Thesis Report

Understanding Sexual Risks and HIV Infection among Voluntary Counseling and Testing (VCT) testers in Vietnam

Minh Luu
Master of Public Health, 2015

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An abstract of
A thesis submitted to the Faculty of the
Rollins School of Public Health of Emory University
in partial fulfillment of the requirements for the degree of
Master of Public Health
in Global Health
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Abstract

Understanding Sexual Risks and HIV Infection among Voluntary Counseling and Testing (VCT) testers in Vietnam

By Minh Luu

Background. VCT has proven to be an effective measure to prevent HIV transmission globally. Understanding sexual risks and HIV infection among VCT testers in Vietnam is critical to customizing the program to better meet the needs of specific at-risk populations, with same sex and drug use behaviors. VCT has been implemented in Vietnam since 2002. To date, very few studies have been conducted to examine the sexual risks and HIV infection among VCT testers in Vietnam, which can provide needed evidence for designing targeted prevention strategies.

Objective. This study explores, through descriptive analyses, sexual risks and HIV infection among key at-risk VCT testers in Vietnam, including MSM, PWID, FSW, M-SP and R-SP.

Methods. This was a secondary data analysis using a sub-dataset from the Vietnam's national VCT client's records. Sexual risks, including condoms use, sexually transmitted infections (STI), number of sex partners and HIV, STI prevalence were compared among risk groups of concern.

Results. Sexual behaviors, including number of sex partners, number of vaginal sex, number of anal sex acts and condom use within the last 30 days preceding the survey were significantly different across participants. Female sex workers (FSW) had the highest number of sex partners (mean = 17.7, SD = 26.4) and number of vaginal sex (mean = 22.8, SD = 29) and number of condom use (mean = 16.6, SD = 23.7) compared to all other sub-groups (p-value < 0.01). Sexually transmitted infections and HIV prevalence were also significantly varied among sub-groups. Female sex workers (FSW) had the highest STI (29.5%) and lowest HIV prevalence (2.6%). Meanwhile, PWID presented highest HIV infection (11.6%) and lowest STI prevalence (2.25) (p-value <0.01). Men who have sex with men (MSM) had the highest likelihood of having sex partners attending VCT services with them on a same visit (2.3%), as well would refer sex partner to VCT services (41%).

Discussion. Lower general HIV prevalence among all key population may imply underutilization of VCT services among high risk populations in Vietnam. Inconsistent condom use across surveyed population indicate a critical need for enhanced awareness raising and behavioral change interventions at individual level.

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Acknowledgement

First and foremost, I would like to thank Dr. Rob Stephenson for his continued mentorship throughout the development and completion of my thesis. My special gratitude goes to Dr. Carlos del Rio for his guidance and support during my masters training at Rollins School of Public Health, Emory University under the grant support from National Institutes of Health (NIH), Fogarty Fellowship. This thesis could not have been done without tremendous inputs and help from Center for Diseases Control and Prevention (CDC) Vietnam Office (Ms. Hong Nguyen, Dr. Vinh Cao, Dr. Sheryl Lyss and Ms. Nisha Gupta), so I thank them for their valuable collaboration. Sincere thanks to my colleges, friends near and far, who have always shared happiness and sadness with me, now and then.

Lastly, my deep gratefulness reserved for my family, my beloved husband and my two sons for their caring, encouragement and love. I could not have reached this far without their great sacrifice. I would like to dedicate this success to my mother and late father, who have instilled in me the courage of life, desire for learning and serving others. They are the meaning of what I strive for.

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List of Acronyms

AIDS	Acquired Immunodeficiency Syndrome
ART	Anti-retroviral Therapy
CDC	U.S. Centers for Disease Control and Prevention
CHW	Community Health Workers
ELISA	Enzyme-linked Immunosorbent Assay
FHI 360	Family Health International 360
FSW	Female Sex Workers
GAP	Global AIDS Program
HCP	Healthcare Provider
GDP	Gross Domestic Product
GF	The Global Fund to Fight AIDS, Tuberculosis, and Malaria
HIV	Human Immunodeficiency Virus
PWID	People Who Inject Drug
IEC	Information-Education-Communication
MSI	Marie Stopes International
MSM	Men who have Sex with Men
MOH	Ministry of Health of Vietnam
M-SP	People who have Multiple Sex Partners
R-SP	People who have At-risk Sex Partners
OI	Opportunistic Infections
OPC	Out-patient Clinics
PAC	Provincial AIDS Center
PEPFAR	U.S. President's Emergency Plan for AIDS Relief
PE	Peer Educators
PLWHA	People Living with HIV and AIDS
PMC	Preventive Medicine Center
PMTCT	Prevention of Mother-to-Child Transmission
PPC	Provincial People's Committee
PSI	Population Services International
STI	Sexually Transmitted Infections
STATA	Data Analysis and Statistical Software
TB	Tuberculosis
UNAIDS	Joint United Nations Programme on HIV/AIDS
USAID	United States Agency for International Development
VAAC	Vietnam Administration of HIV/AIDS Control
VCT	Voluntary HIV Counseling and Testing
WB	World Bank
WHO	World Health Organization

CHAPTER I: INTRODUCTION

Since the inception of the HIV epidemic, HIV Voluntary Counseling and Testing (VCT) program has been a cornerstone strategy for HIV prevention. VCT serves as an entry point to HIV services including primary prevention, prevention of mother-to-child transmission, antiretroviral therapy, management of HIV-related illnesses, tuberculosis control and psychosocial support for people infected with and affected by HIV [1, 2]. Studies have shown that VCT is one of the most effective means to prevent HIV in concentrated epidemic and resource-poor settings, such as Vietnam [2, 3]. In developing countries, VCT is not only becoming increasingly available, but also proved to hold potential impact in facilitating behavior change among most at-risk populations [4] and reducing risky behaviors, especially for HIV-positive individuals [5, 6]. Additionally, a randomized control trial by Go et al. suggested that VCT accounts for decreased drug injecting risks among injecting drug users – the most-at-risk group of HIV infection in Vietnam [7].

While the HIV epidemic in Vietnam is highly concentrated, it embodies diverse sub-epidemics across the country with varied characteristics shaped by behavioral risks and HIV infectivity among difference sub-groups. There were an estimated 256,000 people living with HIV in 2014, and HIV prevalence was approximately 0.26% in the same year. The number of new infections held steady during the period of 2010 to 2013, with about 14,000 cases reported each year [8]. The three most –at-risk groups in Vietnam primarily include PWID, MSM and FSW. However, the risk behaviors in these groups are not mutually exclusive; MSM and FSW who also inject drugs have much higher HIV prevalence than

those who do not inject drug. HIV sentinel surveillance (HSS) in 41 provinces indicated that HIV prevalence among PWID, MSM and FSW averaged 10.3%, 3.7% and 2.6% respectively. In addition, IBBS II (2009) data among the same population has shown HIV prevalence as high as 56% among PWID, 23% among street FSW and 19.8% among MSM [8]. This study has the following goal and specific aims:

Goal

To inform evidence-based programming for HIV prevention and care services targeting high risk groups, including:

- People who inject drug (PWID)
- Men who have sex with men (MSM)
- Female sex workers (FSW)
- People with multiple sex partners (M-SP); and
- People with high risk sex partners (R-SP)

Specific Aims

1. To assess HIV prevalence among key populations testing for HIV presenting for VCT at government-run clinics in 30 provinces throughout Vietnam
2. To understand sexual risk factors (multiple sex partners and unprotected intercourse) across key populations testing for HIV at government-run VCT clinics in 30 provinces throughout Vietnam
3. To determine acceptability of HIV Couples Testing and Counseling (CHTC) services among key populations testing for HIV in 30 provinces throughout Vietnam

Background and Rationale

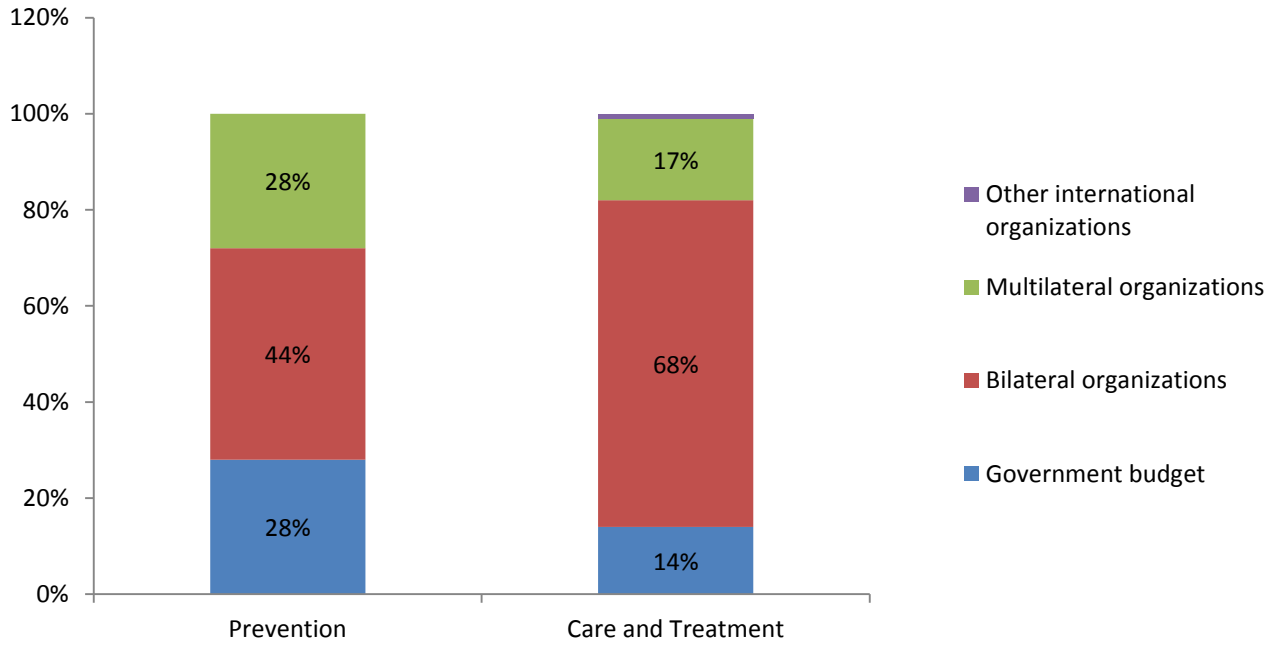
HIV funding and program implementation in Vietnam

The HIV program in Vietnam has been heavily dependent on external financial aid (Figure 1). Reported by UNAIDS in its 2014 progress report, about 70- 80% of HIV funding in Vietnam come from foreign government and international sources [2]. The Government of Vietnam, in an effort to gradually take on greater financial responsibilities over HIV program prevention and control have passed a bill to sustain an annual amount of approximately USD 12mil for HIV program to fill in the gap. The Vietnamese government has also made its political commitment that it will continue to have HIV program on National Target Program agenda [9]. This will help ensure sustainable political, financial and infrastructure support to effectively carry on and develop HIV prevention and control program after foreign donors transition out of the country.

U.S. President's Emergency Plan for AIDS Relief (PEPFAR) and Global Fund for TB, Malaria and HIV/AIDS (GF) have been major international donors to the HIV program in Vietnam. In 2010, planning for transition of the PEPFAR portfolio was initiated as part of the Partnership Framework (PF) and PF Implementation Plan negotiation process. It supports achievement of the second PF goal, strengthened health systems. Recognizing that Vietnam's highly decentralized health structure results in wide variations of healthcare at the provincial level, PEPFAR VN validated the need for specific technical and geopolitical province-level assessments to implement any model PEPFAR develops for transition to Technical Assistance TA, but no longer heavily dependent on financial provision. This

assessment was also important because each provincial People's Committee directs the obligation of resources for health and especially HIV/AIDS. PEPFAR prioritizes the government's role in country ownership through strengthened capacity to engage provincial authorities in planning around a phase-out or shift of the HIV/AIDS portfolio within their respective provinces [9]. During this tenuous period of transformation for PEPFAR VN, it is critical for Ministry of Health of Vietnam, as well HIV program implementers to gather and synthesize evidences on how best to serve populations in need through innovative, holistic and cost-efficient HIV prevention services, including VCT.

Figure 1: Spending on prevention, treatment and care by different financial sources, 2012



Evolution of VCT and VCT-related research in Vietnam

HIV antibody test first became commercial available in the United States in 1985 [10]. Since then, despite mandatory HIV testing for certain population sub-groups such as military

recruits, incarcerated persons, blood donors, or in some countries – commercial sex workers), voluntary testing has been universally promoted as a major strategy for early detection of HIV infection and entry into care. With the purpose to ensure HIV testing is most beneficial to infected persons and HIV prevention efforts, pre- and post-test counseling are mandated along with the test [10]. Other important aspects or elements of VCT, such as confidentiality/anonymity, partner referral and linkages to services, have been added over time. UNAIDS defines VCT as "*a process by which an individual undergoes counselling enabling him or her to make an informed choice about being tested for HIV. This decision must be entirely the choice of the individual and he or she must be assured that the process will be confidential*" [2].

Along with development of HIV epidemic, VCT program implementation has also evolved to adapt changes that better respond to increased, diverse needs and priorities. Globally, research and policy issues pertaining to the provision of utilization of VCT have also evolved, resulting in various approaches to VCT provision depending on setting, target audience, and availability of resources. In low HIV prevalence settings (i.e. HIV prevalence is less than 1% among pregnant women), VCT is often designed to target individuals at increased risk for HIV infection (e.g. MSM, PWID and FSW). For example, special VCT models can be implemented at free-standing testing sites, bathhouses or needle exchange programs. In high prevalence settings, VCT could be an integral part of the primary healthcare system and routinely recommended to all health care seekers.

In Vietnam, there have been very few studies in Vietnam that examine facilitators and barriers of VCT program implementation in Vietnam [10, 11].A study in 2007 examining

facilitators and barriers of VCT program among male PWID in Nam Dinh, Vietnam by Diep TBV was the first one in Vietnam, which aimed to evaluate a VCT promoting intervention among male PWID population [11]. Findings of this study on the actual uptake of VCT and factors associated with getting HIV tested has provided information for HIV/AIDS programs in the country to increase utilization of VCT services among male PWID [11]. Key finding from this study suggested that with some behavioral change intervention, male PWID would drastically increase likelihood of using VCT within 3 months (10% increase in uptake). The study concluded that effort to promote HIV testing made at individual level could be a relevant approach to increase VCT uptake among male PWID in Vietnam. Furthermore, factors found to promote or hinder testing can be addressed through testing campaigns.

During the same period, a similar cross-sectional study by Hong TTN (2011) was conducted to assess successes and barriers to the implementation of anonymous VCT in Vietnam, which stressed on evaluating utilization of CDC/GAP-funded VCT services. Through evaluation of VCT program implementation, this study attempted to assess if VCT program had reached its target population, and if VCT services had been accepted by high-risk populations, and finally how clients had been referred to VCT. One of the recommendations from the study aimed at promoting further research to understand the trends of HIV prevalence and risk factors of HIV infection at the national and provincial levels using VCT program data [10].

The need to better understand characteristics, including sexual risks and HIV prevalence among sub-groups of VCT testers is critical to inform development of custom program, which can provide tailored counseling protocol to target populations. Since 2005, Ministry of Health of Vietnam has actively engaged various government and non-government stakeholders in promoting, implementing and assessing VCT programs with an aim to better provide HIV testing and care services to populations in need [12]. There has been only one study examining factors related to VCT operations, which aimed to provide empirical evidence toward improvement of program implementation at national level. Hong N.T. et al. conducted the first program evaluation research in 2011 to assess the utilization of HIV VCT in Vietnam in order to inform a national response to HIV prevention [13]. In addition, there have been limited number of studies accessing different facets of VCT benefits to preventing HIV among most at-risk populations such as PWID [14]and FSW [15]or early linkage to care [16].

Ministry of Health of Vietnam, in collaboration with U.S. President's Emergency for AIDS Relief (PEPFAR) through Centers for Disease Control and Prevention (CDC) and United States Agency for International Development (USAID), in 2013 established a National Technical Working Group (TWG) to specifically conduct a periodical review of Vietnam's National VCT Program. In its strategic plan, this TWG has further highlighted a gap in practical knowledge of whether VCT in Vietnam has reached its intended target populations and whether its VCT testers are representative of the most at-risks populations in the country [17].

The purpose of this study is to describe sexual risks and HIV prevalence among VCT testers in Vietnam during 2011 – 2013, using secondary data collected from 79 VCT clinics throughout 33 provinces of Vietnam. There has been little to no similar effort to examine sexual risks and HIV prevalence among VCT testers globally and in Vietnam, thus results from this study will add into the overall practical knowledge of program managers at CDC Vietnam, who is putting effort in updating VCT counseling protocol being used at VCT clinics, as well as to input into discussion of possible initiatives for increasing VCT uptakes, promoting couples HIV testing and counseling (HVTC) and general program strengthening.

CHAPTER II: LITERATURE REVIEW

With the aim to gain an in-depth understanding on sexual risks and HIV infections among the general population, as well as VCT testers to better inform a tailored HIV intervention Vietnam, I focused on three aspects: 1) Overview of HIV epidemic and HIV prevalence among key populations (PWID, MSM, FSW, M-RP and R-SP) in Vietnam to understand the magnitude of HIV infection in these populations; 2) International guidelines and evidence to proof effectiveness of VCT as one of the entry prevention point for HIV care and treatment; and 3) Conclusion on the existing evidence and gaps on knowledge that the thesis may contribute to filling in.

HIV/AIDS epidemic in Vietnam

There were an estimated 256,000 people living with HIV in Vietnam as of 2014, according to UNAIDS Country Response Progress Report 2014 [8]. Prevalence of HIV in the country in the same year was approximately 0.26%. During 2007 and 2009, the reported number of new HIV cases to Ministry of Health of Vietnam decreased drastically, and since then been held steady at about 14,000 reports per year. Reports on AIDS cases and mortality have also been leveled since 2009. [8]

The HIV epidemic in Vietnam contains many sub-epidemics across the country and remains concentrated primarily among three populations defined by high levels of HIV-transmission risk behaviors, namely PWID, MSM and FSW (Figure 2 and Figure 3). Noteworthy, the risk behaviors among these groups are not mutually exclusive; MSM and FSW who inject drugs have much higher HIV prevalence than those who do not inject.

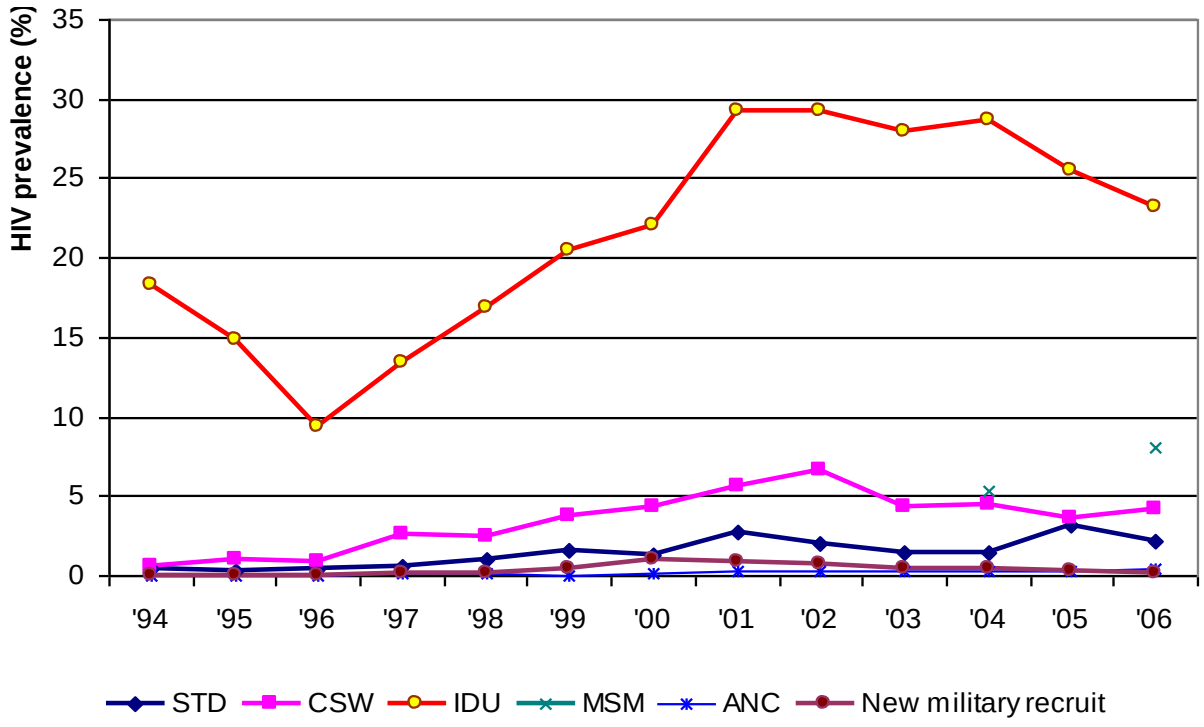
Accordingly to 2013 HIV sentinel surveillance (HSS), prevalence among PWID, MSM and FSW averaged 10.3%, 3.7% and 2.6% respectively. Meanwhile Integrated Behavioral and Biological Survey (IBBS 2009, round II) data among the same populations ranged from 1% to 56% HIV infection among PWID, 4.9% to 19.8% among MSM, and 0.3% to 23% among FSW, depending on geographical areas [18-20].

For total new cases of HIV infection, there has been a steady rise among women. Women now accounts for up to 32.5% of all new cases, reflecting a probably slow but gradual transmission of HIV to women by men engaging in high risk behaviors. However, HIV prevalence among pregnant women and other signals from the general population are low and show now sign of increasing. Most women living with HIV report that they were infected by stable sexual partners who either inject drugs or visit sex workers [8].

According to the Ministry of Health of Vietnam, data from various surveys across multiple years were modelled to project by 2015 an overall decreasing trend in HIV prevalence among PWID from 30.4% in 2005 to 22% in 2013, a slightly increasing trend among FSW from 4.9% in 2005 to 5.3% in 2013, and a worrisome increase in HIV infection among MSM from 1.7% in 2005 to 2.4% in 2013 [21].

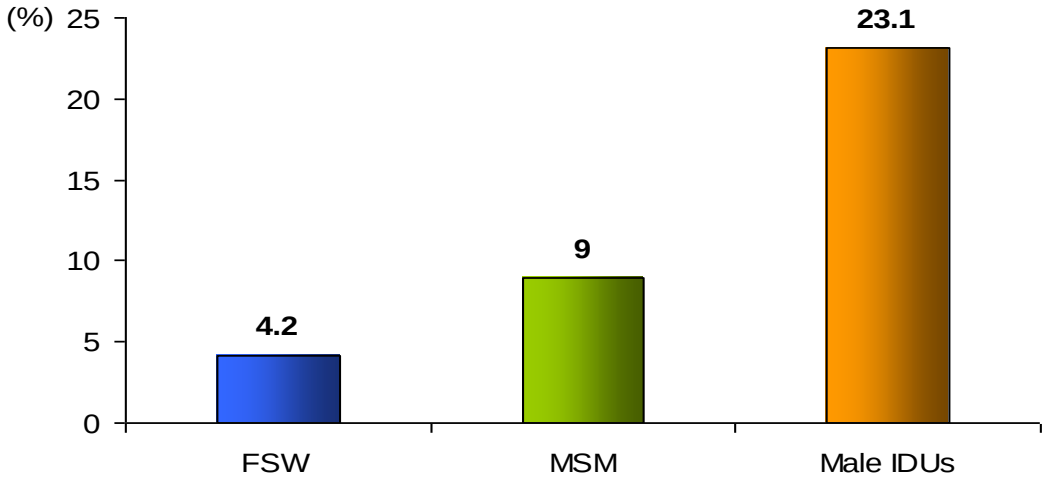
In general, aggregated data reinforce the need to focus HIV prevention efforts on PWID and their regular sex partners, MSM and FSW and their clients.

Figure 2: HIV prevalence among various groups, Vietnam, 2007



Source: Ministry of Health, Vietnam. National Sentinel Surveillance Report. 2007 [22]

Figure 3: HIV prevalence among most-at-risk populations, Vietnam, 2005-2006



Source: UNAIDS, UNGASS Country Report Vietnam January 2006 to December 2007 [23]

VCT program guideline and implementation (global and in Vietnam)

According to UNAIDS, VCT has demonstrated dual benefits in both HIV prevention and, for people infected with HIV, as an entry point to care. Through VCT, people at risk of HIV infection or people infected with HIV are provided with opportunities to learn, accept and cope with their HIV serological status in a confidential and private environment with counseling and referral for ongoing social, mental support and medical care. In specific, people who are tested with HIV during VCT can also benefit from earlier appropriate medical care and interventions to treat and/or prevent HIV-associated illnesses, such as prevention and treatment for tuberculosis, hepatitis B, hepatitis C, as well as other opportunistic infections due to immunologic recession. Similarly, pregnant women who are aware of their sero-positive status can prevent transmission to their infants. Knowledge of HIV serostatus can also help people to make decisions to protect themselves and their sexual partners from infection [2]. Studies have indicated that VCT may be a relatively cost-effective intervention in preventing HIV transmission and highly efficient for integration with other sexual health services [24-27].

In its guidelines, WHO defines VCT as a “major means of HIV/AIDS control” [28]. Key components of VCT policy include access to counselling, consent, confidentiality, and overcoming discrimination against people who have undergone testing and are found HIV positive. Persons with a history of high-risk behavior, couples planning marriage, and pregnant women are the main groups who should receive VCT services; the next most important group is the youth in general. Implementation is ahead of policy development, with standardized policies and guidelines in general lacking. Because of this,

implementation research is critically needed to promote informed decision making as well as program planning in resource-poor settings so that VCT will be efficiently carried out and made highly accessible for populations in need [28].

A number of studies have examined issues related to provision and utilization of VCT program in the U.S., and with only few in other parts of the world. In the U.S., VCT was first provided in then-called alternate sites outside blood banks for people at high risk to learn their HIV status. Public resources were made more available starting in 1985 to support the expansion of VCT services from these original settings to larger number of facility-based services related to sexual health, i.e. STI clinics, drug treatment centers, and family planning clinics throughout the U.S. [29]

In Vietnam, VCT services were first implemented at pilot scale in 2002 with initial support from external financial and technical support sources such as Centers for Disease Control (U.S. CDC), Global Fund (GH), World Bank (WB), and FHI 360. As of 2015, all 63 provinces in Vietnam have been covered with VCT services, either through the local Government's funding support or from one of the external sources mentioned above, or other private and foreign government organizations [27].

The new Vietnam National HIV/AIDS Strategy 2012 – 2020 sets a number of key targets for VCT program including a) 60% PWID, MSM and FSW are tested for HIV by 2015 and 80% by 2020; b) 90% wife/husband of PLHIV are tested for HIV; c) 80% VCT clients who need referral services are successfully referred to appropriate HIV/AIDS prevention, care,

treatment and support services; d) 70% health care clinics/facilities (From district level up) have HTC services available by 2015 and 95% by 2020; e) 100% provinces and 60% districts have VCT sites/services by 2020 and of which 65% meets the national VCT standards [17, 21].

Current key VCT donors and implementers in Vietnam include U.S. PEPFAR, Global Funds, AusAID from Australian Government and Government of Vietnam. In a year, 115 PEPFAR-supported VCT sites provide services for about 200,000 clients while Global Fund supports approximately 90,000 clients through 130 VCT sites. AusAID supports five VCT sites, while Government of Vietnam also has a limited number of VCT sites and services data is not yet available [17].

There have been two brief qualitative studies in Vietnam that assess factors and barriers associated with VCT use. First, a qualitative behavioral survey conducted by Population Services International (PSI) in 2011 in seven provinces reported that a high risk individual (PWID, MSM, FSW and clients of FSW) is more likely to have used VCT services in last six months if they are aware that VCT services are confidential, respectful, accurate, free, easily available, frees them from worry. Also if they believe that they are at a high risk of contracting HIV, are not afraid of receiving a positive result to an HIV test and want to know their HIV status in order to protect themselves. Second, a qualitative survey conducted by FHI360 among key populations that identified barriers and facilitators for positive health in Dien Bien province and Ho Chi Minh City in 2011. It indicated that PWID generally felt at risk for HIV, while half of them did not believe they were personally at risk

for HIV because they did not share needles. Also, they knew how to safely inject and/or did not care about safe sex. Female sex workers and MSM also report low levels of personal risk perception. The study also found that the disclosure of key populations identity or behavior was limited. Individuals without fixed addresses find it impossible to access services. Among those who have not been regularly reached, particularly young key populations or new FSW/injectors, knowledge remains variable and many do not know where services are located. Fear and misconceptions surrounding testing and a positive diagnosis limit service uptake. The stigma is associated with being identified as a drug user, sex worker or MSM. HIV prevention services and commodities must be affordable, accessible and appealing but don't need to be specifically made for key populations [17].

Previous program studies and research gaps

HIV Voluntary Counseling and Testing is globally recognized as an effective measures to reduce risky behaviors related to HIV by significantly reducing the number of sex partners of participants [30]. In addition, results from a meta-analysis conducted by Weinhardt et al. further provided substantiated evidence that VCT can be an effective behavior change strategy for people infected with HIV [6].

Scientific evidence on effectiveness of VCT program implementation in Vietnam, as well as sound data to prove that VCT program in Vietnam has reached its intended target population has not been widely available, despite the fact that VCT is one of the national key action plans for HIV prevention and control [1]. There has been only one study examining factors related to VCT operations, which aimed to provide empirical evidence

toward improvement of program implementation at national level. Hong NTT. et al. conducted the first program evaluation research in 2011 to assess the utilization of HIV VCT in Vietnam in order to inform a national response to HIV prevention [13]. In addition, there have been limited number of studies accessing different facets of VCT benefits to preventing HIV among most at-risk populations such as PWID [14]and FSW [15]or early linkage to care [16].

A study by Bach XT. et al. (2013) suggested that there were inadequate knowledge and some misconceptions about HIV transmission routes and preventive measures, low perceived risk of HIV infection, and low VCT uptake among FSWs in the Mekong Delta region. Thus, interventions to improve their knowledge and self-efficacy, reduce risky behaviors, and encourage VCT uptake and early access to health care services are necessary to prevent HIV transmission in this region [15]. This recommendation is further supported by another study by Minh VH. et al. which offered preliminary evidence on economic aspects of providing VCT services in Vietnam, especially when integrating VCT with other primary health care services for young and sexually active populations.

In summary, operational research on VCT program implementation in Vietnam has been somehow limited. In an effort to provide update data to inform program planning and management policy of VCT program in Vietnam, this study was proposed and conducted with an aim to fill in in the knowledge gap that was identified by Hong TTN. “in the long term, research can be conducted to monitor the trend of HIV sero-prevalence and risk factors of HIV infection at the national and provincial levels using VCT program data” [10].

CHAPTER III: MANUSCRIPT

Understanding Sexual Risks and HIV Prevalence among VCT Testers in Vietnam

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Contribution of the Student

The work herein is the product of a secondary data analysis performed by the student. The student did not have a role in producing the survey or the collection of data through survey implementation. However, the student did perform all work after data collection independently, including the analysis of the data, the construction of analytical models, summation of results in tables, and all writing. Conceptualization of research question, data analysis strategies and other advisement throughout this process was provided by the student's thesis advisors.

Abstract

Background. VCT has proven to be an effective measure to prevent HIV transmission globally. Understanding sexual risks and HIV infection among VCT testers in Vietnam is critical to customizing the program to better meet the needs of specific at-risk populations, with same sex and drug use behaviors. VCT has been implemented in Vietnam since 2002. To date, very few studies have been conducted to examine the sexual risks and HIV infection among VCT testers in Vietnam, which can provide needed evidence for designing targeted prevention strategies.

Objective. This study explores, through descriptive analyses, sexual risks and HIV infection among key at-risk VCT testers in Vietnam, including MSM, PWID, FSW, M-SP and R-SP.

Methods. This was a secondary data analysis using a sub-dataset from the Vietnam's national VCT client's records. Sexual risks, including condoms use, sexually transmitted infections (STI), number of sex partners and HIV, STI prevalence were compared among risk groups of concern.

Results. Sexual behaviors, including number of sex partners, number of vaginal sex, number of anal sex acts and condom use within the last 30 days preceding the survey were significantly different across participants. Female sex workers (FSW) had the highest number of sex partners (mean = 17.7, SD = 26.4) and number of vaginal sex (mean = 22.8, SD = 29) and number of condom use (mean = 16.6, SD = 23.7) compared to all other sub-groups (p-value < 0.01). Sexually transmitted infections and HIV prevalence were also significantly varied among sub-groups. Female sex workers (FSW) had the highest STI (29.5%) and lowest HIV prevalence (2.6%). Meanwhile, PWID presented highest HIV infection (11.6%) and lowest STI prevalence (2.25) (p-value <0.01). Men who have sex with men (MSM) had the highest likelihood of having sex partners attending VCT services with them on a same visit (2.3%), as well would refer sex partner to VCT services (41%).

Discussion. Lower general HIV prevalence among all key population may imply underutilization of VCT services among high risk populations in Vietnam. Inconsistent condom use across surveyed population indicate a critical need for enhanced awareness raising and behavioral change interventions at individual level.

Introduction

Since the inception of the HIV epidemic, HIV Voluntary Counseling and Testing (VCT) program has been a cornerstone strategy for HIV prevention. VCT serves as an entry point to HIV services including primary prevention, prevention of mother-to-child transmission, antiretroviral therapy, management of HIV-related illnesses, tuberculosis control and psychosocial support for people infected with and affected by HIV [1, 2]. Studies have shown that VCT is one of the most effective means to prevent HIV in concentrated epidemic and resource-poor settings, such as Vietnam [2, 3]. In developing countries, VCT is not only becoming increasingly available, but also proved to hold potential impact in facilitating behavior change among most at-risk populations [4] and reducing risky behaviors, especially for HIV-positive individuals [5, 6]. Additionally, a randomized control trial by Go et al. suggested that VCT accounts for decreased drug injecting risks among drug users in Vietnam [7].

While the HIV epidemic in Vietnam is highly concentrated, it embodies diverse sub-epidemics across the country with varied characteristics shaped by behavioral risks and HIV infectivity among difference sub groups. There were an estimated 256,000 people living with HIV in 2014, and HIV prevalence was approximately 0.26% in the same year. The number of new infections has held steady during the period of 2010 to 2013, with about 14,000 cases reported each year [8]. The three most –at-risk groups in Vietnam primarily include PWID, MSM and FSW. However, the risk behaviors in these groups are not mutually exclusive; MSM and FSW who also inject drugs have much higher HIV prevalence than those who do not inject drug. HIV sentinel surveillance (HSS) in 41

provinces indicated that HIV prevalence among PWID, MSM and FSW averaged 10.3%, 3.7% and 2.6% respectively. In addition, IBBS II (2009) data among the same population has shown HIV prevalence as high as 56% among PWID, 23% among street FSW and 19.8% among MSM [8].

The need to better understand characteristics, including sexual risks and HIV prevalence among sub-groups of VCT testers is critical to inform development of custom program, which can provide tailored counseling protocol to target populations. Since 2005, Ministry of Health of Vietnam has actively engaged various government and non-government stakeholders in promoting, implementing and assessing VCT programs with an aim to better provide HIV testing and care services to populations in need [12]. To the author's best knowledge, there has been only one study examining factors related to VCT operations, which aimed to provide empirical evidence toward improvement of program implementation at national level. Hong N.T. et al. conducted the first program evaluation research in 2011 to assess the utilization of HIV VCT in Vietnam in order to inform a national response to HIV prevention [13]. In addition, there have been limited number of studies accessing different facets of VCT benefits to preventing HIV among most at-risk populations such as people who inject drug (PWIDs) [14]and female sex workers [15]or early linkage to care [16].

Ministry of Health of Vietnam, in collaboration with U.S. President's Emergency for AIDS Relief (PEPFAR) through Centers for Disease Control and Prevention (CDC) and United States Agency for International Development (USAID), in 2013 established a National

Technical Working Group (TWG) to specifically conduct a periodical review of Vietnam's National VCT Program. In its strategic plan, this TWG has further highlighted a gap in practical knowledge of whether VCT in Vietnam has reached its intended target populations and whether its VCT testers are representative of the most at-risks populations in the country [17].

The goal of this study is to describe sexual risks and HIV prevalence among VCT testers in Vietnam during 2011 – 2013, using secondary data collected from 79 VCT clinics throughout 30 provinces of Vietnam. There has been little to no similar effort to examine sexual risks and HIV prevalence among VCT testers globally and in Vietnam, thus results from this study will add into the overall practical knowledge of program managers at CDC Vietnam, who is putting effort in updating VCT counseling protocol being used at VCT clinics, as well as to input into discussion of possible initiatives for increasing VCT uptakes, promoting couples HIV testing and counseling (HVTC) and general program strengthening.

Methods

Study Population

We used data from Vietnam's national HIV voluntary counseling and testing (VCT) program, collected between July 2011 and June 2013. The program was established and managed by the Ministry of Health, Vietnam with assistance from U.S. President's Emergency for AIDS Relief (PEPFAR). We analyzed abstracted data from routine client interview forms provided by 79 VCT clinics in 30 provinces of Vietnam. These clinics were

selected from a total of 115 VCT sites then run by the government with financial support of U.S. PEPFAR. Qualifying criteria for selection of sites included 1) sites were operational during the study period; and 2) sites were complying with the standard client intake form used for the study. Though primary target users of VCT services were high risk people, including people who inject drugs (PWID), female sex worker (FSW) and men who have sex with men (MSM), the sample also included non-high risk people who wished to learn their HIV status s.

Study Protocol

All participating VCT clinics followed standardized operational procedures recommended by the Ministry of Health of Vietnam. Adoption of VCT services was voluntary and free-of-charge. Clients could choose between anonymous and personal identifiable VCT services at the same clinic. Pre- and post-test counseling protocols were employed. The protocol was adapted from U.S. CDC client-centered counseling model, emphasizing sex and drug-use related HIV risk reduction [10]. Counselors discussed and gained verbal consent from clients before providing pretest counseling and initiating an HIV test. Clients accepting an HIV test were then instructed to return for post-test follow up counseling and notification of test result after 7 days. When a client completed his/her pretest counseling, HIV testing, post-test counseling including notification of test results, it was considered a complete VCT event and thus data would be entered into the system as a new entry. Subsequently, an unsuccessful VCT event happened when the client did not accept HIV testing after pretest counseling, or declined to have an HIV test. If a client returned for his/her post-test counseling and result retrieval after 1 month from the previous visit, it was considered a new event and a new entry was created. Each initiating VCT visit was provided with a

unique VCT identifying code. For anonymous VCT users, since one person might participate in more than one VCT event, a new code was given to each new event, regardless of number of times the person had previously used VCT services. For individual identifiable VCT users, personal identification information, such as name, date of birth, place of birth was then collected and entered in addition to the unique code, only upon their desire to be identified. However, data analyzed in this study were all unidentified and no personal identification information was associated with the data.

Data Collection

The original data set and the content

There were 227,639 VCT events during the study period from October 2011 to September 2013. Data were collected through standardized client interview forms across all VCT clinics that included personal and socio demographic information, including primary reason for seeking VCT, source of referral, prior HIV testing, personal risk behavior and sex partner risk. The form has 29 questions in total, encompassing personal, sexual risk behaviors as well as information related to couples counselling and testing.

The cleaning and the resultant sample size

We employed STATA SE Version 11 for data analysis. The original data set contained a total of 227, 639 entries (VCT visits). Data cleaning of missing data was performed for key variables. Data was missing for "number of times had vaginal sex" (n=34,765, 15%) "number of sex partners" (n=2,911, 1%), "number of times had anal sex" (n=5,686, 3%), and "number of times used condom" (n=266, 0.1%) . Analysis was conducted among missing data to compare demographic characteristics between missing and non-missing

data. There was no difference in terms of basic demographic characteristics of the two samples. A total of 169,119 entries, or 75% of the original dataset had complete data and was used as final analysis sample.

A new variable was created to categorize education into five categories in accordance with formal Vietnamese education and training system. These categories were: "No education" = "School year = 0"; "Elementary" = "School year = 1-5"; "Secondary" = "School year = 6-9"; "High school" = "School year = 10-12"; "College and above" = "School year = "13+". Similarly, original data contained four categories for marital status, including Single/unmarried, Married/living with sex partners, Divorced/separated, and Widowed. After initial analysis, we found that the number of participants of widowed status was less than 200. For the purpose of statistical analysis, this group was merged into Divorced/separated to become a combination of Divorced/separated/widowed. The same procedure was used for variable "residence". After initial frequency analysis, we decided that foreigners should be moved into other province and subsequently the category was renamed to "Other province/country". Because one of the research questions was to examine percent of VCT users, who are local residents, this merging will better facilitate the data analyses. All data analyses were performed based on final sample size of 169, 119 observations.

The OUTCOME variables

The primary purpose of the study is to contrast sexual behavioral risks, HIV prevalence, as well as preference toward couple counseling and testing across key risk groups attending for VCT at HIV testing sites in Vietnam. Thus, key outcome variables, "Number of sex

partners during last 30 days", "Number of times had vaginal sex during last 30 days (Number of vaginal sex acts)", "Number of times had anal sex during last 30 days (Number of anal sex acts)", and "Number of times used condom during last 30 days". All this information was self-reported by the client and collected during pre-counseling by the counselor. All of these questions were answered in absolute frequency numbers, thus for each of these questions, we ran means procedure to produce dependent values. In addition, information about whether the client had a symptom of STI in past 3 months (self-reported), had HIV detected out of the visit, coming with sex partner on the same visit, or if the clients were willing to refer sex partners to VCT was also used as outcome variables. However, since these were dichotomous variables, we used cross tabulation procedure to find percent of the expected outcomes.

The COVARIATES

A key covariate for this analysis is risk group classification. In the client interview, client was asked what their main risk behaviors were with inclusive options including IDU, CSW, MSM, multiple sexual partners and high risk sex partners. For ease of statistical analysis, each record was assigned to one primary risk category, and was counted only once. Therefore, a hierarchy of risk categories was developed based on a classification of risk factors that were more or less likely to be responsible for HIV acquisition or transmission. The hierarchy of risk categories was applied as follows: PWID (people who inject drugs)>MSM (men who have sex with men)>FSW (female sex worker)>M-SP (multiple sex partner)>high risk sex partner>other>none. This hierarchy suggests the levels of risky behavior from high to low. Those who did not report any personal risks, instead identified their sex partner's risks, such as "sex partner is HIV-infected", "sex partner is PWID", "sex

partner is FSW/both male and female", "sex partner is MSM", and "sex partner is client of sex workers", were categorized into group of "high risk sex partner". Together, there were 5 risk groups, namely PWID, MSM, FSW, Multiple Sex Partner (M-SP) and High Risk Sex Partner (R-SP).

The statistical methods used

With an aim to provide a descriptive table showing proportions of each outcome variable by respective risk groups, i.e. demographic parameters, sexual risk behaviors, HIV prevalence, STI prevalence and reported willingness to refer sex partners to VCT, we conducted a range of descriptive statistical analysis procedures to retrieve means, standard deviation and to reflect differences in frequencies among personal and socio demographic characteristics of VCT testers. Statistical tests were performed at 5% significance level. Chi-square was used for significance measurement of categorical dependent variables, while ANOVA was employed to measure statistical significance as comparing averages among continuous dependent variables.

Results

Descriptive overviews of demographic and personal characteristics of study population are summarized in Table 1. Among 169,119 testing events, 53,460 (32%) were events related to VCT testers who had high-risk sex partners, 49, 303 (29%) were events related to VCT testers who had multiple sex partners, 45,423 (27%) were events related to VCT testers who identified themselves PWIDs, 17,517 (10%) were self-reported FSWs, and only 3,416 (2%) were disclosed being MSM (Table 1). Overall average age of participant was 30, with MSM being the youngest group (mean = 26), and the oldest groups being PWID and people who had multiple sex partners (mean = 31). By education, most of the participants (n=

67,366, 40%) completed high school, and 22, 636 (13%) had college or above qualification. Among participant sub-groups, MSM had the highest percentage of college and higher education (33%). Lowest percent of college or higher education attainment were observed among PWID (4%) and FSW (3%). Seventy one percent of MSM, the highest among the five groups, live in urban area, and 21% of them reported to come from other provinces/being non-locals. Meanwhile, about nearly half (41%) of people with high risk sexual partners were living in rural area. Overall, 68% of VCT testers sought VCT services because they had high risk behaviors, while this number was much higher (98%) among PWID and FSW. Fourteen percent of people with high risk sex partners accessed VCT because their partners were HIV infected people – this is also the higher percent among all five sub-groups. Regarding history of HIV testing, MSM and FSW reported to have highest precedent HIV testing experience (24%), while this number is lowest (19%) among people with high risk sex partners. In general, data suggested that demographic and personal characteristics among five sub-groups of VCT testers in Vietnam are significantly different (chi square p-value <0.01).

Sexual risks, when examined through selected factors, varied among VCT testers in Vietnam (Table 2). Overall, VCT testers had average 3 sexual partners within 30 day preceding the date of VCT access. Of the five sub-groups, FSW had the most number of sexual partners (18), followed by people of multiple sex partners (1.7) and MSM (1.4) and lowest among PWID (0.7). Regarding number of vaginal sex activities within last 30 days before the survey, FSW presented the highest frequency at almost 30 times, compared to overall average of slightly higher than 5 times. For anal sex within the last 30 days, MSM

had the highest frequency at 4 times, while all other groups had less than 1 time. In relation to number of condom uses within the last 30 days, overall VCT testers used condom nearly 3 times during that time period, with FSW had the most frequency at about 17 times.

When examining STI and HIV infection among VCT testers (Table 3), we found that overall about 10% VCT testers were having at least one form of any sexually transmitted infections and on average 7.5% were infected with HIV. In particular, FSW had highest STI prevalence (29%) and lowest HIV infection (2.7%). In contrast, PWID had lowest STI prevalence (2.3%) and highest HIV infection (11.6%). The results show that there are statistically significant differences in STI and HIV infections among sub-groups of VCT testers in Vietnam (p-value <0.01).

Concerning preference among VCT testers on whether they were likely to use VCT services together with their sex partners, or were willing to refer sex partner to VCT services (Table 4), we found that MSM had the highest percent of using VCT with their sex partner (2.35), compared to average of 1.7% overall. Also, 41% of MSM were willing to refer their sex partners to VCT, while on average about 32% said they would. The differences are statistically significant (p-value <0.01)

Discussions

Findings from this study strongly suggest that sexual behaviors among sub-groups of VCT testers in Vietnam are considerably diverse. The variance in both sexual characteristics and STI and HIV infections among these groups may present a special need for programming

effort to better meet the need of disadvantage populations at risk of HIV. Findings from descriptive analyses imply several considerations for HIV prevention programs planning.

First, inconsistent condom use among VCT testers represents a pertinent issue that has been widely announced among high risk population in Vietnam, especially among FSW [18, 31]. The study reiterates this potential gap for behavioral change intervention aiming at promoting consistent and appropriate condom use where it showed a suboptimal number of condom use per sexual intercourse. This is especially relevant as people who attend VCT tend to have better awareness about personal risks and are often considered "knowledgeable" about risks of HIV infection. However, data from the study suggest that all VCT testers in five sub-groups reported unsafe sex demonstrated by lower number of condoms used compared to number of vaginal or anal sex activities within last 30 days. According to IBBS round II in Vietnam, STI prevalence remains low among FSW (around 2% in survey provinces), however our study indicates a much higher prevalence at 29% among this group, thus there might potentially be a hidden dual burden of risks for both HIV and STI due to inconsistent condom use [18].

Second, our findings support previous, localized studies examining HIV prevalence among key populations at risk of HIV infection. In specific, the results found from this study concerning HIV prevalence among sub-groups are generally consistent with information reviewed in the literature, e.g. data provided by behavioral and biological surveillance data (round II) in Vietnam, except for PWID and MSM group (11% in our study, 28% in IBBS round II for PWID, 6.6% in our study, over 10% in IBBS round II for MSM) [18]. This may

imply considerable low coverage of VCT for PWID and MSM who are at high risk of HIV infection. Because VCT program is intended to target most-at-risk population, this suggests the need for specific and custom strategies to better reach PWID and MSM populations for HIV testing services. One of feasible strategies could be to involve community-based peer groups who have network relationships and direct peer contacts with PWID and MSM to refer clients to VCT, thus help both increase uptakes, as well better reach the target populations.

Third, the results suggest that while actually use of CHTC is rather low (1.7% overall), willingness to use CHTC was much higher (31.5% overall), especially most preferred among MSM (41%) among all 5 sub-groups. To the author's best knowledge, there hasn't been a study in Vietnam on this topic, however CHTC has been implemented for over 20 years in African countries, and has been widely promoted in the U.S. recently [32]. According to Jones et al. (2014), it was found that though level of sexual agreement, including monogamy among male couples in the U.S. was high, willingness to use a couples testing service remained modest. Data from this study was suggested for considering the potential role of

CHTC in HIV testing services for heterosexual couples in the U.S [32]. Since CHTC is rather a new concept in Vietnam and has only been implemented since 2012, it is strongly relevant that a similar follow-on study looking further into facilitators and challenges should be conducted to further understand use of CHTC in Vietnam.

The primary limitations to this study originate from the methodology used to collect data, that is, a cross-sectional secondary data which is designed for program monitoring purpose. There were only a few variables that could be used for descriptive analysis. In addition, since the data only contain information of people who used VCT services, the information could not be generalized to broader population.

Despite these limitations, this study addresses several key gaps in the literature related to VCT program implementation in Vietnam. To the author's knowledge, it provides, for the first time, the descriptive information relating to sexual risks, HIV and STI prevalence, preference of couple HIV counseling and testing among VCT testers in Vietnam. Also, the sample used is the largest to date to examine any facet of sexual and HIV risks among VCT users in Vietnam.

The study provides a basic, though concrete snapshot to describe important characteristics of VCT testers. The information can be used as baseline data to help monitor trend of HIV prevalence, sexual risk behaviors among VCT testers in Vietnam in a future to generate evidence for program planning and services provision.

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Appendix A: Tables

Table 1: Socio-demographic and personal characteristics of VCT Testers in Vietnam

TABLE 1 Sociodemographic and personal characteristics of VCT testers in Vietnam, 2011 - 2013 (N = 169,119)

Variable (N = 169, 119)	Overall		IDU		MSM		CSW		M-SP		R-SP		*p* value
	N	%	n (%)										
Distribution of VCT testers	169,119	100.0	45,423	26.9	3,416	2.0	17,517	10.4	49,303	29.2	53,460	31.6	
Age (Mean, SD)	30	8.6	31	7.9	26	6.7	27	7.8	30	8.7	31	9.0	
Education													
No education	5,278	3.1	1,402	3.1	35	1.0	658	3.8	1,144	2.3	2,039	3.8	p <0.01
Elementary	21,440	12.7	6,388	14.1	155	4.5	3,431	19.6	6,043	12.3	5,423	10.1	
Secondary	52,399	31.0	16,720	36.8	563	16.5	7,099	40.5	15,403	31.2	12,614	23.6	
Highschool	67,366	39.8	19,253	42.4	1,552	45.4	5,865	33.5	18,319	37.2	22,377	41.9	
College and above	22,636	13.4	1,660	3.7	1,111	32.5	464	2.7	8,394	17.0	11,007	20.6	
Marital status													
Single/Unmarried	68,077	40.3	20,845	45.9	2,901	84.9	9,466	54.0	19,985	40.5	14,888	27.8	p <0.01
Married/living with sex partners	85,517	50.6	20,884	46.0	413	12.1	4,403	25.1	25,494	51.7	34,323	64.2	
Divorced/Separate/Widowed	15,525	9.2	3,694	8.1	102	3.0	3,648	20.8	3,824	7.8	4,257	8.0	
Residence													
Urban (local)	96,979	57.3	27,372	60.3	2,438	71.4	10,373	59.2	30,446	61.8	26,350	49.3	p<0.01
Rural (local)	54,431	32.2	15,299	33.7	270	7.9	4,573	26.1	12,439	25.2	21,850	40.9	
Other province/country (non-local)	17,709	10.5	2,752	6.1	708	20.7	2,571	14.7	6,418	13.0	5,260	9.8	
Reasons for seeking VCT													
Having high risk behavior	114,251	67.6	44,513	98.0	2,749	80.5	17,150	97.9	40,562	82.3	9,277	17.4	p <0.01
Sex partner is HIV infected	10,434	6.2	67	0.2	17	0.5	72	0.4	2,627	5.3	7,651	14.3	
Sex partner of high risk person	25,120	14.9	147	0.3	118	3.5	182	1.0	4,052	8.2	20,621	38.6	
Feeling ill/recommened by healthcare providers	3,905	2.3	140	0.3	34	1.0	29	0.2	947	1.9	2,755	5.2	
Recommned by sex partner/needle-sharing partner	1,637	1.0	226	0.5	140	4.1	15	0.1	425	0.9	831	1.6	
Accident (step on syringe/needles, prick, etc.)	3,810	2.3	28	0.1	2	0.1	3	0.0	110	0.2	3,667	6.9	
Contact with HIV-infected (or suspected) persons	4,872	2.9	13	0.0	5	0.2	7	0.0	203	0.4	4,644	8.7	
Other	5,090	3.0	289	0.6	351	10.3	59	0.3	377	0.8	4,014	7.5	
History of HIV testing													
Never tested	134,299	79.4	36,237	79.8	2,590	75.8	13,184	75.3	39,307	79.7	42,981	80.4	p<0.001
Ever tested	34,820	20.6	9,186	20.2	826	24.2	4,333	24.7	9,996	20.3	10,479	19.6	

Table 2: Reported Sexual Risk Factors among VCT Testers in Vietnam

TABLE 2 Variable (N = 169,119)	Reported Sexual Risk Factors among VCT Testers in Vietnam, 2011 - 2013 (N = 169,119)												
	Overall		IDU		MSM		CSW		M-SP		R-SP		
	M (SD)												*p* value
Average number of sex partners during last 30 days	2.8	10.3	0.7	1.4	1.9	3.1	17.7	26.4	1.7	4.8	0.9	2.0	p <0.01
Average number of times had vaginal sex during last 30 days	5.4	12.3	2.7	5.0	0.5	2.1	22.8	29.0	4.5	6.7	3.1	5.2	p <0.01
Average number of times had anal sex during last 30 days	0.1	1.4	0.0	0.2	4.0	6.8	0.2	2.2	0.8	0.9	0.0	0.3	p <0.01
Average number of times used condom during last 30 days	2.6	9.5	0.6	2.1	2.7	6.3	16.6	23.7	1.4	4.3	0.8	2.2	p <0.01

Table 3: Reported STI symptoms and HIV infection among VCT Testers in Vietnam

TABLE 3 Variable (N = 169,119)	Reported STI symptoms and HIV infection among VCT Testers in Vietnam, 2011 - 2013 (N= 169,119												
	Overall		IDU		MSM		CSW		M-SP		R-SP		
	n (%)												p value
Self-reported symptoms of STI	16,420	9.71	1,024	2.25	422	12.4	5,161	29.46	5229	10.61	4,584	8.58	p <0.01
Reported HIV (+) test result from the VCT visit	12,656	7.49	5,263	11.6	227	6.65	478	2.73	4083	8.28	2605	4.88	p <0.01

Table 4: Percent of VCT Testers in Vietnam with willingness to visit VCT with sex partners and refer sex partners to VCT services

TABLE 4 Variable (n = 169,064)	Potentiality for Couple HIV Testing and Counseling (CHTC) among VCT testers in Vietnam, 2011 - 2013 (N = 169,064)												
	Overall		IDU		MSM		CSW		M-SP		R-SP		
	n (%)												*p* value
Coming with sex partner on the same visit	2,831	1.7	601	1.3	79	2.3	42	0.2	885	1.8	1,224	2.3	p <0.01
Willing to refer sex partner(s) to VCT	53,203	31.5	9,596	21.1	1,407	41.2	6,633	37.9	17,717	35.9	17,850	33.4	p <0.01

CHAPTER IV: RECOMMENDATIONS

Public Health Implications

Findings from this study strongly suggest that 1) risky sexual behaviors and among sub-groups of VCT testers in Vietnam are considerably diverse; 2) HIV and STI prevalence among sub-groups are similarly distributed, yet slightly lower than national surveillance data (IBBS); and 3) preference for CHTC among MSM is most considerable.

From the above findings, the following recommendations are proposed with a view to better inform HIV prevention strategies in Vietnam, in particular the VCT program planning carried out by Ministry of Health of Vietnam, CDC Vietnam and other relevant stakeholders.

Immediate and short-term strategies at implementation (program) level

First, the national HIV prevention program should continue its efforts in conducting quality and comprehensive behavioral and biological surveillance to monitor trend of behavioral and serologic indicators essential for understanding of HIV epidemic among key populations, including PWID, MSM and FSW. This data is key to inform relevant, efficient and target HIV prevention intervention for each particular group.

Second, while VCT is intended to appeal and serve most at risk populations, it seems that those attending the VCT services are not people with highest risks. Prevalence of HIV among VCT testers are slightly lower than those reported in both sentinel surveillance and IBBS round II (2009). Strategic program innovations should be discussed to find ways that help attract target population better. For example, VCT program managers should strengthen networking with community-based organization, peers clubs, self-

help groups and other health care facilities to establish effective referral system and professional connection. In addition, it's also worth investing in evidence-based and incentivized social marketing campaigns to increase VCT uptake among key populations. Collaboration with civil society to promote policy advocacy toward new regulations that enable commercial sex workers and drug users to attend publicly organized health fairs or community health outreach activities would also be a good alternative solution.

Last, there should be a focused strategy targeting high risk population such as MSM with regard to provision of custom, quality and user-friendly CHTC services. With growing need of the emerging MSM population in Vietnam, there has been a boom in entertainment services for this group, such as gay bar, circuit party, bath house, massage establishments where either marketing activities to promote VCT and CHTC can be conducted, or alternatively other internet-based form of counseling and testing can be explored for use.

Long-term strategies at policy level

One of the key findings from this study implies a considerably low VCT uptake among MSM. Further research is needed to better provide evidence on barriers in accessing VCT for MSM group, yet it is apparent that lack of engagement by targeted audience and end beneficiaries, absence of a holistic approach in program planning, stigma and discrimination could be a few important considerations [12].There should be, at policy level, a concerted effort to engage this population in the design, planning and implementation of HIV prevention interventions, including VCT. There were only less than 3,500 testing events in this study that involved testers who self-reported MSM (approximately 3.5%), among an estimated number of over 100,000 MSM nationwide [17]. With a history of stringent social and cultural perception toward sexual minority group, such as MSM, it is important to recognize the impact of stigma

on prevention and care. Clearly, stigma creates a barrier to effective prevention, further facilitating the epidemic. Protection of human rights, including the right to participate in planning prevention and care, is critical for program credibility and success. The formal network of PLWHA has recently been established in Viet Nam (2010), however strategies to promote effective involvement of organizations representing PLWHA interests remain a question. A review of HIV-related stigma (Busza, 1999) reports that "…both actual discrimination and fear of stigmatization affect transmission patterns and contribute to determining the success or failure of prevention and care and support efforts." Increased support, including financial support, is needed to bring PLWHA and other vulnerable and affected communities into a policy and program dialogue crucial for the design of high-quality and user-friendly services. There is also a need to address contradictions among policy, laws, and regulations that currently block effective prevention and care interventions and the involvement of the most vulnerable groups [33].

Concerning strategies to promote accessibility to VCT services to targeted populations, there should be further studies looking into comparison of different VCT models, i.e. stand-alone or integrated VCT. While stand-alone VCT offers a menu of advantages such as privacy and better outreach to community in need, we should not underestimate comparative benefits of integrated VCT with other health facilities. For example, an integrated VCT service within increasing number of private men's health clinics would be worth considering at policy level. A new regulation that promulgate a list of core service package for men's health clinics which include HIV counseling and testing would tremendously help speed up adoption of this practice.

Of equivalent importance, one of the study's findings strongly suggest that couples testing and counseling has been far underutilized through traditional VCT services, especially among MSM. Data demonstrate a significantly low percent of actual CHTC sessions among all VCT events (1.7% overall), however the proportion of VCT testers who identified as MSM showed their acceptability toward CHTC at over 40%.

This clearly points out a deep gap in filling this need of one of most priority groups, MSM. Therefore, further research should be conducted to specifically identify barriers to CHTC being offered at traditional VCT clinics in Vietnam, as well to identify opportunities to capture this hugely potential demand for CHTC.

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Tables and Figures

Table 5: Socio-demographic and personal characteristics of VCT Testers in Vietnam

TABLE 1 Sociodemographic and personal characteristics of VCT testers in Vietnam, 2011 - 2013 (N = 169,119)

Variable (N = 169, 119)	Overall		IDU		MSM		CSW		M-SP		R-SP		*p* value
	N	%	n (%)										
Distribution of VCT testers	169,119	100.0	45,423	26.9	3,416	2.0	17,517	10.4	49,303	29.2	53,460	31.6	
Age (Mean, SD)	30	8.6	31	7.9	26	6.7	27	7.8	30	8.7	31	9.0	
Education													
No education	5,278	3.1	1,402	3.1	35	1.0	658	3.8	1,144	2.3	2,039	3.8	p <0.01
Elementary	21,440	12.7	6,388	14.1	155	4.5	3,431	19.6	6,043	12.3	5,423	10.1	
Secondary	52,399	31.0	16,720	36.8	563	16.5	7,099	40.5	15,403	31.2	12,614	23.6	
Highschool	67,366	39.8	19,253	42.4	1,552	45.4	5,865	33.5	18,319	37.2	22,377	41.9	
College and above	22,636	13.4	1,660	3.7	1,111	32.5	464	2.7	8,394	17.0	11,007	20.6	
Marital status													
Single/Unmarried	68,077	40.3	20,845	45.9	2,901	84.9	9,466	54.0	19,985	40.5	14,888	27.8	p <0.01
Married/living with sex partners	85,517	50.6	20,884	46.0	413	12.1	4,403	25.1	25,494	51.7	34,323	64.2	
Divorced/Separate/Widowed	15,525	9.2	3,694	8.1	102	3.0	3,648	20.8	3,824	7.8	4,257	8.0	
Residence													
Urban (local)	96,979	57.3	27,372	60.3	2,438	71.4	10,373	59.2	30,446	61.8	26,350	49.3	p<0.01
Rural (local)	54,431	32.2	15,299	33.7	270	7.9	4,573	26.1	12,439	25.2	21,850	40.9	
Other province/country (non-local)	17,709	10.5	2,752	6.1	708	20.7	2,571	14.7	6,418	13.0	5,260	9.8	
Reasons for seeking VCT													
Having high risk behavior	114,251	67.6	44,513	98.0	2,749	80.5	17,150	97.9	40,562	82.3	9,277	17.4	p <0.01
Sex partner is HIV infected	10,434	6.2	67	0.2	17	0.5	72	0.4	2,627	5.3	7,651	14.3	
Sex partner of high risk person	25,120	14.9	147	0.3	118	3.5	182	1.0	4,052	8.2	20,621	38.6	
Feeling ill/recommened by healthcare providers	3,905	2.3	140	0.3	34	1.0	29	0.2	947	1.9	2,755	5.2	
Recommned by sex partner/needle-sharing partner	1,637	1.0	226	0.5	140	4.1	15	0.1	425	0.9	831	1.6	
Accident (step on syringe/needles, prick, etc.)	3,810	2.3	28	0.1	2	0.1	3	0.0	110	0.2	3,667	6.9	
Contact with HIV-infected (or suspected) persons	4,872	2.9	13	0.0	5	0.2	7	0.0	203	0.4	4,644	8.7	
Other	5,090	3.0	289	0.6	351	10.3	59	0.3	377	0.8	4,014	7.5	
History of HIV testing													
Never tested	134,299	79.4	36,237	79.8	2,590	75.8	13,184	75.3	39,307	79.7	42,981	80.4	p<0.001
Ever tested	34,820	20.6	9,186	20.2	826	24.2	4,333	24.7	9,996	20.3	10,479	19.6	

Table 6: Reported Sexual Risk Factors among VCT Testers in Vietnam

TABLE 2 Variable (N = 169,119)	Reported Sexual Risk Factors among VCT Testers in Vietnam, 2011 - 2013 (N = 169,119)												
	Overall		IDU		MSM		CSW		M-SP		R-SP		
	M (SD)												*p* value
Average number of sex partners during last 30 days	2.8	10.3	0.7	1.4	1.9	3.1	17.7	26.4	1.7	4.8	0.9	2.0	p <0.01
Average number of times had vaginal sex during last 30 days	5.4	12.3	2.7	5.0	0.5	2.1	22.8	29.0	4.5	6.7	3.1	5.2	p <0.01
Average number of times had anal sex during last 30 days	0.1	1.4	0.0	0.2	4.0	6.8	0.2	2.2	0.8	0.9	0.0	0.3	p <0.01
Average number of times used condom during last 30 days	2.6	9.5	0.6	2.1	2.7	6.3	16.6	23.7	1.4	4.3	0.8	2.2	p <0.01

Table 7: Reported STI symptoms and HIV infection among VCT Testers in Vietnam

TABLE 3 Variable (N = 169,119)	Reported STI symptoms and HIV infection among VCT Testers in Vietnam, 2011 - 2013 (N= 169,119												
	Overall		IDU		MSM		CSW		M-SP		R-SP		
	n (%)												p value
Self-reported symptoms of STI	16,420	9.71	1,024	2.25	422	12.4	5,161	29.46	5229	10.61	4,584	8.58	p <0.01
Reported HIV (+) test result from the VCT visit	12,656	7.49	5,263	11.6	227	6.65	478	2.73	4083	8.28	2605	4.88	p <0.01

Table 8: Percent of VCT Testers in Vietnam with willingness to visit VCT with sex partners and refer sex partners to VCT services

TABLE 4 Variable (n = 169,064)	Potentiality for Couple HIV Testing and Counseling (CHTC) among VCT testers in Vietnam, 2011 - 2013 (N = 169,064)												
	Overall		IDU		MSM		CSW		M-SP		R-SP		
	n (%)												*p* value
Coming with sex partner on the same visit	2,831	1.7	601	1.3	79	2.3	42	0.2	885	1.8	1,224	2.3	p <0.01
Willing to refer sex partner(s) to VCT	53,203	31.5	9,596	21.1	1,407	41.2	6,633	37.9	17,717	35.9	17,850	33.4	p <0.01

Figure 4: Spending on prevention, treatment and care by different financial sources, 2012

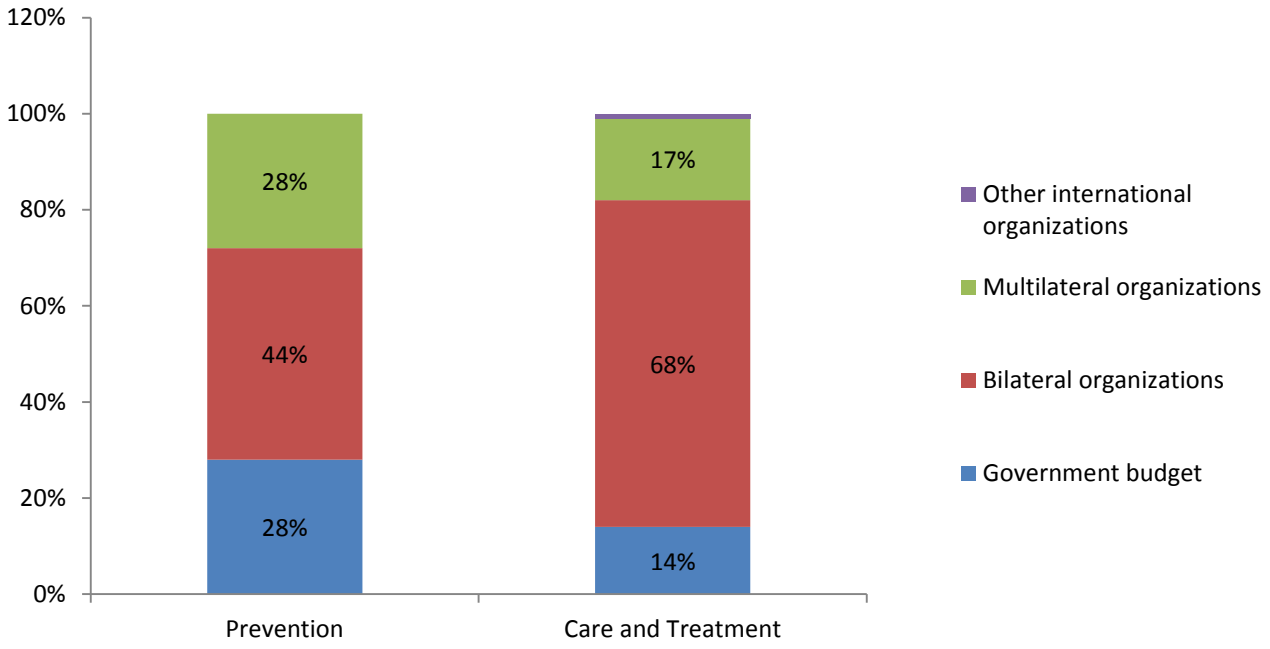
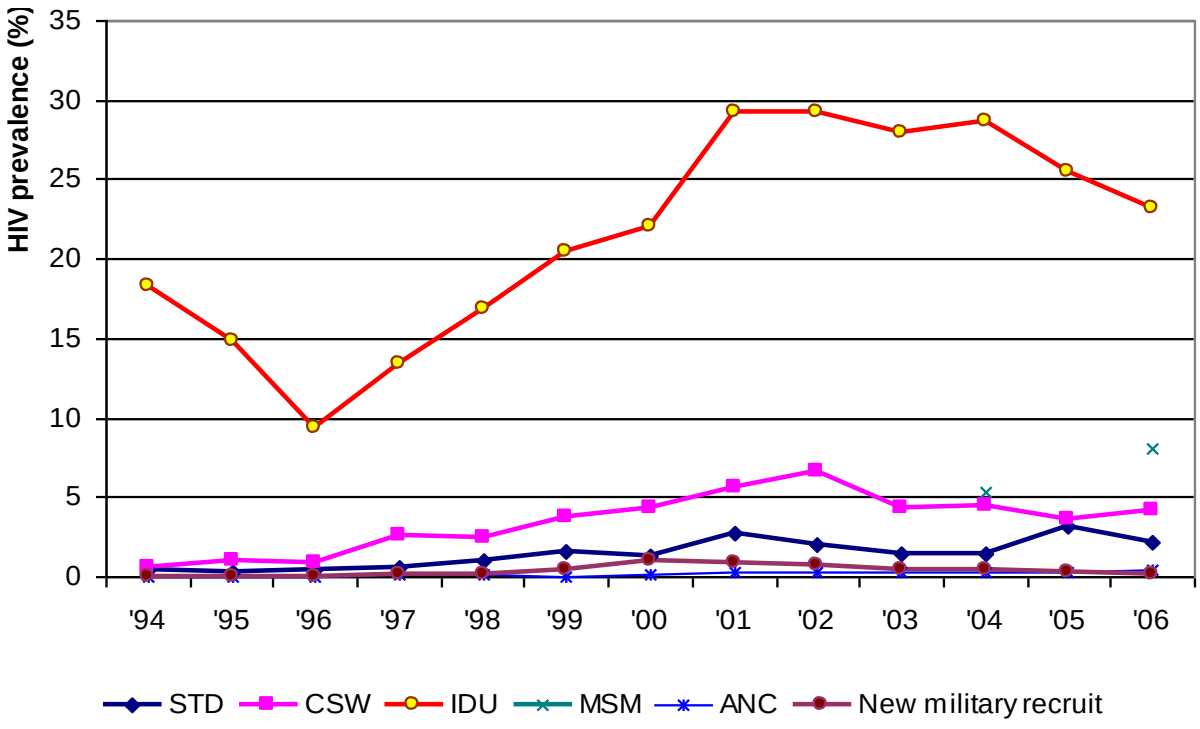
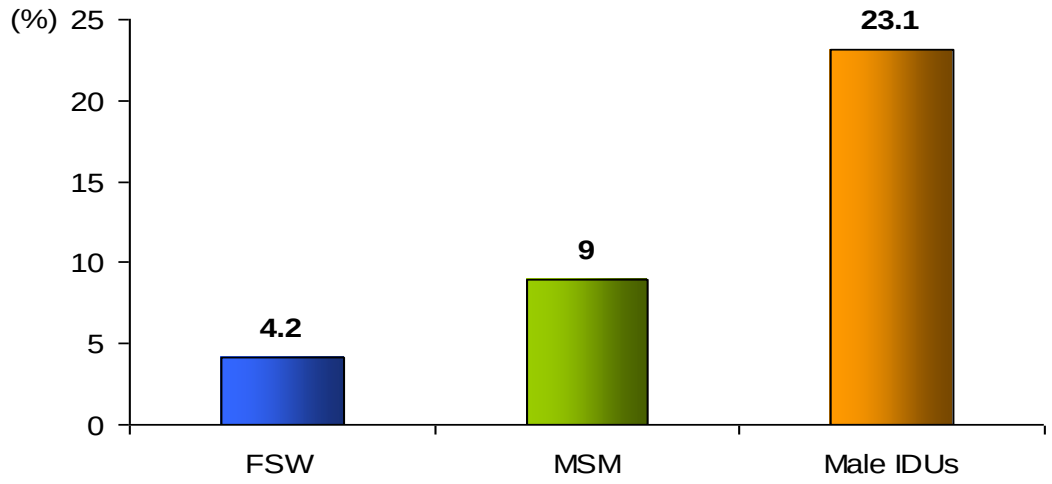


Figure 5: HIV prevalence among various groups, Vietnam, 2007



Source: Ministry of Health, Vietnam. National Sentinel Surveillance Report. 2007 [22]

Figure 6: HIV prevalence among most-at-risk populations, Vietnam, 2005-2006



Source: UNAIDS, UNGASS Country Report Vietnam January 2006 to December 2007 [23]

Appendices

VCT Client Intake Form

PROVINCE CODE: ☐☐☐ **SITE CODE:** ☐☐☐-☐☐

Date of Initial Session: ___ / ___ / ___
Counsellor code: ☐☐☐-☐☐-☐☐☐
Pre-test session: _____ **minutes**

Date of second Session: ___ / ___ / ___
Counsellor code: ☐☐☐-☐☐-☐☐
Post-test session: _____ **minutes**

1. Residence
1. ☐ Urban
2. ☐ Rural
3. ☐ Other province (VNese)
4. ☐ Foreigner

2. Sex
1 ☐ Male
2 ☐ Female

3. Age
__ __

4. No School years
__

5. Marital Status
1. ☐ Single/unmarried
2. ☐ Married/living with sex partners
3. ☐ Divorced/separate
4. ☐ Widowed

6. Has client had an HIV test before? Where? *(Tick one)*
0. ☐ No
1. ☐ Yes, negative
2. ☐ Yes, positive
3. ☐ Yes, indeterminate
4. ☐ Yes, not received
88. ☐ Other (lost, etc.)

If *yes,* last test date: ___/ ___ / ___

Place of HIV test: _____

_____

7.**Coming with sex partner today?**
0. ☐ No
1. ☐ Yes (*only count when sex partner has a VCT code*) – the partner's code:
☐☐☐-☐☐-☐☐☐☐

8. How (from who) client knew about the service? By whom client was referred *(tick all that apply*)
1. ☐ Peer educators
2. ☐ Healthcare provider
3. ☐ Sex partner. ***If checked, what is HIV status of sex partner?***
☐**positive.** ☐**negative.** ☐**not know**
4. ☐ Needle-sharing partner
5. ☐ Other clients
6. ☐ Mass media *(TV, radio, newspaper)*
88. ☐ Other (specify) _____

9. Main reason of visit today *(tick one most appropriate)*
1. ☐ Having high-risk behavior (*PWID, FSW, client of FSW, multiple sex partner)*
2. ☐ Sex partner is HIV-infected
3. ☐ Sex partner of high-risk person
4. ☐ Feeling ill/Recommended by healthcare providers
5. ☐ Recommended by sex partner
6. ☐ Recommended by needle-sharing partner

10. Risk factors (*determined by counselor; tick all that apply)*

Personal risk:
0. ☐ no personal risk (*move to sex partner risk*)
1. ☐ inject drugs
2. ☐ sell sex for money/drugs or other (M or F)
3. ☐ man who has sex with men (MSM)
4. ☐ multiple partners (not for money/drugs)
88. ☐ Other personal risk (*specify*)_____

_____

Sex partner risk
0. ☐ no sex partner
1. ☐ no known sex partner risk
2. ☐ sex partner is HIV-infected
3. ☐ sex partner is PWID
4. ☐ sex partner is FSW (M or F)
5. ☐ sex partner is MSM
6. ☐ sex partner is client of sex workers
7. ☐ sex partner has multiple partners (*not for money/drugs*)
88. ☐ other sex partner risk (*specify*) _____

_____

During the past 30 days

11. # of sex partners ____ ☐ refused

12. # times had vaginal sex ____ ☐ refused

13. # times had anal sex ____ ☐ refused

14. # times used condoms ____ ☐ refused

During the past 7 days

15.# times injected ____ ☐ refused

16. # times used previously used equipment ____ ☐ refused

17. Has client had any STD symptom *(genital ulcer, discharge, etc.)* **the past 3 months?**
0. ☐ No
1. ☐ Yes

18. Has client's sex partner had an STD, or is client worried his/her sex partner has an STD?
0. ☐ No
1. ☐ Yes
2. ☐ Don't know

(If Yes to either, refer to STD center)

19. Has client had a cough or fever more than 10 days?
0. ☐ No

21. Condom demo done? (*Tick 1*)
0. ☐ No
1. ☐Yes, by counselor
2. ☐ Yes, by client
3. ☐ Yes, both

Number of condoms given: ____

22. Needle demo done? (*Tick 1)*
0. ☐ No
1. ☐Yes, by counselor
2. ☐ Yes, by client
3. ☐ Yes, both

Number of bleach kits given: ____

23. If *woman,* client pregnant?
0. ☐ No
1. ☐ Yes

24. Client is referred to (*used for both sessions; determined by counselor [tick all that apply])*
0. ☐ Not referred
1. ☐ HIV care and treatment
2. ☐ STI service
3. ☐ TB service
4. ☐ PMTCT
5. ☐ Family planning
6. ☐ Other clinical care
7. ☐ Peer education program
8. ☐ PLWA support group
9. ☐ Drug treatment program
10. ☐ On-going counseling
88. ☐ Other (*specify*)

_____

25. Did client receive an HIV test?
0. ☐ No 1. ☐ Yes
Model: 2. ☐ Anonymous
3. ☐ Confidential- with name

26. If tested, did client return for test result?
0. ☐ No
1. ☐ Yes Date: _____/_____/_____

27. What is the test result?
1. ☐ Negative
2. ☐ Positive
3. ☐ Indeterminate
88. ☐ Other (lost, etc.) Specify _____

7. ☐ Accident *(step on syringe/needles, needle prick)* 8. ☐ Contact with HIV-infected (or suspected) persons *(casual contacts, AIDS patient care, etc.)* 88. ☐Other (specify) _____	1. ☐ Yes **20. Does client live or work with someone diagnosed with TB?** 0. ☐ No 1. ☐ Yes 2. ☐ Don't know *(If Yes to either, refer to TB center)*	**28. Will client refer sex partner(s) to VCT?** 0. ☐ No 1. ☐ Yes How many: _____ **29. Will client refer needle-sharing partners to VCT?** 0. ☐ No 1. ☐ Yes How many: _____

List of participating VCT clinics

(This list includes a total of 85 current VCT sites throughout 31 provinces in Vietnam, which are funded and managed by U.S. PEPFAR through CDC, USAID and Ho Chi Minh City AIDS Center). The 79 sites located in 33 provinces that provided data for this study during the defined two-year period (Oct 2011 to Sep 2013) were included in this list.

No.	Counseling and Testing Site Name	Site ID	Address
1	VCT center Long Xuyên	AGI-01	20 Nguyễn Du, TP. Long Xuyên, An Giang
2	VCT center PC AIDS Bình Dương	BDU-01	Trung tâm phòng chống AIDS tỉnh, số 213 đường Yersin, thị xã Thủ Dầu Một, Bình Dương
3	VCT center Dĩ An	BDU-02	Trạm y tế Tân Đông Hiệp, huyện Dĩ An, Bình Dương
4	VCT center YTDP Bắc Ninh	BNI-01	Trung tâm y tế dự phòng tỉnh, phường Vũ Ninh, TP. Bắc Ninh, Bắc Ninh
5	VCT center TTPC AIDS Bình Thuận	BTN-01	Trung tâm phòng chống AIDS tỉnh, số 133A Hải Thượng Lãn Ông, TP. Phan Thiết, Bình Thuận
6	VCT center YTDP Cao Bằng	CBA-01	Trung tâm y tế dự phòng tỉnh, 15 Hoàng Như, thị xã Cao Bằng, Cao Bằng
7	VCT center Cần Thơ	CTH-01	21 Phạm Ngũ Lão, TP. Cần Thơ
8	VCT center TTPC AIDS Đắc Lắc	DLA-01	Trung tâm Phòng chống AIDS tỉnh, 46 Hoàng Diệu, phường Thắng Lợi, TP. Buôn Ma Thuột, Đắc Lắc
9	VCT center TTPC AIDS Đà Nẵng	DNG-01	Trung tâm Phòng chống AIDS thành phố, 311/42

			đường Trường Chinh, TP. Đà Nẵng, Đà Nẵng
10	VCT center Thanh Khê	DNG-02	Trung tâm y tế quận, 62/32 Hà Huy Tập, TP. Đà Nẵng, Đà Nẵng
11	VCT center YTDP Hòa Bình	HBI-01	Trung tâm Phòng chống AIDS tỉnh, TP. Hòa Bình
12	VCT center Hải Dương	HDU-01	Trung tâm giáo dục sức khỏe tỉnh, số 144 Quang Trung, TP. Hải Dương, Hải Dương
13	VCT center Chí Linh	HDU-02	Bệnh viện đa khoa Chí Linh, thị trấn Sao Đỏ, huyện Chí Linh, Hải Dương
14	VCT center Trúc Bạch	HNO-01	Trạm y tế phường Trúc Bạch, 2- Trúc Bạch, phường Trúc Bạch, quận Đình, Hà Nội
15	VCT center Đông Anh	HNO-02	Trung tâm y tế huyện, đường Cao Lỗ, thị trấn Đông Anh, huyện Đông Anh, Hà Nội
16	VCT center Cổ Nhuế	HNO-03	Trạm y tế xã, xã Cổ Nhuế, huyện Từ Liêm, Hà Nội
17	VCT center Nhân Chính	HNO-09	Trạm y tế phường Nhân Chính, 132 phố Quan Nhân, phường Nhân Chính, quận Thanh Xuân, Hà Nội
18	VCT center Hà Đông	HNO-12	Trung tâm y tế dự phòng, số 23 Nguyễn Viết Xuân, TP. Hà Đông, Hà Nội
19	VCT center Sơn Tây	HNO-13	Bệnh viện đa khoa thị xã, thị xã Sơn Tây, Hà Nội
20	VCT center Phạm Minh Đức/Ngô Quyền	HPG-01	7 Phạm Minh Đức, quận Ngô Quyền, TP. Hải Phòng
21	VCT center Hải An	HPG-02	Trung tâm y tế quận, 190 Cát Bi, quận Hải An,

			Hải Phòng
22	VCT center Đồ Sơn	HPG-07	Trung tâm y tế dự phòng quận, 229 Lý Thánh Tông, Ngọc Sơn, Đồ Sơn, Hải Phòng
23	VCT center TTPC AIDS Kiên Giang	KGG-01	21 Trần Hưng Đạo, TP. Rạch Giá, Kiên Giang
24	VCT center TTPC AIDS Khánh Hoà	KHA-01	Trung tâm Phòng chống HIV/AIDS tỉnh, 31 Lê Thành Phương, TP. Nha Trang, Khánh Hòa
25	VCT center Ninh Hòa	KHA-02	Trạm y tế xã Ninh Đa, huyện Ninh Hòa, Khánh Hòa (on the national road # 1)
26	VCT center TTPC AIDS Long An	LAN-01	Trung tâm Y tế dự phòng tỉnh, số 102 quốc Lộ 62, thị xã Tân An, Long An
27	VCT center Lạng Sơn	LSN-01	37 Trần Hưng Đạo, TP. Lạng Sơn, Lạng Sơn
28	VCT center Hữu Lũng	LSN-02	Trung tâm y tế huyện, khu An Ninh, thị trấn Hữu Lũng, huyện Hữu Lũng, Lạng Sơn
29	VCT center YTDP Nghệ An	NAN-01	Trung tâm y tế dự phòng tỉnh, 140 Lê Hồng Phong, TP. Vinh, Nghệ An
30	VCT center Hà Huy Tập	NAN-02	149B đường Hà Huy Tập, TP. Vinh, Nghệ An
31	VCT center YTDP Nam Định	NDH-01	Trung tâm y tế dự phòng tỉnh, đường Phù Nghĩa, TP. Nam Định, Nam Định
32	VCT center Trực Ninh	NDH-02	Trung tâm y tế dự phòng huyện, thôn Thượng, thị trấn Cổ Lễ, huyện Trực Ninh, Nam Định
33	VCT center YTDP Quảng Nam	QNA-01	Trung tâm y tế dự phòng tỉnh, 129 Trưng Nữ Vương, thị xã Tam Kỳ, Quảng Nam

34	VCT center Hạ Long	QNH-01	809 Nguyễn Văn Cừ, phường Hồng Hải, TP. Hạ Long, Quảng Ninh
35	VCT center trung tâm y tế Cẩm Phả	QNH-02	Trung tâm y tế thị xã, đường Trần Phú, thị xã Cẩm Phả, Quảng Ninh
36	VCT center YTDP Sơn La	SLA-01	Trung tâm y tế dự phòng tỉnh, đường Lò Văn Giá, thị xã Sơn La, Sơn La
37	VCT center Mai Sơn	SLA-05	Trung tâm y tế dự phòng huyện Mai Sơn, khu 17, thị trấn Hát Lót, huyện Mai Sơn, Sơn La
38	VCT center Sóc Trăng	STG-01	182A Mạc Đĩnh Chi, khóm 4, phường 9, TP. Sóc Trăng, tỉnh Sóc Trăng
39	VCT center YTDP Thái Bình	TBH-01	Trung tâm y tế dự phòng tỉnh, đường Hoàng Công Chất, phường Quang Trung, TP. Thái Bình, Thái Bình
40	VCT center YTDP Thanh Hóa	THA-01	Trung tâm y tế dự phòng tỉnh, 470 Hải Thượng Lãn Ông, TP. Thanh Hóa, Thanh Hóa
41	VCT center Sầm Sơn	THA-05	Trung tâm y tế dự phòng huyện, đường Nguyễn Du, phường Bắc Sơn, thị xã Sầm Sơn, Thanh Hoá
42	VCT center YTDP Thái Nguyên	TNG-01	Trung tâm y tế dự phòng tỉnh, 971 đường Bắc Cạn (Ngã ba Mỏ Bạch), TP. Thái Nguyên, Thái Nguyên
43	VCT center YTDP Tây Ninh	TNI-01	Trung tâm y tế dự phòng tỉnh, đường 30/4, khu phố 1, phường 3, thị xã Tây Ninh, Tây Ninh
44	VCT center YTDP Vĩnh Long	VLG-01	Trung tâm y tế dự phòng tỉnh, số 24 Hùng

			Vương, Phường 1, thị xã Vĩnh Long, Vĩnh Long
45	VCT center Vũng Tàu	VTB-01	27 Huyền Trân Công Chúa, phường 8, TP. Vũng Tàu city, tỉnh Bà Rịa Vũng Tàu
46	VCT center YTDP Bà Rịa Vũng Tàu	VTB-02	Trung tâm y tế dự phòng tỉnh, 19 Phạm Ngọc Thạch, thị xã Bà Rịa, Bà Rịa Vũng Tàu
47	VCT center Long Điền	VTB-03	Phòng khám đa khoa khu vực Long Hải, Hải Lộc, huyện Long Điền, Bà Rịa Vũng Tàu
48	VCT center Tân Châu	AGI-02	Tỉnh lộ 953, ấp Long Thạch B, thị trấn Tân Châu, huyện Tân Châu, An Giang
49	VCT center Châu Đốc	AGI-03	Số 32 đường Núi Sam, phường Châu Phú A, thị xã Châu Đốc, An Giang
50	VCT center Tịnh Biên	AGI-04	Bệnh viện Đa khoa huyện, khóm Sơn Đông, thị trấn Nhà Bàn, huyện Tịnh Biên, An Giang
51	VCT center CLB sức khỏe phụ nữ Cần Thơ	CTH-03	Nhà chữ C, công viên Lưu Hữu Phước, TP. Cần Thơ
52	VCT center Thốt Nốt	CTH-05	Ấp Long A, thị trấn Thốt Nốt, huyện Thốt Nốt, TP. Cần Thơ
53	VCT center TTPC AIDS Điện Biên	DBI-01	Trung tâm Phòng chống AIDS tỉnh, phố 26, phường Mường Thanh, TP. Điện Biên, tỉnh
54	VCT center bệnh viện đa khoa Điện Biên	DBI-02	Bệnh viện đa Khoa tỉnh, phường Noong Bua, TP. Điện Biên, tỉnh Điện Biên
55	VCT center Trung tâm y tế Tuần Giáo	DBI-03	Trung tâm y tế huyện, khối Trường Xuân, thị trấn Tuần Giáo, huyện Tuần Giáo, tỉnh Điện Biên

56	VCT center Mường Ẳng	DBI-05	Trung tâm y tế huyện Mường Ẳng- Khối 11- Huyện Mường Ẳng - Tỉnh Điện Biên
57	VCT center Điện Biên Đông	DBI-06	Tổ 5- Thị Trấn Điện Biên Đông- Tỉnh Điện Biên
58	VCT center Mường Chà	DBI-09	Tổ dân khối 1- Thị trấn Mường Chà- Huyện Mường Chà- Tỉnh Điện Biên
59	VCT center Ánh Dương	HCM-21	Tầng 2, số 71 Võ Thị Sáu, phường 6, quận 3, TP. HCM
60	VCT center Bình Thạnh (ATS)	HCM-22	8/104 Đinh Bộ Lĩnh, phường 24, quận Bình Thạnh, TP. HCM
61	VCT center district 3	HCM-63	Số 368 đường CMT8, phường 10, quận 3, TP. HCM
62	VCT center district 8	HCM-68	314 Âu Dương Lân, phường 3, Quận 8, TP. HCM
63	VCT center district 9	HCM-69	107 Nguyễn Văn Tăng, P. Long Thạnh Mỹ, Q.9
64	VCT center Thủ Đức	HCM-78	Số 2 Nguyễn Văn Lịch, phường Linh Tây, quận Thủ Đức, TP. HCM
65	VCT center Hóc Môn	HCM-81	65/2B Bà Triệu, thị trấn Hóc Môn, huyện Hóc Môn, TP. HCM
66	VCT center Bạch Mai	HNO-04	Phòng 408, tầng 4, khoa khám bệnh, Bệnh viện Bạch Mai, Hà Nội
67	VCT center Ngôi nhà Tuổi trẻ	HNO-06	Số 5 phố Nguyễn Quý Đức, quận Thanh Xuân, Hà Nội
68	VCT center bệnh viện da liễu Hà Nội	HNO-07	Bệnh viện da liễu, số 79 Nguyễn Khuyến, Đống

			Đa, Hà Nội
69	VCT center Chương Mỹ	HNO-14	Phòng khám khu vực Xuân Mai, Trung tâm y tế huyện, 120 Hòa Sơn, thị trấn Trúc Sơn, huyện Chương Mỹ, Hà Nội
70	VCT center Linh Đàm	HNO-15	Tổ 12, khu đô thị Bắc Linh Đàm, phường Đại Kim, quận Hoàng Mai, Hà Nội
71	VCT center Tôn Đức Thắng/Lê Chân	HPG-03	208 Tôn Đức Thắng, quận Lê Chân, Hải Phòng
72	VCT center CLB sức khỏe phụ nữ Hoa Phượng	HPG-04	783 Thiên Lôi, phường Kênh Dương, quận Lê Chân, Hải Phòng
73	VCT center Thủy Nguyên	HPG-05	Trung tâm y tế dự phòng huyện Thủy Nguyên, xã Thủy Sơn, huyện Thủy Nguyên, Hải Phòng
74	VCT center Kiến An	HPG-08	Trung tâm y tế quận Kiến An, 360 Trần Thanh Ngô, quận Kiến An, Hải Phòng
75	VCT center bệnh viện đa khoa số 1 Lào Cai	LCI-02	Bệnh viện đa khoa số 1- Lào Cai, Đường Hàm Nghi, Phường Kim Tân, thành phố Lào Cai, tỉnh Lào Cai
76	VCT center Sapa	LCI-03	Tổ 1- Đường Điện Biên Phủ - Thị trấn Sa Pa - Huyện Sa Pa - Tỉnh Lào Cai
77	VCT center Bảo Thắng	LCI-04	Số 299 - Thôn Phú Thịnh 1 - Đường Cách Mạng tháng 8 - Thị trấn Phố Lu - Huyện Bảo Thắng - Tỉnh Lào Cai
78	VCT center Bát Xát	LCI-05	Bệnh viện Đa khoa Bát Xát - Tổ 2 - Thị trấn Bát

			Xát - Huyện Bát Xát
79	VCT center Văn Bàn	LCI-06	Bệnh viện Đa Khoa Văn Bàn - Đường 279 -Thị trấn Khánh Yên - Huyện Văn Bàn
80	VCT center Diễn Châu	NAN-04	Bệnh viện đa khoa huyện, xóm 7, xã Diễn Phúc, huyện Diễn Châu, Nghệ An
81	VCT center CLB sức khỏe phụ nữ Hoa Nắng	NAN-06	209 Phan Chu Trinh, TP. Vinh, Nghệ An
82	VCT center Quỳ Châu	NAN-13	Trung tâm y tế huyện Quỳ Châu, Khối 4, Thị trấn Quỳ Châu, Huyện Quỳ Châu, Tỉnh Nghệ An
83	VCT center Quế Phong	NAN-14	Trung tâm y tế huyện Quế Phong, Thị trấn Kim Sơn, H.Quế Phong, Tỉnh Nghệ An
84	VCT center Vân Đồn	QNH-03	Khu 3, thị trấn Cái Rồng, huyện Vân Đồn, Quảng Ninh
85	VCT center Móng Cái	QNH-04	88 Lý Tự Trọng, phường Hoà Lạc, thị xã Móng Cái, Quảng Ninh