplies NGOs with ARV and laboratory tests services. These national and international NGOs target the most-at-risk populations such as MSM, MSW, and transsexuals. Some NGOs also carry out HIV/AIDS clinical trials and drug studies in association with the Ministry of Health, the American National Institute of Health (NIH), and private pharmaceutical companies, and at the same time provide services to AIDS patients.

**Table 2. Institutions participating in the current public HIV/AIDS program 2011-present**

Ministry of Economics and Finance	Directs annual transfers from the MEF to the decentralized institutions
Ministry of Health HIV/AIDS program	Policy, coordination and monitoring. Principal means by which the state provides HIV/AIDS services
National Center for Public Health(INS)	Provides laboratory services for testing HIV/AIDS across the country. INS is responsible for managing the National Reference Laboratory and supervising the rest of the laboratory network.
Department of Epidemiology	Surveillance and registry of HIV and AIDS diagnosed cases
General Directorate of Drugs	Drug licensing, regulation and quality control
General Directorate for Supplies and Drugs (DARES)	Purchases ARV medicines, rapid tests and condom supply chain management
Comprehensive Health Insurance (SIS)	Reimburses consultation services, screening and ART for pregnant women and children, and C-sections. Maintains an information system that records services data
25 regional governments	Administer HIV/AIDS regional funding
Regional Directorates for Health (DIRESA)&	Monitor HIV/AIDS services, manages the resources, and the 24 regional reference laboratories
Hospitals, CERITSS and NGOs	Provide HIV/AIDS services

Other important institutions not analyzed in this study include the Military, which provides ART services to its members; the prison system, which provides services to inmates; and social insurance (EsSalud), which is funded through mandatory contributions from its members, who are public and private employees. Social security finances ART treatment to about 20 percent of HIV/AIDS patients.

## **NEW PUBLIC POLICY SCENARIO: PRIORITY PROGRAMS, FINANCIAL DECENTRALIZATION AND RESULTS-BASED BUDGETING**

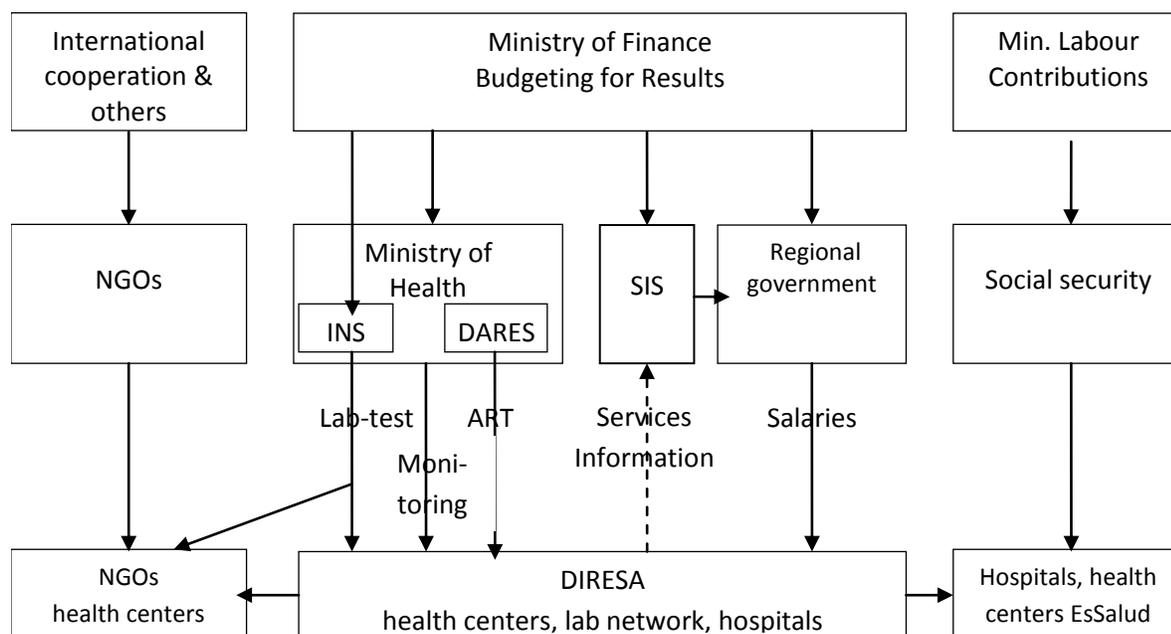
In 2008, the Ministry of Economics and Finance began to prioritize selected health programs. These programs are protected at the time financial resources are allocated. Since 2011, HIV/AIDS and TB were added to the list of priority programs and the government has assumed full funding of the treatment and care of HIV patients in Peru. The new program purchases the antiretroviral drugs, HIV diagnostic tests, condoms, and health education for the general population and the most-at-risk groups.

Beginning in 2002, the government began decentralization. With regard to the health sector, decentralization provides the regional health centers and the national and regional hospitals autonomy from the MOH and makes them recipients of direct financial allocation from the MEF. This process included the implementation of two robust information systems, the Integrated Financial Management Information System (SIAF) and the Integrated Administrative Control System (SIGA). The information systems permit a comprehensive yet user-friendly overview of the whole financial system.

### **Financial Flows of the HIV/AIDS Program**

The MEF allocates financial resources to the MOH, the National Institute of Health (INS), the General Directorate for Supplies and Drugs (DARES), Comprehensive Health Insurance (SIS), the 25 regional governments, Regional Directorates for Health (DIRESA), and the national and regional hospitals. Financial resources are transferred directly to these institutions without the administrative participation of the MOH. However, each institution at the regional level needs day-to-day approval from the regional government regarding the execution of the assigned resources (Figure 4).

**Figure 4. Financial flows of the HIV/AIDS decentralized program: budgeting-for-results 2011-onwards**



*Source:* Author's elaboration based on discussion with MEF officials and personal interviews

The funds allocated to the HIV/AIDS program are channeled to different institutions:

- The lines allocated to the MOH are designated for policy definition and monitoring purposes.
- The lines allocated to DARES are used to purchase ART, condoms and other inputs.
- The lines allocated to the National Reference Laboratory, which is located in the National Institute of Health in Lima (also falls under MOH), are used to support the viral load and CD4 viral count tests and process laboratory tests. However, the rest of the laboratory network falls under the DIRESAs and hospitals.
- Funds allocated to the Comprehensive Health Insurance (SIS) cover laboratory, diagnostic services for pregnant women, and the consultations costs of other HIV/AIDS patients. These financial resources are transferred to the providers via the regional government.
- Finally more than half of the funds allocated to the regional government are earmarked for wages. The remaining allocation is directed to health education and community information services.

## Results Based Budgeting Process

The new method for allocating financial resources, budgeting-for-results (BFR), involves linking the public budget with the delivery of services to different risk groups. For example, the budget line “Adults and young people receive STDs and HIV/AIDS screening tests” targets the general population 15-49 years old for STDs and HIV testing (Annex B).

**Table 3. HIV/AIDS priority program: steps and institutions involved in results-based budgeting (RBB), 2011-onwards**

	MEF	HIV/AIDS	Drugs Office	Lab	SIS	Regional Gov.	DIRE- SA	Hospitals
Budget formulation and implementation (SIGA& SIAF)		X	X	X	X		X	X
Consolidation	X	X				X		
Approval	X					X		
Monitoring expenditures (SIAF)	X	X	X	X	X	X	X	X
Monitoring, intermediate results	X	X			X			
Monitoring, final results	Planned 2015							

*Source:* Author’s elaboration based on interviews results

As shown in Table 3, budgeting-for-results involve the participation of all decentralized institutions in different roles:

- The MOH and the MEF suggest priority groups to be covered and the types of interventions to be addressed, but each decentralized unit drafts budget formulations: MOH HIV/AIDS program, National Institute of Health (lab services), General Directorate for Supplies and Drugs (DARES), Comprehensive Health Insurance (SIS), Regional Directorates for Health (DIRESA), and national and regional hospitals. The budgeting process includes quantification of intermediate outcomes and interventions, as well as the activities, goals and associated financial resources, using SIGA and SIAF software.<sup>6</sup>
- Budget consolidation and approval: The MEF consolidates budget implementation progress every six months. After the information is updated it is published on the MEF website. Adjustments to the HIV/AIDS program budget are made continuously throughout the year in every institution, but they need approval from the regional government and the MEF.
- Monitoring of HIV/AIDS: Every national and regional institution has access to real time monitoring of HIV/AIDS program budget changes and execution by accessing the public databases SIAF and SIGA at the MEF-website. Activities include analysis of budget

execution, achievement of operational targets, number of services provided, and analysis of intermediate and final results.<sup>7</sup>

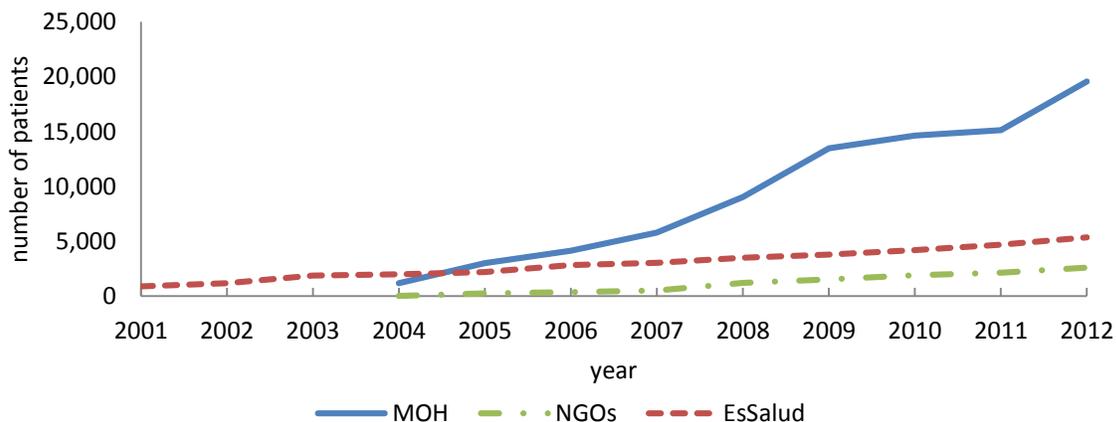
- Measurement of intermediate indicators for impact monitoring: The MEF and the MOH decide on the indicators they want measured and the National Institute of Statistics and Informatics (INEI) collects and analyses the data using the demographic and family health survey (DFHS). The indicators assess, for example, the knowledge of transmission of HIV/AIDS among women of childbearing age. It is important to mention that the survey includes only women in its sample; men are not yet included. The results of the measurements are not linked to budget approval.
- Finally, the MEF plans to do a future (2015+) baseline study to compare and measure the performance of the HIV/AIDS program.<sup>8</sup>

This new budgeting method should facilitate higher levels of accountability in the delivery of HIV/AIDS services and link spending with results. Also, this approach may help determine any necessary expenditure increases or decreases in a particular line/intervention.

## SERVICE DELIVERY: ANTIRETROVIRAL AND SCREENING

In 2004, the SIS began financing the ART therapy of infected children. In 2005, the MOH began delivering ART drugs free of charge. As shown in Figure 5, cases of treatment with ARV therapy have increased by a factor of five since 2004. MOH currently covers 19,552 patients (71 percent), and the NGOs cover 2,595 patients (10 percent) with ART medications provided by the MOH (Figure 5). Since 2002, the social security (EsSalud) has delivered treatment to its members and 5,355 cases (19 percent) were covered in 2012 (Figure 5). In total, there are 27,502 people receiving ART. Based on this information, this report estimates ART coverage of all diagnosed and eligible PLWA at 66 percent based on currently available guidelines that favor starting ART at CD4 count of 500 (Box 2).<sup>9</sup>

**Figure 5. Patients on ART therapy by institution: MOH, social security (EsSalud) and NGOs**



Source: Author's elaboration based on data from Llanos 2010, and the HIV/AIDS program

Initially, the program identified and addressed the key problems associated with delays in the enrolment of patients. Thereafter, a successful strategy was implemented to rationalize and

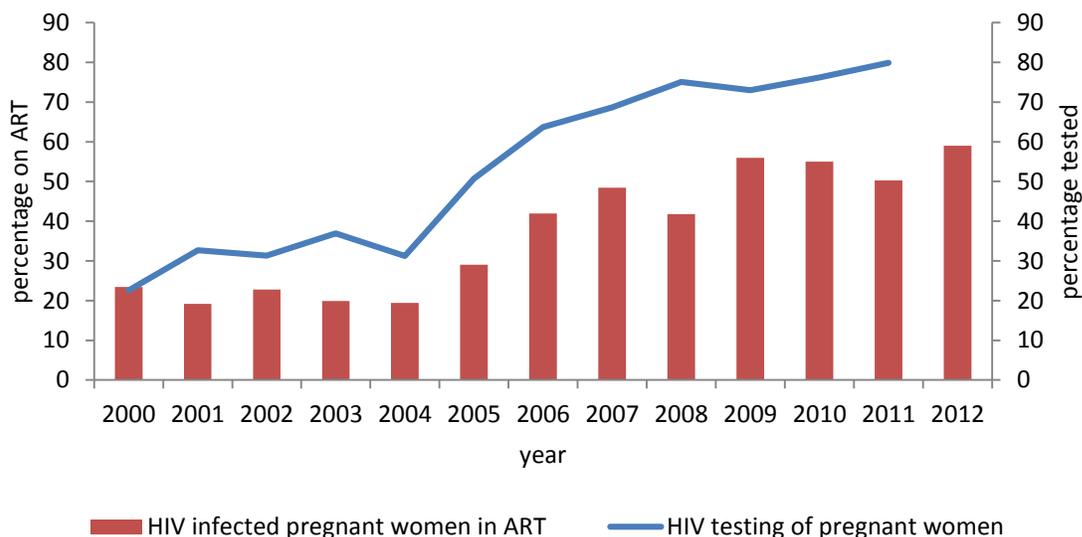
simplify the diagnosis and initiation of treatment with the support of community health workers (CHWs). The strategy was patterned on the MDR-TB-Dots Plus program, which had a successful CHW program (Lecca 2013, personal interview; Sebastian et al. 2006; MINSA 2009).

### Coverage for Pregnant Women and Children

Among interventions to prevent MTC HIV transmission is the testing of all mothers who come in contact with health services. A rapid HIV testing program is used and those infected start treatment immediately.

Figure 6 shows that the percentage of pregnant women tested for HIV has increased steadily since 2004 at all levels of care, after the introduction of rapid testing or on-site testing. In 2011, around 75 percent of all pregnant women attending antenatal care were tested for HIV (ONUSIDA/OPS 2012). The coverage of screening pregnant women has currently been deferred due to problems with the reimbursement of laboratory services. SIS can purchase rapid HIV tests and the regional laboratory might process them. However, the regional lab is part of the hospital and SIS currently reimburses the hospital rather than the regional laboratory. The result is that the lab does not have the incentive to perform rapid testing.

**Figure 6. Percentage of HIV screened pregnant women and infected pregnant women in ART**



Source: Llanos et al. 2008; MOH/UNAIDS 2013; ONUSIDA/OPS 2012.

Figure 6 shows the total number of pregnant women on ARV treatment of the total estimated number of infected pregnant women. The coverage has increased from 20 percent to 59 percent in the period 2000-2012 (Llanos et al. 2008; ONUSIDA 2013). Alternatives estimates based on health service data —of HIV positive pregnant women, who received ARV for prophylaxis or treatment in MINSA— show an increase from 48 percent in 2004, to 92 percent in 2010 (UNGASS 2012).

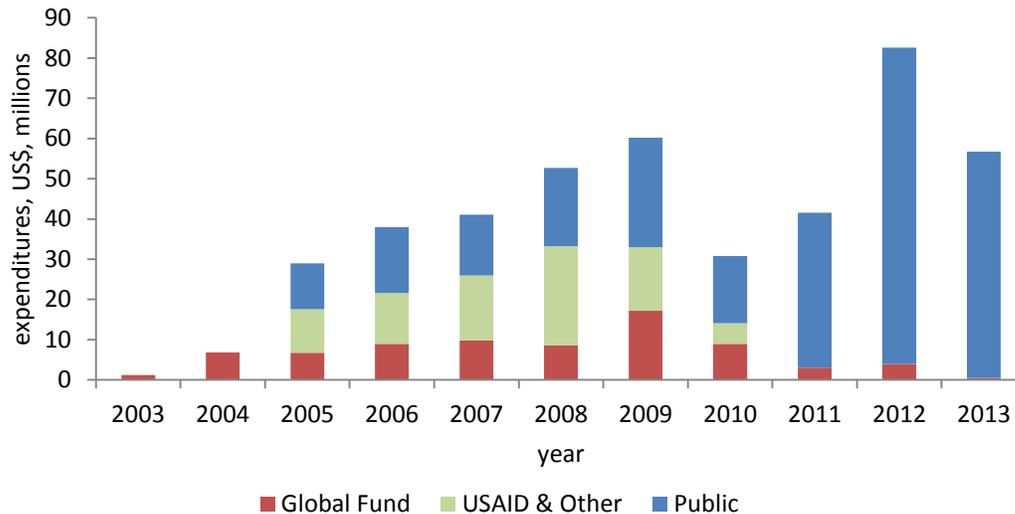
In contrast, ART coverage for infected living children is estimated at 18 percent. Among the approximately 3,200 children living with HIV, only 584 are currently on treatment (MINSASpectrum 2013). There is little information on this group beyond press reports (MINSAS and Socios en Salud 2010). Some faith-based NGOs, with the support of the international cooperation, host children and adolescents with HIV/AIDS—such as the residents of San Camilo and the Good Shepherd (MINSAS 2011). These institutions reported that there were 267 orphans in Lima in 2007. Independently, the NGO *Vida Libre* reported 232 orphan children in Lima. Of the 232, 12 percent lost a mother, 52 percent lost a father, and 36 percent lost both parents, which demonstrates the extreme vulnerability of a group in need of both health services and foster care (Llanos et al. 2008).

## PART V – HIV/AIDS PROGRAM EXPENDITURES

### TRENDS IN HIV/AIDS PROGRAM EXPENDITURE 2002-2013

There are three subsectors that finance and provide health interventions for the prevention and treatment of HIV/AIDS: (i) the public sector, which includes the MOH and social security; (ii) the private non-profit sector with NGOs such as *Socios en Salud*, and *Via Libre* and (iii) bilateral and international organizations such as the Global Fund and USAID (projects Vigia and Policy).

**Figure 7. HIV/AIDS program expenditures 2005-2013 by source (2013, US\$, millions)**



*Source:* Author's elaboration based on data from UNAIDS Health Accounts 2005-2010, The Global Fund web 2003-2012, and MEF 2011-2013.

Figure 7 shows HIV/AIDS program expenditures during the last decade by the government, the Global Fund, USAID, and others (excluding out-of-pocket expenditures). As seen in Figure 7, the government has increased its participation. An increasing share of funding is coming from the public sector, comprised of the MOH and social security (EsSalud). Other important funders are the Global Fund and bilateral organizations, such as USAID, and international organizations that provide technical assistance, such as UNAIDS and PAHO.

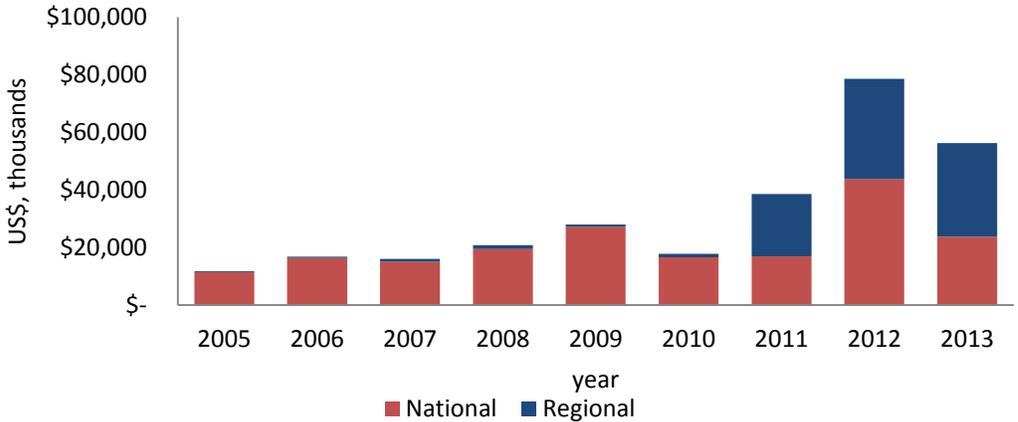
During the period 2005-2010, the total program expenditure reached about US\$41 million annually (US\$ as of 2013). In recent years (2011-2013), this amount increased to US\$60 million annually. The Global Fund has been the most important external source of funding and spent an annual average of US\$8.6 million during the period 2003-2010 (Figure 7). During the last three years, the amount disbursed by the Global Fund fell to an average of US\$2.5 million (Annex C).

Regarding intervention type, HIV prevention reached 32 percent in the period 2005-2010 (MINSA, 2010) and increased to 46 percent in the following period (2011-2011). The 2010 expenditure decrease by international organizations and the government affected the procurement of ARV and preventive actions.

**TRENDS IN PUBLIC EXPENDITURE BY REGIONS**

Since 2005, the program’s share of public funding has increased from US\$18.5 million spent annually during the period 2005-2010, to US\$57.8 million in 2011-2013 (Annex C), with more than half of these resources allocated to the regions outside Lima and Callao. In contrast, the public sector allocated 4 percent to regions during the previous period, 2005-2010.

**Figure 8. Budget allocation to the national and the regional government (2013 US\$, thousands)**



Source: Author’s elaboration based on data from UNAIDS Health Accounts 2005-2010 and MEF 2011-2013.

Figure 8 shows the distribution of resources allocated by the MEF to the central and regional governments. As mentioned above, two important changes were observed: (i) a significant increase of the resources allocated to the program, and (ii) the emergence of the regions—outside Lima and Callao—as main beneficiaries of public funds.

## PART VI – VALUE FOR MONEY IN THE HIV/AIDS PROGRAM

In practice, the pursuit of more Value for Money consists of distributing resources to interventions that are more cost-effective or where a greater “value for money” is achieved. At the same time, it is important to evaluate the extent to which the program has been focused on the most vulnerable groups or people with a greater need for health interventions. Therefore, efficient allocation of resources should combine the dimensions of efficiency and equity.

The inclusion of the HIV/AIDS program in the RBB method allows for more detailed analyses, because the budget lines correspond to easily identifiable activities and intervention type for the beneficiary group. A summary of the analysis of the indicators selected for analyzing Value for Money is presented in Table 4.

**Table 4. Summary of Value for Money indicators, main results, and proposed solutions**

Indicators	Operationalization	Input	Activities	Output	Main Results Identified	Solutions Proposed
Appropriate budget allocation for HIV/AIDS	Share of the budget covering key populations/ total number of pregnant women & children, sexual workers and PLWA	Human resources, laboratory services, ARV	IEC key pop ART for infected pregnant women & children ART for PLWA	Infected pregnant woman & children, sexual workers and PLWA on ART Pregnant woman, newborn, MSM and sexual workers tested	Half of the budget allocated to high risk groups – pregnant women, children, MSM, PLWA 43-48% of eligible infected people covered with ART, 59% of infected pregnant women but just 18% of infected children in treatment.	Rapidly increase coverage of HIV testing & laboratory capacity Alliances with NGOs that can host infected children
Program effectiveness	Decrease premature number of deaths from peak to present Increase knowledge of MTCHIV transmission among women of childbearing age, especially the poor. Reduce disparities in access to ART for PLWA	Number of deaths attributed to AIDS % of women of child bearing in gage, quintile 1-2, that know about MTCHIV transmission % of diagnosed PLWA that access care and ART	ART for PLWA Testing, IEC & condom distribution Health education by health workers ART for diagnosed PLWA	PLWA on ART Women of child bearing age know HIV can be transmitted from mother-to-child during pregnancy Diagnosed PLWA in ART	From peak to present -54.7% reduction in the number of deaths but Amazon region deaths increasing Women of quintile 1-2 with accurate knowledge of MTC have increased from 30% to 46% in 2004-2012 82% of diagnosed PLWA reported access to ART regardless of socio-economic status.	Amazon region to be included in the policy discussion. Native communities of the Amazon to be reached Continue expanding IEC activities

Indicators	Operationalization	Input	Activities	Output	Main Results Identified	Solutions Proposed
Cost-efficiency	Per capita cost per ART patient by region	ARV	ART for PLWA by regions	Number PLWA in Lima/Callao and regions access ART	About 20 regions with high expenditure cost per patient on ART	Conduct a case study to understand underlying issues
Efficiency of budget management	Share of wage bill managed by regional government effectively allocated to HIV/AIDS program	Wage bill devoted to HIV/AIDS	The wage bill allocated to HIV/AIDS is used to support wages of HIV/AIDS employees	Employees and CHW paid by the HIV/AIDS program, work under the HIV/AIDS manager supervision	Effective time allocated to HIV/AIDS program by selected employees paid with the HIV/AIDS bill is only 60%	Human resources rationalization, including CHW

## APPROPRIATE BUDGET ALLOCATION FOR HIV/AIDS

Costs associated with high-risk groups were analyzed in order to evaluate the appropriateness of program priorities. Key populations are comprised of infected pregnant women and their infected children, MSM, female and male sex workers, and PLWA.

The average budget allocated to high-risk groups, estimated by the public system during the period 2011-2013 represents just 79 percent of the estimated total costs. Furthermore, the amount allocated by the MEF to high-risk groups during this period represents 44 percent of total program expenditures (Annex D). Most of the remaining program expenditures are directed at the general population (Annex D). Since activities for the general population overlap with other program interventions (i.e., the STDs Program), the remaining funding can be easily requested and used by these other programs (See case study in Loreto-Section D).

**Table 5. Key population covered by MOH and NGOs and estimated costs**

Risk group	Intervention	Target population	Estimated number beneficiaries 2013	Estimated unit cost (2013 US\$)	Estimated total cost (US\$ 2013 thousands)
Pregnant women	Screening	Pregnant women	649,167	9	5,843
Pregnant women	ART	Infected pregnant women	1,357	409	556
Children	ART +	Infected children 0-15	584	555	324
MSM	Screening, condoms & peer CHW	Infected MSM	23,478	103	2,418
MSM	ART	PLWA	10,174	409	4,165
Female sex workers	Screening, condoms & peer CHW	Female sex workers	25,000	103	2,575
Female sex workers	ART	Female sex workers	176	409	72
Other PLWA	ART	PLWA	15,341	409	6,274
<b>TOTAL</b>					<b>22,227</b>

*Source:* Author's elaboration

The analysis took the following steps:

- Size of the key population was estimated using the following sources: population projections were extracted from the World Development Indicator (2013), number of pregnant women was assumed to be equal to 1.3 of the number of children born—which is estimated at a birth rate of 21.3 per 1,000 in 2010, and 19.6 per 1,000 in 2015. The percentage of adolescents (aged 15-19) was taken from CELADE (2012).
- Number of MSM was estimated at 6 percent of males aged 15-49 years (Alarcón et al. 2012). Number of FSW estimated at 2 percent of females aged 15-49 and number of other PLWA were estimated as the residual of other categories. Prevalence was assumed to be 0.28 percent for pregnant women, 5.16 percent for MSM, 0.5 percent for female sex workers and 0.24 percent for the general population 15-49 years old years (Alarcón et al. 2012).
- Current coverage by health services was estimated by using the number of people served by the health services over the total relevant population, as defined by the WHO 2013 guidelines. The number of people served was based on recent data from the Ministry of

Health HIV/AIDS program (Figure 5). The dataset contains the total number of PLWA on ART and provides details on the total number of children. Then, the total number for other populations was estimated on residuals.

- Unit cost of providing treatment for adults was estimated at US\$409, consisting of an ARV annual cost of US\$294 and a consultation cost of US\$115 (details in Annexes E and F). The ARV therapy costs were based on 13 ARV combinations used by patients of the public program. Consultation unit costs were based on estimates from the NGO IMPACTA. The cost for treating children was estimated at US\$555. The ARV cost for treating children is 50 percent higher according to HIV/AIDS managers (Dr. Gonzalez, personal interview). Consultation services for adults and children have been estimated at US\$115.5 and are based on De La Grecca (2013). The study includes human resources and clinical supplies but excludes the costs of ART and laboratory testing—which are provided free of charge by the public sector to the NGOs (Annex F). The cost per testing pregnant women was estimated at US\$9 (Dr. Cabezas, Director National Health Institute, personal interview, 2013). The unit cost of screening, condom distribution and peer CHW was assumed at US\$103 using World Bank estimates for Peru (2011).
- Total estimated costs were estimated by multiplying the estimated number of people reached by the health interventions times the unit cost.
- Average budget allocations directed to high risk populations in 2011-2013 are presented. Other budget lines not included in Table 5 are not specific for high-risk populations. These budget lines presented include human resources, ARVs and clinical supplies but exclude overhead and costs of monitoring and managing the program from the central and regional levels (Annex D).

In summary, financial resources are available, but funding for high-risk groups corresponds to less than half of the budget. Any increase in the coverage of services for high-risk populations will require a re-allocation of the available funding.

### **Solutions Proposed, Rapid scale-up of Diagnostic and Laboratory Services**

Financial resources are available but ART treatment services covering MSM are in the medium-low range, denoting insufficient testing and diagnostic services. Therefore, a key intervention is scaling up HIV testing to MSM and then providing full access to ART. HIV testing can dramatically decrease the epidemic, as the treatment of more infected MSM could reduce the infection rate (UNAIDS 2013).

According to our analysis, resources allocated for laboratory HIV testing for the period 2011-2013 were insufficient (Annex D). Therefore, a review of the budget lines allocated to testing and a financial plan aligned with the program coverage target is required (Annex G). Currently, the network of public regional laboratories is under the Regional Health Bureau administration, and the National Health Institute manages the central laboratory. This organizational model seems to have reached its limit in meeting the increase in coverage of diagnoses. During the early phase of the program (2002-2010), testing activities were supported by private laboratories, which is an option that should be revisited.

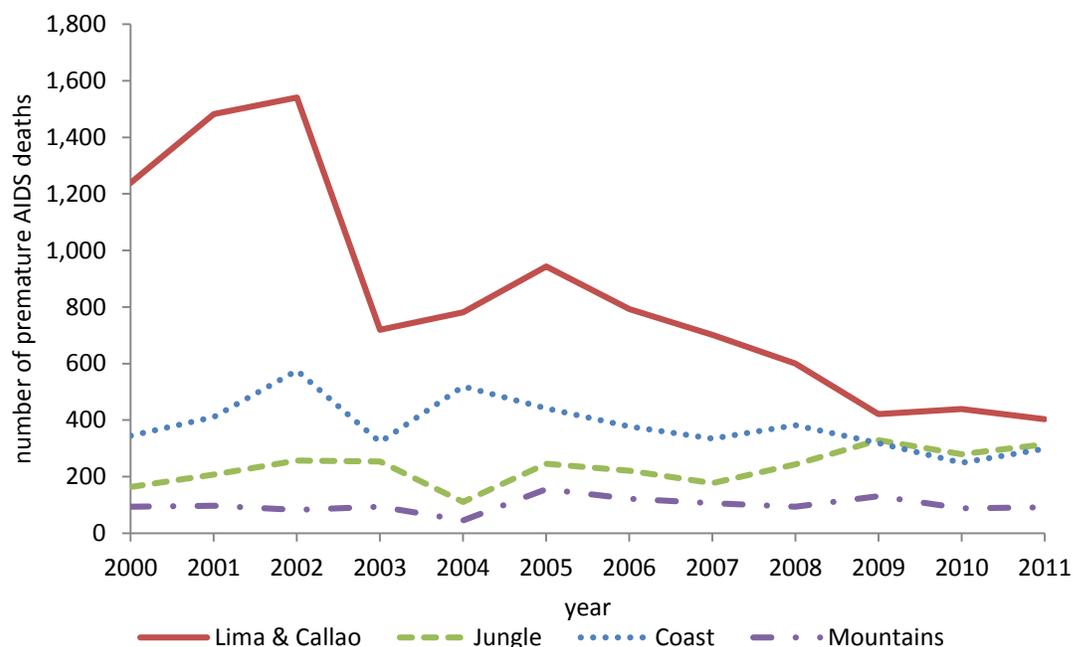
Furthermore, testing services should urgently be decentralized. The MOH laboratory network should focus on counting CD4 lymphocytes and viral load, and rapid-testing should be available at the maximum number of public and private points of care. For example, Brazil's *Fique Sabendo* (know your status) promotes testing in places like shopping centers, festivals and gay pride events, and can serve as a model (UNAIDS 2013).

## PROGRAM EFFECTIVENESS

### Reduction in Number of Deaths

Regarding mortality, Ortblad et al. (2013) analyze the Global Burden of Diseases Study data and compare changes from the peak year to present (2002-2012), and report a 54.7 percent (from 83.0 to 11.5 percent) reduction in the percentage of deaths attributable to AIDS in Peru. These gains were achieved by the government-led scaling up of the ART program for infected persons, which began in 2004 and continue with the successful execution of the Multisectoral Strategy 2007-2011. This effort involved the delivery of free ARV therapy to infected mothers in order to prevent transmission to their babies and the delivery of ART to other high-risk groups.

**Figure 9. Premature AIDS deaths by main regions 2000-2011**



Source: Alarcón et al. 2012.

Note: Amazon: Amazonas, Huanuco, Madre de Dios, Loreto, San Martín, Ucayali. Coast: Ancash, Arequipa, Moquegua, Piura, Tacna, Tumbes, Lambayeque, La Libertad, Ica. Mountains: Arequipa, Apurímac, Ayacucho, Cajamarca, Cusco, Huancavelica, Huanuco, Junín, Pasco, and Puno.

According to official data based mainly on hospital discharge records, Figure 9 shows the number of deaths during the period 2000-2011. A progressive and significant decrease in AIDS deaths occurred in Lima and Callao after the initiation of the ARV program. The number of

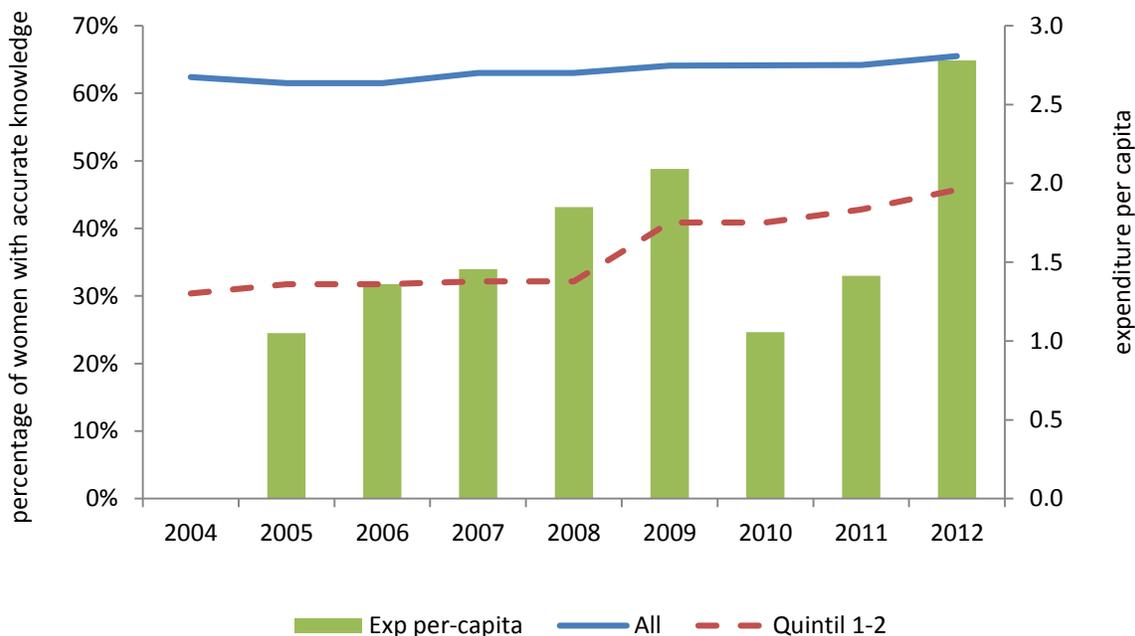
premature deaths has also decreased in the coastal area. However, the number of deaths in the Amazon has slightly increased during the same period.

In summary, a progressive decrease in premature AIDS deaths occurred in Lima and Callao after the initiation of the antiretroviral drug therapy program. The number also decreased in the coastal area. However, the number of premature AIDS deaths has increased in some regions of the Amazon, such as in the department of San Martin.

### Accurate Knowledge about MTC HIV

MTC transmission is a major route of HIV infection among children throughout the world and these infected children are likely to die before their teens. MTC HIV transmission is preventable. If infected mothers could be identified and treated early, their chances of giving birth to an infected baby would be greatly reduced (Llanos 2013, and De Vicenzi 2011).

**Figure 10. Percentage of women of childbearing age who know that HIV can be transmitted during pregnancy and per-capita spending of the HIV/AIDS program (US\$ 2013)**



Source: Author's elaboration based on ENDES 2004-2012, and MEF.

Due to the increase in HIV infection among women of childbearing age, the Ministry of Health is implementing antenatal HIV screening to identify infected mothers. Accurate knowledge about MTC HIV transmission has been selected as a second indicator of the program's effectiveness. Accurate knowledge of the transmission of HIV from mother to child has the potential to shape an infected individual's level of perceived risk and behavior regarding adherence to the treatment, elective C-section, and bottle-feeding among a certain percentage of the mothers. Lack of accurate knowledge is certainly a risk factor of HIV transmission.

The ENDES 2004-2012, a large and representative national survey of Peruvian women, shows that 62 to 66 percent of women knew that “HIV infection can be transmitted from mother to fetus during pregnancy. “The women of quintile 1-2 (40 percent of the poorest) demonstrated an increase in accurate knowledge, from 30 percent in 2004 to 46 percent in 2012. This is an important result as it signals improvements in equity (Figure 10). However, not all improvements can be attributed exclusively to the program. All-encompassing activities supported by total program expenditures together with the public media create a receptive environment that facilitates information sharing.

In summary, the indicators suggest the program has achieved its objectives and has been effective in decreasing the number of premature deaths attributed to AIDS, and has helped create a positive environment for accurate knowledge sharing, even to the hard-to-reach women of quintiles 1-2.

### **Equity of access to ART services by PLWA**

There is scarce information on access to ART by different socioeconomic status. The ENDES survey has not incorporated men in its HIV survey module. However, Silva-Santisteban et al. (2013) performed a study in four cities in Peru. They report that most PLWA (96 percent) access some kind of HIV-related health services regardless of their socioeconomic status, and 84 percent were receiving those services at a public facility. Approximately 85 percent who reported access to care was receiving ARV and 17 percent of those patients not in treatment they indicated they were going to start treatment. However, transgendered people and those younger than 35 years old were associated with lower access to health care. To increase access, the ten round of the Global Fund has made supporting the transsexual population a priority (Annex A).

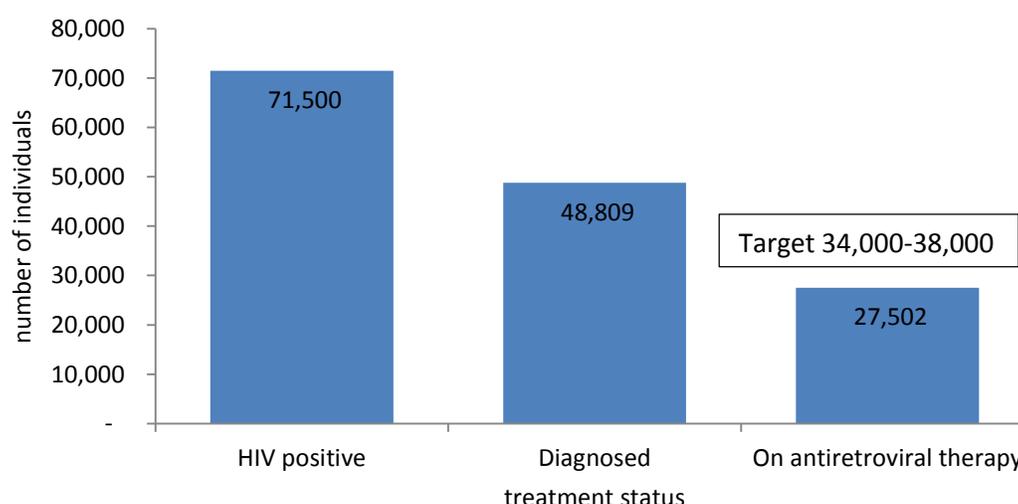
The public delivery sector has around 100 public HIV/AIDS health centers (CERITSS and UAMPS) across the country specialized in providing services to MSM and sexual workers (MINSA 2011). These centers focus on preventive interventions such as condom distribution, testing and IEC. However these services are not directed to middle class MSM (Cáceres 2013, personal interview) who receive services from NGOs, which is a more diverse MSM population. NGOs receive free ART and laboratory services from the MOH to serve their beneficiaries.

## Box 2. Peru Treatment Cascade from HIV Positive to Antiretroviral Treatment

Individuals living with HIV need to be diagnosed as early as possible. Based on UNAIDS and MOH data, an estimated 27 to 36 percent of positive individuals have not been diagnosed (See Figure B.2).

For many people, accessing ART depends on immunological status. The WHO's new 2013 guidelines recommend a CD4 threshold of 500 for initiation of HIV treatment, in contrast to the previous 350. Along similar lines, UNAIDS (2013) reports sharp gains against HIV — reduced incidence by 50 to 70 percent—in countries in which HIV treatment has reached over 60 percent coverage. In Peru, ART coverage is estimated at 43 to 48 percent of all ART eligible individuals under WHO 2013 guidelines, and at 66 percent of all diagnosed and eligible PLWA. Closing the coverage gap will require increasing the number of individuals on ART in about 10,000 more beneficiaries.

**Figure B.2 Number of HIV positive individuals, diagnoses, and on antiretroviral therapy, Peru**



Source: MINSAs 2013; UNAIDS 2013; HIV/AIDS program 2013.

Closing the coverage gap means active testing, promotion of condom use and proactive ART with the support of CHWs. Then, people can continue to access care following their diagnosis and are not “lost to follow up”.

## COST-EFFICIENCY OF ART EXPENDITURES

The Ministry of Health allocated around 23.5 percent of program resources to ART (Annex D and H). The government has established special agreement with the PAHO Strategic Drug Fund to procure low-priced ARV (PAHO 2014).

Another indicator is the unit cost of ARV medications distributed to the regions for the PLWA in treatment. This indicator offers a measure of cost efficiency and indicates the extent to which ARVs are being distributed at minimum price and are being deployed in the correct

quantities. The budget expenditure on ART by the Directorate for Medications, Supplies, and Drugs was matched with the number of patients reported by the program in each region. This information was used to estimate expenditure on ARV per patient by region.

**Table 6. Per-patient expenditure on ART in 25 regions by budget execution level as reported by regions (US\$ 2012)**

Annual expenditure on ART per patient	Budget execution >90%	Budget execution 71%-89%	Budget execution < 70%
US\$400 - 1000	Lima & Callao	Loreto, Ica, Ucayali	
US\$1001 - 2000		La Libertad, Piura, Arequipa, Lambayeque, San Martín, Junin, Tumbes	Tacna, Madre de Dios, Amazonas
> US\$2000		Ancash, Cusco, Huanuco, Cajamarca, Apurimac, Puno, Huancavelica	Ayacucho, Moquegua, Pasco

*Source:* Author's elaboration based on MEF and MOH data (Annex H)

The 25 regions were grouped according to the two variables: number of patients and region. The estimated expenditure by patient was then compared to an estimated annual cost for ART treatment (Annex H). The weighted average for ART therapy per adult patient per year is assumed to be US\$409-555 (See indicator 1).

Table 6 presents the results grouped into three categories of ARV expenditure per patient:

- Lima and Callao, which represent 76 percent of the reported HIV/AIDS cases in the country, are the historical bases of the program. More than 90 percent of the budget executions indicated a good understanding of the accounting and RBB functioning rules on the part of the management team in these areas. In Callao, the expenditure per case is US\$437. In Lima, the expenditure per case is US\$564, which is closer to the estimated cost per case of US\$409 to US\$555. These results suggest an appropriate distribution of financial resources in both regions.
- The US\$820 cost per patient in Loreto falls within the first range and indicates an acceptable cost per ART per patient. Budget execution inefficiency in Loreto, Ica, and Ucayali can be explained by financial mismanagement within the regional government.
- A third group of mostly coastal regions demonstrated higher per patient spending than the estimated average. This might indicate that the program reached fewer patients than were reported, or patients did not adhere to treatment and did not come back for medications. The result could also indicate diseconomies of scale. Cost per delivering ART increases with a decreasing scale of activities and number of cases, as fixed costs are spread across fewer units of output.
- Finally, a group of ten regions, most of which are in the mountains, have a low number of reported cases and a high average cost per ART per patient. In this case, the scale of

operations may affect cost-efficiency. The cost per unit of delivering services generally increases with a decreasing scale of activities.

These results suggest the presence of economies and diseconomies of scales, where urban areas with better infrastructure and human resources, such as Lima and Callao, show lower unit costs than more scarcely populated areas and those with fewer infrastructures, such as the mountain regions. At the same time, these results are consistent and correlate with trends in premature deaths by region, as reported by Alarcon et al. (2012) and as shown in Figure 9. During the period 2000-2011, there was a decrease in the number of AIDS deaths in Lima and Callao, especially after the introduction of the ART program in early 2000. This is consistent with the above analysis, a thorough budget execution, and appropriate per-patient expenditure. The same holds true for the coastal regions, which already had adequate budget execution.

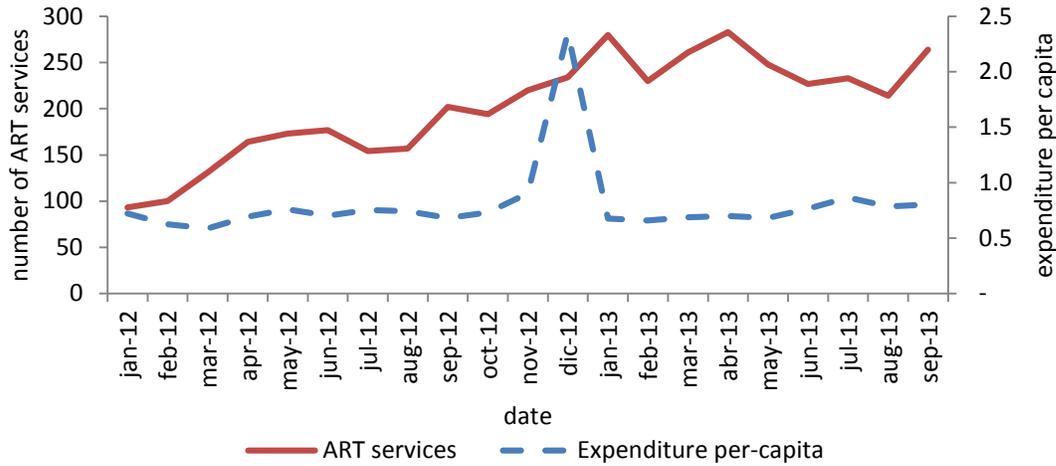
From this analysis, we cannot draw clear conclusions on the quality of resource allocation in regions with high unit costs. Therefore, we recommend a detailed study of one region that experienced an increase in deaths attributable to AIDS that might be related to insufficient delivery of ARV medications (See next section Loreto case study).

## **EFFICIENCY ON BUDGET MANAGEMENT**

The last indicator focuses on the efficiency of spending allocated to the HIV/AIDS program. The regional government of Loreto was selected for this case study. Loreto reports the highest number of premature deaths, after Lima and Callao. The number of premature deaths associated with AIDS has increased. In 2005, 102 premature deaths were recorded, and in 2011, that number rose to 175, which is an increase of 71 percent (Alarcón et al. 2012).

The case study analyzes the utilization of the wage bill managed by the DIRESA. As presented in Figure 4, the wage bill is allocated to the regional government and managed by the Human Resources Office at each decentralized institution. The region started to receive additional funding in 2011. The total 2012 budget was US\$4.3 million, and the total 2013 budget (from January to October) was US\$3.2 million. This budget included funding for the Regional Health Bureau of Loreto and Alto Amazonas, the Health Network of Marañón, and the Hospitals of Loreto, Iquitos and Santa Gema de Yurimaguas.

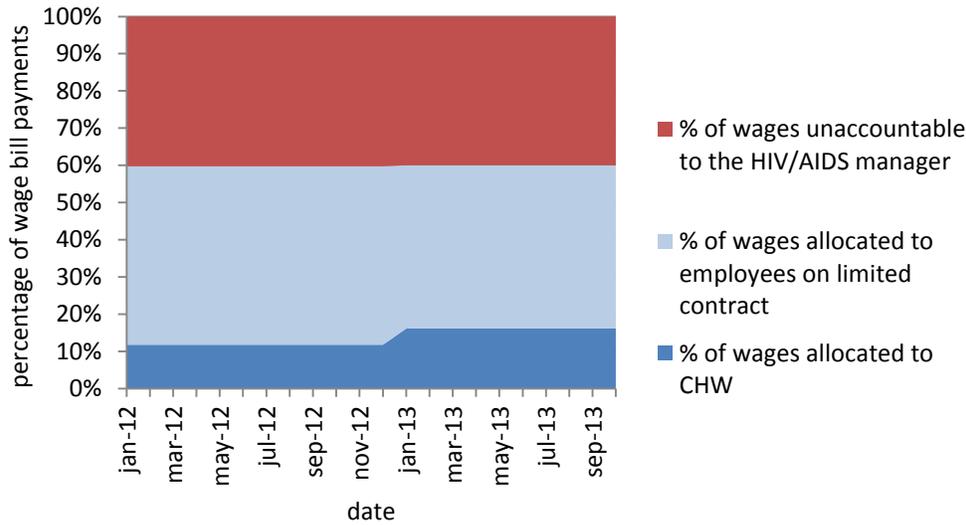
**Figure 11. Regional Government of Loreto: number of ART services and expenditure per-capita (US\$) January 2012-September 2013**



*Source:* Author’s elaboration based on DIRESA epidemiological statistics and MEF Loreto data

The total budget spent during the period 2012-2013 is fairly stable at around US\$1 per-capita, although it displays a spike around the end of the fiscal year in December 2012 (Figure 11). In parallel, the ART services for PLWA started to rise, which should help to reduce premature mortality within the next few years. In spite of this positive trend, there are areas where services are lagging. For example, HIV testing during pregnancy reached 84 percent in Maynas. But in the province of Requena, where the case number is significant (accumulated cases is 104 per 100,000), testing during pregnancy falls to 65 percent. Additionally, health services have not reached native communities of the Amazon that have high numbers of HIV infections. Culturally competent interventions, including consultation with indigenous leaders on the implementation of the HIV/AIDS program are needed (Box 1).

**Figure 12. Share of the wage bill paid by the regional Government of Loreto to selected HIV/AIDS human resources, 2012-2013**



Source: Annex I

Employees with limited contracts are the largest budget line in the regional government budget, reaching 23 percent of the total. The Regional Health Bureau of Loreto manages the wage bill of employees and CHW of the program. The list of employees, their respective salaries, and the time they allocate to the program were analyzed in conjunction with the manager of the program. Regarding CHW, there are two main types: the voluntary and the remunerated CHW. The remunerated includes the peer CHW. The existing remunerated program provides education through peer CHW, who work with established networks of sex workers.<sup>10</sup>

Figure 12 shows the time allocated to the program by the 29 contracted employees and for the 14-16 CHW in 2012 and 2013 (Annex I). The results showed that only four employees were working full time for the program. Others spent half of their time on the program, and the rest were deployed to other programs, often related to reproductive health. Thus, 54 percent of this wage bill was effectively allocated to the HIV/AIDS program.

Peer CHW are a well-recognized and effective intervention in populations at high risk of contracting HIV. Previous research has demonstrated that among those who start ART through CHW in Peru, treatment coverage increases and mortality decreases (Muñoz et al. 2009, Sebastian et al. 2006, and Cerda et al. 2011). Peer CHW has budget support, but only a small percentage is used. There are around 14-16 CHW active peers in the entire region of Loreto. Currently, the Regional Health Bureau of Loreto pays them a monthly salary of about US\$150 and provides them a kit with information, communication and education (IEC) material (Herrera 2013, personal interview) (Figure 12).

In summary, budget management had a number of flaws. The peak resource expenditure occurred around the last month of the fiscal year, which is indicative of insufficient planning and improvised management. Additionally, only 54 percent of the working time of contracted employees is accountable to the program and there is a limited number of peer CHW available to

work for the program. The MEF has supported improvements in budget formulation, but this finding suggests that the program could be significantly improved with monitoring of program implementation at the regional level and support for a strategic human resources plan.

### **Proposed Solution: Rationalization of Human Resources with a Focus on CHW**

Each of the HIV/AIDS, Malaria, and TB health programs has a CWH cadre with its own contracts and arrangements. The CHW program is fraught with challenges, such as poor planning, multiple competing programs with little coordination, poor supervision and support, and under-recognition of the CHW contribution (Tulenکو et al. 2013).

A number of CHW-related issues need to be addressed, including the incorporation of CHWs into the formal health system. For example, most CHWs have low levels of formal education, which presents a problem—according to the human resource officer of DIRESA in Loreto—when it comes to fulfilling contract requirements. CHW compensation—whether cash, voucher or goods—is another unresolved problem. Some NGOs, like Partners in Health, compensate CHWs with a monthly food basket (Dr. Lecca 2003, personal interview). Other international programs offer successful examples, such as Brazil’s community health agents program. All CHW receive a salary, and training requirements and the scope of practice are defined under federal law (Schneider et al. 2008).

## PART VII – PROJECTING INCREMENTAL COSTS OF THE HIV/AIDS PROGRAM

We now know that rapid response is an important part of successful HIV/AIDS treatment (UNAIDS 2013b). A recent assessment of UNAIDS data shows that faster decreases in the incidence of HIV took place in countries that rapidly increased coverage of HIV treatment. Countries that sharply scale up the program and where ART coverage reaches more than 60 percent of the infected population can expect to decrease incidence by 50 to 70 percent. In contrast, countries like Peru, with ART coverage of around 43 to 49 percent, might be able to reduce incidence by 20 to 40 percent (UNAIDS 2013b).

**Table 7. Key population, current and target coverage and estimated unit cost**

Intervention	Target population	Estimated current coverage WHO 2013 guidelines	Target coverage 2016	Estimated unit cost (2013 US\$)
Screening	Pregnant women	79%	90%	9
ART	Infected pregnant women	59%	70%	409
ART plus	Infected children, adolescents 0-14	18%	50%	555
Sexual education & condoms	Adolescents 15-19 years old	1%	10%	20
ART	MSM 15-49 years old	49%	52%	103
Screening, condoms & peer education	Female sex workers	64%	75%	103
ART	PLWA	49%	52%	409

*Source:* Author's elaboration

The WHO's new 2013 guidelines on The Use of Antiretroviral Drugs for Treating and Preventing HIV Infection were used to estimate current coverage. The guidelines recommend a CD4 threshold of 500 for initiation of HIV treatment. This threshold made about 85 percent of HIV positive individuals eligible for ARV treatment, as well as provided lifelong treatment for pregnant women living with HIV and infected children irrespective of CD4 cell count (WHO 2013).

Financial resources necessary to scale up the delivery of the key cost-effective HIV/AIDS interventions for the period 2014-2016 are presented. Two scenarios are considered: a counterfactual scenario whereby the program maintains the current coverage for ART and preventive activities, and a second scenario whereby the coverage of ART reaches on average 60 percent of the infected eligible population, screening services over 75 percent of the high-risk groups and condom and personal sex education reach 75 percent of FSW, 20 percent of the MSM and 10 percent of adolescents.

This section is based on the unit costs and baseline estimates presented earlier in Table 5 and described in Section VI. To calculate counterfactual or current total costs, the first step was to estimate numbers in the target population currently treated or served. Target populations are defined in the second column of Table 7. Program costs include only direct delivery costs of the interventions directed to the targeted population, salaries and medications. Overhead and infrastructure investments are excluded.

**Table 8. Projected total and incremental program costs in two scenarios: counterfactual and scaling-up ART to 60 percent, plus testing and preventive interventions, 2014-2016 (US\$, thousands, 2013)**

	2014		2015		2016	
	Counter factual	Incremental	Counter factual	Incremental	Counter factual	Incremental
HIV testing and counseling	11,042	2,914	11,264	5,787	11,474	8,832
ARV therapy	11,344	950	11,523	2,029	11,662	3,321
Condom and sex education	584	584	591	2,365	597	5,374
Total	22,970	4,448	23,379	10,182	23,733	17,528

*Source:* Author's elaboration

The total cost of scaling up the program and increasing coverage of key populations reaches US\$32 million in the three years 2014-2016. The proposed scaled-up program consists of the following three interventions:

- About 55 percent of the total incremental budget will be directed to HIV testing; 90 percent of pregnant women and 20 percent of MSM will be tested by 2016.
- About 20 percent of the incremental resources will be used to increase the coverage of ARV therapy to 60 percent of the ARV-eligible people; (i) to infected mothers and their children from 59 percent and 18 percent to 70 percent and 50 percent respectively, and (ii) PLWA coverage of ARV therapy will be increased from 49 percent to 52 percent
- Finally, 26 percent of incremental resources may be directed to empowering adolescents, and specifically to increasing their access to sexual education and condoms, and to expanding behavioral interventions for high prevalence populations such as MSM and male sex workers and their clients. Peer CHW can deliver the majority of these services on an individual basis.

In summary, reaching 60 percent coverage using the new WHO 2013 treatment guidelines criteria would require an additional US\$32 million during the period 2004-2006.

## PART VIII – CONCLUSIONS AND RECOMMENDATIONS

Public financing resources are available for the HIV/AIDS program, as the program is among the few prioritized interventions in Peru. Since 2011, the program has received an increasing share of public funding, from US\$17.7 million spent annually during the period 2005-2010, to US\$57.8 million spent annually in recent years. This budget increase is accompanied by financial decentralization, meaning that the MEF allocates the budget for the HIV/AIDS program directly to the MOH, the 25 regional governments, the DIRESAs, and the hospitals. The new method for the allocation of financial resources uses budgeting-for-results (BFR), thus linking the public budget with the delivery of services to different risk groups.

According to the analysis of the allocation of resources by risk group, just 44 percent of total program expenditures were allocated to high risk groups in 2011-2013: pregnant women and children, MSM, adolescents and PLWA. Furthermore, our model results estimate around 43 to 48 percent of the proportion of eligible infected people —under the WHO 2013 guidelines— are being treated with ART by the public system, including social security. Although, the coverage rises to 66 percent if only diagnosed and eligible PLWA is used as the reference group. On the other side, the percentage of ART coverage for infected pregnant women has risen to 59 percent in 2012, while the percentage of tested pregnant women attending antenatal care to 75 percent.

Equity has improved among women of childbearing age in quintiles 1-2, which includes 40 percent of the poorest. The ENDES 2004-2012 shows an increase in women who are knowledgeable about the transmission of HIV infection from mother to fetus, from 30 percent of women accurately informed in 2004 to 46 percent in 2012. However, it is estimated that only 18 percent of the infected children are being treated. The situation becomes even more critical in native Amazon communities, which constitutes a new emerging at-risk group currently missing from the program discussion.

As discussed, ART treatment services coverage is on the medium side. We now know that rapid response is an important element for success in combating HIV/AIDS. Recent assessment of UNAIDS data shows that faster decreases in the incidence of HIV took place in countries that rapidly increased coverage of HIV treatment (UNAIDS 2013b). UNAIDS recommends a faster scale-up of adult ART coverage. If at least 60 percent of the adult infected eligible population were covered, HIV/AIDS incidence would likely decrease by 50 percent-70 percent. The total cost of scaling up the program and closing the coverage gap among high-risk groups is estimated at around US\$32 million over the three years 2014-2016. The high-risk groups include infected pregnant women and their children, MSM, sex workers and native populations from the Amazon. The native populations need culturally appropriate interventions and comprehensive messages in local languages.

Closing the coverage gap means active HIV testing, promotion of condom use and full access to ART with the support of CHWs. Increased laboratory capacity and expanded rapid diagnostic testing would have the greatest impact on program coverage and can dramatically decrease the epidemic, as the treatment of more infected people in ART could reduce the infection rate. The MOH has secured access to price-reduced ARV, through an agreement with

PAHO's Strategic Drug Fund. However, the public laboratory network faces gaps in the technical capacity needed to support increased diagnostic services, which has the very real risk of undercutting the potential for accelerated progress in HIV/AIDS treatment. Furthermore, the Loreto case study detected important management issues. The program did not have the capacity to claim and retain the human resources funded with its own budget, and about half of the working time of employees with limited contracts was unaccountable to the HIV/AIDS program manager.

The limited number of CHWs could also potentially undermine accelerated progress in HIV/AIDS. Additional questions related to CHWs include whether they should become part of the formal health system and how best to compensate them: cash, voucher or goods. Programmatic expansion of CHW models that have proven cost-effective for vulnerable populations in Peru, such as Partners in Health and their work with CHW in the TB control program, and international examples, such as Brazil's community health workers program, should be considered. Resolving issues surrounding the CHWs would be an appropriate first step in developing a strategic human resources plan.

In conclusion, some of the incremental resources needed for extending coverage to key populations may well be funded with a re-appropriation of existing financial resources. This initiative could accompany a discussion on human resources in which there is ample room for a more cost-effective allocation of resources.

## NOTES

<sup>1</sup>In order to increase transparency and improve public resource management along with the support of the World Bank and the Inter-American Development Bank, the Ministry of Finance implemented an information system consisting of two main programs: (i) the Integrated Financial Management System (IFMS), and (ii) the Integrated Administrative Management System (SIGA). This information system monitors revenues and expenditures at the national, provincial, and municipal levels. It should be noted that this system provides reliable information on a periodic basis. Citizens can also access this information system through a website called “Consulta Amigable.”

<sup>2</sup>The information contains the Institutional Budget Opening (PIA), the Institutional Budget Modified (PIM), and the executed budget during different phases. The information is broken down by the Implementing Units (UEs) of the national government, regional governments, and local governments.

<sup>3</sup>As Caceres (2013) and Medici (2013) point out, an alternative assumption is that the AIDS epidemic remains constant, in which a decline in the number of new infections in the adult population still needs to be demonstrated.

<sup>4</sup>With regard to screening for HIV in pregnant women, if the HIV result is reactive, another blood sample must be drawn for a confirmatory test, specifically, the CD4 count and the viral load (VL) test. If a rapid test had been used and the result is reactive, then an ELISA test or another rapid test must be performed before the confirmatory test. The confirmatory tests used for HIV are Western Blot (WB), Indirect Immunofluorescence Assay (IFA), and Recombinant Immunoblotting Assay (RIBA) (Dr. Cabezas, Personal interview, 2013).

<sup>5</sup>Although the 2008 norm stipulates that the confirmatory test is the responsibility of a high level facility, at the moment only the INS has a laboratory capable of performing CD4 counts, VL tests, and RIBA confirmatory tests. According to the 2008 norm, confirmatory samples must be sent within 48 hours of being obtained, and the results should be available in the electronic medical record system NETLAB after 10 working days (Dr. Cabezas, Personal interview, 2013).

<sup>6</sup>SIAF and SIGA are complementary software used to organize the administrative management of the programs at the central, regional and local governments. It simplifies their tasks and reduces reporting. At the same time, it makes budgetary management more transparent through the publication of information on the web.

<sup>7</sup> Program managers deliver information, including activities carried out. Adjustment and revisions are incorporated into the designs of the budget. The MEF is in charge of the follow-up through the administrative databases SIAF and SIGA.

<sup>8</sup>The MEF has been working on other baseline indicators: nutrition, maternal and neonatal health, population access to ID, and the conditional cash transfer program JUNTOS.

<sup>9</sup>According to UNGASS (2012) based on WHO guidelines of 2010 (CD4 < 200) about 93 percent of people diagnosed with HIV/AIDS were receiving ARV treatment in 2011.

<sup>10</sup>When the HIV/AIDS epidemic set in, PLWA had no choice but to help one another. The peer health worker structure evolved: Female sex workers helped and educated other sex workers, and gay men educated and supported gay men.

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## ANNEXES

### ANNEX A: FINANCIAL SUPPORT OF THE GLOBAL FUND TO THE HIV/AIDS PROGRAM 2003-2012

Round	US\$ M	Title	Main activities	Implementer	Coverage
2 <sup>nd</sup>	6.5m	Fortalecimiento de la prevención y control del SIDA y la TB. Propuesta con enfoque de descentralización multisectorial participativa	In 2004 begin the ARV program	CARE Perú Coordinadora Nacional Multisectorial en Salud (CONAMUSA)	Hospitals
5 <sup>th</sup>	6 m	Cerrando brechas: hacia los logros del Objetivos del Milenio en TB y VIH/SIDA	Health promoters, peer community health workers, educators for peers, vertical transmission, community health promoters	CARE Perú Coordinadora Nacional Multisectorial en Salud (CONAMUSA)	Hospitals and health centers
6 <sup>th</sup>	41m	Planes nacionales multisectoriales: Integrando recursos para la lucha contra el VIH/SIDA		CARE Perú Coordinadora Nacional Multisectorial en Salud (CONAMUSA)	Decentralized. Three macro regions; North, Center-south & East
10 <sup>th</sup>	15.7m*	Construyendo capital social para la prevención del VIH y el acceso a la salud integral de la población trans, gay y HSH, sin transfobia ni homofobia en el Perú		PARSALUD/ INPPARES	Targeting 8 regions with 80% of HIV/AIDS reported cases: coast-Lambayeque, La Libertad, Lima, Callao, Ica & 3 jungle—Loreto, San Martín, Ucayali.

Source: Global Fund to Fight Malaria, Tuberculosis and HIV/AIDS (2013) Available at <http://portfolio.theglobalfund.org/en/Country/Index/PER> (Accessed May, 2013)

Note: \* Committed, not disbursed.

## **ANNEX B: MINISTRY OF FINANCE: BUDGET LINES OF THE HIV/AIDS PROGRAM**

The program's objective is to reduce infection with the human immunodeficiency virus (HIV) and Acquired Immunodeficiency Syndrome (AIDS). The program consists of a set of coordinated interventions between the Ministry of Health, Comprehensive Health Insurance, and the Regional and Local Governments. The program is regulated by the Ministry of Health.

Final result: Reduced morbidity and mortality from HIV/AIDS.

Intermediate outcomes:

- a) Reduce the risk of HIV infection and TB in the target population,
- b) Prevent HIV/AIDS,
- c) Decrease vertical transmission and control of sexually transmitted infections and HIV AIDS.

Budget lines:

1. Regulation of the financing and provision of HIV/AIDS services
2. Community health promoters support prevention of HIV/AIDS
3. Social networks participating in decreased transmission of HIV AIDS
4. Adults and adolescents use condoms to prevent STDs and HIV and access voluntary testing
5. Teenagers are educated to prevent STDs and HIV infections
6. Increase measures to prevent STDs and HIV infections in the high risk population
7. Population with sexually transmitted infections and HIV/AIDS access diagnosis and treatment
8. Reduced risk of vertical transmission
9. Family with healthy practices for the prevention of HIV AIDS and tuberculosis
10. Educational institutions that promote healthy practices for the prevention of HIV AIDS and tuberculosis
11. Community promoters support healthy practices for preventing HIV/AIDS and TB
12. Population informed about correct use of condoms to prevent STDs and HIV/AIDS
13. Adults and young people receive counseling and screening for STDs and HIV/AIDS
14. Adolescent informed about STDs and HIV/AIDS
15. Population with STD infections is treated according to clinical guidelines
16. People diagnosed with HIV receive comprehensive care
17. Infected pregnant women and HIV-exposed infants receive timely treatment
18. Pregnant women with syphilis and HIV infected and exposed infants receive timely treatment

**ANNEX C: HIV/AIDS PROGRAM EXPENDITURE BY MAIN FUNDERS (US DOLLARS, 2013)**

	The Global Fund	Public sector*	USAID &Other**	Total
2003	1,231	n/a	n/a	1,231
2004	6,856	n/a	n/a	6,856
2005	6,726	11,440	10,844	29,010
2006	8,996	16,330	12,634	37,960
2007	9,857	15,080	16,103	41,040
2008	8,589	19,430	24,671	52,690
2009	17,210	27,240	15,770	60,220
2010	9,000	16,630	5,130	30,760
2011	3,036	38,550	n/a	41,586
2012	3,993	78,600	n/a	82,593
2013	502	56,240	n/a	56,742

*Source:* The Global Fund at <http://portfolio.theglobalfund.org/en/Country/Index/PER> (Accessed 12 June, 2013), Public sector 2005-2010 and other based on data from MINSA/ONUSIDA health accounts 2010, and public sector 2011-2012 based on MEF- Annex C.

*Note:* Public sector 2005-2010 includes Ministry of Health and the Social Security. The public sector 2011-2013 excludes Social Security. Category “Other” includes bilateral and United Nations organizations but exclude out-of-pocket expenditures.

## ANNEX D: HIV/AIDS PROGRAM'S PUBLIC EXPENDITURE 2011-2013 (NOMINAL US DOLLARS)

Line No	Line name	%	Target Pop	2011	2012	2013 approved
2206929	Leadership program IEC					
2087691	HIV/AIDS for district El	100%	General	0	5,367	43,644
2178243	Agustino Lima& Others					
3043950	Regulation of financing and provision of HIV/AIDS services	50%	Mgmt	2,143,088	5,082,081	4,952,315
3043951	Development of protocols and clinical guidelines	50%	Mgmt	474,502	377,613	734,341
3043952	Family with healthy practices for the prevention of HIV AIDS	50%	General	1,556,247	2,150,521	1,804,285
3043953	Educational institutions that promote healthy practices for the prevention of HIV AIDS	50%	Adolescents	442,471	1,155,484	778,407
3043954	Community health promoters support prevention of HIV/AIDS	50%	MSM	583,851	1,464,578	1,394,391
3043958	Population informed about correct use of condoms to prevent STDs and HIV	100%	General	1,666,244	6,140,348	2,590,290
3043959	Adults & adolescents IEC, condoms, test	100%	General	7,784,976	16,057,992	12,344,163
3043960	Teenagers are educated to prevent STDs and HIV	100%	General	1,404,639	1,837,330	1,969,044
3043961	Increase measures to prevent STDs and HIV infections in high risk population.	100%	MSM	3,213,303	7,409,542	5,172,174
3043968	Population with STDs and HIV/AIDS access diagnosis and treatment.	100%	General	5,198,972	4,646,598	0
3043969	People diagnosed with HIV receive comprehensive care.	100%	HIV+	9,865,263	25,903,540	18,835,333
3043970	Infected pregnant women and HIV-exposed infants receive timely treatment.	100%	Pregnant	1,525,439	2,848,350	3,541,787
3043971	Pregnant women with syphilis and HIV infected and exposed infants receive timely treatment.	100%	Pregnant	1,019,789	1,749,470	2,079,681
	TOTAL			36,878,784	76,828,815	56,239,856

*Source:* Ministry of Finance website “Consulta Amiga” Year 2011 (accessed 21 June 2013), Year 2012 and 2013 (accessed 22 June, 2013). Exchange rate equals 2.75 Soles per 1 US dollar in 2011, 2.60 in 2012 and 2.70 in 2013.

## ANNEX E: AVERAGE COST OF ART PER PERSON PER YEAR (PPPY)

This annex presents the cost of ARV therapy using the prices of awarded contracts as published by DARES/MINSA in “Corporate Purchase of Drugs for Supply of the Year 2013.” The drugs presented are based on 15 combinations of ARV regimes used in Peru by the patients as reported by the MOH (Dr. A Gonzales). The average cost is weighted according to its relative frequency of use.

Drugs, Doses and Frequency		Patients (N)	%	Unit cost	Annual cost
1	LAMIVUDINA 150 MG + ZIDOVUDINA 300 MG - CM 300 mg/150 mg c/12 horas + EFAVIRENZ 600 MG - CM 600 mg c/24 hrs	6,361	35.7	769.18	274
2	LAMIVUDINA 150 MG + ZIDOVUDINA 300 MG - CM 300 mg/150 mg c/12 horas + NEVIRAPINA 200 MG - CM 200 mg c/12 hrs	4,358	24.4	665.90	163
3	ESTAVUDINA 30 MG - CM 30 mgc/12 hrs. + LAMIVUDINA 150 MG - CM 150mgc/12 hrs + NEVIRAPINA 200 MG - CM 200 mg c/12 hrs	1,380	7.7	233.41	18
4	ESTAVUDINA 30 MG - CM 30 mgc/12 hrs. + LAMIVUDINA 150 MG - CM 150mgc/12 hrs+ EFAVIRENZ 600 MG - CM 600 mg c/24 hrs	1,309	7.3	336.68	25
5	LAMIVUDINA 150 MG - CM 150mgc/12 hrs + ABACAVIR 300 MG - CM 300 mgc/ 12 hrs. + EFAVIRENZ 600 MG - CM 600 mg c/24 hrs	975	5.5	683.61	37
6	LAMIVUDINA 150 MG + ZIDOVUDINA 300 MG - CM 300 mg/150 mg c/12 horas + LOPINAVIR 200 MG + RITONAVIR 50 MG - CM 2 cap c/12 horas	753	4.2	1723.58	73
7	DIDANOSINA 400 MG - CM 400 mgc/24 hrs. + LAMIVUDINA 150 MG - CM 150mgc/12 hrs + LOPINAVIR 200 MG + RITONAVIR 50 MG - CM 2 cap c/12 horas	744	4.2	1896.28	79
8	ABACAVIR 300 MG - CM 300 mgc/ 12 hrs. + LAMIVUDINA 150 MG - CM 150mgc/12 hrs. + NEVIRAPINA 200 MG - CM 200 mg c/12 horas	591	3.3	580.33	19
9	DIDANOSINA 400 MG - CM 400 mgc/24 hrs. + LAMIVUDINA 150 MG - CM 150mgc/12 hrs + EFAVIRENZ 600 MG - CM 600 mg c/24 hrs	360	2.0	941.88	19
10	ESTAVUDINA 30 MG - CM 30 mgc/12 hrs. + LAMIVUDINA 150 MG - CM 150mgc/12 hrs+ LOPINAVIR 200 MG + RITONAVIR 50 MG - CM 2 cap c/12 horas	281	1.6	1301.05	20
11	ABACAVIR 300 MG - CM 300 mgc/ 12 hrs. + LAMIVUDINA 150 MG - CM 150mgc/12 hrs.+ LOPINAVIR 200 MG + RITONAVIR 50 MG - CM 2 cap c/12 horas	500	2.8	1638.01	46
12	DIDANOSINA 400 MG - CM 400 mgc/24 hrs. + LAMIVUDINA 150 MG - CM 150 mg c/12 horas+ NEVIRAPINA 200 MG - CM 200 mg c/12 horas	139	0.8	838.61	7
13	DIDANOSINA 400 MG - CM 400 mgc/24 hrs+ ABACAVIR 300 MG - CM 300 mgc/ 12 hrs +LOPINAVIR 200 MG + RITONAVIR 50 MG - CM 2 cap c/12 horas	84	0.5	2251.25	11
TOTAL (US\$293)		17,835	100		791

Source: Elaborated with the assistance of Andrea Pineda based on data from MOH/HIV-AIDS program and prices of MOH/DARES provided by Carlos Gutierrez Sanchez DIGEMID

## ANNEX F: UNIT COSTS OF PATIENT ON ART (US\$ 2013)

These estimations include only consultation services, and clinical supplies exclude ARVs and laboratory services provided by the public sector, free of charge.

Activities	Cost per hour	Time per visit	Cost per visit
Participant reception and appointment schedule	5.6	0.25	1.4
Medical history, physical exam and prescription	21.5	0.50	10.7
Assessments (psychologist, social worker)	9.6	0.50	.8
Adherence	9.6	0.30	2.9
Sample withdraw	9.6	0.20	1.9
Dispensation	14.3	0.25	3.6
Coordination	31.1	0.20	6.2
Sub Total			31.5
<b>Total</b> (3 visits per year)			94.5
Clinical supplies cost (3 visits per year)			20.97
<b>Grand Total (US\$)</b>			<b>115.5</b>

*Source:* De La Grecca 2013, The IMPACTA PERU CTU Asociación Civil Impacta Salud y Educación

**ANNEX G: HIV/AIDS PROGRAM'S PUBLIC EXPENDITURE 2011-2013 BY ACTIVITY: MONITORING, PREVENTION, TESTING AND TREATMENT (NOMINAL US\$)**

	2011		2012		2013* (Jan-Oct)	
Monitoring	2,617,590	7%	5,459,694	7%	5,686,657	10%
Prevention	9,451,220	26%	6,140,348	8%	2,590,290	5%
Condom distribution	7,200,512	20%	14,022,823	18%	11,119,796	20%
HIV testing and counseling	5,198,972	14%	16,057,992	21%	12,344,163	22%
Treatment	12,410,491	34%	35,147,958	46%	24,498,950	44%
Total	36,878,784	100%	76,828,815	100%	56,239,856	100%

*Source:* Ministry of Finance website “Consulta Amiga” Year 2011 (accessed 21 June, 2013), Year 2012 (accessed 13 June, 2013) Year 2013 (accessed 18 November, 2013)

**ANNEX H: GOVERNMENT EXECUTION OF THE BUDGET ALLOCATED TO ARV MEDICATION BY REGION, NUMBER OF BENEFICIARIES AND EXPENDITURE PER-PATIENT PER YEAR (US\$2012)**

Region	Budget ARV	% Budget executed	N patients	Expenditure per patient (US\$)
Lima	7,868,986	97%	13,709	574
Callao	1,130,167	91%	2,539	445
Loreto	1,045,463	76%	1,252	835
La Libertad	944,701	81%	674	1,402
Piura	632,381	84%	562	1,125
Arequipa	599,206	68%	529	1,133
Ica	371,186	51%	523	710
Lambayeque	559,687	66%	478	1,171
Ucayali	231,663	97%	309	750
San Martin	372,791	50%	304	1,226
Junin	397,854	42%	218	1,825
Tumbes	294,602	85%	196	1,503
Ancash	360,081	61%	136	2,648
Cusco	299,403	69%	126	2,376
Huanuco	293,355	9%	107	2,742
Tacna	118,897	49%	92	1,292
Madre de Dios	90,968	41%	78	1,166
Cajamarca	481,899	78%	73	6,601
Amazonas	96,372	78%	71	1,357
Ayacucho	239,071	67%	49	4,879
Moquegua	82,497	11%	38	2,171
Apurimac	133,984	100%	23	5,825
Pasco	64,516	42%	22	2,933
Puno	266,809	72%	19	14,043
Huancavelica	293,355	75%	189	16,298
<b>TOTAL</b>	<b>17,269,896</b>		<b>22,145</b>	<b>780</b>

Source: Government budget corresponds to DARES allocation to the HIV/AIDS program. Available at <http://apps5.mineco.gob.pe/transparencia/Navegador/de9fault.aspx> (Accessed 11 September, 2011). Number of patients was provided by HIV/AIDS national program (Dr. Gonzales).

**ANNEX I: HIV/AIDS PROGRAM DIRESA LORETO: LIST OF CHW & LIMITED CONTRACTS EMPLOYEES, THEIR COMPENSATION, SALARIES AND TIME ALLOCATED TO THE PROGRAM (NOMINAL US\$)**

	2012				2013			
	CHW	Employee with limited contract			CHW	Employee with limited contract		
	Monthly compensation	Monthly salary	% time HIV/AIDS program	Effective contribution	Monthly compensation	Monthly salary	% time HIV/AIDS program	Effective contribution
1	154	356	100%	356	148	220	100%	220
2	154	314	20%	63	148	127	30%	38
3	154	314	20%	63	148	343	20%	69
4	154	629	100%	629	148	343	20%	69
5	154	629	100%	629	148	593	100%	593
6	154	356	100%	356	148	593	70%	415
7	154	629	50%	314	148	815	20%	81
8	154	314	20%	63	148	343	100%	343
9	154	356	20%	71	148	343	20%	69
10	154	314	20%	63	148	481	20%	96
11	154	1,706	50%	853	148	815	20%	163
12	154	356	20%	71	148	815	80%	652
13	154	880	50%	440	148	815	20%	163
14	154	356	20%	71	148	815	20%	163
15		503	20%	101	148	343	100%	343
16		356	100%	356	148	343	20%	69
17		314	20%	63		343	20%	69
18		356	20%	71		343	20%	69
19		356	20%	71		343	20%	69
20		356	20%	71		343	50%	172
21		356	20%	71		815	70%	570
22		356	20%	71		1,037	80%	830
23		356	20%	71		343	20%	69
24		1,425	20%	285		593	80%	474
25		356	20%	71				
26		1,677	50%	838				
27		629	20%	126				
28		356	50%	178				
29		880	100%	880				

*Source:* Data on the employees and their monthly salaries provided by the human resource office of the DIRESA Loreto—Amazon region. Information on the time allocated to the program and CHW salaries provided by the coordinator of the program.



This study aims to evaluate and develop recommendations on how the HIV/AIDS program in Peru can achieve better Value for Money. In Peru, the HIV epidemic concentrates mostly among men who have sex with men, with AIDS being the first cause of death for men ages 30-49 in 2010 and the second cause of death for women aged 25-34 (BOD, 2013). UNAIDS (2013) estimates there were 76,000 people living with HIV/AIDS (PLWA) in 2012, and this study estimates 67,000 PLWA in 2013. The Ministry of Health reports that 27,502 PLWA currently receive ART, a 43-48 percent coverage of eligible people, and 66 percent coverage of all diagnosed eligible individuals (WHO, 2013 guidelines). In 2011, there was a transition from international to domestic public funding, which increased from US\$17.7 million in 2005-10 to US\$57.8 million in 2011-13. This study recommends targeting high-risk groups with proactive testing, promotion of condom use, and supervised ART administration by community health workers to close the coverage gap. In addition, there is a need to expand coverage of rapid testing points through greater diversity of contractual arrangements with NGOs and the private sector, which can only be achieved with the support of a human resources plan that centrally positions community health workers in HIV prevention and ARV treatment.

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