

# NATIONAL ESTIMATES OF ADULT HIV

## INFECTIONS



National Centre for  
AIDS and STD Control  
Ministry of Health and Population  
Nepal Government  
May 2006

---

# FOREWORD

---

The estimated number of HIV infections is important information for formulating a national strategy on HIV/AIDS and for program design, monitoring and evaluation purposes. The National Centre for AIDS and STD Control (NCASC), Ministry of Health and Population (MOHP) of Nepal, with the technical support of Family Health International (FHI)/Nepal and the United States Agency for International Development (USAID), estimated the number of adult HIV infections in Nepal for the first time in 2003. This estimation exercise was repeated again for the year 2005 by NCASC with technical assistance from FHI/Nepal and USAID. As before, the estimates are derived for four epidemic regions and combined to derive national estimates.

The new estimate of adult HIV infections for Nepal has indicated that the epidemic is still on the rise and needs specific responses to address HIV among rural populations as well. The details presented in this report also clearly indicated the data gaps in the surveillance system of Nepal. I am very optimistic that reports like this would be great for supporting documents to plan the national response to the HIV epidemic in a scientific and effective way.

I am grateful to those who participated individually and institutionally in the estimation work, meetings, and wrote and published this report. I strongly recommend that estimates should be updated on a regular basis when new information is available in the country.

Kathmandu, May, 2006



-----  
Dr. Shyam Sundar Mishra

Director

National Centre for AIDS and STD Control

---

# ACKNOWLEDGEMENT

---

The National Centre for AIDS and STD Control (NCASC) wishes to express special thanks to Family Health International (FHI)/Nepal, for their instrumental role that enabled us to work on the second round of estimates of HIV/AIDS infections in Nepal. We acknowledge the encouragement and support at various stages of the work provided by Asha Basnyat, Country Director FHI/Nepal, Jacqueline McPherson, Deputy Director FHI/Nepal and Sharon Arscott Mills, Consultant USAID. Special acknowledgement goes to two technical experts Dr. Laxmi Bilas Acharya, Team Leader/FHI and Dr. Mahesh Puri, CREHPA for leading the technical part of the work and writing the report. NCASC also acknowledges UNAIDS/Nepal and Dr. Dimitri Prybylsky, FHI/APD for their comments on a draft version of this report. NCASC staff are also acknowledged for their encouragement to work out the estimates for HIV infections in the country.

NCASC thanks USAID for providing financial support to make this National Estimates of Adult HIV Infection in Nepal 2005 possible.

This publication was made possible through the financial support of the United States Agency for International Development through Family Health International/ Nepal.

---

# ABBREVIATIONS AND ACRONYMS

---

ADRA	Adventist Development and Relief Agency
AIDS	Acquired Immuno Deficiency Syndrome
AMDA	Association of Medical Doctors of Asia
ANC	Antenatal Care
BDS	Blue Diamond Society
BPKIHS	B.P. Koirala Institute of Health Sciences
BSS	Behavioral Surveillance Survey
CREHPA	Center for Research on Environment, Health & Population Activities
FHI	Family Health International
FSWs	Female Sex Workers
HIV	Human Immunodeficiency Virus
HSS	HIV Sentinel Surveillance
IBBS	Integrated Bio Behavioral Survey
IDUs	Injecting Drug Users
IPEC	International Program on the Elimination of Child Labor
MOHP	Ministry of Health & Population
MSM	Men Having Sex with Men
MTCT	Mother to Child Transmission
NCASC	National Center for AIDS and STD Control
NRCS	Nepal Red Cross Society
PLHA	People Living with HIV/AIDS
PMTCT	Prevention of Mother to Child Transmission
PRB	Population Reference Bureau
SACTS	STD/AIDS Counseling and Training Service
SC/US	Save the Children/US
STD	Sexually Transmitted Disease
STI	Sexually Transmitted Infection
TB	Tuberculosis
UNAIDS	Joint United Nations Program on HIV/AIDS
UNODCCP	United Nations Office for Drug Control and Crime Prevention
UoH	University of Heidelberg
VDC	Village Development Committee
VDRL	Venereal Disease Research Laboratory
VCT	Voluntary Counseling and Testing
WHO	World Health Organization

---

## EXECUTIVE SUMMARY

---

This is the second time that the number of people living with HIV infection has been estimated in Nepal using available data on the four epidemic regions; Kathmandu valley, highway districts, Far-Western hill districts and the remaining hill districts. The Kathmandu valley has the highest risk of having increased number of HIV infections because the HIV prevalence among injecting drug users (IDUs) is quite high and HIV among men who have sex with men (MSM) and female sex workers (FSWs) is also high. Labor migrants and their spouses in the Far-Western hill districts are emerging as highly affected population sub groups by the epidemic.

Compared to about 60,000 adult HIV infections estimated for 2003, the current estimate of 70,000 for 2005 has increased by about 10,000. Out of the total 70,000 estimated infections in 2005 about nine percent are among IDUs, four percent among MSMs and about two percent among FSWs. More importantly, about 19 percent are the clients of sex workers and another 46 percent are the seasonal labor migrants who are also the potential clients of FSWs abroad. The new estimate also shows that about 17.5 percent of total HIV infections are among the rural women.

Better quality data were available for the estimation of HIV infections in 2004 and 2005. However, the data gaps still exist. Particularly, the estimation of the population size of the risk groups needs to be improved. Existing surveillance data among FSWs, IDUs and MSM need to be geographically expanded. Studies to estimate the HIV prevalence among general male and female populations need to be conducted. Existing HIV data generated from blood banks and TB programs could be utilized as a secondary source of HIV data in the general male population with some refinements.

Finally, it is concluded that such a database should be strengthened and such estimation exercise should be conducted regularly so that it could continuously serve as a basic document for developing a National HIV/AIDS strategy and for national HIV/AIDS program monitoring and evaluation purposes.

---

# TABLE OF CONTENTS

---

FOREWORD

ACKNOWLEDGEMENT

ABBREVIATIONS AND ACRONYMS

EXECUTIVE SUMMARY

1.	INTRODUCTION	1
1.1	Background	1
1.2	The HIV epidemic and its components in Nepal	2
2.	DATABASE ON HIV/AIDS IN NEPAL	3
2.1	Female sex workers	4
2.1.1	Size estimation	5
2.1.2	HIV prevalence	6
2.2	Clients of female sex workers	7
2.2.1	Size estimation	8
2.2.2	HIV prevalence	8
2.3	Seasonal labor migrants and their spouses	10
2.3.1	Size estimation	11
2.3.2	HIV prevalence	11
2.4	Injecting drug users	12
2.4.1	Size estimation	13
2.4.2	HIV prevalence	14
2.5	Men having sex with men	16
2.5.1	Size estimation	16
2.5.2	HIV prevalence	17
2.6	General women	18
2.7	Mother to child transmission	18
2.8	HIV prevalence among blood donors	19
2.9	HIV prevalence among tuberculosis patients	19
3.	ESTIMATES OF HIV CASES	21
3.1	Description of HIV epidemic zones	21
3.2	Classification of subpopulations at higher and lower risk	23
3.3	Regional and national estimates of adult HIV infections	23
3.3.1	Estimates of HIV cases for Kathmandu valley	24
3.3.2	Estimates of adult HIV cases for Highway districts	24
3.3.3	Estimates of adults HIV cases for Far-Western hill districts	25
3.3.4	Estimates of adult HIV cases for Remaining districts	26
3.3.5	National estimates of adult HIV cases	27
4.	SUMMARY AND CONCLUSIONS	30
	References	32
	Annexes	37

# LIST OF TABLES AND FIGURES

---

Table 1:	Estimated number of FSWs in various locations of Nepal	6
Table 2:	Estimated number of injecting drug users	14
Table 3:	HIV prevalence among injecting drug users	15
Table 4:	HIV infections estimation regions and district names	22
Table 5:	Estimates of adult HIV infections in the Kathmandu valley, 2005	24
Table 6:	Estimates of adult HIV infections in highway districts, 2005	25
Table 7:	Estimates of adult HIV infections in Far-Western hill districts, 2005	26
Table 8:	Regional estimates of adult HIV infections: Remaining districts, 2005	27
Table 9:	National estimates of adult HIV infections, 2005	27
Table 10:	National estimates of adult HIV infections by sub-populations, 2005	28
Table 11:	Comparison of summary of indicators between the year 2003 and 2005	29
Fig 1:	HIV prevalence among STI patients in different sites of Nepal	10
Fig 2:	HIV prevalence among blood donor	19
Fig 3:	Size estimation regions	22

# 1. INTRODUCTION

---

## 1. 1 BACKGROUND

The Human Immunodeficiency Virus (HIV) - the virus that causes AIDS (Acquired Immuno Deficiency Syndrome) was first identified in Nepal in 1988. In the ten years that followed, the country found itself facing a “concentrated epidemic,” among certain sub-populations. These included injecting drug users (IDUs) and migrant laborers whose HIV prevalence rates consistently surpassed five percent year after year. Recent integrated bio-behavioral surveys (IBBS) indicate the HIV prevalence among IDUs to be 51.6 percent in Kathmandu valley, 31.7 percent in the Eastern Terai districts, 11.7 percent in the Western Terai districts, and 21.7 percent in Pokhara (New ERA/SACTS, 2005). Although a recent study on female sex workers in Kathmandu valley showed only a two percent HIV prevalence rate among this population (New ERA/SACTS, 2004), in a subgroup of street based female workers in Kathmandu, about 15.7 percent were found to be HIV infected in 2001 (New ERA/ SACTS/FHI, 2001).

With every HIV-related report produced on Nepal, new sources of information and data become available. These data are extremely useful when trying to produce accurate estimates of the number of HIV infections. For example, men having sex with men (MSM) is another sub-group of the population at high risk of contracting HIV, which was not previously known until recently. The first ever IBBS carried out among the MSM community in Kathmandu Valley, showed 3.9 percent to be HIV-positive (CREHPA/BDS/SACTS/FHI, 2005). In another study among 600 migrants and non-migrants from Achham district, about 8 percent of labor migrants who migrated to Mumbai were found to be HIV-positive. Another small study conducted in Doti district among 99 men who had migrated to Mumbai, revealed that 10 percent were HIV positive (UNAIDS/NCASC, 2004). It was also discovered that 34 out of 71 people who visited the voluntary counseling and testing (VCT) center in Doti district hospital, Silgadhi, were HIV-positive.

HIV infections recorded in November 2005 by the National Center for AIDS and STD Control (NCASC) of the Government of Nepal shows a cumulative total of 5,647 people infected with HIV, of who 929 developed AIDS. Two hundred seventy three AIDS-related deaths were also recorded (NCASC, 2005). Out of the infected population, 53 percent were clients of FSWs, 20 percent were IDUs, 14 percent were housewives and seven percent were adolescents.

In the absence of community-based HIV prevalence data, these figures were obtained from sentinel surveillance and voluntary counseling and testing centers, and are gross underestimates of community prevalence. In absence of effective health interventions, some reports predict a generalized epidemic occurring by the end of the decade, with an estimated sero prevalence of 1 to 2 percent among the age group 15 to 49 (Chin, 2000). For Nepal, this means that by 2010 the human immunodeficiency virus may become the nation’s number one killer among people between the ages of 15 and 49. If

---

this proves to be correct it will pose a great challenge to Nepal's Sixth Millennium Development Goals for "halting and reversing the spread of HIV/AIDS by 2015" (NCASC/POLICY, 2004).

## **1.2 THE HIV EPIDEMIC AND ITS COMPONENTS IN NEPAL**

It has been documented in many studies that the predominant route of HIV transmission in Nepal is through heterosexual relations. Sex workers, their clients including labor migrants, IDUs and MSM are identified as the primary sub-population driving the epidemic. An expanding sex industry in urban areas (i.e. the establishment of dance restaurants, "cabin" restaurants, dance clubs, bars, massage parlors etc); the trafficking of girls and women to Indian brothels; increased international migration, including cross-border migration of young adults and labor migrants; and the continuation of political unrest in Nepal, are the prominent forces leading to substantial increases in the rate of HIV infection.

Similarly, many IDUs heighten their risk of contracting HIV and other infections by engaging in risky behavior. For example, needle sharing is the most important risky behavior among IDUs. To support their habit, some IDUs resort to sex work which provides a conduit for HIV to enter the non-drug using population (PRB, 2004). In addition, the stigmatization and discrimination associated with HIV/AIDS, irregularities in the reporting of HIV/AIDS infections, limitations of the National HIV Surveillance System, and difficulty in tracking the mobile high risk population, all act as secondary forces that fuel the epidemic taking place in Nepal (PRB, 2005; IPEC, 2004; FHI, 2003).

Nepal health reports indicate that the rate of HIV infection is growing fast and reaching low-risk groups such as the rural populations. In addition, the distribution of high-risk populations and HIV prevalence is no longer confined to a certain administrative or geographical region within Nepal. With rapid urbanization taking place, including the extension of highways and improved transportation planning, people all over Nepal are becoming more mobile and as a result are adapting to changes in lifestyle. These changes can eventually lead to populations engaging in risky behavior.

This report provides estimates of adult HIV infections in Nepal at the sub-national and national levels by reviewing available data on HIV/ STI prevalence, and high-risk behavior of the most "at-risk" sub-populations. This report also highlights the various data gaps, and discusses the needed improvements to the nation's database for more effective monitoring of the HIV epidemic affecting the country. Such improvements will facilitate the coordinated efforts of the national planners and program developers trying to understand the magnitude and potential impacts of the epidemic on the people of Nepal and on the country's development. The Joint United Nations Program on HIV/AIDS (UNAIDS) and the World Health Organization (WHO) uses this report as a basis of their annual estimates on the number of HIV infections in Nepal, as well as estimates on the national adult HIV prevalence.

## 2. DATABASE ON HIV/AIDS IN NEPAL

---

Despite the efforts made by a number of government and non-government institutions and scholars to collect and analyze HIV related data, information on this virus remains limited in Nepal. This is mainly due to the fact that a systematic and continuous surveillance system has not yet been institutionalized in the country (NCASC, 2003). HIV related data in Nepal largely comes from behavioral surveillance surveys (BSS) and IBBS, from blood banks, TB screening data, small scale community level surveys, and until very recently, data from programs on the prevention of mother to child transmission (PMTCT).

WHO first initiated the HIV/AIDS sentinel surveillance (HSS) program in Nepal in 1991. Ever since, it has served as an important source of data on the prevalence of HIV in the country. The HSS program covered five sub-populations (FSWs, sexually transmitted infection (STIs) patients, IDUs, antenatal care attendees, and tuberculosis (TB) patients) and a total of seven surveillance sites were identified (Nepaljung, Pokhara, Nuwakot, Mahendranagar, Kathmandu, Sindupalchowk and Dharan). The surveillance was to be carried out every six months; however, the protocol for HSS was radically modified during the fifth round of implementation in June of 1994. This led to the elimination of two of the sites, an increase in sample sizes at each of the sites, and the monitoring of only STI patients. Moreover, HSS conducted in the first few phases had several limitations. For example, HSS protocol was not uniformly implemented at all sites or during the initial project phases, and data sets were not characterized by the sex of the patients tested; age, and migration characteristics as they are important to analyze the risk behaviors.

Since 1998, four rounds of HSS among STI patients were conducted in six sites. Although HSS is an important source of data on HIV in Nepal, it has not been conducted for the past couple of years. Recently, the NCASC reviewed its entire first generation surveillance strategy in preparation for adopting a second-generation surveillance system. In HSS among STI patients, three additional sites have been proposed.

A surveillance work plan developed by the NCASC under a second generation surveillance system covers the most at risk sub-populations. These include: FSWs, clients of FSWs including labor migrants to Indian cities, IDUs, and MSM. In 1995, Family Health International (FHI) conducted a BSS study among sex workers and clients in the nine Highway districts of Nepal. From 1998 to 2002, five rounds of BSS studies were conducted among FSWs, truck drivers, and male laborers in the 16 Terai Highway districts of Nepal. FHI has also conducted two rounds of behavioral and sero-surveys of FSWs and truck drivers in the 16 Terai Highway districts between Jhapa in the east, and Rupandehi in the west (New ERA/FHI, 1999 and 2003). BSS and HIV testing among IDUs were also conducted in Kathmandu, Pokhara and in Eastern Terai in 2002 and 2003. Extensive mapping and scientific estimations of number of FSWs were also conducted by CREHPA and New ERA in various towns in 2001 and 2002. This data was subsequently updated in 2005.

---

Before 2004 there was a lack of behavioral and HIV and STI data on men having sex with men; a recently identified high-risk group in Nepal. In 2004 CREHPA and SACTS carried out an IBBS among MSM in the Kathmandu valley, where HIV prevalence and other risk behavior were documented for the very first time.

Given the relatively high prevalence of HIV among IDUs, FSWs and migrant men, a significant proportion of whom are married, the transmission of HIV from mother to child transmission is increasing. As more women become infected, the number of infected infants and children also increases. Thus in February of 2005, NCASC/MOH launched comprehensive PMTCT services at Maternity hospital in Thapathali, Bheri Zonal hospital in Nepaljung, and B.P. Koirala Institute of Health Sciences in Dharan. These programs are expected to provide valuable data on HIV infection among children.

HIV prevalence data are also obtained from blood banks. Caution should be exercised when interpreting data derived from donors as all donors are screened beforehand. Nevertheless, such information does shed some light on the number of HIV infections among the general male population. Blood is mostly collected from voluntary donors, and the Nepal Red Cross Society collects blood from 21 district level blood banks, 16 district emergency units, and 15 hospital units. This blood is immediately screened for HIV, HBsAg, HCV, and Syphilis (NRCS, 2003/2004). In 2003/2004, the Central Blood Transfusion Center in Kathmandu Valley identified 0.5 percent of 76,647 units of blood to be HIV positive. In 1996, the HIV prevalence rate among blood donors in Nepal was nearly one infection per 1,000, or 39 infections in a total of 42,500 donors. Nation-wide prevalence of HIV in blood donors in 1999 was 0.32 percent and 0.37 percent in 2003/2004 (NRCS, 2005).

Information related to HIV is also obtained from TB screening data. Since 1993 the National TB Program (NTP) has been carrying out HIV prevalence surveys in TB patients, and the results have shown an increasing trend of HIV infection among patients with TB. From 1993 until 2002, HIV in TB patients increased by 2.4 percent. The survey also indicates that 84 percent of HIV/TB co-infections occur in men between the age of 25 and 55 years (NTP, 2002).

## **2.1 FEMALE SEX WORKERS**

Women who provide sex services for financial or material gain are defined as female sex workers. In Nepal, mainly two types of FSWs have been identified. "Street-based" FSWs are those who solicit customers from the street, while "establishment-based" FSWs are those who solicit clients from

---

establishments such as hotels, cabin restaurants, dance restaurants and massage parlors (CREHPA/FHI, 2002 and New ERA/FHI, 2002). Although Nepal's legal provisions prohibit commercial sex work and the establishment of brothels, commercial sex work is nevertheless prevalent in many towns and cities, especially those located along highways and border regions.

### **2.1.1 SIZE ESTIMATION**

Despite recent attempts at estimating the total population size of FSWs in Nepal, data from many geographic locations has yet to be collected and quantified. Furthermore, estimates of FSWs have been made for urban areas that include Kathmandu, Pokhara and the country's Highway districts. Little is known about the number of FSWs in smaller locations, i.e., in towns and market places, and mountain districts where FSWs are known to be active.

Financed by FHI, both CREHPA and New Era helped put together scientific estimates on the number of FSWs present in Nepal. Part of the methodology included in the study involved the use of ethnographic research. It was estimated that between 4000 and 5000 FSWs are working in the Kathmandu Valley (CREHPA/FHI, 2005); figures very similar to those obtained in 2001. In 2002, similar research was conducted in Pokhara, where the number of FSWs was estimated to be between 280 and 320 (CREHPA/FHI, 2002).

Similarly, in 2003, the total estimated number of FSWs in the 23-terai Highway districts spanning from Jhapa in the East, to Kanchanpur in the Far West, was between 7,000 and 9,000. Also in that same year, the estimated number of FSWs in the six districts between Kapilbastu and Kanchanpur was between 1700 and 2200 (CREHPA/FHI, 2004). Likewise, Save the Children/US estimated between 800 and 900 FSWs in the Pokhara valley, the Mugling–Pokhara sector of the Prithivi highway, the Baglung-Pokhara highway, and the Palpa-Pokhara sector of Siddhartha highway.

The Adventist Development and Relief Agency (ADRA) also estimated between 700 and 800 FSWs to be in highway areas along the Kathmandu-Jiri sector of the Kodari highway. A 2005 study conducted by CREHPA in 22 Highway districts estimates the number of FSWs to be somewhere between 7,500 and 10,000 (CREHPA/FHI, 2005). This study however assumes current estimates of FSWs to be between 8,500 and 11,000 (see Table 1 in the next page).

**Table 1: Estimated number of FSWs in various locations of Nepal**

Location	Estimated number of FSWs	Year	Estimate made by
Kathmandu valley	4000-5000	2005	CREHPA
Kathmandu valley	4000-5000	2001	CREHPA/New ERA
Pokhara	280-320	2002	CREHPA
Highway section from Jhapa in the east to Kanchanpur in the west and Dhading districts	7000-9000	2003	CREHPA
Highway section connecting to Pokhara	800-900	2002	SC-US
Highway section connecting Kathmandu-Kodari-Jiri	700-800	2003	ADRA
16 highway and peripheral districts from Jhapa to Rupandehi	5,300-6,900	2003	CREHPA
6 Highway districts from Kapilvastu to Kanchanpur	1,700-2,200	2003	CREHPA
22 Highway districts from Jhapa to Kanchanpur	7,500-10,000	2005	CREHPA
26 Highway districts	8,500-11,000	2005	CREHPA

Note: The figures are rounded off to the nearest 100.

## 2.1.2 HIV PREVALENCE

Since 1992, STD/AIDS Counseling and Training Service (SACTS) have been conducting sero studies among street based FSWs to measure HIV prevalence. Back then, there were no programs available that catered to FSWs, so these studies were able to capture a specific network of them operating in the Kathmandu valley. Among this network of FSWs, HIV prevalence levels increased from less than one percent to nine percent by mid-1990, to 15.7 percent in 2001.

In 2004 SACTS and New ERA conducted a joint IBBS among street and establishment sex workers using a representative sample of existing networks of FSWs operating in the Kathmandu valley. Prior to conducting the study, a mapping exercise was carried out in order to identify their locations of work, and estimate their numbers in those locations. A wider representative sample was designed in 2004 compared to previous SACTS studies conducted prior to 2002. The 2004 survey showed an HIV prevalence of two percent among street-based sex workers in the Kathmandu valley (New ERA/SACTS/FHI, 2004).

---

In the first HIV prevalence study conducted in 2001 among establishment-based FSWs in Kathmandu, a 2.5 percent HIV prevalence rate was discovered. A two percent prevalence rate was found in a similar survey in 2004.

In 2002, a rapid qualitative study of FSWs carried out in Pokhara by CREHPA/FHI found that unlike in Kathmandu there were very few street-based FSWs. Based on this study an IBBS was conducted among FSWs two years later. HIV prevalence among FSWs in Pokhara in 2001 was 0.8 percent (NCASC/UoH/ CREHPA, 2001), but increased to two percent in 2004 (New ERA/SACTS/FHI, 2004). In the 16 Terai Highway districts between Jhapa and Rupandehi, 3.9 percent of FSWs were found to be HIV positive in 1999, and was three percent in 2003. In the six Highway districts between Kapilbastu and Kanchanpur, none of the 200 FSWs sampled tested positive (New ERA /SACTS/FHI, 1999; New ERA/ SACTS/FHI, 2003).

In 1991, in the Far-western and Mid-western regions of Nepal, 300 FSWs of the Badi community were tested for prevalence of VDRL and HIV-1. Seventy percent of FSWs were found to be VDRL positive, while none had a history of constant and often untreated STDs (Bhatt, et. al., 1994). In the city of Nepalgunj, the HIV status of FSWs was tested in 1992 and 1993, but no (zero) HIV prevalence was found. A similar kind of test was duplicated in the early 1990's among the FSWs in Nuwakot, Sindupalchowk, Pokhara and Dharan, and HIV prevalence was found to be less than two percent (NCASC Surveillance data, year not known).

## **2.2 CLIENTS OF FEMALE SEX WORKERS**

Clients of FSWs comprise of many sub-groups among the male population. A focused ethnographic study that includes extensive mapping (CREHPA/FHI, 2002), and a BSS and IBBS among FSWs in Kathmandu, Pokhara and Terai Highway districts (New ERA/SACTS/FHI, 2003) has documented these diverse clients. They are transport workers, rickshaw pullers, industrial laborers, students, armed personnel, civil servants, businesspersons, IDUs, vegetable vendors, and soldiers from the army of Nepal. It is the transport workers, rickshaw pullers, daily wage laborers and armed personnel who visit FSWs the most. In Nepal, BSS and IBBS have been conducted mostly among truck drivers, laborers and rickshaw pullers, IDUs, MSM and FSWs. Recently, the BSS has been extended to include the police and the army of Nepal. Results and other relevant information about these clients have yet to be released.

---

## 2.2.1 SIZE ESTIMATION

No direct estimates of the number of clients of FSWs are currently available. In the 2003 national estimates of adult HIV infection report, an indirect estimate of the type, number, and frequency of clients seeking the services of FSWs was made based solely on information gathered from FSWs. The following formula was used to calculate the number of clients in the Kathmandu Valley and along the highway routes where BSSs and IBBSs on FSWs and their clients were conducted. In the absence of an alternative method for calculating FSW clientele, this same formula was also applied in this 2005 estimate report (see below).

$$\text{Number of clients of FSWs} = \frac{\text{NFSW} \times \text{ADWK} \times \text{ACPD} \times \text{NWPY}}{\text{CRAF}}$$

Where,

NFSW	=	Number of female sex workers
ADWK	=	Average days worked in a week
ACPD	=	Average number of clients per working day
NWPY	=	Number of weeks per year
CRAF	=	Client repetition adjustment factor (average number of visits by clients in a year)

## 2.2.2 HIV PREVALENCE

Few studies have been conducted that provide information on HIV prevalence of FSW clientele, and are generally limited to a specific category of clients; the most popular being truck drivers. A survey conducted among 400 truck drivers in the 16 Terai districts in 1999 showed an HIV prevalence rate of 1.5 percent (New ERA/SACTS/FHI, 2000). Three years later, the prevalence was 1.75 percent in the same study area. A similar survey is currently underway and results are expected to be available in the near future.

The HSS conducted in the early 1990's provides time-series data on HIV prevalence among STI patients, however there is no way of telling whether these patients contracted HIV through FSWs due to a lack of information on their sexual history. Based on the information available today however, it can be assumed that sexual relations with FSWs were the likely mode by which they contracted the virus. Equally, it is highly likely that apart from FSW clientele, IDUs and FSWs could have also been included in the HSS sample.

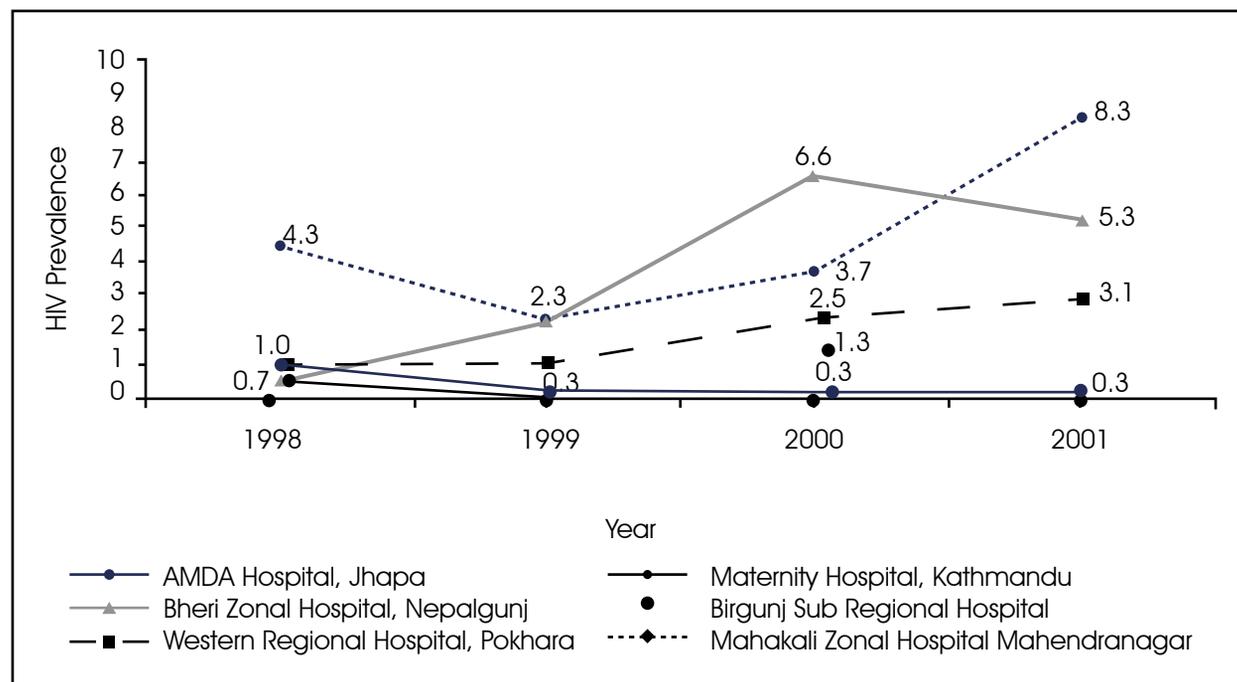
---

Some of these clients (male) may have visited clinics with the suspicion of having STI, or when developing STI symptoms. It is likely that this group may have had a higher chance of being infected with HIV compared to other men showing no physical signs of having STI. In 2001, the overall HIV prevalence rate among 1,824 STI patients gathered from six sentinel sites was 2.7 percent, however wide geographical variations were noticed (NCASC, 2001). For instance, HIV prevalence was more widespread in the Far-western and Mid-western sentinel sites compared to the Eastern sites. In Jhapa, 0.3 percent of STI patients were HIV-positive, whereas in Mahendranagar, the HIV prevalence rate was as high as 8.3 percent. Similarly, HIV prevalence among STI patients in Pokhara and Nepaljung was 3.1 and 5.3 percent respectively (refer to figure 1). Surprisingly in that same year a zero (nil) percentage HIV prevalence rate among STI patients was recorded for the Kathmandu site (NCASC, 2001). It should be noted however, that the absence of HIV among this group does not match with the prevalence of HIV among FSWs in Kathmandu. The recruitment procedure for studying participants in HSS was also ill-documented, and as a result it is difficult to determine how the data were obtained (NCASC/FHI, 2003).

As mentioned earlier, when the survey protocol for HSS was revised in 1995, the number of sentinel sites dropped from seven to six. In the 1995 round of HSS (April, May and November), HIV prevalence remained at about one percent in Kathmandu and Pokhara, but was much lower in other sites. It should be noted that the low HIV prevalence contradicts the high percentage (9.9 %) of STI patients attending counseling sessions in Kathmandu in the mid-1990s (Gurubacharya and Shrestha, 1997). Since only people with suspicions of having HIV might have sought counseling, this latest figure may be prone to bias. Hence, no reliable evidence can be obtained from earlier studies to explain these wide variations in HIV prevalence among STI patients.

Recently NCASC has reviewed its first generation surveillance system and adopted a second one. The HSS under the second-generation surveillance system will soon expand from six to nine sites, and contain a revised HSS protocol and a standardized protocol for STI diagnosis and HIV testing. Better data will become available once HSS with revised protocols are conducted among STI patients.

**Fig 1: HIV prevalence among STI patients in different sites of Nepal**



## 2.3 SEASONAL LABOR MIGRANTS AND THEIR SPOUSES

Mobility and migration are not direct risk factors for HIV but create conditions that can increase peoples' vulnerability to HIV/AIDS. The employment-oriented seasonal and short-term migration of Nepalese youth and young men to urban areas of Nepal, India and other countries has emerged as a major factor in driving the HIV epidemic in Nepal (Furber et al, 2002; Pokharel, 2000; Seddon, 1998, Puri et al, 2004). While the entire migrant population cannot be considered a high-risk group for HIV transmission, a substantial proportion of adolescent and adult male labor migrants who go to "high-risk" Indian cities such as Mumbai and visit FSWs are becoming a most "at-risk" group.

Young and mobile men who are away from home for months or years at a time are likely to be sexually involved with casual partners or FSWs other than their wives (Puri, 2002; Tamang et al, 2001; WHO, 1999; Subedi, Gurubacharya and Thapa, 1994). HIV-infected labor migrants upon returning home are likely to transmit their disease to their spouses through unprotected sex. On the other hand, wives of migrants also face the risk of becoming infected, if and when they engage in sexual activities with other partners in the absence of their husbands. Consequently, as both male migrants and their spouses engage in unsafe sexual conduct, they become more susceptible to HIV infections, thus

---

making them one of the most at-risk sub-groups. However, there are no specific studies conducted so far to understand the level of sexual contact of spouses of migrants at home with other sex partners in the absence of their husbands.

### **2.3.1 SIZE ESTIMATION**

The size of the population absent from their usual place of residence for at least six months can be obtained from census data. However, the census data does not provide an accurate estimate of the number of actual labor migrants. This is because people absent from their household for at least six months (during enumeration) are counted as absent, irrespective of their previous migration status.

This report utilizes information on the migrant population gathered from two sources: the 2001 Nepal Population Census and community level research conducted by CARE/FHI in the Far-western region. The 2001 census showed nearly 10 percent of adult men to be residing in India for at least six months at the time it was conducted. Between 0.5 percent of adult males were recorded as being absent from the Kathmandu Valley, and 27.5 percent from the Far-western hill districts.

Nepal's ongoing political instability felt nationwide has increased the number of labor migrants to India. This phenomenon may have inflated the number of migrants recorded in some sites more so than others, in particular, those located along the border with India. In this report, 10 to 15 percent of the adult male population of Kathmandu are assumed to be labor migrants. Similarly, 10 to 20 percent, and 20 to 25 percent of the total male population of the Highway and Remaining district regions respectively, is assumed to be labor migrants. For the Far-western hill districts, 60 to 80 percent of the adult male population are considered to be migrants (CARE/FHI, 2002).

### **2.3.2 HIV PREVALENCE**

The 2003 National Estimate of Adult HIV infection report clearly cited the lack of data on the migrant population. An IBBS among labor migrants in the five districts in the Western sector and six districts in the Far-western sector of Nepal was however later planned. These studies are presently being conducted and results are expected to be available in 2006. In 2005, UNDP-Nepal commissioned a behavioral study among labor migrants which should shed some light on their background, including: place of origin, destination, rate of turnover, socio-demographic characteristics, sexual behavior and STI/HIV prevalence.

---

Conflict-related migration is a relatively new phenomenon in Nepal that forces people to look for opportunities elsewhere. Cross-border migration into India for example, has had a significant effect on the spread of HIV/AIDS in Nepal. A study conducted among 99 labor migrants returning to Doti District from the Indian city of Mumbai, found 10 percent of men to be HIV-positive. In Achham district, HIV prevalence among the general male population was 2.3 percent, whereas this figure was 3.7 percent among international migrants. Among the international migrants, those who return from Mumbai have about eight percent HIV prevalence. The same study found HIV prevalence among internal migrants to be three percent, as compared to 0.7 percent among their non-migrant counterparts (New ERA/SACTS/FHI 2002a). It should be noted that all these studies were conducted in some small geographical areas and therefore lack the power of generalizing to wider areas.

In 2003 FHI-Nepal and FHI-India conducted a rapid qualitative study among Nepali migrants in Mumbai, and found that of those interviewed, 120 had migrated primarily from two clusters. Achham, Doti, Kailali, Surkhet and Kaski districts represented one cluster, and the other included the Nawalparasi, Palpa and Syangja districts. Men from Bajhang district in Far-western Nepal often sought work in Bangalore, India while men from neighboring Doti and Achham districts, often head to Mumbai.

A study conducted in the 1990s in eleven districts of the Mid and Far-western regions of Nepal, estimates that 15 percent of the population migrated seasonally. Among the migrants, 49 percent of the male, and 40 percent of the female migrants, reported to be having extra-marital or pre-marital sexual relations (Subedi, Gurubacharya and Thapa, 1994).

## 2.4 INJECTING DRUG USERS

People who inject themselves with various types of drugs into their veins or muscles are defined as injecting drug users (IDUs). While the consumption of cannabis (marijuana) in Nepal has been around for centuries, and continues to play a role in the lives of many societal sectors, the practice of injecting substances into the body however is a recent phenomenon. Heroin, commonly known as “brown sugar,” came into Nepal in the mid-1960s and was either smoked or chased (UNAIDS and UNODCCP, 2000 as reported in NCASC, 2003). By the 1990s, the introduction of Buprenorphine brought a significant shift in the drug-use culture, with injection emerging as a main method of drug administration. Since Buprenorphine, also known as Tidigesic, was cheaper than heroin and readily available in injectable form, it quickly replaced heroin as the leading drug (UNAIDS/ UNODCCP, 2000).

---

## 2.4.1 SIZE ESTIMATION

Estimating the number of IDU's in Nepal is a difficult task because of the lack of credible data. Estimates released in the 1990s ranged from 2500 to 4000 nationwide, 2000 of which were said to be present in the Kathmandu Valley (Crofts, 1998), and 1200 in Pokhara (Dixon 1999). Later in the same decade, higher estimations of IDUs were recorded across several towns. For example, the estimated number of IDUs in Kathmandu valley climbed to a range of 15,000 to 20,000 (Furber et al., 2002). In 2001, the National Center for STD and AIDS Prevention (NCASC) estimated the total number of IDUs in Nepal to be between 40,000 and 50,000 (UNAIDS/WHO, 2000). However, none of the above mentioned estimates were based on scientific studies or estimation methods.

A focused ethnographic study carried out by CREHPA and New ERA in Kathmandu, Pokhara and Eastern Terai towns in 2001, estimated between 4000 and 5000, 600 and 2,300 IDUs to be located in these respective areas. In 2004, CREHPA conducted a similar study and estimated the IDU population in the 22 Terai districts to be between 3,500 and 4,000. CREHPA also conducted a study in 2002 and 2004 on the number of female IDUs in the 22 Terai districts, the Kathmandu Valley and Pokhara, and found that there were only about 200 IDUs total (CREHPA/FHI, 2004 and 2002). For the purpose of the present estimation however, 16,500 to 23,200 IDUs are calculated in Nepal for 2005 based on the studies conducted by CREHPA, 2002 and New ERA, 2004. Estimates made by New ERA and CREHPA have used a kind of modified enumeration method. This includes listing out all "locations" in the study area; enumeration (verification by triangulation) of the target population through members of the target population and people who have direct/indirect contacts with them; adjustment for hidden population; consensus among program, research and community people; and approval by government body after consensus among technical group.

**Table 2: Estimated number of injecting drug users**

Location	Estimated number of IDUs	Year	Estimated by
Kathmandu Valley	4000-5000	2001	CREHPA/New ERA
Pokhara	600	2002	CREHPA/New ERA
Jhapa -Morang -Sunsari	2300	2002	CREHPA/New ERA
18 terai districts (Saptari Kanchanpur)	1200-1700	2004	CREHPA
26 Highway districts	8,000-11,000	2005	CREHPA/New ERA

*Note: The figures are rounded off to the nearest 100.*

## 2.4.2 HIV PREVALENCE

Until 1995, HIV prevalence among male IDUs in Nepal was less than two percent (NCASC, 1999). This figure substantially increased to 40 percent in 1999 (Karki, 2000). In Kathmandu, HIV prevalence was 1.57 percent in 1991 and 2.56 percent in 1992 (Crofts, 1998). The percentage suddenly climbed to 50 percent in 1999 (NCASC, 1999), and later 68 percent by 2002 (New ERA/ SACTS/FHI, 2002). In a 2005 study carried out by ERA/SACTS/FHI in the Kathmandu Valley, HIV prevalence among male IDUs was 51.6 percent, while in 2002 a study of 57 female IDUs found that about 16 percent of them were HIV positive.

The prevalence of HIV among IDUs in Pokhara is also high. In the early 1990s, HIV prevalence among IDUs was nil (zero). In 2003, FHI commissioned an IBBS to be carried out among a sample of 300 male IDUs in Pokhara. HIV prevalence here was found to have increased to 22 percent. A second round of IBBS conducted in 2005 among male IDUs in Pokhara showed HIV prevalence to be 21.7 percent. Similarly, the first round of the IBBS carried out among male IDUs in the Eastern Terai districts in 2003 showed HIV prevalence to be 35.1 percent (New ERA and FHI, 2003), while in 2005, the IBBS conducted showed HIV prevalence to be 31.6 percent.

The first IBBS among male IDUs in the seven Western to Far-western Terai districts (Rupandehi to Kanchanpur) was conducted in 2005, and showed HIV prevalence to be 11.7 percent (New ERA and SACTS, 2005). Blood tests conducted among 90 IDUs in the VCT center of ADRA in Kavre district (from May 15, 2003 to October 30, 2004) showed that 46 percent were infected with HIV. Similarly, blood tests

among 313 IDUs from the VCT center of AMDA in Jhapa district showed 31 (10 %) to be HIV positive.

It must be noted however, that the results from the VCT centers cannot be applied to the general IDU population (ADRA/CREHPA, 2005). It was reported that the high prevalence rate among IDUs at the ADRA VCT center was due to the voluntary HIV tests sought by several IDUs residing in Kathmandu and Bhakatapur who had already tested positive after undergoing HIV tests at other clinics. They had visited ADRA VCT in order to reconfirm their HIV status (ADRA/CREHPA, 2005).

Studies have shown that IDUs have diverse networks with widespread sharing of unclean needles, and risky sexual activity patterns within and outside their groups (CREHPA and FHI, 2002). This suggests that IDUs' involvement in spreading HIV into the general population is contingent upon their sexual, as well as needle-sharing behaviors.

**Table 3: HIV prevalence among injecting drug users**

Location	Survey Year	HIV prevalence (%)	Reference
National (11 towns)	1999	40	Karki, 2000
Kathmandu	1991	2	NCASC
Kathmandu	1992	3	NCASC
Kathmandu	1999	50	Karki, 2000
Kathmandu	2002	68	FHI, New ERA, SACTS
Kathmandu	2005	52	New ERA, SACTS
Pokhara	1992	Nil	NCASC
Pokhara	2003	22	FHI, New ERA, SACTS
Pokhara	2005	22	New ERA, SACTS 2005
Eastern terai	2003	35	FHI, New ERA, SACTS
Eastern terai	2005	32	FHI, New ERA, SACTS
Western terai	2005	12	New ERA, SACTS 2005

---

## 2.5 MEN HAVING SEX WITH MEN

Two groups have been identified under the men having sex with men sub-group: male sex workers who sell sex to men, and those who have sex with men but do not sell sex. Community-based research conducted in other South Asian countries provides ample evidence of the pervasiveness of male-to-male sexual practices taking place, however in Nepal this remains largely unexplored (NAZ Foundation, 2000). Thus, information regarding the social, cultural and behavioral dynamics of male homosexuals (or the MSM) community in Nepal is extremely limited. This presents a significant barrier to the development of any understanding of the possible relationship between male homosexual activity, and the transmission of HIV and other STDs. The Blue Diamond Society (BDS), the only NGO working with MSM in Nepal, has classified them into seven categories. These are: Meta, Ta, MSW-Meta, MSW-Ta, Transvestites (cross dressed), hijara and Dohari or 'double-deckers.'

### 2.5.1 SIZE ESTIMATION

In 2005, CREHPA/BDS/SACTS/FHI carried out the first ever population size estimate study and IBBS among MSM in Kathmandu. The study provided valuable data on this community; however similar studies need to take place elsewhere in the country. In Nepal, socio-cultural pressures and the stigma attached to male homosexuality (or MSM) compel males to lead a heterosexual lifestyle. As a result, much of the sexual behavioral practices among male homosexuals (or men who engage in sex with other men) are highly discreet. Homosexuality in general is invisible in mainstream Nepali culture. Under this social construct, MSM form a heterogeneous population compounding the prevalent impression that MSM are a marginal minority in Nepal. Almost all male-to-male sexual activity is conducted in an atmosphere of guilt and denial.

In 2003, a social mapping and size estimation study of MSM was carried out by CREHPA for the first time in the three municipalities (Kathmandu, Lalitpur and Kirtipur) of Kathmandu valley. The estimated number of MSM ranged between 6,000 and 8000 at the maximum (CREHPA/BDS/FHI, 2004). CREHPA also estimated the MSM population of the seven categories previously listed. These are as follows:

- Ta - between 4,941 and 6,292;
- Meta - between 732 and 973;
- MSW-Meta - between 148 and 179;

- 
- Dohari - between 96 and 147;
  - MSW-ta - between 68 and 73;
  - Transvestites - between 54 and 65; and
  - Hijara - 8.

These estimates differ from the figures gathered in the BDS, which claims that their peer outreach-workers have listed thousands of MSM (more than 20,000) in the Kathmandu valley alone.

In 2004, CREHPA/BDS/SACTS/FHI incorporated the “capture/recapture” method in their study to estimate the number of MSM in Kathmandu, where low estimates resulted. Among the inconspicuous MSM community, this method proved rather ineffective. Furthermore, in estimating this population, program coverage data obtained from an IBBS conducted among MSM, and program reporting data from BDS, was also used. Together, these estimates provide enough evidence to support the assumption that between one and three percent of the adult male population in Kathmandu are MSM.

Considering the large number of MSM present in the Kathmandu valley, there is no telling what percentage is located in the rest of the country. As in the 2003 national estimates report, the size of the MSM population outside the Kathmandu valley has been estimated to also be between one and three percent of the adult population. This was based on the Kathmandu experience, and data gathered from other Asian countries (the UNAIDS/WHO estimates that about 2% - 5% of adult male population practice MSM behavior).

## **2.5.2 HIV PREVALENCE**

MSM in Nepal are a group at risk of contracting HIV and other STIs, and are likely to bridge the infection to other people. This is because of the high-risk of infection associated with anal sex and the diverse sexual networks that exist in some MSM. In 2001, FHI-Nepal conducted a rapid ethnographic study on the sexual health of the MSM community in Kathmandu. The study found that among MSM, there was a high prevalence of unprotected anal sex and frequent changes in male partners and to some extent female partners too. There was also a low level of awareness on HIV/AIDS/STIs, safer sex and condom use (Boyce, 2001). Based on this information, the assumption was made that HIV prevalence among MSM was high. In 2005, the first ever IBBS study among 358 MSM in the Kathmandu Valley was carried out, resulting in an HIV prevalence of 3.9 percent (CREHPA/BDS/SACTS/FHI, 2005).

---

Currently there is no information on HIV prevalence among the MSM subpopulation outside the Kathmandu Valley. HIV infection levels among MSM in the Southeast Asian region however vary widely. For example, HIV prevalence among MSM in Indonesia is reported to be as low as 0.11 percent in Indonesia; 6.5 percent in Chennai, India; and between 1 to 7 percent in China (Vivian 2004; AIDS Education and Prevention, 2004; PRB, 2005). For the purposes of this estimation exercise, the levels of HIV infection among MSM outside Kathmandu valley was assumed between 0.5 to 2.5 percent depending on the epidemic zones of the country.

## **2.6 GENERAL FEMALE POPULATION**

As of November 2005, 13.5 percent of the 5,564 HIV cases reported to NCASC were housewives (NCASC, 2005). This indicates that HIV is also spreading to “low-risk” women. It is more than likely that they contracted the virus from their husbands who were earlier infected through casual sex (including with FSWs) or drug-injecting partners. In Kavre and Jhapa districts, a high HIV prevalence of 10 and 20 percent respectively was found among housewives who used VCT services provided by ADRA and AMDA. The high prevalence of HIV among housewives could be attributed to the fact that their husbands were HIV symptomatic, and had utilized VCT services to determine their status (ADRA/CREHPA, 2005). Between the period of 1993 and 1999, the HSS among ANC attendees in different locations of the country showed HIV prevalence to be between 0.2 and 0.3 percent respectively (NCASC, 1992 and 1999). A later study conducted in 2002 among 300 pregnant women in Pokhara, found that 0.2 percent of the women were infected with HIV.

## **2.7 MOTHER TO CHILD TRANSMISSION**

While providing estimates on the number of HIV-infected children in Nepal is beyond the scope of this report, an effort was made to review existing information on this issue. Mother-to-child transmission is believed to be the largest source of HIV infection in children in Nepal. Out of an estimated 900,000 pregnancies in a year, 1,800 pregnancies are suspected to occur in HIV-positive women (based on 0.2 percent of HIV prevalence among pregnant women) suggesting that between 450 and 810 infected infants are born annually (NCASC, 2005). According to WHO, 25 percent of HIV-infected pregnant women will transmit HIV infection to their infants. About five percent of the transmissions will take place in utero during gestation, 15 percent around the delivery period, and 10 percent in the postnatal period primarily due to breast-feeding (WHO, 2001). Realizing the growing need to start Prevention

---

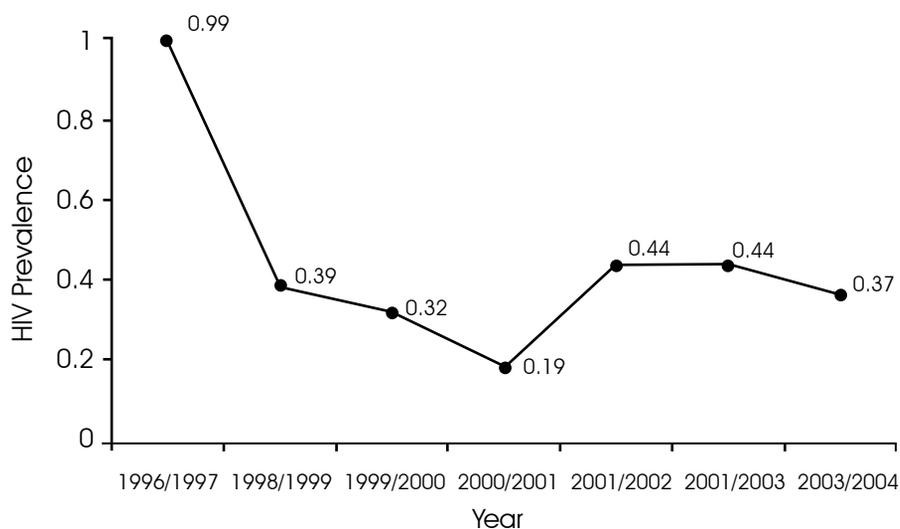
of Mother to Child Transmission (PMTCT) in Nepal. NCASC in 2005, launched “comprehensive PMTCT services” at four major hospitals in Kathmandu, Dharan, Pokhara and Nepalgunj.

In late 2005, UNAIDS/WHO estimated that 1,700 children below the age of 15 in Nepal were living with HIV/AIDS, of which 600 infections were identified in that same year (UNAIDS/WHO, 2005).

## 2.8 HIV PREVALENCE AMONG BLOOD DONORS

In Nepal, the screening of all blood donations was initiated in 1992. Two years later, the Nepal Red Cross Society began screening blood sources used in government health facilities. According to the National Policy on AIDS Control (1995), all donated blood must be screened for HIV, HBsAg, HCV and syphilis before transfusion. NRCS has estimated that HIV prevalence among blood donors ranged from 0.99 percent in 1996 to about 0.37 percent in 2003 (Central Blood Bank/NRCS, 1999; 2005).

**Fig 2: HIV prevalence among blood donors**



Source: Central Blood Bank, NRCS Kathmandu.

## 2.9 HIV PREVALENCE AMONG TUBERCULOSIS PATIENTS

TB is the most common co-infection among HIV-infected people, with reports showing that 75 percent of AIDS infections have TB. Since 1993, the National TB Program (NTP) has carried out four HIV prevalence

---

surveys (1993, 1996, 1999, and 2001) among TB patients and found zero prevalence in a sample of 300 patients taken in 1993 which increased to 2.4 percent in a sample of 1023 in 2001. The surveys also indicated that 84 percent of HIV/TB co-infections occurred in men between the ages of 25 and 55 (NTP, 2002). In 2001, another study conducted by the Nepal Tuberculosis Center and Tribhuvan University's Tansen Mission hospital showed an HIV prevalence of 10.8 percent among a sample of 260 TB patients.

### 3. ESTIMATES OF HIV INFECTIONS

---

Over the years, efforts have been made to estimate the total number of HIV infections in Nepal. As early as 1997, NCASC staff and five national sentinel surveillance coordinators, along with the help of foreign experts, estimated 15,000 people to be infected with HIV, and projected about 1,000 AIDS cases and deaths by the year 2000 (Shrestha, Burathoki and Mugrditchian, 1998). The estimation was based on the limited data available at that time.

UNAIDS/WHO has also been a good source for obtaining regular estimates and projections of HIV/AIDS in Nepal. By the end of 1999, they had estimated a total of 34,000 people to be living with HIV/AIDS (PLHA) (UNAIDS and WHO, 2000). According to UNAIDS/WHO 2003 estimates, the total adult population between the ages of 15 and 49 living with HIV was 60,000 (UNAIDS, 2004). Similar figures were obtained by NCASC/FHI in 2003 with 60,283 adult HIV infections nationally (NCASC/FHI, 2003). In this report, NCASC/FHI placed international migrants and their spouses, and MSM separately in the first estimation process, taking into consideration the fact that these sub-groups (of the total adult population) were the highest contributors to the HIV epidemic in Nepal.

The data and methods used in the 2005 estimation were similar to those employed in 2003. Only few modifications were made on the assumptions and calculations due to the latest data and other relevant information available on Nepal.

#### 3.1 DESCRIPTION OF HIV EPIDEMIC ZONES

Nepal is administratively divided into five development regions, 14 zones and 75 districts. The country has three ecological zones, namely mountain, hill and terai (flat-lands). The distribution of at-risk populations and HIV prevalence is not uniform within a particular administrative or ecological region, but rather associated with the extension of highways, mobility status and urbanization.

Access to the different districts via roadways differs significantly in Nepal, and there is great diversity with regards to how accessible these roads are. The Mahendra highway is the main highway that originates in Kakarvitta, a town at the Indo-Nepal border, and runs along the North Indian border ending at Kanchanpur, in Far-western Nepal. Equally, the other major highways are the Kathmandu-Narayanghat, Kathmandu-Pokhara, Pokhara-Butwal and Pokhara-Baglung, Kathmandu-Tatopani and Jiri highways, that experience a significant amount of traffic.

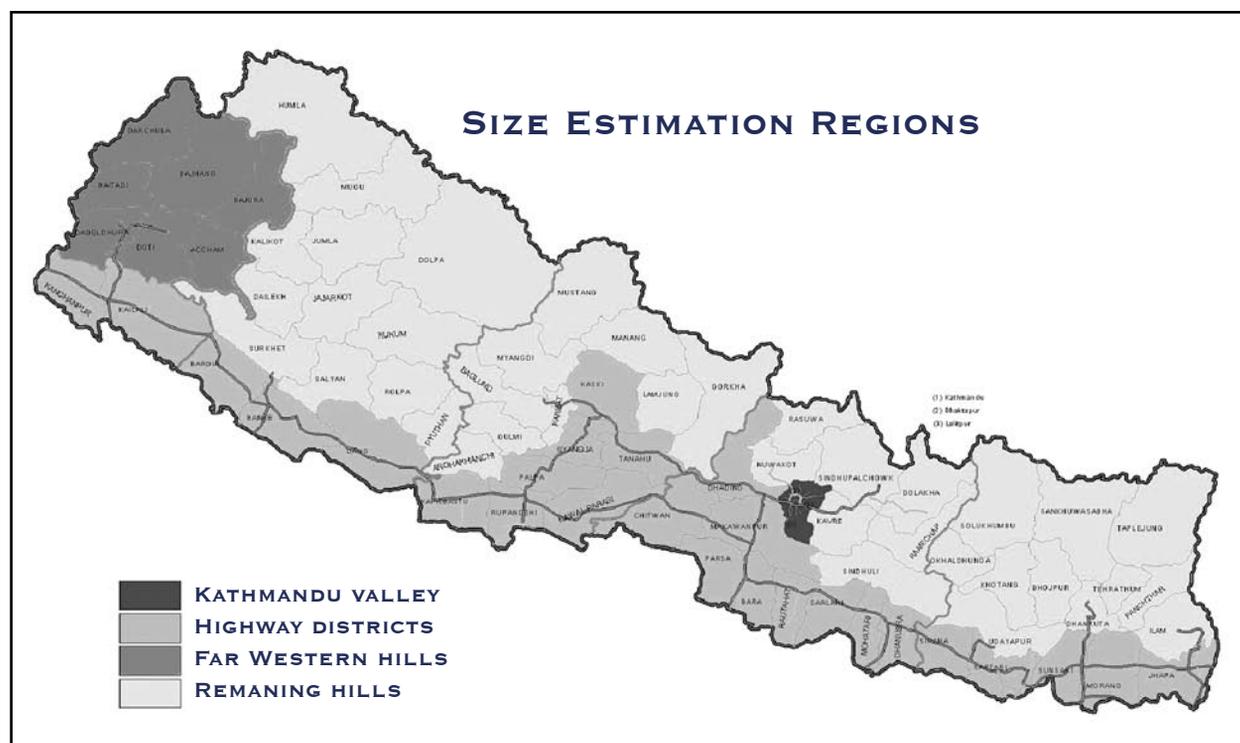
As in the 2003 estimation, the distribution of at-risk populations and HIV prevalence in the country was divided into four epidemic regions (Table 4 & Fig. 3). During the 2005 estimation, the need to redefine

these zones was observed. In the end they were left untouched due to the need to add continuity to the original study, and to fill in the gaps from previous estimates.

**Table 4: HIV infections estimation regions and district names**

Epidemic regions	Number, location and name of districts
Kathmandu valley	3 districts in the Kathmandu valley (Kathmandu, Lalitpur, Bhaktapur)
Highway districts	26 districts along Mahendra, Prithvi and Pokhara-Butwal highway (Jhapa, Morang, Sunsari, Saptari, Siraha, Dhanusha, Mahottari, Sarlahi, Rautahat, Bara, Parsa, Chitwan, Dhading, Makawanpur, Syanja, Kaski, Palpa, Rupendehi, Kapilbastu, Dang, Banke, Bardiya, Kailali, Kanchanpur, Tanahu, Nawalparasi.
Far-western hill	7 hill districts of the Far-western development region (Bajura, Bajhang, Accham, Doti, Dadeldhura, Baitadi, Darchula)
Remaining districts	39 districts (Taplejung, Panchthar, Ilam, Dhankuta, Tehrathum, Sankhuwasabha, Bhojpur, Solukhumbu, Okhaldunga, Khotang, Udayapur, Sindhuli, Ramechhap, Dolkha, Sindhupalchowk, Kaverpalanchok, Nuwakot, Rasuwa, Gorkha, Lamjung, Manang, Mustang, Myagdi, Parbat, Baglung, Gulmi, Arghakhanchi, Puthan, Rolpa, Rukum, Salyan, Surkhet, Dailekh, Jajarkot, Dolpa, Jumla, Kalikot, Mugu, Humla )

**Fig 3: Size estimation regions**



---

## 3.2 CLASSIFICATION OF SUBPOPULATIONS AT HIGHER AND LOWER RISK

Similar to the 2003 estimation, the sub-populations are broadly categorized into “high-risk,” and “low-risk” groups. The high-risk groups include: IDUs, FSWs, Clients of FSWs, seasonal labor migrants, and MSM. In general, women (excluding active FSWs) and non-migrant men (excluding clients of FSWs) were classified as low-risk groups. Different categories of population have different levels of risk behavior and HIV prevalence. Taking these diverse groups into account, the following classification was created for the estimation.

### Populations at higher risk

- Injecting drug users (IDUs)
- Female sex workers (FSWs)
- Clients of FSWs including Seasonal labor migrants
- Men having sex with men (MSM)

### Low-risk women

- Urban low-risk female population
- Rural low-risk female population

## 3.3 REGIONAL AND NATIONAL ESTIMATES OF ADULT HIV INFECTIONS

Estimates of adult HIV infections throughout 2005 have been derived for each of the four epidemic regions. The average number and proportion of adult HIV infections (or number of PLHA) for the sub-populations in the epidemic regions used in the estimation model are presented in the following sections. Details of these estimates are found in Annex 2 of this report. A range of HIV infections are estimated based on the utilization of minimum and maximum estimates of the size of the population exposed to the risk of HIV, and the prevalence of HIV in those groups. The minimum size of the at-risk population, and the minimum prevalence of HIV, produces the lowest estimate of HIV infections. Similarly, the maximum group size, and maximum group prevalence produces the highest estimates.

### 3.3.1 ESTIMATES OF ADULT HIV INFECTIONS FOR KATHMANDU VALLEY

The number of adult HIV infections for Kathmandu averaged 12,000, with an estimated range between 5,000 and 20,000. As in 2003, the clients of sex workers, and IDUs, were identified as those most responsible for spreading HIV in the Kathmandu valley. Of the total HIV infections in the Kathmandu valley, more than two-fifths are clients of sex workers, while a quarter are IDUs (refer to Table 5).

Key assumptions made for calculating the size and prevalence of HIV among the sub-groups population in the Kathmandu valley can be found in Annex 1.

**Table 5: Estimates of adult HIV infections in the Kathmandu valley, 2005**

Population groups	Size Estimates		HIV Prevalence		Average PLHA	
	Min	Max	Min (%)	Max (%)	N	% of total PLHA
IDU	5,000	6,500	47.00	57.00	2,990	24.9
MSM	7,000	20,000	3.50	5.00	574	4.8
Female sex workers	7,000	8,000	2.00	15.00	638	5.3
Clients of sex workers	175,000	200,000	0.67	5.00	5,316	44.2
Seasonal labor migrants	58,000	86,000	1.23	2.57	1,368	11.4
Urban female low-risk population	338,427	339,024	0.10	0.30	677	5.6
Rural female low-risk population	228,589	228,992	0.10	0.30	458	3.8
<b>Total</b>					<b>12,021</b>	<b>100.0</b>

### 3.3.2 ESTIMATES OF ADULT HIV INFECTIONS FOR HIGHWAY DISTRICTS

No change was observed in adult HIV-infection infections in the highway district between 2003 and 2005. In 2005 it was estimated that over 30,000 adult populations were infected with HIV in the 26 Highway districts of the country. The estimate ranged between 11,000 and 56,000 adult HIV infections. The broad range of estimates may have been due to the wide variations of estimates of HIV prevalence. Seasonal labor migrants who are clients of FSWs abroad account for the largest proportion of HIV

infections in this region. Clients of FSWs and rural women are two other important sub-populations contributing to the total number of HIV infections in this area, each sharing a little more than one-fifth of HIV infections in this region.

Key assumptions made for calculating the size and prevalence of HIV among the sub-groups population in the Highway districts can also be found in Annex 1.

**Table 6: Estimates of adult HIV infections in the Highway districts, 2005**

Population groups	Size estimates		HIV Prevalence		Average PLHA	
	Low	High	Low (%)	High (%)	N	% of total PLHA
IDU	10,000	14,000	12.00	42.00	3,240	10.8
MSM	36,000	109,000	1.75	2.50	1,541	5.1
Female sex workers	14,000	18,000	1.00	3.00	320	1.1
Clients of female sex workers	291,000	375,000	1.20	2.70	6,494	21.6
Seasonal labor migrant	364,000	729,000	0.60	3.50	11,203	37.3
Urban female low-risk population	501,364	501,917	0.10	0.30	1,003	3.3
Rural female low-risk population	3,124,111	3,127,558	0.10	0.30	6,252	20.8
<b>Total</b>					<b>30,053</b>	<b>100.0</b>

### 3.3.3 ESTIMATES OF ADULT HIV INFECTIONS IN THE FAR-WESTERN HILL DISTRICTS

Seven hill districts from the Far-western development region are included in this area, and it was estimated that over 15,000 adults in this region are infected with HIV. The estimate ranged between 4,000 and 23,000 adult HIV infections. This figure is roughly 1,000 more than that estimated in 2003. No change was found in the sharing of infections between the various risk groups in this area between 2003 and 2005. As expected, seasonal labor migration is the primary factor driving the HIV epidemic in this region. Seasonal labor migrants account for about 80 percent of the estimated adult HIV-infection infections. The rural female population accounts for 14 percent of the total adult HIV infections.

Key assumptions made for calculating the size and prevalence of HIV among the sub-groups population in the Far-western hill districts are in Annex 1.

**Table 7: Estimates of adult HIV infections in the Far-western hill districts, 2005**

Far-West hills	Size estimates		HIV prevalence		Average PLHA	
	Low	High	Low (%)	High (%)	N	% of total PLHA
IDU	700	1,100	10.00	15.00	113	0.7
MSM	3000	9,000	1.75	2.50	128	0.8
Sex workers	1,400	2,100	3.00	5.00	70	0.5
Clients of sex workers	32,000	48,000	1.50	2.50	800	5.2
Seasonal labor migrant	180,000	240,000	3.70	7.70	11,970	78.5
Urban female low-risk population	14,618	14,652	0.10	0.30	29	0.2
Rural female low-risk population	283,792	284,457	0.50	1.00	2,131	14.1
<b>Total</b>					<b>15,241</b>	<b>100.0</b>

### 3.3.4 ESTIMATES OF ADULT HIV INFECTIONS FOR REMAINING DISTRICTS

Of the four epidemic regions created, the “Remaining districts” region is the largest in terms of population and area coverage. Despite its size, there are relatively few HIV infections due to the low numbers of high, at-risk populations such as IDUs and FSWs, and generally low HIV prevalence among almost all sub-populations. In 2005, there were 13,000 estimated adult HIV infections, compared to 10,000 in 2003. On average, the number of HIV infections ranged between 7,000 and 20,000. Seasonal labor migrants account for 60 percent of the total HIV infections, while rural women comprise a little more than 25 percent of the infections. There were no changes in the pattern of HIV infections between 2003 and 2005 (see Table 8 below).

Key assumptions made for calculating the size and prevalence of HIV among the sub-groups population in the remaining hill districts are in Annex 1.

**Table 8: Regional estimates of adult HIV infections: Remaining districts, 2005**

Remaining districts	Size estimates		HIV Prevalence		Average PLHA	
	Low	High	Low	High	N	% of total PLHA
IDU	800	1,600	10.00	15.00	150	1.2
MSM	18,000	55,000	0.50	1.00	274	2.1
Sex workers	3000	6000	1.00	3.00	90	0.7
Clients of sex workers	66,000	131,000	0.50	1.50	985	7.6
Seasonal labor migrants	361,000	451,000	1.23	2.57	7,800	60.3
Urban female low-risk population	88,375	88,521	0.10	0.30	177	1.4
Rural female low-risk population	1,731,158	1,734,012	0.10	0.30	3,465	26.7
<b>Total</b>					<b>12,941</b>	<b>100.0</b>

### 3.3.5 NATIONAL ESTIMATES OF ADULT HIV INFECTIONS

The national estimate of adult HIV infections, which is the sum of regional estimates, rose from 60,000 in 2003 to 70,000 in 2005. While the estimated number of adult HIV infections in the different regions ranged from 32,000 to 119,000, the 26 Highway districts and the Far-western hill region accounted for more than 40 and 20 percent of the infections, respectively. 18 percent of the adult HIV infections were in the remaining district, followed by 17 percent in the Kathmandu Valley.

**Table 9: National estimates of adult HIV infections, 2005**

Regions	Low-Low	Low-High	High-Low	High-High	Average	% of Total infections
Kathmandu valley	5,188	16,193	6,882	19,819	12,021	17.1
Highway districts	11,271	36,993	16,272	55,674	30,053	42.8
Far-western hills	8,739	17,792	11,368	23,064	15,241	21.7
Remaining districts	6,839	16,220	8,581	20,122	12,941	18.4
Total	32,037	87,198	43,103	1,18,679	70,256	100.0

Note:

Low-low = low size - Low prevalence;

Low-High = Low size - High prevalence

High-low = High size - Low prevalence;

High-High = High size - High prevalence

Table 10 categorizes adult HIV infections into high-risk and low-risk populations. 80 percent of the infections occur in high-risk groups such as IDUs, MSM, FSWs and their clients, and seasonal labor migrants. The remaining 20 percent of HIV infections are women in rural or urban areas, which indicates that HIV infection is slowly spreading to low-risk populations.

**Table 10: National estimates of adult HIV infections by sub-populations, 2005**

Population at higher risk	Kathmandu valley	Highway districts	Far-Western hills	Remaining districts	Total	% of Total infections
IDU	2,990	3,240	113	150	6,493	9.2
MSM	574	1,541	128	274	2,517	3.6
Sex workers	638	320	70	90	1,118	1.6
Clients of sex workers	5,316	6,494	800	985	13,594	19.3
Seasonal labor migrants	1,368	11,203	11,970	7,800	32,341	46.1
<b>Sub-total</b>						<b>79.8</b>
<b>Population at lower-risk</b>						
Urban female low-risk population	677	1,003	29	177	1,886	2.7
Rural female low-risk population	458	6,252	2,131	3,465	12,305	17.5
<b>Sub-total</b>						<b>20.2</b>
<b>Total</b>	<b>12,021</b>	<b>30,053</b>	<b>15,241</b>	<b>12,941</b>	<b>70,256</b>	<b>100.0</b>

Table 11 presents the major indicators of the HIV epidemic. HIV prevalence among the adult population is less than one percent (0.55 percent), and women are becoming increasingly vulnerable, comprising more than 20 percent of HIV infections. On average, HIV prevalence among high-risk groups is less than 5 percent except among IDUs. HIV prevalence among this group is 33 percent, a slight drop from 38 percent in 2003.

**Table 11: Comparison of summary of indicators between the year 2003 and 2005**

<b>Major indicators</b>	<b>Estimated number/ percentage in 2003</b>	<b>Estimated number/ percentage in 2005</b>
Number of adults (15-49 years) PLHA	60,283	70,256
Adult prevalence (15-49 years)	0.52	0.55
Number of women (15-49 years) PLHA	15,559	15,310
% of adult (15-49 years) who are women	25.90	21.80
% of total population (15-49 years) who are IDUs	0.20	0.16
% of men (15-49 years) who are MSM	2.00	2.03
% of women (15-49 years) who are sex workers	0.40	0.47
% of men (15-49 years) clients of female sex workers	8.90	10.39
PLR to PHR ratio	0.32	0.25
HIV prevalence rate (%) in IDUs	38.40	32.71
HIV prevalence rate (%) in MSM	0.80	1.96
HIV prevalence rate (%) in sex workers	4.20	3.76
HIV prevalence rate (%) in clients of sex workers	2.10	2.06

## 4. SUMMARY AND CONCLUSIONS

---

In Nepal, no major change was observed in the patterns and scenarios of HIV infections during the period between 2003 and 2005. Much like the 2003 report, the HIV situation in 2005 is still characterized by the high prevalence present among the various sub-groups listed who engage in risky sexual activities. On average, it was estimated that over 70,000 people are living with HIV/AIDS – one fifth of which are women – compared to 60,000 in 2003. This upward trend in the numbers of HIV infections and at-risk populations demonstrate that unless effective interventions are immediately implemented, these numbers will grow significantly.

Currently, the overall HIV prevalence rate in the adult population aged 15 to 49 is 0.55 percent, and the potential for HIV to quickly spread from high-risk groups to the general population is very real, if not already taking place. The types of interventions targeted at these groups will determine the extent to which these high-risk groups will become infected and continue to spread HIV into the general population. Thus, national programs that target sex workers and their clients, men who have sex with men, and injecting drug users, should be expanded to reach a greater coverage. Similarly, activities targeting labor migrants and their families should be scaled up and concentrate on mostly migration prone areas around the country.

The current estimation has major limitations. These need to be kept in mind when interpreting the results. While new information on HIV was available for a number of risk groups in various locations compared to 2003, there is still a considerable amount of unavailable data. Specifically, size estimation and HIV prevalence data among MSM outside the Kathmandu valley is not available. Reliable data are lacking on the size and prevalence of HIV among seasonal migrants as well. Moreover, scientific population size estimations of IDUs, FSWs, MSM, and seasonal labor migrants are not available in the Remaining districts. Scientific studies on the size and risk behaviors of large groups such as labor migrants, clients of sex workers and MSM in all epidemic zones are essential.

An HIV Sentinel Surveillance (HSS) among antenatal clinic (ANC) attendees has yet to be carried out, but should provide valuable data for the group identified as women at “low-risk.” The HSS on STI patients conducted during the first generation of the surveillance system was limited due to several reasons. HSS/STI protocol for one was not uniformly implemented in all sites, nor during the first few rounds, and HSS conducted during the initial phases included several high-risk groups, but only later focused on STI patients. The number of sentinel sites was also reduced from seven to six.

---

Earlier HSS/STI studies did not include important background characteristics on the patients tested. For example, data were not available by age, sex, marital status or migration characteristics, which can provide valuable insights when estimating the number of HIV infections, and in identifying target groups. Due to the lack of epidemiological or behavioral information required for this estimation exercise, informed induced estimates were made on the basis of information available for similar subpopulations or locations. This of course limits the robustness of the estimates. However, every possible effort was made to obtain best estimates using the data available.

Existing HIV prevalence studies have concentrated on high-risk populations in urban areas, while very little is known about HIV prevalence in rural areas. In Nepal, the HIV epidemic is being fueled through labor migrants who travel to “high-risk” cities like Mumbai, India in search of work. Moreover, because of the high prevalence of HIV among these migrants, the virus is likely to be transmitted to their spouses; a trend noticeable in districts in Far-western Nepal. It is strongly felt that migrant populations need to be categorized further in terms of age, sex, place of origin, and work destination. Likewise, in-country mobile populations (i.e. “floating populations” such as truck drivers, laborers, and businessmen) and cross-border migrants (seasonal and temporary migrants) need to be studied in greater detail. This high-risk group also needs to be properly addressed in the surveillance system. It is expected that the revised NCASC-HSS survey will reduce much of the current information gaps.

## REFERENCES

---

- ADRA and CREHPA (2005). Participatory Evaluation of Nepal Voluntary Counseling Testing Linkage and Referral Project of ADRA Nepal.
- AIDS Education and Prevention (2004). HIV Surveillance, Prevention, Intervention and Treatment in Asia, An Interdisciplinary Journal, Supplement to Volume 16, No. 3.
- Bhatt P, S Thapa, S Neupane, J Beaker and Matt Friedman (1994). Commercial sex workers in Kathmandu valley: Profile and prevalence of sexually transmitted diseases. *Journal of Nepal Medical Association* 32:191-203.
- Bhatt, P. VL. Gurubacharya and G. Vadies (1993). A Unique Community of Family Oriented Prostitutes in Nepal Uninfected By HIV-1. *International journal of STD/AIDS*; 4: 280-283.
- Boyce P. and FHI (2001). A rapid ethnographic study of male-to-male sexual life & sexual health in Kathmandu and Pokhara.
- CARE (2002). People at Risk: Migrants and their Families. Report of HIV/AIDS Rapid Rural Community Assessment in Bajhang and Doti Districts. Kathmandu, Nepal.
- Chin J. (2000). An assessment of the HIV/AIDS situation in Nepal.
- CREHPA/FHI (2005). Size Estimation and Update of FPs along east-west and north-south highways and major towns of Nepal.
- CREHPA/BDS/SACTS/FHI (2004). Integrated Behavioral and Biological Survey among MSM Population in Kathmandu Valley.
- CREHPA/BDS/FHI (2004). Social Mapping and Size Estimation of Men Having Sex with Men in Kathmandu Valley. A rapid assessment and update.
- CREHPA and FHI (2004). Estimations of Sex Workers and Potential Client Sub-Population in Select Major Towns in Terai and Along the East-West Highway Districts: A Rapid Assessment and Update.
- CREHPA and FHI, (2002). A Situational Assessment of Sex Workers and Intravenous Drug Users in Kathmandu Valley. A Focused Ethnographic Study.

---

Crofts N, (1998). Injecting drug use and HIV infection in Asia. *AIDS* 12 (Suppl. B):S87-S91.

Dixon P. (1999). Toward a public health response for preventing the spread of HIV amongst IDUs within Nepal and the development of a treatment rehabilitation and prevention program in Pokhara, *International journal of drug policy* 10: 375-383.

FHI (2003). Draft Report of Implementing AIDS Prevention and Care Project.

Francisco S. Sy, P. Aggleton, D.Holtgrave, MJ.Rotheram-Borus, RO. Valdiserri (2004). HIV Surveillance, Prevention, Intervention, and Treatment in Asia, *An Interdisciplinary journal* Vol 16 (43-47).

Furber, A. JN. Newell and MN. Lubben (2002). A Systematic review of current knowledge of HIV epidemiology and of sexual Behavior in Nepal. *Tropical Medicine and International Health* 7(2): 140-148.

Gurubacharya VL. and J. Shrestha (1997). Bringing HIV home. 4th International Congress on AIDS in Asia and the Pacific, Manila, December 25-29, 1997.

IPEC (2004). HIV/AIDS and working children in Nepal.

Karki, BB (2000). Rapid assessment among drug users in Nepal. *Aids Watch* 5(20): 3-5.

Naz Foundation (2000). *Naz Ki Pukaar*, New Delhi: Shivalok Enterprises.

National TB Program(2002). Annual Report.

NCASC (2005). Cumulative HIV/AIDS Situation of Nepal. Monthly reports on cumulative HIV/AIDS statistics. NCASC, Kathmandu.

NCASC/POLICY (2004). *The Heart of the Matter*, Findings from a study on the Greater Involvement of People with HIV/AIDS in Nepal.

NCASC (2003). National Estimates of Adult HIV Infections in Nepal.

NCASC (2001). Draft report of HSS conducted by NCASC.

---

NCASC/UoH/CREHPA (2001). Behavioral Sentinel Surveillance of Sex Workers in Pokhara.

NCASC (1999). Cumulative HIV/AIDS Situation of Nepal. Monthly reports on cumulative HIV/AIDS statistics.  
NCASC, Kathmandu.

NCASC (1992). Cumulative HIV/AIDS Situation of Nepal. Monthly reports on cumulative HIV/AIDS statistics.  
NCASC, Kathmandu.

New ERA (2005). Draft Report of Population Perspective Plan.

New ERA/SACTS/FHI (2004). IBBS among FSWs and BSS among clients in Kathmandu valley.

New ERA/SACTS/FHI (2004). IBBS among FSWs and BSS among clients in Pokhara valley.

New ERA/SACTS/FHI (2004). STI/HIV prevalence and risk behavioral study among FSW and Truckers along the Terai Highway routes covering 22 districts in Nepal.

New ERA/SACTS/FHI (2002). HIV Behavioral and sero study of injecting drug users in the Kathmandu valley.

New ERA and FHI (2002). Rapid Qualitative Study of Female Sex Workers in Pokhara. A Focused Ethnographic Study.

New ERA/SACTS/FHI (2002a). HIV/STI Prevalence and Risk Factors among Migrant and Non-Migrant Males of Achham District in Far-western Nepal.

New ERA/SACTS/FHI (2002b). HIV/STI Prevalence and Risk Factors among Migrant and Non-Migrant Males of Kailali District in Far-western Nepal.

New ERA and FHI (2002). Behavioral Surveillance in the Highway Routes of Nepal: Round 4.

New ERA and FHI (2001). Behavioral Surveillance in the Highway Routes of Nepal: Round 3.

New ERA/SACTS/FHI (2000). Behavioral Surveillance in the Highway Routes of Nepal: Round 2.

New ERA and FHI (1999). Behavioral Surveillance in the Highway Routes of Nepal: Round 1.

---

NRCS (2005). Blood Transfusion Services, Central Blood Bank, Nepal Red Cross Society, Kathmandu Nepal .

NRCS (2003/04). Annual Progress Report.

PRB (2004). China confronts HIV/AIDS

Puri, M, and Busza, J. (2004). In forests and factories: sexual behavior among young migrant workers in Nepal. *Culture Health and Sexuality*, March-April, 2004 6(2) 145-158.

Puri, M (2002). Sexual Risk Behavior and Risk Perception of Unwanted Pregnancy and Sexually Transmitted Infection among Young Factory Workers in Nepal. CREHPA, Kathmandu.

SACTS and FHI (2001) Kathmandu Female Sex Worker HIV/STI Prevalence study.

Seddon, D. (1998). HIV/AIDS in Nepal: the coming crises. *Bulletin of Concerned Asian Scholars* 30: 35-45.

Shrestha, B., K. Burathoki and D. Mugaritchian (1998). Nepal. In: T. Brown et. al. (Ed). *Sexually Transmitted Diseases in Asia and the Pacific*, Veverology Publishing Inc. Armidale, Australia.

Subedi B.K. (2003). HIV/AIDS in Asia: Overcoming the Challenge. *Journal of Health Management*, Vol. 5(2): 206-212.

Subedi, B.K, VL. Gurubacharya and K. Thapa (1994). Nepal. Seasonal migration and it's relation to HIV transmission in western Nepal. International Conference on AIDS 7-12 Aug 1994 (Abstract no. 192D).

Tamang A, B. Nepal, M. Puri and D. Shrestha (2001). Sexual behavior and risk perception among young men in border towns of Nepal. *Asia-Pacific Population Journal* 16(2): 195-210.

UNAIDS/UNICEF/WHO (2004). Epidemiological fact sheet on HIV and Sexually Transmitted Infections.

UNAIDS (2005). Report on the global AIDS epidemic.

UNAIDS and UNODCCP (2000). Drug Use and HIV Vulnerability, Policy Research study in Asia.

---

UNAIDS and WHO (2000). Nepal: Epidemiological Fact Sheets on HIV/AIDS and Sexually Transmitted Infections – 2004 Update.

Verma R.K, P.J. Pelto, S L.Schensul and A. Joshi (2004). Sexuality in the Time of AIDS. Contemporary Perspectives from Communities in India.

Vivian F.G (2004). High HIV Prevalence and risk behaviors in men who have sex with men in Chennai, India. *Epidemiology and social science*. Vol 35. pp 314-319.

WHO (2003). Regional Strategic Plan on HIV/TB.

WHO (2001). HIV/AIDS in Asia and the Pacific region.

WHO (1999). Men in Nepal ignoring risk from unprotected casual sex, *Social science research policy Briefs, series1, No. 2*. Department of Reproductive Health and Research, WHO, Geneva.

---

## **ANNEXES**

Annex 1. Estimates and assumptions for size and HIV prevalence

	Kathmandu Valley	Highway Districts	Far-western hill districts	Remaining districts
<b>IDUs</b> Population	<b>Estimated Number:</b> 5,000-6,500 <b>Estimation Method:</b> Assumed that only about 80% of the total IDUs in maximum are visible and therefore can be captured by size estimation studies. So the estimated number of IDUs by the size estimation studies conducted by New ERA/CREHPA/FHI is inflated 1.25 times.	<b>Estimated Number:</b> 10,000-14,000 <b>Estimation Method:</b> Estimated for the year 2005 based on size estimation by CREHPA/New ERA/FHI in 22 districts in 2002 to 2004 and informed extrapolation in four districts. Assumed that only about 80% of the total IDUs in maximum are visible and therefore can be captured by size estimation studies. So the estimated number of IDUs population by the size estimation studies is inflated 1.25 times.	<b>Estimated Number:</b> 700-1,100 <b>Estimation Method:</b> about 100-150 IDUs assumed per district (7 districts).	<b>Estimated Number:</b> 800-1,600 <b>Estimation Method:</b> about 20 to 40 IDUs assumed per district (39 districts).
HIV prevalence	<b>HIV Prevalence:</b> 47 % - 57 % <b>Source:</b> IBBS among IDUs, New ERA/SACTS/FHI, 2005.	<b>HIV Prevalence:</b> 12% - 42% <b>Source:</b> IBBS among IDUs, New ERA/SACTS/FHI, 2005.	<b>HIV Prevalence:</b> 10% - 15% <b>Source:</b> Assumption based on IBBS among IDUs conducted by New ERA/SACTS/FHI, 2005 in Western cluster	<b>HIV Prevalence:</b> 10% - 15% <b>Source:</b> Assumption based on IBBS among IDUs conducted by New ERA/SACTS/FHI, 2005 in Western cluster
<b>MSM</b> Population	<b>Estimated Number:</b> 7,000-20,000 <b>Estimation Method:</b> Based on IBBS among MSM, 2004 and process data. This estimated number of MSM in Kathmandu is about 1.2% to 3.5% of the total adult (aged 15-49) male population in Kathmandu.	<b>Estimated Number:</b> 1%-3% of adult (aged 15-49) male population. <b>Estimation Method:</b> based on the experience of other countries similar to Nepal (as in 2003 estimates) and Kathmandu Study.	<b>Estimated Number:</b> 1%-3% of adult (aged 15-49) male population. <b>Estimation Method:</b> based on the experience of other countries similar to Nepal (as in 2003 estimates) and Kathmandu Study.	<b>Estimated Number:</b> 1%-3% of adult (aged 15-49) male population. <b>Estimation Method:</b> based on the experience of other countries similar to Nepal (as in 2003 estimates) and Kathmandu Study.

Annex 1. (contd..)

	<b>Kathmandu Valley</b>	<b>Highway Districts</b>	<b>Far-western hill districts</b>	<b>Remaining districts</b>
HIV prevalence	<b>HIV Prevalence:</b> 3.5%-5.0% <b>Source:</b> Based on IBBS among MSM in Kathmandu (HIV among MSM reached and not reached by BDS program) conducted by CREHPA/SACTS/BDS in 2004)	<b>HIV prevalence:</b> 1.75% - 2.50% <b>Source/assumption:</b> assumed half of HIV prevalence among MSM in Kathmandu	<b>HIV prevalence:</b> 1.75%-2.50% <b>Source/assumption:</b> assumed half of HIV prevalence among MSM in Kathmandu	<b>HIV prevalence:</b> 0.5%-1% <b>Source/assumption:</b> assumed as in the year 2003
<b>FSWs</b> Population	<b>Estimated Number:</b> 7,000-8,000 <b>Estimation Method:</b> Assumed that only about 60% of the total FSWs in maximum are visible and therefore can be captured by size estimation studies. So the estimated number FSWs by the size estimation studies conducted by CREHPA/New ERA/FHI are inflated 1.67 times	<b>Estimated Number:</b> 14,000-18000 <b>Estimation Method:</b> Estimated for the year 2005 based on size estimation by CREHPA/FHI in 23 districts in 2003 to 2005 and informed extrapolation in three districts. Assumed that only about 60% of the total FSWs in maximum are visible and therefore can be captured by size estimation studies. So the estimated number FSWs by the size estimation studies conducted by CREHPA/New ERA/FHI are inflated 1.67 times	<b>Estimated Number:</b> 1400-2100 <b>Estimation method:</b> 200-300 FSWs per district (considering Badis and Devakis in the districts) assumed	<b>Estimated Number:</b> 3,000-6000 <b>Estimation method:</b> 75-150, FSWs per district assumed
HIV prevalence	<b>HIV Prevalence:</b> 2% - 15% <b>Source:</b> IBBS among FSWs, New ERA/ SACTS/FHI,2004 and Sero study among FSWs, SACTS/FHI, 2001	<b>HIV Prevalence:</b> 1% - 3% <b>Source:</b> IBBS among FSWs conducted by New ERA/SACTS/FHI, 2003	<b>HIV Prevalence:</b> 3% - 5% <b>Source:</b> assumed higher than in Terai highway districts due to the existence of Badis and Devakis in this region	<b>HIV Prevalence:</b> 1% -3% <b>Source:</b> assumed same prevalence as in terai highway districts

Annex 1. (contd..)

	Kathmandu Valley	Highway Districts	Far-western hill districts	Remaining districts
<b>Clients</b> Population	<b>Formula used:</b> [No. of FSW × 4.8 clients per week × 52 w]/10 {10 is assumed as the factor to adjust repeated visits} <b>Source:</b> # of clients per week from IBBS among FSWs, New ERA/SACTS/FHI, 2004.	<b>Formula used:</b> [no. of FSW × 4 clients per week × 52 w]/10 {10 is assumed as the factor to adjust repeated visits}. <b>Source:</b> # of clients per week from IBBS among FSWs, New ERA/SACTS/FHI, 2003.	<b>Formula used:</b> [no. of FSW × 4.4 clients per week × 52 w]/10 {10 is assumed as the factor to adjust repeated visits} <b>Source:</b> # of clients per week from IBBS among FSWs in Western to Far Western Terai, New ERA/SACTS/FHI, 2003.	<b>Formula used:</b> [no. of FSW × 4.2 clients per week × 52 w]/10 {10 is assumed as the factor to adjust repeated visits} <b>Source:</b> # of clients per week assumed based on studies conducted in other parts of the country (as in 2003).
HIV prevalence	<b>HIV Prevalence:</b> 0.67% - 5.0% <b>Source:</b> Assumed one-third of HIV prevalence among FSWs in Kathmandu.	<b>HIV Prevalence:</b> 1.2% - 2.7% <b>Source:</b> IBBS among Truckers, New ERA/SACTS/FHI, 1999, 2003 and HSS among STI patients in six sites (NCASC, 2001). Majority of the STI patients are assumed to have sexual contact with sex workers.	<b>HIV Prevalence:</b> 1.50-2.50% <b>Source:</b> half of the prevalence among FSWs - assumed as in 2003	<b>HIV Prevalence:</b> 0.50 - 1.50% <b>Source:</b> half of the prevalence among FSWs - assumed as in 2003
<b>Migrant</b> Population	<b>Estimated Number:</b> 10-15% of adult male population. <b>Estimation Method:</b> Based on the percentage of absentee population calculated from 2001 census data.	<b>Estimated Number:</b> 10%-20% of adult male population <b>Estimation Method:</b> Minimum based on the percentage of absentee population calculated from 2001 census and maximum percentage is assumed high considering the ongoing conflict situation	<b>Estimated Number:</b> 60-80% of adult male population <b>Estimation Method:</b> on the basis of CARE/FHI community assessment data (as in 2003)	<b>Estimated Number:</b> 20%-25% of adult male population <b>Estimation Method:</b> Based on the percentage of absentee population calculated from 2001 census data
HIV prevalence	<b>HIV Prevalence:</b> 1.23% - 2.57%. <b>Source:</b> one-third of the HIV prevalence for migrants in the Far-western Hills	<b>HIV Prevalence:</b> 0.60% - 3.5% <b>Source:</b> IBBS among migrants in Kailali district, 2001 and HSS among STI patients in five HSS sites (excluding Kathmandu), NCASC, 2001. It is assumed that the STI patients visiting the HSS sites are predominantly migrants.	<b>HIV Prevalence:</b> 3.7% - 7.7% <b>Source:</b> IBBS among migrants in Achham district, 2001.	<b>HIV Prevalence:</b> 1.23-2.57 % <b>Estimation Method:</b> one-third of labor migrants from Far-western region- assumed as in 2003

Annex 2. National estimates of Adult HIV infections 2005, Nepal

Names of higher risk population groups	Size Estimate		HIV prevalence		Number of PLHA				Average	% of PLHA in total PLHA
	Low	High	Low	High	Low - Low	Low - High	High - Low	High - High		
<b>Kathmandu valley</b>										
IDU	5,000	6,500	47.00%	57.00%	2,350	2,850	3,055	3,705	2,990	25
MSM	7,000	20,000	3.50%	5.00%	245	350	700	1,000	574	5
Female sex worker	7,000	8,000	2.00%	15.00%	140	1,050	160	1,200	638	5
Male client of FSW	175,000	200,000	0.67%	5.00%	1,173	8,750	1,340	10,000	5,316	44
Seasonal labor migrant	58,000	86,000	1.23%	2.57%	713	1,491	1,058	2,210	1,368	11
Urban female low-risk pop	338,427	339,024	0.10%	0.30%	338	1,015	339	1,017	677	6
Rural female low-risk pop	228,589	228,992	0.10%	0.30%	229	686	229	687	458	4
<b>Total</b>					<b>5,188</b>	<b>16,192</b>	<b>6,881</b>	<b>19,819</b>	<b>12,021</b>	<b>100</b>
<b>Highway districts</b>										
IDU	10,000	14,000	12.00%	42.00%	1,200	4,200	1,680	5,880	3,240	11
MSM	36,000	109,000	1.75%	2.50%	630	900	1,908	2,725	1,541	5
Female sex worker	14,000	18,000	1.00%	3.00%	140	420	180	540	320	1
Male client of FSW	291,000	375,000	1.20%	2.70%	3,492	7,857	4,500	10,125	6,494	22
Seasonal labor migrant	364,000	729,000	0.60%	3.50%	2,184	12,740	4,374	25,515	11,203	37
Urban female low-risk pop	501,364	501,917	0.10%	0.30%	501	1,504	502	1,506	1,003	3
Rural female low-risk pop	3,124,111	3,127,558	0.10%	0.30%	3,124	9,372	3,128	9,383	6,252	21
<b>Total</b>					<b>11,271</b>	<b>36,993</b>	<b>16,272</b>	<b>55,674</b>	<b>30,053</b>	<b>100</b>

<b>Far-western districts</b>												
IDU	700	1,100	10.00%	15.00%	70	105	110	165	113	1		
MSM	3,000	9,000	1.75%	2.50%	53	75	158	225	128	1		
Female sex worker	1,400	2,100	3.00%	5.00%	42	70	63	105	70	0		
Male client of FSW	32,000	48,000	1.50%	2.50%	480	800	720	1,200	800	5		
Seasonal labor migrant	180,000	240,000	3.70%	7.70%	6,660	13,860	8,880	18,480	11,970	79		
Urban female low-risk pop	14,618	14,652	0.10%	0.30%	15	44	15	44	29	0		
Rural female low-risk pop	283,792	284,457	0.50%	1.00%	1,419	2,838	1,422	2,845	2,131	14		
<b>Total</b>					<b>8,739</b>	<b>17,792</b>	<b>11,368</b>	<b>23,064</b>	<b>15,241</b>	<b>100</b>		
<b>Remaining Districts</b>												
IDU	800	1,600	10.00%	15.00%	80	120	160	240	150	1		
MSM	18,000	55,000	0.50%	1.00%	90	180	275	550	274	2		
Female sex worker	3,000	6,000	1.00%	3.00%	30	90	60	180	90	1		
Male client of FSW	66,000	131,000	0.50%	1.50%	330	990	655	1,965	985	8		
Seasonal labor migrant	365,000	456,000	1.23%	2.57%	4,490	9,381	5,609	11,719	7,800	60		
Urban female low-risk pop	88,375	88,521	0.10%	0.30%	88	265	89	266	177	1		
Rural female low-risk pop	1,731,158	1,734,012	0.10%	0.30%	1,731	5,193	1,734	5,202	3,465	27		
<b>Total</b>					<b>6,839</b>	<b>16,219</b>	<b>8,582</b>	<b>20,122</b>	<b>12,941</b>	<b>100</b>		
<b>National</b>												
IDU	16,500	23,200	21.93%	43.49%	3,700	7,275	5,005	9,990	6,493	9		
MSM	64,000	193,000	1.58%	2.34%	1,018	1,505	3,040	4,500	2,517	4		
Female sex worker	25,400	34,100	1.37%	6.14%	352	1,630	463	2,025	1,118	2		
Male client of FSW	564,000	754,000	0.96%	3.16%	5,475	18,397	7,215	23,290	13,595	19		
Seasonal labor migrant	967,000	1,511,000	1.37%	3.85%	14,047	37,471	19,921	57,924	32,341	46		
Urban female low-risk pop	942,784	944,114	0.10%	0.30%	943	2,828	944	2,832	1886	3		
Rural female low-risk pop	5,367,650	5,375,020	0.12%	0.34%	6,503	18,089	6,513	18,116	12306	18		
<b>Total</b>					<b>32,038</b>	<b>87,195</b>	<b>43,101</b>	<b>118,677</b>	<b>70,256</b>	<b>100</b>		