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## HIV risk among female sex workers with different patterns of drug use behaviors in Southwest China: a cross-sectional study

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### Abstract

Although many researchers found that drug use behaviors significantly increased HIV risk, few of them investigated the association between HIV risk and different drug use behaviors among female sex workers (FSW) in China. The current study examines demographic and behavioral risk factors as well as the infections of HIV, syphilis and HCV among a subgroup of FSW who are injection drug users (IDU) or non-injection drug users (NIDU) in comparison to non-drug users (non-DU). We conducted secondary analysis of the 2010 National Sentinel Surveillance (NSS) data from Guangxi China. A self-administered, standard behavioral surveillance survey was completed by a total of 12,622 FSW recruited from Guangxi, China. The Guangxi 2010 NSS sample included 2.6% NIDU and 0.5% IDU. Compared to non-DU, IDU were more likely to report no condom use in the last sex act (aOR=3.25, 95%CI=1.65, 6.40), inconsistent condom use in the past month (aOR=4.88, 95%CI=2.66, 8.96), having an HIV testing (aOR=2.48, 95%CI=1.34, 4.58), infections of HIV (aOR=42.60, 95%CI=9.45, 192.06), syphilis (aOR=4.13, 95%CI=1.86, 9.16), and HCV (aOR=74.54, 95%CI=30.26, 183.61). NIDU had 2.89 times higher than non-drug users to report a history of STD and 26% less likely to report inconsistent condom use in the past month ( $p<0.05$ ). We called for tailored, accessible and non-judgmental drug treatments coupled with effective sexual risk reduction interventions to help FSW with various drug use problems to reduce their vulnerability and susceptibility of HIV risk in China as well as other cultural settings.

### Keywords

drug use; HIV risk; National Sentinel Surveillance; China

## Introduction

Many researchers have suggested that women who were engaging in both commercial sex and drug use are more susceptible to infection of HIV and other sexually transmitted diseases (STD) because of the potentially synchronized effects of sexual risks and drug use behaviors (Lau et al., 2007; Loza et al., 2010; Medhi et al., 2012; Strathdee et al., 2001). For instance, the prevalence of HIV, syphilis and HCV among female sex workers (FSW) who were also drug users was as high as 2.0%, 18.6% and 32.4% respectively in a study conducted in China (Kwong-Lai Poon, Pui-Hing Wong, Sutdhibhasilp, Trung-Thu Ho, & Wong, 2012), which was much higher than that among general population of FSW (0.3%, 2.6%, and 0.8% in 2012, respectively) (Wang et al., 2014; Zhou et al., 2013). In another study conducted among Indian female injection drug users, Azim and colleagues found 60% of women who engaged in sex work had syphilis infection (Azim et al., 2006). Taylor and coworkers found that prevalence of HCV among FSW who were injection drug users in Glasgow was as high as 81% (Taylor et al., 2008).

Existing literature also revealed several possible mechanisms by which FSW drug users (including both injection and non-injection drug users) faced a higher risk of HIV and other STD infection compared to their non-drug using peers. First, as drugs are often expensive, FSW drug users usually face tremendous economic pressure to support such a habit (Choi, Cheung, & Chen, 2006). Under the unavoidable economic burden, FSW with problems of drug use are more likely to accept clients with a high risk of HIV infection or transmission (e.g., under influence of alcohol or other drugs, being violent, or with known HIV/STD infection) or be willing to practice unprotected sex for more money (C. Zhang et al., 2012). Second, under the influence of drugs during or before sexual encounters, FSW's ability to negotiate safe sex practice could be impaired (Lomba, Apostolo, & Mendes, 2009; Loza et al., 2010). Moreover, FSW drug users are more likely to experience psychological distress compared to their non-drug using peers, which further increases their risk of HIV infection (Seth, Raiji, DiClemente, Wingood, & Rose, 2009). Third, to scrimp on expenses, many drug users choose injection and prefer to share or re-use needles, which precipitate their risk of HIV infection (Choi et al., 2006). Loza and colleagues (2010) suggested that compared to sexual risk behaviors, drug use played a more important role in syphilis transmission among a group of FSW drug users in Mexico (Loza et al., 2010).

Although significantly high risk of HIV/STD infection has been found among FSW with drug use behaviors, most researchers either only focused on sexual risks or general drug use behaviors among FSW, few of them have examined HIV risk among FSW with different patterns of drug use behaviors (e.g., injection drug use vs. non-injection drug use). In addition, limited studies have been conducted in China, where sex work flourishes (Hong & Li, 2008; UNAIDS & MoH, 2012). An estimated four to six million FSW work in China, and 5.8% to 20% of them report ever using illicit drugs in their life time with 0.8% to 7% injection drug users (Hong & Li, 2008; UNAIDS & MoH, 2012). Given the alarmingly high prevalence of drug use among FSW, the exploration of drug use and HIV risk has become significant. Therefore, the current study analyzed the 2010 National Sentinel Surveillance (NSS) data collected from FSW in Guangxi, China to examine demographic and behavioral

risk factors as well as the infection of HIV, syphilis and HCV among the subgroup of FSW who are injection or non-injection drug users.

## Method

### Study Design

**National Sentinel Surveillance (NSS) sites**—The information on the Chinese HIV NSS system and study design was provided in detail elsewhere (Zhou et al., 2013). Briefly, in response to the HIV epidemic among high-risk populations including FSW, the Chinese government has launched the HIV NSS program since 2004 (L. Zhang, Chow, Zhang, Jing, & Wilson, 2012). The number of HIV NSS sites for FSW increased from 49 in 2005 to 369 in 2009, accounting for 35.9% of the total 1,029 HIV NSS sites in the nation in 2009 (Jia, Lu, Sun, & Vermund, 2007; L. Zhang et al., 2012). Basically, NSS sites were set up in HIV prevalent areas with a target sample size of 250–400 persons in each site (China National Center for AIDS and STD Control and Prevention, 2010). In the current study, public health workers from local centers for disease control and prevention (CDC) approached FSW at pre-established NSS sites and conducted HIV, syphilis, and HCV testing and a self-administered, standard behavioral survey. For those women with low literacy (less than 5% of all participants), interviewers read questions to these participants. The 2010 Guangxi NSS for FSW included data from a total of 12,622 FSW at 35 NSS sites.

**Classification of venues**—The short behavioral surveillance survey included the type of venues from which the participants were recruited (i.e., sauna/bath houses, nightclubs, karaoke (KTV)/dance halls/bar, hotels and restaurants, hair salons/massage parlors, mini-hotels/road-side restaurants, and street). The local CDC were asked to classify the venues into three tiers (low, medium, and high) based on fees charged for sexual services in relation to the local economic condition. In the current study, low-paid venues included mini-hotels, road-side restaurants, and street; medium-paid venues included hotels and restaurants, hair salons/massage parlors; high-paid venues were sauna/bath houses, nightclubs, and KTV/dance balls/bars.

### Measurements

**Drug use behaviors**—Drug use was measured by two items: “have you ever used illegal drugs (yes/no)” and “have you ever injected drugs (yes/no)”. Based upon the responses to these two questions, participants were divided into non-drug users (non-DU), non-injection drug users (NIDU) and injection drug users (IDU).

**Demographics**—Participants were asked to provide information regarding the year of their birth, marital status (single, currently married, cohabited, divorced or widowed), location of primary residence (Guangxi, other province, or foreign countries), ethnicity (Han, Zhuang, or others), educational attainment (no formal schooling, elementary school, middle school, at least high school), length of working in the current location (more than one year, 6–12 months, one to six months, less than one month), and site of their previous work location (other province, other city in Guangxi, the current city, did not work before).

Participant's age was estimated using the difference between the survey year (i.e., 2010) and their reported birth year.

**HIV risk**—HIV risk was measured in terms of no or inconsistent condom use, no HIV testing, and history of STD. Two questions were used to measure FSW's condom use: “how often did you use condoms with clients in the last month (never, sometimes, always, and don't know)” and “did you use condom with clients in the last sex act (yes/no)”. Those respondents who didn't answer “always” to the first question were considered having used condoms inconsistently in the last month. Participants were also asked whether they had a history of STD (yes, no, and don't know). Respondents were considered to have a history of STD if they answered “yes” to this question. HIV testing was assessed by the question of “have you ever tested for HIV (yes/no)”.

**HIV knowledge**—Knowledge of HIV was assessed with eight questions regarding possible transmission routes, non-transmission routes, and preventive measures. For each question, the response was coded as 1=correct answer or 0=incorrect answer. The composite score of the HIV knowledge was calculated by summing correct answers to all eight questions with a higher score indicating a higher level of HIV knowledge.

**HIV prevention services**—Participants were asked if they ever participated (yes/no) in any HIV prevention services: condom distribution/voluntary counseling and testing (VCT), methadone maintenance treatment (MMT)/needle exchange program (NEP), and peer education.

**HIV, Syphilis, and HCV testing**—Following the standard protocol of national HIV sentinel surveillance from the China National Center of AIDS and STD Control and Prevention (2010), participants provided consent and were tested anonymously for HIV, syphilis, and HCV antibody. Two different methods (ELISA and RPR/TRUST) were used to conduct parallel tests for syphilis and a result was considered positive only if it was positive on both tests. For both HIV and HCV, initial screening was conducted using ELISA method (ELISA-1) and confirmation tests were done on positive cases using a different ELISA method (ELISA-2). A result was considered positive only if the confirmation test was also positive.

## Data analysis

First of all, we employed the Chi-square test (for categorical variables) and ANOVA (for continuous variables) to assess FSW's demographic information, HIV risk, HIV knowledge, HIV prevention services, as well as HIV, syphilis, and HCV antibody testing results by their drug using behaviors (non-DU, NIDU and IDU). Second, we used multivariable logistic regression models to examine the association of drug use behavior with HIV risk, HIV, syphilis and HCV infections among FSW while controlling variables that were significant in the bivariate analyses. To control for potential intra-class correlation (ICC) due to venue-based cluster-sampling, random effect modeling was employed to control for venue-level ICC. Adjusted odd ratios (aOR) as well as their 95% confidence intervals (95% CI) were

used to depict the independent relationship between predictors and dependent variables. All statistical analyses were performed using SAS 9.2 for Windows.

## Results

### Demographics by drug use behaviors

As shown in table 1, among 12,622 participants, 3.1% reported drug use including 2.6% using non-injection drugs and 0.5% using injection drugs. Among all participants, FSW had a mean age of 28.0 (SD=7.4) years with a range of 13 to 68; majority of them were recruited from medium or low-paid venues and nearly half of them were currently married. Compared to both non-DU and IDU, NIDU were more likely to be younger, work in high-paid venues such as night clubs, KTVs, dancehalls, and bars, and were less likely to be married ( $P<0.05$ ). In addition, NIDU usually were of Han-ethnicity with a higher educational attainment, and reported Guangxi as their primary residence. IDU usually worked in low-paid venues, such as hair salons, massage parlors, mini-hotels and road-side restaurants and they were the most likely to be divorced or widowed, be a foreigner and stay longer in the current location ( $P<0.05$ ).

### HIV risk, HIV knowledge, HIV prevention services and blood testing results by patterns of drug use behaviors

Table 2 showed the relationship between different drug use behaviors and HIV risk, HIV knowledge, HIV prevention services and blood testing results among FSW. Compared to non-DU and NIDU, IDU were more likely to report inconsistent condom use in the past month, a history of STD, having an HIV testing, participating in HIV prevention services, and having better HIV knowledge ( $P<0.05$ ). In addition, IDU had the highest HIV, syphilis and HCV infection rates compared to their peers ( $P<0.05$ ).

### Result of multivariable analyses

Compared to non-DU, IDU were more likely to report no condom use in the last sex act (aOR=3.25, 95%CI=1.65, 6.40), inconsistent condom use in the past month (aOR=4.88, 95%CI=2.66, 8.96), having an HIV testing (aOR=2.48, 95%CI=1.34, 4.58), infections of HIV (aOR=42.60, 95%CI=9.45, 192.06), syphilis (aOR=4.13, 95%CI=1.86, 9.16), and HCV (aOR=74.54, 95%CI=30.26, 183.61). Compared to non-DU, NIDU were 2.89 times more likely to report a history of STD and 26% less likely to report inconsistent condom use in the past month ( $P<0.05$ ).

## Discussion

In the current study, we examined the HIV risk among FSW who were IDU, NIDU and non-DU. We found that injection drug use increased the risk of HIV infection by 42.60 times, syphilis infection by 4.13 times, and HCV infection by 74.54 times compared to non-drug use peers. The seroprevalence rates of HIV, syphilis and HCV among IDU are comparable to similar groups in other areas of China (Chen et al., 2005; H. Liu, Grusky, Li, & Ma, 2006). For instance, Chen et al. (2005) found that the prevalence of HIV was 17.8% and syphilis was 11.3% among FSW drug users in Yunnan, one of the Guangxi neighboring

provinces that was severely hit by drug trafficking and drug use and it is one of the HIV-epidemic centers in China.

The HCV prevalence is substantially higher among IDU than non-DU or NIDU (44.1% versus 8% or 1.5%,  $p < .0001$ ). The HCV rate among IDU in the current study is comparable with the prevalence among a group of drug users in Anhui (H. Liu et al., 2006). Therefore, injection drug use is a convincing risk factor for HCV infection among FSW. This small but significant subgroup of the FSW is highly susceptible to contracting HIV and STD. We found that the interplay of commercial sex and drug use (especially injection drug use) presented a serious threat to public health efforts (C. Zhang et al., 2014; C. Zhang et al., in press). Based on findings in the current study, health professionals should design specifically tailored interventions targeting FSW who are also an IDU (FSW-IDU).

We also identified several unique demographic and behavioral characteristics of FSW-IDU in the current study. Compared to NIDU and non-DU, IDU in the current sample were much older and they usually work in low-paid commercial venues. Older IDU were usually physically or psychologically dependent on drugs and they were typically immersed in the vicious cycle of sex-for-drug exchanges (C. Zhang et al., 2013). In addition, IDU were more likely to report better HIV knowledge, having an HIV test and participating in HIV prevention services (e.g., MMT, NEP, peer education). It was possible that IDU were more aware of their susceptibility of contracting HIV or other STD, and therefore, they were more actively participate in HIV prevention services including HIV testing. It was also possible that IDU were more likely to be the target of government-sponsored HIV education and intervention programs (Li, Ha, Zhang, & Liu, 2010), through which IDU increased their HIV knowledge and were voluntarily or compulsorily exposed to these institution-based or community-based HIV prevention activities.

We found the prevalence of self-reported STD history was higher among both NIDU and IDU compared to non-DU. Drug use may impair women's ability to negotiate for safe sex practice, and therefore, FSW who used drug prior to or during sex were more likely to practice unprotected sex (Lomba, Apostolo, & Mendes, 2009; Loza et al., 2010). Therefore, public health professionals who develop sexual risk reduction interventions among FSW should also address drug use problems including non-injection use, as they may directly or indirectly facilitate the infection and transmission of HIV and other STD among FSW and their clients (C. Zhang et al., 2014; C. Zhang et al., in press).

Several limitations of the study need to be kept in mind when interpreting findings. First, the data were derived from a cross-sectional survey; therefore, we cannot establish a causal relationship between the drug use behaviors and FSW's HIV risk. Second, participants were recruited from Guangxi, a multiethnic region of China, which might limited the generalizability of findings in the current study. Third, due to the illegal status of drug use in China, FSW may under report their illicit drug use activities. Fourth, because of time constraints of the survey, some important behavioral factors (e.g., needle sharing, psychosocial distress) that might be associated with the risk of HIV and other STD infections were not available in the current study.



Despite these limitations, the findings in the current study may provide preliminary data that can inform future research and interventions. First, future research needs to focus on drug-using FSW in China. HIV interventions in China have mainly focused on either FSW or drug users (Hong & Li, 2009; Hong, Poon, & Zhang, 2011); however, limited efforts have specifically targeted drug users among FSW, who may play a considerable role in the epidemic of HIV and other STD in China. We call for future interventions targeting not only unprotected sex, but also the problem of drug use among FSW. Second, the Chinese government needs to improve the coordination among governmental agencies in their drug-related harm reduction programs. China has launched the current Narcotic Control Law since 2008 (Y. Liu, Liang, Zhao, & Zhou, 2010), which aimed to curb drug use in China by prioritizing comprehensive prevention and intervention activities (e.g., MMT, NEP). However, the double jeopardy of commercial sex and drug use imposed on FSW drug users may prevent them from accessing to harm reduction initiatives. FSW may have fears of being arrested as the act of receiving clean needles or drug dependence treatment would be considered as evidence of their illegal activities (Li et al., 2010). We call for a synchronized approach by coordinating different government sectors (e.g., health departments, public security agencies) to understand that implementing harm reduction initiatives is not an endorsement for illegal activities. Third, health professionals should consider heterogeneous needs among drug-using FSW in the intervention and harm reduction efforts. We found that IDU FSW were the most vulnerable and at-risk group for HIV and other STD infections and other health problems. They were more likely to be drug-dependent and had urgent financial needs, which would place them in a less favorable position for negotiating safe sex practice during sexual transactions. For FSW who have problems of drug use, especially IDU, researchers should design tailored, accessible and non-judgmental drug treatments coupling with effective sexual risk reduction interventions. Only by these efforts, can health professionals in both China and in other cultural settings help FSW with problems of drug use to reduce their financial dependence on sex work and to negotiate safe sex with clients (Deering, Shoveller, Tyndall, Montaner, & Shannon, 2011).

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**Table 1**  
**Demographics, HIV knowledge, HIV prevention services among non-drug users, IDU and non-IDU<sup>1</sup> (N=12,622)**

	Total	Non- <b>DU</b>	<b>IDU</b>	$\chi^2$ /F-statistics
<b>Overall Demographics</b>	12622(100%)	12233 (96.9%)	59 (0.5%)	n/a
Age (mean, sd, range)	28.0 (7.4) (13-68)	28.2(7.4) (13-68)	29.7(7.3) (16-50)	95.0 <sup>*****</sup>
Types of venue <sup>2</sup>				
<i>Sauna/Bath<sup>h</sup></i>	2387(18.9%)	2331(19.1%)	1(1.7%)	619.3 <sup>*****</sup>
<i>Nightclub<sup>h</sup></i>	415(3.3%)	336(2.7%)	0(0.0%)	
<i>KTV/Dancehall/Bal<sup>h</sup></i>	1150(9.1%)	1069(8.7%)	0(0.0%)	
<i>Hotel/Restaurant<sup>m</sup></i>	2251(17.8%)	2214(18.1%)	11(18.6%)	
<i>Hair salon/Massage<sup>m</sup></i>	4785(37.9%)	4668(38.2%)	37(62.7%)	
<i>Mini-hotel/Road-side restaurant<sup>l</sup></i>	1401(11.1%)	1383(11.3%)	10(16.9%)	
<i>Street<sup>l</sup></i>	227(1.8%)	226(1.8%)	0(0.0%)	
Marital status				
<i>Divorced/Widowed</i>	370(2.9%)	362(3.0%)	4(6.8%)	181.5 <sup>*****</sup>
<i>Cohabitate</i>	679(5.4%)	646(5.3%)	5(8.5%)	
<i>Currently Married</i>	5863(46.5%)	5804(47.5%)	17(28.8%)	
<i>Never Married</i>	5696(45.2%)	5407(44.3%)	33(55.9%)	
Primary residence				
<i>Guangxi</i>	9452(75.0%)	9128(74.7%)	49(83.1%)	30.43 <sup>*****</sup>
<i>Other Provinces</i>	3104(24.6%)	3041(24.9%)	8(13.6%)	
<i>Foreigner/Viet Nam</i>	49(0.4%)	47(0.4%)	2(3.4%)	
Ethnicity				
<i>Han</i>	7442(59.4%)	7178(59.1%)	35(59.3%)	16.8 <sup>***</sup>
<i>Zhuang</i>	4071(32.5%)	3972(32.7%)	22(37.3%)	
<i>Other ethnicity</i>	1021(8.1%)	995(8.2%)	2(3.4%)	
Education				
<i>No Formal Schooling</i>	413(3.3%)	409(3.4%)	2(3.40%)	80.0 <sup>*****</sup>
<i>Elementary</i>	3511(27.9%)	3458(28.3%)	13(22.0%)	

	Total	Non-DU	NIDU	IDU	X <sup>2</sup> /F-statistics
<i>Middle</i>	7025(55.8%)	6783(55.6%)	204(62.0%)	38(64.4%)	
> <i>High School</i>	1643(13.0%)	1554(12.7%)	83(25.2%)	6(10.2%)	
Time in current location					
> <i>12 month</i>	4770(37.9%)	4601(37.7%)	126(38.3%)	43(72.9%)	32.4****
6~ <i>12 month</i>	2642(21.0%)	2573(21.1%)	62(18.8%)	7(11.9%)	
1~ <i>6 month</i>	3754(29.8%)	3644(29.8%)	104(31.6%)	6(10.2%)	
< <i>1 month</i>	1434(11.4%)	1394(11.4%)	37(11.2%)	3(5.1%)	
Location of previous job					
<i>Other Province</i>	2352(18.7%)	2281(18.7%)	66(20.0%)	5(8.5%)	18.1**
<i>Other Cities in GX</i>	2091(16.6%)	2036(16.7%)	48(14.5%)	7(11.9%)	
<i>Current City</i>	7011(55.7%)	6767(55.4%)	201(60.9%)	43(72.9%)	
<i>No Previous Work</i>	1139(9.0%)	1120(9.2%)	15(4.5%)	4(6.8%)	

Notes:

<sup>1</sup> Missingness for each variable: age (n=0), types of venues (n=6, <0.1%), marital status (n=14, 0.1%), primary residence (n=17, 0.1%), ethnicity (n=88, 0.7%), education (n=30, 0.2%), time in the current location (n=22), location of previous job (n=29, 0.2%).

<sup>2</sup> n: high-paid venues, m: medium-paid venues, l: low-paid venues;

\*\* p<.01,

\*\*\* p<.005,

\*\*\*\* p<.0001

**Table 2**  
**HIV risk and HIV prevention services among non-drug users, non-IDU and IDU<sup>1</sup> (N=12622)**

	Total	Non-DU	NIDU	IDU	X <sup>2</sup> /F-statistics
<b>HIV Risk</b>					
No Condom use in the last sex act	1923(15.7%)	1857(15.60%)	51(15.7%)	15(25.9%)	4.57
Inconsistent condom use in the past month	4813(39.4%)	4674(39.5%)	101(31.1%)	38(64.4%)	24.96****
Self-reported STD History	515 (4.1%)	486(4.0%)	24(7.3%)	5(8.5%)	11.65***
Ever tested for HIV	5138 (40.8%)	4956(40.6%)	146(44.2%)	36(61.0%)	11.85***
<b>HIV/STD infection</b>					
HIV	125(1.0%)	120(1.0%)	0(0.0%)	5(8.5%)	36.98****
Syphilis	772(6.1%)	745(6.1%)	15(4.5%)	12(20.30%)	22.18****
HCV	128(1.0%)	97(0.8%)	5(1.5%)	26(44.1%)	1095.18****
<b>HIV knowledge, mean (sd, range)</b>	6.8 (1.9,0-8)	6.8(1.8, 0-8)	7.1(1.2,2-8)	7.3(1.4,3-8)	5.37**
<b>HIV Prevention Services</b>					
Condom distribution/VCT	10874 (86.2%)	10552(86.3%)	266(80.6%)	56(94.9%)	12.55****
MMT/Needle exchange	633 (5.0%)	573(4.7%)	15(4.5%)	45(76.3%)	628.00****
Peer education	4941 (39.2%)	4766(39.0%)	127(38.5%)	48(81.4%)	44.16****

Notes:

<sup>1</sup> Missingness for each variable: no condom use in the last sex act (n=358, 2.8%), inconsistent condom use in the past month (n=415,3.3%), self-reported STD history (n=130,1.0%), ever tested for HIV (n=19, 0.2%), HIV knowledge (n=0), HIV (n=11,0.1%), syphilis (n=15,0.1%), HCV(n=12,0.1%), condom distribution/VCT (n=6, <0.1%), MMT/Needle exchange (n=71, 0.6%), Peer education (n=28, 0.2%).

\*\* p<.01,

\*\*\* p<.005,

\*\*\*\* p<.0001

**Table 3**  
**Multivariate analyses for HIV risk among drug users with different patterns<sup>1</sup>**

	HIV risk				HIV, syphilis and HCV infection			
	No condom use in the last sex act (aOR, 95%CI)	Inconsistent condom use in the past month (aOR, 95%CI)	A History of STD (aOR, 95%CI)	HIV testing (aOR, 95%CI)	HIV (aOR, 95%CI)	Syphilis (aOR, 95%CI)	HCV (aOR, 95%CI)	
<b>Being a non-DU</b>	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
<b>Being a NIDU</b>	1.16 (0.83,1.60)	0.74(0.57,0.96)*	2.89(1.81,4.61) ****	1.14(0.88,1.48)	n/a	1.40(0.80,2.46)	2.44(0.95,6.28)	
<b>Being an IDU</b>	3.25(1.65,6.40) ***	4.88(2.66,8.96) ****	2.51(0.87,7.20)	2.48(1.34,4.58) ***	42.60(9.45,192.06) ****	4.13(1.86,9.16) ****	74.54(30.26,183.61) ****	

Notes:

<sup>1</sup> controlling variables including demographics, HIV knowledge and HIV prevention services that statistically significant in table 1 and table 2;

\* p<.05,

\*\*\* p<.005,

\*\*\*\* p<.0001