

# Integrated Biological & Behavioral Surveillance (IBBS) in Selected Cities of Afghanistan

Findings of 2012 IBBS survey and comparison to 2009 IBBS survey

## SUBMITTED TO

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Johns Hopkins University  
Bloomberg School of Public Health  
HIV Surveillance Project  
H # 111, Street # 3, Ansari Avenue  
Shahr-i-Naw, Kabul-Afghanistan



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## ACRONYMS

<b>AIDS</b>	Acquired Immune Deficiency Syndrome
<b>CHA</b>	Coordination of Humanitarian Assistance
<b>FSW</b>	Female Sex Workers
<b>IBBS</b>	Integrated Biological and Behavioral Surveillance
<b>IRB</b>	Institutional Review Board
<b>IIHMR</b>	Indian Institute of Health Management Research
<b>HBV</b>	Hepatitis B Virus
<b>HCV</b>	Hepatitis C Virus
<b>HIV</b>	Human Immune Deficiency Virus
<b>HSV</b>	Herpes Simplex Virus
<b>HSDO</b>	Health and Social Development Organization
<b>JHU</b>	Johns Hopkins University
<b>KCP</b>	Kabul Central Polyclinic
<b>NACP</b>	National AIDS Control Program
<b>NGOs</b>	Non-governmental Organizations
<b>MMRCA</b>	Medical Management Research Courses Afghanistan
<b>MoJ</b>	Ministry of Justice
<b>MoPH</b>	Ministry of Public Health
<b>PWID</b>	People Who Inject Drugs
<b>PLWHA</b>	People Living with HIV/AIDS
<b>RDS</b>	Respondent Driven Sampling
<b>RRS</b>	Risk Reduction Services
<b>RTW</b>	Road Transport Worker
<b>RTWa</b>	Road Transport Worker assistant
<b>SGS</b>	Second Generation Surveillance
<b>SRS</b>	Systematic Random Sampling
<b>STI</b>	Sexually Transmitted Infection
<b>WHO</b>	World Health Organization
<b>YHDO</b>	Youth Health and Development Organization

## EXECUTIVE SUMMARY

Currently, the Human Immunodeficiency Virus (HIV) epidemic in Afghanistan appears to have the highest prevalence among people who inject drugs (PWIDs), with other groups being identified as being at increased risk of infection (1). It has been hypothesized that the conditions exist for HIV prevalence to increase within these groups and to spread into the general population. For the 2012 Integrated Biological and Behavioral Surveillance (IBBS), information was collected about the behavior and disease prevalence among five groups: people who inject drugs (PWIDs), female sex workers (FSWs), road transport workers and their assistants (RTW/RTWa), prisoners and men who have sex with men (MSM). The specific objectives of the 2012 IBBS were to: 1) assess the knowledge of modes of transmission and modes of protection against STIs, with emphasis on HIV among populations at higher risk for HIV; 2) characterize risk behaviors (sexual and drug use) among key populations at higher risk; 3) estimate the prevalence of HIV, Hepatitis B Virus (HBV), Hepatitis C Virus (HCV), and syphilis among populations at higher risk; 4) estimate population size of MSM, PWID and FSW populations in various locations.

<b>Table 1: Sero-prevalence findings of IBBS, by populations at higher risk groups and sites, 2012</b>							
<b>People who inject drugs, Kabul n= 369</b>				<b>Prisoners, Kabul n= 368</b>			
HIV	HBV	HCV	Syphilis	HIV	HBV	HCV	Syphilis
2.4%	7.3%	27.6%	6.2%	0.5%	6.0%	4.6%	0.8%
<b>People who inject drugs, Herat n= 185</b>				<b>Prisoners, Herat n= 351</b>			
HIV	HBV	HCV	Syphilis	HIV	HBV	HCV	Syphilis
13.3%	4.4%	70.0%	3.3%	0.8%	4.8%	1.4%	0.8%
<b>People who inject drugs, Mazar n= 254</b>				<b>Men who have sex with men, Kabul n= 207</b>			
HIV	HBV	HCV	Syphilis	HIV	HBV	HCV	Syphilis
0.3%	3.2%	18.8%	6.9%	0.4%	1.6%	5.3%	10.2%
<b>People who inject drugs, Jalalabad n= 236</b>				<b>Female sex workers, Kabul n= 333</b>			
HIV	HBV	HCV	Syphilis	HIV	HBV	HCV	Syphilis
1.0%	8.3%	9.5%	3.8%	0.0%	1.0%	0.0%	0.0%
<b>People who inject drugs, Charikar n= 117</b>				<b>Female sex workers, Herat n= 344</b>			
HIV	HBV	HCV	Syphilis	HIV	HBV	HCV	Syphilis
0.9%	5.4%	25.0%	4.0%	0.9%	1.8%	0.6%	0.9%
<b>Road transport workers, Torkham n= 378</b>				<b>Female sex workers, Mazar n= 355</b>			
HIV	HBV	HCV	Syphilis	HIV	HBV	HCV	Syphilis
0.0%	5.3%	1.8%	0.3%	0.0%	3.5%	1.7%	2.0%

Among **road transport workers and their assistants** surveyed at Torkham, about 12% of the RTW/RTWa interviewed showed correct adequate HIV prevention knowledge. Regarding high-risk behavior, approximately 1 out of every 4 RTW/RTWa reported ever using drugs (26%) but none reported injecting drugs, with 29% reporting ever buying sex from a female and 8% reporting ever having sex with males. Only 4% reported using condom with any type sexual partner during last sexual encounter. There were no cases of HIV reported among RTW/RTWa. Disease prevalence was of 5.3% for HBV, 1.8% for HCV, and 0.3% for syphilis. When comparing 2009 vs. 2012 IBBS results for key biological variables among RTW/RTWa, statistically significant lower proportion of HCV positive participants was reported in 2012 when compared to the 2009 cohort ( $p < 0.001$ ).

Among **prisoners** interviewed at Herat and Kabul prisons, the proportion that had adequate HIV knowledge was low (11% in Kabul and 2% in Herat). Approximately 1 out of every three prisoners in Kabul (22%) and Herat (29%) reported ever-buying sex from a female, with a similar ratio reporting ever condom use when having sex (Kabul=25% and Herat=36%). In Kabul, 7% of the participants reported ever having sex with a man/boy. This proportion was double in Herat (14%). Drug use among prisoners was more prevalent in Herat (46%) when compared to Kabul (16%). However, out of those who had ever tried drugs, almost 7 out of every 10 of Kabul's inmates reported drug use while in prison, in contrast with only 26% of Herat's inmates. Approximately 1 out of every five inmates in Kabul (15.9%) and in Herat (19%) reported ever being tested for HIV. The 2012 disease sero-prevalence can be noted on Table 1 for each site. When comparing 2009 vs. 2012 IBBS results for key biological variables among Kabul's inmates, statistically significant higher proportion of HCV positive participants was reported in 2012 when compared to the 2009 cohort ( $p=0.03$ ). The opposite trend was observed among Herat's inmates, with a statistically significant lower proportion of HCV positive prisoners reported in 2012 when compared to 2009 ( $p=0.03$ ).

Among **men who have sex with men** in Kabul, more than half of participants (55.5%) had never heard of STIs and only 51.6% of them had heard of HIV. The proportion of adequate HIV knowledge was only 5% among all MSM surveyed. Injecting drug use in the last 12 months was low among the MSM surveyed (3.7%). Previous history of being raped was common, with 40% of the people surveyed reporting being sexually abused. Approximately, half of the MSM in our sample reported ever paying a female sex worker for sex. Four out of every 10 reported having between 2 and 10 male sex partners in the past 12 months, with over 60% reporting unprotected insertive anal sex with a male partner in the past 12 months. About 58% of the MSM surveyed reported receiving some type of payment in exchange for sex in the past 12 months and about 31% reported paying for sex with a man in the past 12 months. Reported condom use during last sex act was of 15.8%. Only one participant was HIV positive (prevalence=0.4%). Disease prevalence was estimated at 1.6% for HBV, 5.3% for HCV and 10.2% for syphilis.

Among **people who inject drugs (PWIDs)** interviewed in Kabul, Herat, Mazar-i-Sharif, Jalalabad, and Charikar, most PWIDs reported having heard of STIs, except for PWIDs in Mazar-i-Sharif where only 13.9% reported ever hearing of STIs. Regarding HIV, the lowest number of PWIDs who reported ever hearing of this disease was reported in Charikar with 49.5%. Adequate knowledge about HIV was highest in Mazar-i-Sharif (39.1%) and Herat (38%) and lowest in Charikar (0%). Approximately 8 out of every 10 PWID reported injecting drugs once a day or more, except in Jalalabad (20.9%). Ever being in prison was common among all PWIDs, however, the highest proportion of participants who reported ever being in prison was reported in Herat (74%). Use of non-sterile injecting equipment was highest among PWIDs in Herat, with more than 1 out of every 4 reporting this behavior in the past 3 months. A very low proportion of PWIDs living in Kabul reported ever being tested for HIV (2.7%), although the awareness of risk reduction services (RRS) was of 63.9% and among those who were aware of these services (244 PWIDs), 88.1% had used



them. Awareness of RRS was lowest in Charikar, with only 2.2% of participants included in our sample knowing about them and only 1 participant reported ever using RRS. When comparing 2009 vs. 2012 IBBS results for key behavioral variables among PWIDs, there was a statistically significant lower proportion of participants with correct HIV knowledge ( $p<0.001$ ), with more than 3 years of drug use ( $p=0.006$ ) and who reported ever being in prison ( $p<0.001$ ) in 2012 when compared to 2009 in Kabul. The 2012 disease seroprevalence can be noted on Table 1 for each site. When comparing 2009 vs. 2012 IBBS results for key biological variables among PWIDs, there was statistically significant higher proportion of participants positive for HCV ( $p=0.01$ ) in 2012 when compared to 2009 in Herat and statistically significant lower proportion of participants positive for syphilis ( $p=0.03$ ) in 2012 when compared to 2009 in Mazar-i-Sharif.

Among **female sex workers** surveyed in Kabul, Herat and Mazar-i-Sharif, approximately 1 out of every 3 participants in Kabul and Mazar-i-Sharif knew about STIs. About 66% of FSWs in Herat reported knowing about STIs and only 25% of FSWs in Mazar-i-Sharif reported ever hearing about HIV. In Herat, nearly half of participants had 2-3 clients in the last month, compared to 45% in Kabul and 16% in Mazar. Most FSWs reported sex work for more than 2 years. More than half of FSWs surveyed in Kabul (60%) reported STIs symptoms in the past 12 months, compared to 20.7% in Herat and only 8.1% in Mazar-i-Sharif. In Kabul, 71.6% of FSWs who reported STI symptoms also reported having sex while symptomatic. Drug use was high in Herat (88.3%) and Kabul (98%), with only 7.1% of FSWs in Herat and 1% in Kabul reporting ever injecting drugs. Approximately 1 out of every 4 FSWs reported using a condom during their last sex act and ever being tested for HIV in Mazar-i-Sharif, with a higher proportion reported in Herat (67% and 93.2, respectively) and Kabul (64% and 96.2, respectively). However, the reported use of risk minimizations services was highest in Mazar-i-Sharif (13.1%). The 2012 disease seroprevalence can be noted on Table 1 for each site. When comparing 2009 vs. 2012 IBBS results for key biological variables among FSWs in Kabul, there was statistically significant higher proportion of participants with HBV (2009=3.5% vs. 2012=6%,  $p=0.008$ ) and a lower proportion of participants who tested positive for syphilis (2009=5.4% vs. 2012=0%,  $p<0.001$ ).

Based on these findings from the IBBS, the recommendations are the following:

1. Extend surveillance activities to other regions applying same surveillance protocol.
2. Share findings and recommendation with other government agencies and stakeholders.
3. Continue to conduct surveillance activities among PWIDs to monitor behavior and HIV/STIs every two years.
4. Methadone Substitution Therapy should be scaled-up in Kabul and to other priority areas in Afghanistan for PWIDs.
5. Continue to conduct surveillance activities among FSWs, MSMs, and prisoners to monitor behavior and HIV/STIs every three to four years.
6. Develop targeted prevention programs to address high-risk behaviors among RTWs, PWIDs, prison populations, and FSWs.

7. Implement programs to monitor and evaluate the efficacy and effectiveness of risk reduction services and HIV/STI prevention, treatment and care services.
8. Strengthen collaborations within the government ministries as well as with non-governmental organizations to address HIV/STI prevention and care in Afghanistan.
9. Implement strategies to fight stigma and discrimination.

## INTRODUCTION

### HIV IN AFGHANISTAN

The Human Immunodeficiency Virus (HIV) prevalence in Afghanistan was found to be highest among people who inject drugs (PWIDs) (1). Although other key populations at higher risk groups (Female Sex Workers (FSWs), Road Transport Workers and their assistants (RTWs/RTWa) and prisoners) were found with a low HIV prevalence in 2009, the conditions exist for the disease prevalence to increase within these groups. The 2009 survey did not collect HIV data among men who have sex with other men (MSM) in Afghanistan. For the second round of IBBS in 2012, information was collected about the behavior and disease prevalence among MSM living in Kabul, along with the other previously mentioned key populations who are at higher risk. International funding by the World Bank, Global Fund and other agencies has allowed the National AIDS Control Program (NACP) to expand its activities since 2009 through coordination with local and international non-governmental organizations (NGOs) and academic institutions (Johns Hopkins University Bloomberg School of Public Health). As inferred by data from the 2009 Integrated Biological and Behavioral Surveillance (IBBS) survey (1), the Afghan HIV epidemic is slow to spread, which allows national and local health authorities to be inclusive and proactive in their response to the epidemic.

Much of this work is underway, and is being led by the NACP of the Ministry of Public Health (MoPH), with support from donors such as the World Bank and the Global Fund to fight AIDS, Tuberculosis and Malaria. National non-governmental organizations (NGOs) are important partners in this effort, as they are doing much of the implementation of preventive work.

Among all the key populations at higher risk for HIV in Afghanistan, PWIDs are particularly vulnerable to infection (2-4). The virus can spread relatively quickly among drug users who use non-sterile equipment. Given the high level of interaction between PWIDs and other key populations at higher risk and the general population, HIV can potentially spread to other segments of the population, particularly through sexual transmission (5,6). Thus, this population is of special concern with regards to control of HIV, STI and other Blood Borne Infections (BBI) such as Hepatitis C Virus.

Several studies of HIV and other STIs have been conducted in Afghanistan prior to the Johns Hopkins University (JHU) contract. However, these studies were predominantly small cross-sectional studies using different methodologies, which make data difficult to compare with results of population-based studies (7-10). This current project aims to survey and understand the HIV and STIs prevalence among the key populations at higher risk. This is a particularly difficult task as these key populations at higher risk are marginalized by society and face significant stigma and discrimination. These populations are forced to live underground, which poses a particular challenge for collecting data on these populations at higher risk because they are very difficult to access. The sampling methodologies that are used in this project, respondent-driven sampling (RDS) for the people who inject drugs (PWIDs), female

sex workers (FSWs) and men who have with sex men (MSM) studies, and systematic random sampling for the road transport worker and prisoner studies, have been used in many similar settings to survey difficult to reach populations. The results of these studies will be of great value in building a surveillance system and to generate, implement and evaluate programs that aim to control and prevent the spread of STIs and HIV within these populations and into the general population.

## THE HIV IBBS SURVEY PROJECT

In 2008, the MOPH contracted Johns Hopkins University (JHU) to establish an HIV Surveillance System in Afghanistan. Traditional surveillance approaches provide disease estimates for the general population, so called first generation methods. In Afghanistan, where HIV is likely to be concentrated in specific subpopulations, an alternative approach called Second Generation Surveillance (SGS) is indicated. This approach provides HIV estimates among sub-populations at increased risk of HIV infection and offers additional benefits over first generation surveillance systems. The SGS approach can track the HIV epidemic in high-risk groups before it reaches the general population, and it can provide an early warning system for countries that are at an early stage in the epidemic. Its fundamental goal is to provide reliable information that will enable health authorities to monitor the development of the epidemic and the impact that preventive measures are having in curbing the epidemic. In a country like Afghanistan where HIV prevalence is low and likely to be concentrated to a specific group (1), it is more cost-effective to target surveillance to specific groups rather than conduct large studies among the general population.

In 2009, the first Integrated and Biological Behavioral Surveillance (IBBS) was conducted in Afghanistan. The survey included PWIDs in Kabul, Herat and Mazar-i-Sharif; FSWs living in Kabul; Prisoners in Kabul and Herat and RTWs and their assistants (RTWa) that crossed the border through Torkham (1). During the 2009 IBBS survey, no cases of HIV among RTWs and their assistants (N=365) were detected. However, the vast majority of RTW participants reported having multiple sex partners (97%), potentially placing them at high risk for becoming infected with and transmitting HIV (1).

The IBBS testing was carried out among PWIDs in Kabul (N=286), Herat (N=160) and Mazar-e-Sharif (N=102). Literacy level among PWIDs in all cities was reported below 50%. With more than 98% of PWIDs in these three cities reporting ever having heard of HIV and >98% reporting that HIV could be transmitted by sharing non-sterile injecting equipment, a considerable knowledge about key factors related to HIV were observed among this population. Among PWIDs, other important risk factors were identified. In 2009, the mean reported time of injecting drugs was of 2.2 years among PWIDs living in the three cities. Most participants reported paying for sex and 25% reported ever having sex with men. Overall, less than 25% of PWIDs reported using a condom during their last sex act and only about 1 in every 4 had ever been tested for HIV. One of the most significant findings was the 18.2% HIV prevalence reported among PWIDs in Herat, a much higher prevalence than

Kabul (3.2%) or Mazar-i-Sharif (1%). A high prevalence of HCV infection among PWIDs was reported in Herat (57.9%), Kabul (37.1%) and Mazar-i-Sharif (25.5%) (1).

FSWs were surveyed only in the city of Kabul, with a total recruitment of 368 participants. Among this group, a low level of literacy, access to services, HIV knowledge, condom use and ever being tested for HIV was reported. No FSW was reported to also inject drugs. During 2009, no cases of HIV were reported among this group (1).

On the basis of the 2009 findings, the surveillance project was expanded in 2012 to include PWIDs in the cities of Jalalabad and Charikar, FSWs in Herat and Mazar-i-Sharif and MSM in the city of Kabul. The RTWs at Torkham and their assistants, as well as prisoners in Kabul and Herat were also included during the second round of IBBS. The second round of IBBS was implemented between March and September 2012.

### SPECIFIC OBJECTIVES FOR IBBS

The primary objective of this surveillance among RTWs, prisoners, PWIDs, MSM and FSWs is to provide a baseline and comparative estimates of the prevalence of risk behaviors and HIV, hepatitis B virus (HBV), hepatitis C virus (HCV) and syphilis. It is also designed to provide information about changes in the utilization of risk reduction services, and changes in knowledge and attitudes about HIV. This information will help inform prevention and intervention activities for these populations and measure their success in reaching these sub-populations. The specific objectives of the 2012 survey were:

1. To assess the knowledge of modes of transmission and modes of protection against STIs, with emphasis on HIV among populations at higher risk for HIV;
2. To characterize risk behaviors (sexual and drug use) among key populations at higher risk;
3. To estimate the prevalence of HIV, HBV, HCV and syphilis among each of the most at-risk populations;
4. To estimate population size of MSM, PWID and FSW populations in various locations;
5. To identify changes in key behavioral and biological variables when comparing data collected during the 2009 IBBS and 2012 IBBS.

## METHODOLOGY

### IMPLEMENTATION PROCESS

The contract for the first round of IBBS was signed with the MoPH in June 2008, which was followed by hiring of key staff (e.g. project manager, chief surveillance officer, statistician and research assistant). A preliminary plan was developed, starting with literature review, finalizing contract with field implementers, development of research protocols and its approval from Institutional Review Board (IRB) of MoPH and procurement of testing kits for HIV, Hepatitis B and C, Herpes Simplex Virus type 2 (HSV-2) and syphilis.

For the second round of IBBS, the contract for expansion of work was signed on October 2011. However, multiple administrative delays prevented implementation until March 2012. Additional NGOs were hired as subcontractors and their staff trained to cope with the expanded activities that were defined in the expanded IBBS contract. The implementation plan scope aimed to assess behavioral and biological characteristics among five populations at increased risk of HIV infection, which were defined in consultation with the National AIDS Control Program and the World Bank in five cities in Afghanistan. For the second round, participants were not tested for Herpes simplex-2 virus.

#### *Protocol development and contract with partners*

The development of the research protocol and collaboration agreements with partners started simultaneously. The team based in Kabul developed the protocols with assistance of JHU Principal Investigator and experts from the Baltimore office. Research protocols were submitted and approved to IRB in Kabul.

### LITERATURE REVIEW

A thorough review of available literature on HIV/STIs in Afghanistan and the region was conducted. The review included published and unpublished studies and reports from NGOs and research organizations, government strategies, guidelines and policies, and interviews with local HIV experts and stakeholders. The objective was to obtain an understanding of the nature and extent of HIV/STIs infection, potential epidemic trajectories, and the government's current response to HIV/STIs in terms of policies, current program implementation and future program development. Johns Hopkins submitted the literature review manuscript ("*Understanding HIV in Afghanistan: the Emerging Epidemic and Opportunity for Prevention*") to the MoPH on August 2008.

### STUDY SITES AND TARGET POPULATIONS

The inclusion criteria for recruitment of road transport workers/road transport worker assistant (RTWs/RTWa) to participate in the study include: 1) being a truck driver or the

assistant of a truck driver; 2) being 18 years of age or older; 3) and being Afghan. The only exclusion criterion is not providing verbal informed consent. The study site took place at Torkham, a crossing border point between Afghanistan and Pakistan.

The inclusion criteria for recruitment of prisoners to participate in the study include: 1) being a prisoner at Kabul and Herat prisons; 2) being 18 years of age or older; 3) and being Afghan. The exclusion criteria are being currently not providing verbal informed consent and being a prisoner classified by prison authorities as a high threat prisoner. The study site took place in Kabul and Herat prisons.

The inclusion criteria for recruitment of men who have sex with men (MSM) to participate in the study include: 1) men who have had anal sex in the past 12 months with another man; 2) being 18 years of age and older, 3) being Afghan. The exclusion criteria are being currently not living in Kabul at the time of the survey and not providing verbal informed consent. The study site took place in Kabul.

The inclusion criteria for recruitment of people who inject drugs (PWIDs) to participate in the study include: 1) being a person who currently injects or have injected drugs in the past 3 months; 2) being 18 years of age or older; 3) and being Afghan. The exclusion criteria are being currently not providing verbal informed consent and not living in the target cities. The study site took place in Kabul, Herat, Mazar-i-Sharif, Jalalabad, and Charikar.

The inclusion criteria for recruitment of female sex workers (FSWs) to participate in the study include: 1) being a person who currently sells sex or have sold sex in the past 3 months; 2) being 18 years of age or older; 3) and being Afghan. The exclusion criteria are being currently not providing verbal informed consent and not living in the target cities. The study site took place in Kabul, Herat, and Mazar-i-Sharif.

The selection of the study site for each key population at higher risk for HIV in each target city is based on the formative work done with key informants to ensure the privacy and safety of the participants.

## SAMPLING

### RESPONDENT-DRIVEN SAMPLING

The PWIDs, FSW and MSM studies used Respondent-Driven Sampling (RDS) methodology for data collection. The RDS is a network based, chain referral sampling method that uses social networks of the target population to recruit participants. The RDS recruitment method has been successfully used to anonymously recruit more hidden populations who are not easily reached in United States (11), Bangladesh (12), Thailand (13), Brazil (14), and China (15).

RDS begins with the selection of a diverse group of “seeds”, people who are members of the target population and who would know many of its members. In our sampling, we selected 10-15 seeds in each target city. Seeds were purposively selected based on characteristics that



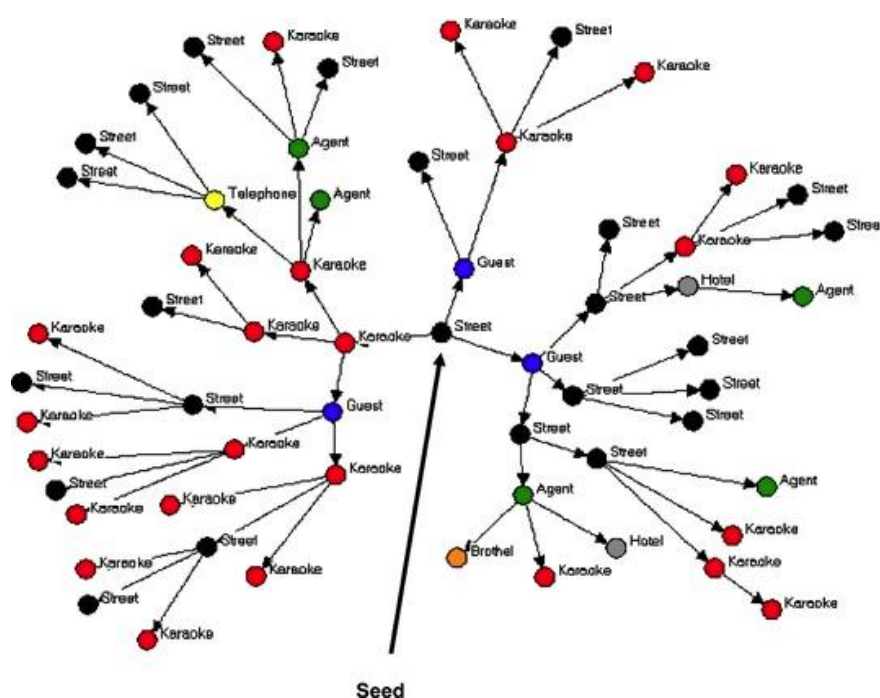
identified them to be representative of the target population in each city. The characteristic seed profiles (such as comprehensive knowledge of the target population, access to a large network of the target population, ability to recruit members of the target population and good understanding of the recruitment process) were determined from the information from the formative work that was done prior to epidemiologic data collection.

Seeds from each target population (PWIDs, FSWs, MSMs) that completed the survey protocol received three recruitment coupons. They provided each coupon to a member of the PWIDs population who was also a member of their social network. The seed's recruits redeemed their coupons to enroll into the study and complete the survey, and thus became the first wave of participants. The first wave of participants received up to three recruitment coupons with which to recruit members of their social network (second wave of participants). This recruitment process continued for numerous waves, until the target sample size was reached or until the limits population of target group of interest was reached within each city. The careful selection of seeds was an instrumental component of the recruitment process to ensure that chains are long enough (for at least four to five waves) to be sustained until the sampling reached equilibrium (equal distribution of the characteristics of the samples). At equilibrium point, additional waves of recruitment longer change or add to the demographic composition of samples. The mathematical theory for RDS states that after a number of recruitment waves, those recruited would closely approximate a random sample.

Participants received a monetary incentive, which varied depending on the group being surveyed. A primary incentive was provided for participating in the survey (primary incentive) and secondary incentive for recruiting their peers. Monetary rather than in-kind incentives are the most often used incentive in many studies that use RDS, as they generally prove to be the most effective in encouraging participation in the research study.

Given certain conditions, RDS yields a more representative sample than convenience sampling, and has become a method widely used by researchers. In convenience sampling, study participants are drawn from segments of the population accessible to researchers. Convenience sampling is subject to selection bias and study results cannot be generalized. The RDS approach aims to recruit from a wider, more diverse group by reaching into the social networks of a participant to access those target populations who may not be so well known or accessible. In this assessment, RDS was used to sample PWIDs, FSWs and MSM. Figure 1 illustrates how the mechanisms for referral work using RDS and the use of multiple seeds, allows recruitment across multiple social networks, thereby improving the representativeness of the sample. During analysis, the RDS approach also allows adjustments for recruitment patterns and the social network size of participants, reducing bias in making estimates of the population (16).





Grazina, J, *et.al.* 2006.

**Figure 1: Schematic of respondent driven sampling (RDS) approach**

### SYSTEMATIC RANDOM SAMPLING (SRS)

For the Road Transport Workers (RTWs) or their assistants (RTWa) and prison populations of the survey, a probability based sampling method was applied given that for these two populations a sampling frame could be generated. Systematic Random Sampling (SRS) is a very simple procedure that will yield a representative sample of the population being studied. The advantages that SRS will have over simple random sampling are that there is increased reliability, less selection bias, and the population is evenly sampled, thus, eliminating the possibility of cluster selection.

SRS methodology for RTW and RTWa consists of the following. A sampling frame was generated by mapping the parking lot in Torkham and dividing it in sections. The truck parking space has a capacity for 500 trucks at a time. We divided it in sections that will contain 60-70 trucks at a time. For SRS implementation, we chose our first participant (truck) from the sampling frame that will be generated. Once this selection is made, we continued to select every  $n$ 'th truck from the list based on a pre-determined interval, which was generated by dividing the number of potential participants in the sampling frame (total number of trucks in the sampling frame) by our required number samples needed to completed for each day of data collection (on average, 6-8 participants were enrolled per day). Alternating sampling between truck drivers and assistants was done. A Social Mobilizer (SM) was hired to approach the RTW and RTWa that were selected to brief them on the objectives, risks and benefits of the project and to invite them to the Johns Hopkins University Site in Torkham for the interview and rapid testing.

Similarly, the sampling process for prisoners using the SRS methodology was achieved through a sampling frame based on the list of prisoners available. This recruitment is made by a social mobilizer, who will be in charge of going into each of the cells in the prison. A

cell in a prison has 50-70 prisoners in it. The social mobilizer, who was also a prisoner, was hired to approach each of the cells and brief the cell population on the aims, process, benefits and risk of participating in the study. After the briefing, the prisoners are invited to provide their names to be included in the list. From the list of prisoners, the sampling frame was generated. For SRS implementation, we chose our first participant randomly from the sampling frame that was generated. Once this selection is made, we continued to select every  $n$ 'th participant from the list based on a pre-determined interval, which was generated by dividing the number of potential participants in each cell by our required number samples needed to completed for each day of data collection (on average, 6-8 participants were enrolled per day). The social mobilizer then went back to the cell and invited the selected participant to the study site, a place that has been previously identified as being safe, secure and private.

### SAMPLE SIZE CALCULATIONS

The following formula was used to determine the sample size for each key population at higher risk for each study site. Please refer to each section of each study population for how the sample size was derived.

$$n = \frac{t^2 p(1-p)}{d^2} \cdot (deff)$$

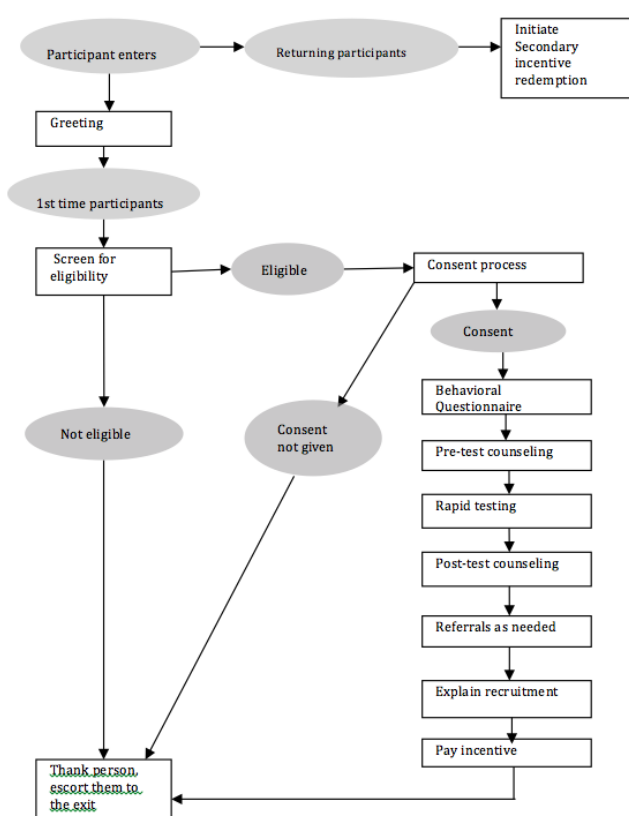
$p$	proportion of interested target in overall population.
$t$	value on the abscissa of a standard normal distribution, whereby 1.96 equivalent to the confident level of 95%.
$d$	relative margins error, whereby 5% margin of error was used for SRS studies and 10% for RDS studies due to the difficulty of accessing participants in RDS studies.
$deff$	design effect, whereby 1 is used in calculations for SRS studies and 4 for RDS studies (17)

### DATA COLLECTION

Data collection for each participant involved several steps: screening for eligibility, consent and behavioral interview, pre-test counseling, rapid tests for STIs, HIV and HCV, post-test counseling, referrals, and explaining peer-recruitment process, and incentive payment. This is illustrated in the figure 2, which outlines the flow of participants from the time they enter the study site.

Screening for eligibility is done to limit selection bias. Upon arrival to the study site, participants in the RDS studies (FSWs, PWIDs and MSMs) will be checked if they have a proper and valid coupon and that the coupon has not expired. All participants (in both the RDS and SRS) in the IBBS study will undergo a set of screening questions to ensure that each participant meets the inclusion and exclusion criteria in order to participate in the study.

**Figure 2: Flow of participants from the time they enter the study site**



## SEROLOGICAL TESTING

Respondents were tested for HBV, HCV, syphilis and HIV. The process was explained twice to each respondent: at the time of informed consent at initial intake, and before the blood sample was drawn. Laboratory technicians with qualification recognized by the MoPH were hired for each site to draw blood samples and conduct the biological testing and the pre-test and post-test counseling. Tests were conducted with rapid testing kits, using whole blood or serum. Universal safety precautions were observed. Blood samples and used equipment were properly disposed of in accordance to local regulations.

Quality of serological testing was assured through following mechanisms:

- Quality of education and qualification of the lab technicians.
- Refresher training on rapid testing and universal precautions in laboratory.
- Training on human subject protection, privacy and confidentiality required for HIV testing.
- Using the WHO testing guidelines for rapid testing in low prevalence countries for surveillance purposes.

- Regular serum sample confirmation of HIV test result from a reference laboratory: every 15<sup>th</sup> HIV test and every 5<sup>th</sup> positive HIV test was sent to a private laboratory for independent confirmation by ELISA testing.
- Rapid test for HIV, HBV, HCV and syphilis were stored in a refrigerator or cool box throughout the day. Ice or ice-packs were replenished for the cool box every day. Thermometers were kept inside the refrigerator or cool box and inside the testing room throughout the study's implementation to assure that the tests were kept within manufacturer's suggested temperature range to ensure validity and reliability of the test kits. Temperature logs were kept and the laboratory technician recorded the temperature twice daily.
- Quality control visits were made periodically through the implementation of the survey to assess that all the procedures were being followed as established in the protocol and national guidelines, and the findings recorded on quality control assessment checklists.
- The laboratory technician recorded the tests results immediately after the tests results had been reported to the participant.
- Test results were recorded in the IBBS questionnaire and in the laboratory logbook.

**Box 1: Biological testing kits used during the second round of IBBS.**

- 1) **HIV** – This three-test strategy is recommended by World Health Organization and the Afghanistan MoPH/NACP for hard-to-reach populations (18).
  - 1st rapid test (First Response HIV-1-2-0 Card Test- Premier Medical Corp, Daman, India)
  - 2nd rapid test (Alere Determine HIV-1/2, Alere Medical Co., Chiba, Japan or Retrocheck HIV ½ WB, Qualpro Diagnostics, Verna, India, depending on local availability) for those with positive results on the 1st rapid test,
  - 3rd rapid test (OraQuick Rapid HIV 1 and 2 Antibody Test, OraSure Technologies, Inc. Thailand) will also be done if the 1st rapid test is positive.
- 2) **Syphilis** – serological testing using a rapid card test (SD Bioline syphilis 3.0 Standard Diagnostics Inc., Kyonggi-do, South Korea).
  - This is an anti-treponemal rapid (anti-TP) test. The disadvantage of this test is that the anti-TP information cannot differentiate between current active infection from previous treated infection.
- 3) **Hepatitis B virus SD HBsAg 3.0** (Standard Diagnostics Inc., Kyonggi-do, South Korea).
- 4) **Hepatitis C virus SD Bioline HCV 3.0** (Standard Diagnostics Inc., Kyonggi-do, South Korea).

## DATA ANALYSIS

Respondent Driven Sampling (RDS) is a quasi-random sampling method. RDS data analyses requires adjustment or weighting for different probabilities of recruitment into the sample and for different patterns of social connections using a measure of network size and homophily (likeness) of recruiters to recruits for each variable of interest (19). Data analysis

was done using STATA 12. The procedures for RDS analysis in STATA 12 were done as specified by Schonlau (20). Network size was not estimated in RDS analysis. Self-reported social network size that was captured in the questionnaire, along with homophily, were used in RDS analysis to weight the individual data. In this study, social network size and homophily were incorporated into a standard RDS analysis, as described by Heckathorn (21, 22, 23). The network size was empirically incorporated into the analysis from self-report, as per standard procedures in RDS analyses. While the network size was not reported in the results section, the network size was assessed for outliers and validity.

In some tables, RDS weighting could not be performed given a small sample size in one or more strata of a specific variable. The small sample size affects the RDS transition matrix required for weighting analysis. When this occurs, annotations were made to state that RDS weighting adjustment could not be performed. In these cases, the crude estimates are shown instead.

Data analysis was carried out for RTW and prisoners using Systematic Random Sampling (SRS). SRS requires no weighting, so the crude estimates are shown in the sections that present the results for each of these groups.

Pearson's chi-square was used to determine the difference in key variables between 2009 and 2012. Statistical significance was defined as  $p \leq 0.05$ .

The definitions used for key variables described in this report are as follows:

Within the general HIV knowledge section of each key population section, correct knowledge of HIV was defined as:

1. Having heard of HIV
2. Correctly identifies 3 ways to prevent sexual transmission of HIV (faithfulness with uninfected sex partner, using condoms and abstinence can reduce HIV transmission)
3. Being able to reject major misconceptions about HIV transmission (a person can get HIV from a mosquito bites and by sharing a meal with someone who is infected with HIV)

The risk behavior and risk factor for each key population at higher risk for HIV can vary. There is no standardized indicator or set of indicators to report for each population. Consequently, we presented key risk behaviors and risk factors that were determined to most relevant to each population.

This IBBS survey questionnaire does ask if the respondent have had sex with boys in the past. The intent is to explore the risk behaviors of the respondent. This IBBS survey does not inquire if the participant buys, sells or sexually exploits boys. To the best of our knowledge, this IBBS survey does not deviate or is at variance from the United Nations' policy on sexual exploitation of children.

The key variable of interest for reporting HIV testing and prevention were: 1) proportion of people ever tested for HIV and knowing the results of the test; 2) percentage of participants who used condom during their last sex act.

Sero-prevalence for each disease (HIV, HBV, HCV and syphilis) was presented for each key population.

Where possible, a comparison of 2009 to 2012 of the key behavioral and disease sero-prevalence are presented for each key population.

## HIV COUNSELING

Counseling and testing during IBBS were conducted according to the counseling and testing strategy of National AIDS Control Program (NACP), which was based on the World Health Organization (WHO) counseling and testing guidelines. The national strategy ensures both the quality and quantity of services needed for universal access for the most at risk, vulnerable and general populations with referral to Antiretroviral Treatment (ART) and other services.

Before being asked for informed consent, each individual participating in the survey and volunteering to be tested is provided with information concerning the procedures, including:

- Importance of the tests;
- Voluntary nature of participation;
- Benefits and risks of testing;
- Right of the participant to know the result; and
- Explanation of how the confidentiality of results is ensured

Each respondent was counseled before and after the test. Pre-test counseling included explanation of each infection for which he/she was tested, ways of transmission, myths about transmission, prevention and discussion on personal risks and protection. In the same way each respondent was counseled after the test. In case of not testing positive for any of the infections, the post-test counseling focused on self-protection and prevention. In case of positive results the respondents were counseled on prevention of transmission to others and self-protection from other infections.

## REFERRAL SERVICES

Prior agreements were made with local NGOs and treatment/support centers in each city where the survey took place. Positive cases of syphilis were immediately referred to receive

appropriate treatment. HIV positive cases were put in contact with the center for HIV treatment with funds provided by the World Health Organization (WHO). Cases of hepatitis B and C in Kabul were referred to a public hospital providing treatment and support to people with infectious diseases. In Mazar-e-Sharif, Charikar, Jalalabad and Herat, all the positive cases were referred to NGOs that provided support and treatment for some of the infections.

## POPULATION SIZE ESTIMATION

The principle method used to estimate the size of the target population in each study site was through the unique object multiplier methodology. Prior to the implementation of epidemiological data collection, formative work was carried out with key informants about the particular unique object that is not commonplace within the general community that would be desired by the target population. The unique object identified for PWIDs was a lighter/torch; for FSWs, the unique object was a silver bird keychain; and for MSM, the unique object was also a keychain. We had asked risk reduction programs and local NGOs who provided services to target population in each study site to distribute one unique object to one person who belonged to the target population. The distribution of the unique object took place approximately one month before the start of the survey data collection. During the data collection period, the participants were asked if they received the particular unique object. From the total number of participants who were surveyed, the proportion of participants who received the unique object can be determined. This information of proportion of participants who received the unique object, combined with the knowledge of the total number of unique objects distributed, the population size of the target population can be determined by the following example calculation:

- 306 lighter/torch unique object was distributed among PWIDs in Kabul
- 2.4% of PWIDs admitted to having received unique object on a survey questionnaire
- $306 \div 2.4\% = 12,541$
- Population size of PWIDs in Kabul would then equal 12,541

## DATA MANAGEMENT AND QUALITY CONTROL

### RESPONDENT-DRIVEN SAMPLING (RDS):

In each RDS site there were three sets of data collected: completed questionnaires, participation coupons along with the coupon log-book and the lab testing log book. Completed questionnaires had two types of numbering; the first number on the questionnaire was the coupon number that was given to the respondents and was linked to the recruiter and to participants who were recruited. The second number was the study number, which was a code that indicates the site and also was linked to the day on which the person joined the



study. The coupon number and the study ID number were recorded on the questionnaire by the site manager. After the interviews were completed, the questionnaires were handed over to the site manager. Each questionnaire was checked by the site manager and interviewers were asked to correct any errors found. The site manager signed and securely stored the questionnaire. Only the site manager had access to the questionnaire before sending it to JHU office. Completed questionnaires were sent to the JHU Kabul office in JHU vehicle every two weeks. Questionnaires from Torkham, Herat, Charikar, Jalalabad and Mazar-e-Sharif were transported by field supervisors of partner organizations and JHU staff when they returned from supervision visits to those sites.

Data were double entered by JHU Data Management Unit. Through an on-going process, CS-Pro was adapted and adjusted as modifications to the assessment tools were made based on the needs of the technical staff. After data double entry, the Data Manager ran data quality queries to identify missing and potentially problematic issues related to data collection. Questionnaires with queries following this process were retrieved and reviewed by the Data Manager, Project Manager, the Chief Surveillance Officer, Research Associate, and Data Editor as appropriate to determine the proper action.

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#### SYSTEMATIC RANDOM SAMPLING (SRS):

In the studies conducted through systematic random sampling (e.g. prisoners and RTW/RTWa), only the study ID was used on the forms. No coupons were used. Data management method and data quality checks were done as described above.

#### CONFIDENTIALITY ASSURANCES

A system was put in place to assure the confidentiality of participant's data, as well as the laboratory results. The following points were used for making sure that the system worked regarding confidentiality:

- Office and field staff was trained on the definition of confidentiality, its importance and on human subjects research.
- A separate interview room, laboratory, waiting area and site manager office was procured.
- Each questionnaire had a study ID number and coupon number (in case of RDS studies). No individual identifiers were recorded.
- Informed consent was part of each questionnaire and administered before interview and each laboratory test.
- Steel boxes with lock were put in each survey site to receive the completed forms, and only site manager had access to them.
- A single JHU staff member transported data from site to office, where it was handed over to data manager and kept in a locked container.



- Participants were advised of the system to ensure strict confidentiality, which limited access to the records and the commitment of the team to maintain confidentiality. This was emphasized to participants at the beginning of interview and again before securing consent for laboratory testing.

## SURVEY TEAM TRAINING

While the team was being recruited, a comprehensive training plan was drawn up. This was used to train all survey team members who participated in the assessment. Specific modules were developed to address both general issues and issues specific to the assessment of RTWs, MSM, PWIDs, FSWs and prisoners. For training purposes, interactive presentations, Q&A sessions, role-play and discussion were used. In addition, facilitators used different visual aids to convey clear messages to the participants.

In addition, we developed training material that could be used on site by the laboratory technicians. These materials provided contained all the information necessary for conducting the testing procedures of each of the rapid tests that were being used. The information was posted on the wall at each laboratory room at each study site. The information was reviewed periodically with laboratory staff during supervision visit to assess the staff member's understanding of the conduct of testing methods in each local site.

## RESULTS SECTION A: ROAD TRANSPORT WORKERS

### IMPLEMENTATION PROCESS

Frequent movement of Road Traffic Workers and their assistants (RTW/RTWa) between countries and extensive absence from their primary home, combined with potential exposure to commercial sex work, places them at increased risk of sexually transmitted infections (STIs), including HIV.

### STUDY SITE

For participation in this study, RTW/RTWa were recruited at parking spots for trucks in Torkham, a border crossing area located in the province of Nangarhar, Afghanistan, next to Khyber Agency of Pakistan's Federally Administered Tribal Areas.

RTW and RTWa were invited to participate, screened for eligibility, interviewed and tested for HIV, HBC, HCV and syphilis in a safe and confidential location, once verbal informed consent was provided.

### SAMPLING METHOD AND SAMPLE SIZE CALCULATION

Systematic random sampling (SRS) was used to select trucks from the truck park in Torkham. The local implementer, Health and Social Development Organization (HSDO), received supervision from the JHU Kabul office to develop a sampling frame. The sampling frame was used for the daily random selection of trucks that would be included in the sample. From selected trucks, alternately a RTW or RTWa were selected for participation. When an RTW was not present, the social mobilizer selected the next truck assigned by randomization. To be eligible to participate in the study, respondents had to be at least 18 years of age, Afghan, and currently living in Afghanistan.

A total sample size of 377 drivers and driver's assistants was needed to reach our target. The sample size was calculated using the prevalence rate of 30.9% for ever having bought sex in past 6 months (this information that was reported in the 2009 IBBS), assuming a type 1 error = 0.05 and Power = 0.80, a margin of error of 5% and 15% missing data. In total, 403 potential respondents were approached to participate, and 380 participants were recruited. Out of the 380 participants, there were 203 RTWs and 177 RTW assistants. The following formula was used to determine the sample size.

$$n = \frac{t^2 p(1-p)}{d^2} \cdot (deff)$$

$p$	proportion of interested target in overall population.
$t$	value on the abscissa of a standard normal distribution, whereby 1.96 equivalent to the confident level of 95%.
$d$	relative margins error, whereby 5% margin of error was used
$deff$	design effect, which 1 is used in this calculation

## LOGISTICS

The survey was implemented from August 2012 to September 2012. JHU sub-contracted HSDO for the implementation and data collection for the project. The facility at the Torkham IBBS site was arranged to ensure participant's privacy and confidentiality. There were separate rooms for interviewers and laboratory technicians/counselors. Documents were properly and safely stored to address participant's confidentiality. The JHU Kabul office provided supervision on site by a surveillance officer every two weeks.

## RESULTS

### SOCIO-DEMOGRAPHIC CHARACTERISTICS

A total 403 RTWs and RTWa were approached by the project's social mobilizer. A total of 21 (5.2%) refused to participate in the study. The reasons for this refusal were mostly because RTWs/RTWa were waiting for custom clearance or because they were alone in the truck at that particular time and could not leave to participate in the study. A total of 382 RTWs and RTWa were recruited, 380 participated. Two participants initially accepted to participate but refused to provide a blood sample for testing. Consequently, a total of 380 participated in the survey questionnaire and 378 participated in blood testing for sero-prevalence. The characteristics for this group are set out in table 2.

Of the total 380 participants, a total of 203 (53.4%) were an RTW and 177 (46.6%) RTWa. From the total sample of RTW, 133 (65.5%) were between 18-30 years of age. The mean age for this group was 29.5 years (range=18-57 years, SD=8.3 years). Of the 203 RTW, 198 (97.5%) identified themselves as being Pashtun. There were 131 (64.5%) who said they could not read or write. Most, 163 (80.3%), reported being currently married. The average monthly income for an RTW was 18,230 AFS (range=3000 AFS-150,000 AFS SD=21,000 AFS). The mean time working as an RTW was of 9 years (range= 4 months - 40 years, SD=8.1 years) (see Table 2).

Of the 177 RTWa, the mean age for the RTWa group was of 24.3 years (range=18-42 years, SD=5.5 years). Almost all RTWa (170 [96%]) indicated they were Pashtun. There were 117 (66.1%) RTWa who were not able to read or write, and 11 (6.2%) RTWa reported being currently married. The average monthly income reported by RTWa was of 10,171 AFS (range=2000-100,000 AFS, SD=11,870 AFS). Finally, the average time that RTWa reported being employed as RTWa was of 4.5 years (range=1 month -25 years, SD=4.1 years) (see Table 2).

**Table 2: Socio-demographic characteristics for RTW and RTWa, Torkham, 2012**

Characteristic	RTW (n= 203) n (%)	RTWa (n=177) n (%)
<b>Age (years)</b>		
18-30	133 (65.5)	154 (86.9)
31-40	51 (25.1)	22 (12.6)
41-50	16 (7.9)	1 (0.6)
51-60	3 (1.5)	0 (0)
<b>Ethnicity</b>		
Pashtun	198 (97.5)	170 (96)
Tajik	3 (1.5)	7 (4)
Other	2 (1)	0 (0)
<b>Literacy</b>		
Can not read or write	131 (64.5)	117 (66.1)
Can read only	5 (2.5)	13 (7.3)
Can read and write	67 (33)	47 (26.6)
<b>Marital Status</b>		
Single	40 (19.7)	66 (37.3)
Married	163 (80.3)	111 (62.7)
Other	0 (0)	0 (0)
<b>Income (AFS)</b>		
<1000	0 (0)	0 (0)
1000-5000	15 (7.4)	58 (32.8)
5001-10,000	96 (47.3)	86 (48.6)
10,001-20,000	40 (19.7)	16 (9.0)
>20,000	51 (25.1)	17 (9.6)
<b>Length of time in this work</b>		
< 1 year	6 (3)	13 (7.42)
1-5 years	65 (32.0)	105 (58.3)
5-10 years	78 (38.4)	43 (24.6)
11-20 years	37 (18.2)	14 (8)
>20 years	17 (8.4)	2 (1.1)

(\*): Number of respondents. † Currency exchange: 1 Afs= 0.217 USD (May 11 2010)

\*\* Total % might not add 100% due to rounding \*\*\*Total may not add up due to missing responses

Out of 380 (100%) RTW/RTWa surveyed, 147 (39.1%) RTW/RTWa reported spending 11-20 nights outside their primary home in the past month (mean=17.8 nights, range=0 -30 nights, SD=7.3 nights), with most of them reporting having between 1-25 trips outside of the country in the past 6 months (mean= 18.4 trips, range=1-60 trips, SD= 6.7 trips). Of the 380, 360 (94.7%) RTW/RTWa reported their most frequent pick-up/drop-off site was Peshawar (see table 3).

**Table 3: Transport activities of RTW and RTWa, Torkham, Afghanistan, 2012**

Indicators	Category n (%)				
	1-25 trips	26-50 trips	51 – 75 trips	Don't know	
Number of trips taken outside Afghanistan in the past 6 months	339 (89.2)	27 (7.1)	1 (0.3)	10 (2.6)	
Number of nights spent away from family home in the past 30 days	1-10 nights	11-20 nights	21-30 nights	Don't know	
	88 (23.3)	147 (39.0)	129 (34.2)	13 (3.5)	
Regular pick up of drop off location <sup>δ</sup>	Peshawar	Karachi	Lahore	Quetta	Other
	360 (94.7)	18 (4.7)	13 (3.4)	0 (0)	7 (1.8)

<sup>δ</sup>Drop off and pick off location were not exclusive. One person could use multiple locations.

\*\* Total % might not add 100% due to rounding \*\*\*Total may not add up due to missing responses

### GENERAL HIV/STI KNOWLEDGE

The level of the RTW/RTWa participant's awareness of STI/HIV and condoms was determined using questions that required a yes/no answer (table 4). Of 380 (100%) RTW/RTWa surveyed, 162 (42.6%) respondents reported having heard of STIs, while 214 (56.3%) reported having heard of HIV. Out of the 380 (100%) RTW/RTWa surveyed, only 273 (71.8%) reported having heard of condoms (see table 4).

**Table 4: Knowledge about HIV prevention among RTW and RTWa Torkham, Afghanistan, 2012**

	RTW/RTWa N (%)	Yes n (%)	No n (%)	Don't Know n (%)
Have you ever heard of STI?	380 (100)	162 (42.6)	218 (57.4)	0 (0)
Have you ever heard of a condom?	380 (100)	273 (71.8)	106 (27.9)	1 (0.3)
Have you heard of HIV?	380 (100)	214 (56.3)	166 (43.7)	0 (0)
Can having sex with only one faithful uninfected sex partner reduce the risk of HIV transmission?*	380 (100)	150 (39.5)	183 (48.2)	47 (12.4)
Can using condoms reduce the risk of HIV transmission?*	380 (100)	162 (42.6)	182 (47.9)	36 (9.5)
Can people protect against HIV by abstaining from sex?*	380 (100)	177 (46.6)	185 (48.7)	18 (4.7)
Can a person get HIV from mosquito bites?*	380 (100)	210 (55.3)	100 (26.3)	70 (18.4)
Can a person get HIV by sharing meal with someone who is infected?*	380 (100)	230 (60.5)	107 (28.2)	43 (11.3)
Adequate knowledge about HIV prevention	380 (100)	45 (11.8)	335 (88.1)	0 (0)

\* Questions asked among those who have ever heard of HIV

\*\* Total % might not add to 100% due to rounding

From the 380 (100%) RTW/RTWa, 150 (39.5%) correctly identified having one faithful uninfected partner as modes of prevention from HIV infection; 162 (42.6%) RTW/RTWa recognized correct and consistent condom use as a preventive measure to protect them against HIV infection; and 177 (46.6%) correctly identified being abstinent can reduce risk HIV transmission. Out of the 380 (100%) respondents, only 107 (28.2%) participants who

correctly rejected the misconception that people get infected with HIV by sharing a meal with an HIV infected person; and 100 (26.3%) participants rejected that HIV could be transmitted through a mosquito bite (see table 4). From the total of 380 participating RTWs/RTWa, only 45 (11.8%) had adequate knowledge of HIV prevention.

## RISK BEHAVIORS AND RISK FACTORS

Out of the 379 (99.7%) RTW/RTWa who provided a response to question about “ever had penetrative vaginal or anal sex”, 309 (81.6%) reported this activity at least one time during their lifetime, with 25 (8.1%) saying that they had had sex with a man at least once. Out of 309 (100%) RTW/RTWa who ever had sex, 90 (29.1%) reported ever paying for sex from a female. Of the 90 (100%) who reported ever paying for sex from a female, 26 (29.6%) RTW/RTWa said that they had had more than one paid partner in the past six months. There were 97 (25.5%) of the 380 RTW/RTWa who said they had ever used drugs, however, none of them had said they had injected drugs. Out of 377 (100%) RTW/RTWa, 48 (12.7%) reported ever being in prison, with only 2 (4.2%) reported drug use while in prison (see table 5).

**Table 5: Risk behaviors among RTW and RTWa, Torkham, Afghanistan, 2012**

Characteristic	Respondents N (%)	Response	
		Yes n (%)	No n (%)
Ever lived outside Afghanistan in the past 10 years	380 (100)	94 (27.7)	286 (75.3)
Ever used drug	380 (100)	97 (25.5)	283 (74.5)
Ever injected drug	97 (100)	0 (0)	97 (100)
Ever bought sex from a female*	309 (100)	90 (29.1)	219 (70.9)
More than 1 FSW partners past 6 months	90 (100)	26 (29.6)	62 (70.5)
Ever had sex with another male	309 (100)	25 (8.1)	285 (92.2)
More than 1 male sex partners past 6 months	25 (100)	8 (32.0)	17 (68.0)
Ever been in prison	377(100)	48 (12.7)	329 (87.3)
Ever used drug in prison $\delta$	48 (100)	2 (4.2)	46 (95.8)

\* Total % might not add to 100% due to rounding \*\*\*Total may not add up due to missing information

## HIV TESTING AND PREVENTION

Among the 214 RTW/RTWa who had heard of HIV, 113 (52.8%) said it was possible to have confidential HIV testing, but only 29 (13.5%) reporting ever being tested for HIV themselves. Out of 273 (100%) respondents who had ever heard of condoms, 76 (27.8%) said that they had used a condom at least once during their lifetime. There were 26 (100%) RTW/RTWa who reported having paid for sex in the past six months, and 12 (46.2%) reported always using condoms during this each time during these six months when paying

for sex with a female. For the 21 (100%) RTW/RTWa who reported having sex with men/boys in the past six months, 15 (71.4%) reported always using condoms within this period of time when having sex. Regarding condom use with any partner during the last sex act, out of the 302 (100%) RTW/RTWa, 12 (4.0%) reported consistent condom use. There were one or more STI symptoms in the past 12 months, reported by 62 (16.3%) out of the 380 RTW/RTWa surveyed (genital discharge, genital sore/ulcer or jaundice). Out of the 45 (100%) RTW/RTWa who knew about health services available to them, 25 (55.6%) reported ever using them (see table 6).

**Table 6: Use of testing and preventive services among RTW/RTWa, Torkham, Afghanistan, 2012**

Characteristic	Respondents n (%)	Response		
		Yes n(%)	No n(%)	Don't know n(%)
Can get confidential HIV tests*	214 (100)	113 (52.8)	89 (41.6)	12 (5.6)
Ever been tested for HIV*	214 (100)	29 (13.5)	185 (86.4)	0 (0)
Received result of HIV test	29 (100)	27 (93.1)	1 (3.5)	1 (3.5)
Ever used condom**	273 (100)	76 (27.8)	197 (72.2)	0 (0)
Always used condom in the past 6 months with FSW***	26 (100)	12 (46.2)	14 (53.9)	0 (0)
Ever used condom in the past 6 months with men/boys	21 (100)	15 (71.4)	6 (28.6)	0 (0)
Used condom last time you had sex with:				
Female Sex Worker	25 (100)	3 (12.0)	22 (88.0)	0 (0)
Regular female partner	251 (100)	11 (4.4)	240 (95.6)	0 (0)
Casual Sex Partner	30 (100)	3 (10.0)	27 (90.0)	0 (0)
Any partner	302 (100)	12 (4.0)	290 (96.0)	0 (0)
Ever had any STI symptom in the past 12 months	380 (100)	62 (16.3)	319 (83.7)	0 (0)
Ever used Risk Reduction services	45 (100)	25 (55.6)	20 (44.4)	0 (0)

\* among those who have heard of HIV; \*\* among those who admitted to have heard of condom

\*\*\* among those who had admitted to paying for sex in last 6 month; \*\*\*\*Total may not add up due to missing responses

¶ Total % might not add to 100% due to rounding

## DISEASE SERO-PREVALENCE

Out of the 378 (100%) RTW/RTWa tested for HIV, there were no positive cases. The highest prevalence of STIs was observed for HBV, with 20 (5.3%) tests reported as reactive. For HCV, 7 (1.8%) RTW/RTWa were found positive, and 1 (0.26%) RTW/RTWa was reactive to the syphilis rapid test (see table 7).

**Table 7: Overall 2012 disease sero-prevalence among RTWs/RTWa**

Disease	Prevalence (%)	95% CI
HIV	0	0.0-0.0
HBV	5.3	3.2-8.0
HCV	1.8	0.7-3.8
Syphilis	0.26	0.0-1.4

**KEY VARIABLES 2009 VS. 2012 IBBS SURVEY**

Select key behavioral variables were compared the 2009 RTW/RTWa cohort to those found in 2012. We observed a higher proportion of participants in 2012 who reported ever being tested for HIV ( $p=0.003$ ). There was also a statistically significant increase in the proportion of participants who received their HIV test results ( $p=0.006$ ). We also observed a higher proportion of RTW/RTWa who reported ever using drugs (opium heroin, hashish, misuse of pharmaceutical drugs, alcohol or any other drug) in 2012 ( $p=0.003$ ) (see table 8). There was a statistically significant increase in the proportion that had paid for sex from 0.3% to 6.8% ( $p<0.0001$ ). Finally, we also assessed for a change in the number of sexual partners during the past six months, with no statistical significant change observed.

**Table 8: Comparison of key behavioral variables between RTW/RTWa surveyed Torkham, Afghanistan, 2009 vs. 2012 IBBS**

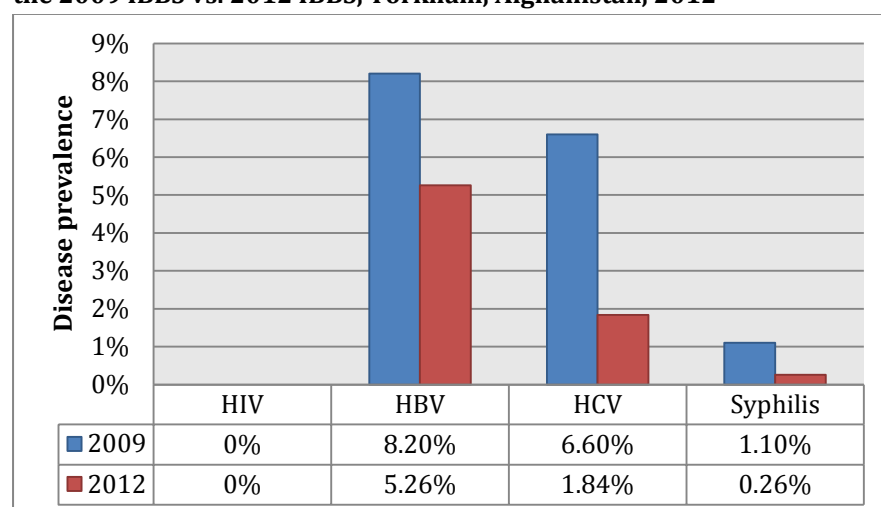
Key indicators	2009 365 (100%)	2012 380 (100%)	p-value
Adequate HIV knowledge	5 (1.4)	45 (11.8)	<0.001
Paid for sex with female partner past 6 mo.	1 (0.27)	26 (6.8)	<0.001
Sex with men in the past 6 mo.	7 (1.9)	8 (2.1)	0.85
Ever tested for HIV testing	10 (2.7)	29 (7.6)	0.003
Know results of HIV test	10 (2.7)	27 (7.1)	0.006
Ever Used Drugs	62 (17)	97 (25.5)	0.003
Condom use in last sex act	9 (2.5)	12 (3.2)	0.57

\*\*\*Total may not add up due to missing responses

Comparisons between the two cohorts were done using a two-sample t-test of proportion for two independent samples. A statistically significant lower prevalence of HCV was observed among RTW/RTWa surveyed in 2012 compared with 2009 ( $p=0.001$ ). For HIV, HBV and syphilis, no statistically significant difference was observed (see Figure 3).



**Figure 3: Disease sero-prevalence comparison between RTW/RTWa surveyed for the 2009 IBBS vs. 2012 IBBS, Torkham, Afghanistan, 2012**



## SUMMARY OF RESULTS

Regarding HIV knowledge and awareness, about half (56.3%) reported having heard of HIV (see table 4). However, only 45 out of 380 participants (12%) possessed adequate knowledge about HIV prevention.

Of the high-risk behaviors among the RTW/RTWa results, the following key behaviors are noted: 1) approximately one of every four RTW/RTWa reported ever using drugs (26%) but none reported injecting drugs; 2) about 29% reported ever buying sex from a female (see table 5) and 8% admitted to ever had sex with men and boys; and 3) only 4% reported using condom with any sexual partners (see table 6).

Only 45 out of the 380 participants (12%) knew of health services available specifically for RTW/RTWa and about half of them (55.6%) reported having used risk reduction services at least once in their lifetime (see table 6). There was a higher proportion of participants in 2012 reporting ever been test for HIV ( $p=0.003$ ) and who received the results of their test ( $p=0.006$ ) and ever used drugs ( $p=0.003$ ) (see table 8).

Laboratory testing found no cases of HIV among the participants sampled. There was about 5% HBV prevalence. HCV prevalence was 1.8%, a decrease in prevalence ( $p=0.001$ ) in 2012 compared to 2009 (see figure 5). Syphilis prevalence was 0.26%.

## RESULTS SECTION B: PRISON POPULATION

### IMPLEMENTATION PROCESS

#### STUDY SITES

Afghanistan, with an estimated population of 33.2 million people (United Nations figures, September 2012), has approximately 24,600 prisoners, including pre-trial detainees. This amounts to 74.1 prisoners/100,000 citizens (24). The two largest prisons are located in Kabul and in Herat. Current research has shown that incarceration carries an increased risk for HIV/STI infection through increased participation in high-risk behaviors such as using unsterilized injecting equipment and unprotected sexual activities (25).

#### SAMPLING METHOD AND SAMPLE SIZE CALCULATION

##### Herat

The sample size was calculated using the prevalence rate of 33% for ever bought sex among Herat prison inmates (reported in 2009 IBBS) with type 1 error =0.05, power=0.80 and 5% margin of error, and a 10% missing data was 355 prisoners. At the end of data collection, 351 agreed to participate in the study and 4 refused to participate in the study.

##### Kabul

The sample size was calculated using the prevalence rate of 35% for ever bought sex among Kabul prison inmates (reported in 2009 IBBS) assuming type 1 error = 0.05 and power = 0.80 and 5% margin of error, and a 10% missing data was of 368 participants. At the end of the data collection, 371 agreed to participate and 1 prisoner who refused to participate in the survey.

#### LOGISTICS

The survey was conducted between June 02, 2012 and August 15, 2012 in Herat prison and Pul-e-Charkhi prison in Kabul. A national NGO, CHA (Coordination for Humanitarian Assistance), was sub-contracted to implement the survey in these two sites. A total of 12 members (6 members for each site) were recruited and trained on the random sample methodology. In Herat, due to the lack of available rooms for confidential testing and interviews, tents were installed in the courtyard of the prison. In Kabul, prison's authorities provided separate room for each team member. To maintain cold chain, refrigerators and cool boxes were provided to each site.

## RESULTS

### SOCIO-DEMOGRAPHIC CHARACTERISTICS

More than half of participants at both sites were under 30 years old (55.3% in Herat, 52.6% in Kabul). The median age of Kabul participants was 30 years (mean=34.0 years), while the median age of Herat participants was 28 years (mean=31.8 years). The largest ethnic group represented at both sites was Pashtun (52.7% in Herat, 48.4% in Kabul). More than half (51.0%) of Herat participants could not read or write, while 49.1% of Kabul participants could not read or write. The majority of participants in both prisons (75.5% in Herat, 65.7% in Kabul) were married. A much larger proportion of Kabul prisoners (78.0%) were in prison less than a year than Herat prisoners (52.4%).

**Table 9: Socio-demographic characteristics of prisoners in Herat and Kabul, 2012**

	<b>Herat (n=351)</b>	<b>Kabul (n=371)</b>
<b>Characteristic</b>	<b>n (%)</b>	<b>n (%)</b>
<b>Age (years)</b>		
18-30	194 (55.3)	195 (52.6)
31-40	88 (25.1)	96 (25.9)
41-50	39 (11.1)	44 (11.9)
51-60	16 (4.6)	16 (4.3)
>60	14 (4.0)	20 (5.4)
<b>Ethnicity</b>		
Pashtun	185 (52.7)	178 (48.4)
Tajik	112 (31.9)	122 (33.2)
Other	54 (15.4)	68 (18.5)
<b>Literacy</b>		
Can not read or write	179 (51.0)	182 (49.1)
Can read only	11 (3.1)	38 (10.2)
Can read and write	161 (45.9)	151 (40.7)
<b>Marital Status</b>		
Single (never married)	84 (23.9)	123 (33.2)
Married	265 (75.5)	243 (65.7)
Other	2 (0.6)	4 (1.1)
<b>Length of time in prison</b>		
<1 year	184 (52.4)	287 (78.0)
1 year or more	167 (47.6)	81 (22.0)

¶ Total % might not add to 100% due to rounding \*\*\*Total may not add up due to missing information

## GENERAL HIV/STI KNOWLEDGE

**Table 10-Herat: Knowledge on STI and HIV prevention among Prisoners in Herat, 2012**

	<b>Prisoners N (%)</b>	<b>Yes n (%)</b>	<b>No n (%)</b>	<b>Don't Know n (%)</b>
Have you ever heard of STI?	351 (100)	211 (60.1)	137 (39.0)	3 (0.9)
Have you ever heard of a condom?	351 (100)	204 (58.1)	147 (41.9)	0 (0)
Have you heard of HIV?	351 (100)	271 (77.2)	80 (22.8)	0 (0)
Can having sex with only one faithful uninfected sex partner reduce the risk of HIV transmission?	351 (100)	173 (49.3)	127 (36.2)	51 (14.5)
Can using condoms reduce the risk of HIV transmission?	351 (100)	167 (47.6)	100 (28.5)	84 (23.9)
Can people protect against HIV by abstaining from sex?	351 (100)	156 (44.4)	167 (47.6)	28 (8.0)
Can a person get HIV from mosquito bites?	351 (100)	274 (78.0)	36 (10.3)	41 (11.7)
Can a person get HIV by sharing meal with someone who is infected?	351 (100)	197 (56.1)	128 (36.5)	26 (7.4)
Adequate knowledge about HIV prevention	351 (100)	8 (2.3)	343 (97.7)	0 (0)

\* Question were asked to those who ever heard of HIV

¶ Total % may not add to 100% due to rounding

**Table 10-Kabul: Knowledge on STI and HIV prevention among Prisoners in Kabul, 2012**

	<b>Prisoners N (%)</b>	<b>Yes n (%)</b>	<b>No n (%)</b>	<b>Don't Know n (%)</b>
Have you ever heard of STI?	371 (100)	189 (50.9)	176 (47.4)	6 (1.6)
Have you ever heard of a condom?	371 (100)	196 (52.8)	174 (46.9)	1 (0.3)
Have you heard of HIV?	371 (100)	268 (72.2)	101 (27.2)	2 (0.5)
Can having sex with only one faithful uninfected sex partner reduce the risk of HIV transmission?	371 (100)	148 (39.9)	166 (44.7)	57 (15.4)
Can using condoms reduce the risk of HIV transmission?	371 (100)	171 (46.1)	122 (32.9)	78 (21.0)
Can people protect against HIV by abstaining from sex?	371 (100)	229 (61.7)	124 (33.4)	18 (4.9)
Can a person get HIV from mosquito bites?	371 (100)	196 (52.8)	92 (24.8)	83 (22.4)
Can a person get HIV by sharing meal with someone who is infected?	371 (100)	168 (45.3)	169 (45.6)	34 (9.2)
Adequate knowledge about HIV prevention	371 (100)	40 (10.8)	331 (89.2)	0 (0)

\* Question were asked to those who ever heard of HIV

¶ Total % might not add to 100% due to rounding

Misconceptions about HIV among inmates in both Herat and Kabul prisons were high. Herat (78% or 274) and Kabul inmates (52.8% or 196) believed that they could be infected with HIV through a mosquito bite; and 56.1% (197) of Herat and 45.3% (168) of Kabul prisoners believed once could be infected by sharing a meal with an HIV-positive person.

The number of prisoners who knew that using condoms every time during sex would protect against HIV infection was 167 (47.6%) in Herat and 171 (46.1%) in Kabul. More Herat participants (49.3% or 173 participants) had accurate knowledge that having one uninfected, faithful sex partner would protect against HIV infection compared to Kabul participants (39.9% or 148 participants). More Kabul participants knew that abstinence would protect against HIV compared to Herat participants (61.7% to 44.4%). Finally, only 10.8% (40 out of 371) Kabul participants and only 2.3% (8 out of 351) Herat participants had adequate HIV prevention knowledge.

## RISK BEHAVIOR AND RISK FACTORS

### Sexual behavior and condom use

Over 21.6% (80) of Kabul participants and 28.5% (100) of Herat participants had ever bought sex from a sex worker. Among those who ever bought sex, approximately 8% (8 out of 100) of participants from Herat reported buying sex from a sex worker in the last 12 months before being imprisoned, and 75% of whom (6 out of the 8) Herat participants had more than 1 FSW partner in the past 12 months. About 40% (32 out of 80) participants from Kabul reported buying sex from a sex worker in the last 12 months before being imprisoned, and all of whom (32 out of 32) had more than 1 FSW partner in the past 12 months. Among those who paid for sex in the last 12 months, 38% (3 of 8) Herat participants and 38% (12 of 32) Kabul participants had used condom in last paid sex act. Some prisoners did report to having sex with men (7% Kabul and 14% Herat). Among those who have had sex with men, about 52% (14 of 27) Kabul participants reported having had sex with a male partner while in prison and 4 out of 14 Kabul participants stated they were forced to have sex with another man while in prison. No Herat participants had sex with another male while in prison.

**Table 11- Herat: Risk behaviors and risk factors among Herat prisoners, 2012**

	<b>Prisoner n(%)</b>	<b>Yes n(%)</b>	<b>No n(%)</b>	<b>Don't know n(%)</b>
<b>Ever used drugs</b>	351 (100)	163 (46.4)	188 (53.6)	0 (0.0)
<b>Used drugs will in prison</b>	163 (100)	43 (26.4)	120 (73.6)	0 (0.0)
<b>Used sterile injecting equipment last time injected</b>	163 (100)	1 (0.6)	160 (98.2)	2 (1.2)
<b>Injected drug while in prison *</b>	163 (100)	1 (0.6)	162 (99.4)	0 (0.0)
<b>Have access to sterile injecting equipment in prison**</b>	1 (100)	0 (0.0)	0 (0.0)	0 (0.0)
<b>Ever paid for sex from FSW</b>	351 (100)	100 (28.5)	251 (71.5)	0 (0.0)
<b>Paid for sex from FSW in last 12 months</b>	100 (100)	8 (8.0)	92 (92.0)	0 (0.0)
<b>Has more than 1 FSW partner in past 12 months</b>	8 (100)	6 (75.0)	2 (25.0)	0 (0.0)
<b>Ever had sex with a male partner</b>	351 (100)	49 (14.0)	301 (85.7)	1 (0.3)
<b>Had more than 1 male partner in last 12 months</b>	49 (100)	46 (93.9)	3 (6.1)	0 (0.0)
<b>Had sex with male partner while in prison</b>	49 (100)	0 (0.0)	49 (100.0)	0 (0.0)
<b>Ever been forced to have sex with another male</b>	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)

\*among those who ever used drugs; \*\*among those who injected drugs while in prison

**Table 11- Kabul- Risk behaviors and risk factors among Kabul prisoners, 2012**

	<b>Prisoner n(%)</b>	<b>Yes n(%)</b>	<b>No n(%)</b>	<b>Don't know n(%)</b>
<b>Ever used drugs</b>	371 (100)	61 (16.4)	309 (83.3)	1 (0.3)
<b>Used drugs while in prison</b>	61 (100)	43 (70.4)	18 (29.6)	0 (0.0)
<b>Used sterile injecting equipment last time injected</b>	61 (100)	10 (16.4)	50 (81.9)	1 (1.6)
<b>Injected drug while in prison*</b>	61 (100)	18 (29.5)	42 (68.9)	1 (1.6)
<b>Have access to sterile injecting equipment in prison**</b>	18 (100)	4 (22.2)	13 (72.2)	1 (5.6)
<b>Ever paid for sex from FSW</b>	371 (100)	80 (21.6)	289 (77.9)	2 (5.4)
<b>Paid for sex from FSW in last 12 months</b>	80 (100)	32 (40.0)	48 (60.0)	0 (0.0)
<b>Has more than 1 FSW partner in past 12 months</b>	32 (100)	32 (100.0)	0 (0.0)	0 (0.0)
<b>Ever had sex with a male partner</b>	371 (100)	27 (7.3)	336 (90.6)	8 (2.2)
<b>Had more than 1 male partner in last 12 months</b>	27 (100)	9 (33.3)	18 (66.7)	0 (0.0)
<b>Had sex with male partner while in prison</b>	27 (100)	14 (51.9)	13 (48.1)	0 (0.0)
<b>Ever been forced to have sex with another male</b>	14 (100)	4 (28.6)	10 (71.4)	0 (0.0)

\*among those who ever used drugs; \*\*among those who injected drugs while in prison

### Drug use among prisoners

Kabul and Herat prisoners varied widely in their drug use: 46% of Herat inmates (163) and 16% (61) of Kabul inmates said they have ever used drugs. Among those inmates who had ever used drugs, 70% (43 of 61) of Kabul participants and 26% (n=43 of 163) of Herat participants admitted to using drugs while in prison. Also, among those participants who said they had ever used drugs, 30% (18 out of 61) of Kabul inmates and 0.6% (1 out of 163) of Herat inmates had injected drugs since being in prison. Among those people, 4 of the 18 Kabul participants and 0 of 1 Herat participant said that they have access to sterile injecting equipment in prison.

### **HIV TESTING AND PREVENTION**

Few participants from either site (64 or 23.6% in Herat and 42 or 15.7% in Kabul) said they thought they could get a confidential HIV test in prison. Just 43 (15.9%) of Herat inmates and 51 (19%) of Kabul inmates had ever been tested for HIV. Use of HIV prevention methods was low. Only 73 out of 204 (35.8%) of Herat's participants and 49 out of 197 (24.9%) of Kabul's participants had ever used a condom. Out of the 8 Herat prisoners who admitted to paying for sex in the last 12 months, 6 (75%) inmates stated that they used always used condoms with FSW. Among the 32 Kabul inmates who had paid for sex in the last 12 months, 20 (62.5%) had always used condoms with FSW in the past 12 months. However, 234 of 351 (66.7%) of Herat participants and 209 out of 369 (56.6%) of Kabul participants reported having STI symptoms in the past 12 months.

**Table 12: Use of testing and preventive services among prisoners, Herat & Kabul, 2012**

	Prison	Prisoners n(%)	Response		
			Yes n(%)	No n (%)	Don't know n(%)
Is it possible to get confidential HIV tests?	Herat	271 (100)	64 (23.6)	161 (59.4)	46 (17.0)
	Kabul	268 (100)	42 (15.7)	183 (68.3)	43 (16.0)
Have you ever been tested for HIV?	Herat	271 (100)	43 (15.9)	228 (84.1)	0 (0.0)
	Kabul	268 (100)	51 (19.0)	214 (79.9)	3 (1.1)
Have you ever been tested for HIV in past 12 months?*	Herat	43 (100)	26 (60.5)	17 (39.5)	0 (0.0)
	Kabul	51 (100)	35 (68.6)	14 (27.4)	1 (2.0)
Know results of HIV test**	Herat	26 (100)	19 (73.1)	5 (19.2)	2 (7.7)
	Kabul	35 (100)	20 (57.1)	13 (37.1)	2 (5.7)
Have you ever used condom?***	Herat	204 (100)	73 (35.8)	131 (64.2)	0 (0.0)
	Kabul	197 (100)	49 (24.9)	147 (74.6)	1 (0.5)
Always used condom in the past 12 months with FSW****	Herat	8 (100)	6 (75.0)	2 (25.0)	0 (0.0)
	Kabul	32 (100)	20 (62.5)	13 (39.4)	0 (0.0)
Have you ever had any STI symptom in the past 12 months? ¥	Herat	351 (100)	234 (66.7)	117 (33.3)	0 (0.0)
	Kabul	369 (100)	209 (56.6)	160 (43.4)	0 (0.0)

\*Question asked among those who have ever been tested for HIV; \*\* Question among those who were tested in the last 12 months

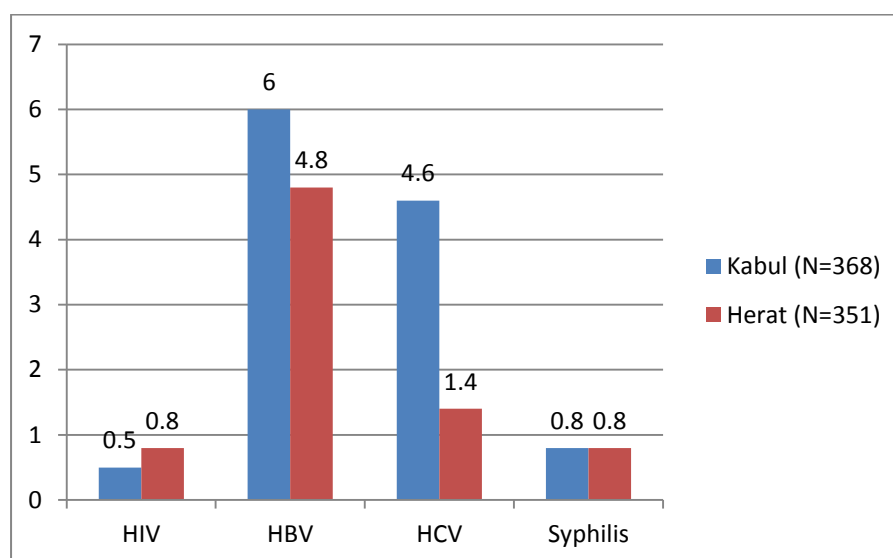
\*\*\*Question asked to those who ever heard of condom; \*\*\*\* Ever bought sex in the past 12 months

¥ defined as having burning during urination, or genital discharge/ ulcer; ¶ Total % might not add to 100% due to rounding

Total may not add up due to missing responses

## DISEASE SERO-PREVALENCE

Out of the 351 inmates from Herat prison that participated in the assessment, 3 (0.8%) were positive for HIV. Out of 368 participants from Kabul prison (3 Kabul participants had refused in blood testing), 2 (0.5%) were seropositive for HIV. The sero-prevalence of HBV was higher (4.8% in Herat, 6.0% in Kabul), as well as HCV prevalence (1.4% in Herat, 4.6% in Kabul). The difference in HCV sero-prevalence between the two prison study populations was significantly larger ( $P=0.01$ ). Please see table 14 for overall disease prevalence among combined prison population.

**Figure 4: Disease sero-prevalence among prisoners, Herat and Kabul, 2012**

**Table 13: Disease sero-prevalence among inmates in Herat & Kabul, 2012**

Disease	Prison	N (%)	$\chi^2$ (p value)
HIV	Herat (351)	3 (0.8)	0.21
	Kabul (368)	2 (0.5)	
HBV	Herat (351)	18 (4.8)	0.20
	Kabul (368)	21 (6.0)	
HCV	Herat (351)	5 (1.4)	0.01
	Kabul (368)	17 (4.6)	
Syphilis	Herat (351)	3 (0.8)	0.39
	Kabul (368)	3 (0.8)	

**Table 14: Overall 2012 disease sero-prevalence among Prisoners, Kabul & Herat**

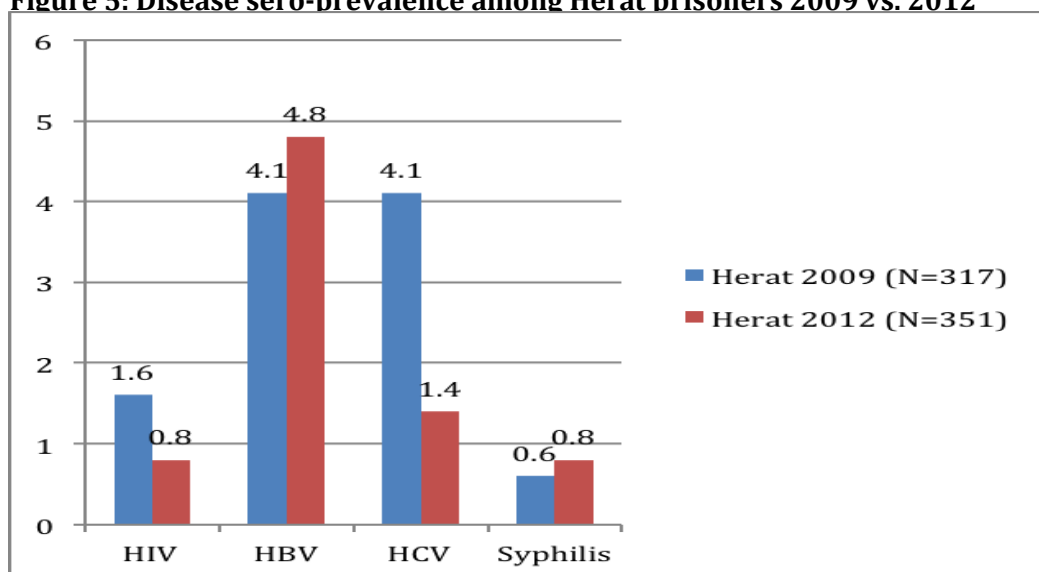
Disease	Prevalence	95% CI
HIV	0.7	0.2-1.6
HBV	5.42	3.9-7.3
HCV	3.06	1.9-4.6
Syphilis	0.83	0.3-1.8

**COMPARISON OF KEY VARIABLES: 2009 VS. 2012 IBBS**

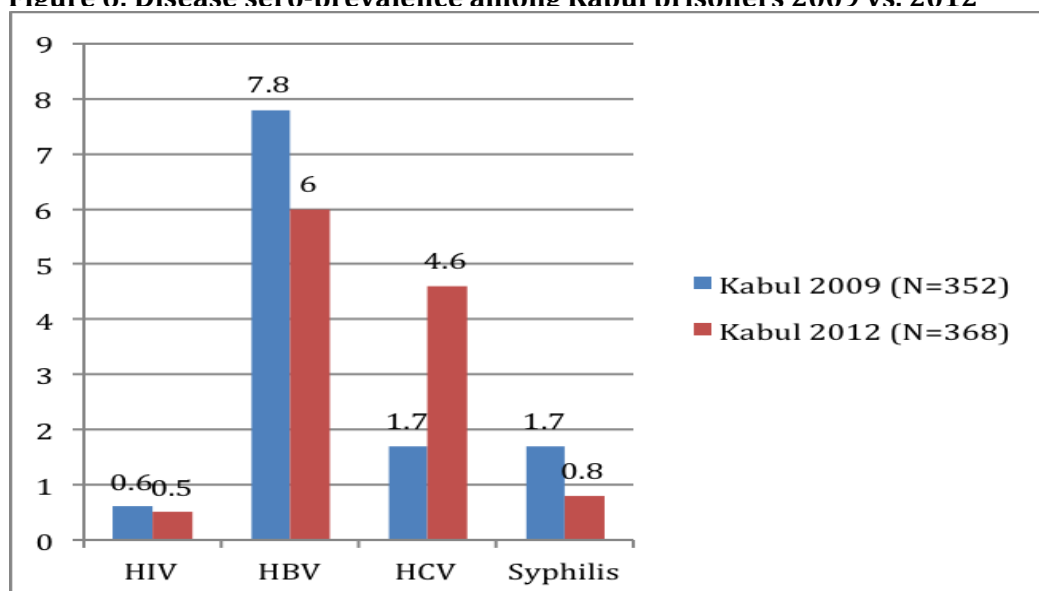
Pearson's chi-square was used to determine the difference in key variables between 2009 and 2012 in both Kabul and Herat sites. In Kabul, the HIV sero-prevalence was 0.6% in 2009 and 0.5% in 2012 sample. This is not statistically significant ( $p=1.0$ ). The HBV sero-prevalence in 2009 was 7.8%, compared to 6.0% in the 2012 sample ( $P=0.34$ ). The HCV sero-prevalence was 1.7% in 2009 and 4.6% in 2012 ( $p=0.03$ ). Syphilis sero-prevalence was 1.7% in 2009 and 0.8% in the 2012 sample ( $p=0.28$ ).



**Figure 5: Disease sero-prevalence among Herat prisoners 2009 vs. 2012**



**Figure 6: Disease sero-prevalence among Kabul prisoners 2009 vs. 2012**



In Herat, the HIV sero-prevalence was 1.6% in 2009 and 0.8% in 2012 ( $p=0.33$ ). The HBV prevalence in 2009 was 4.1%, compared to 4.8% in 2012 ( $P=0.66$ ). HCV sero-prevalence was 4.1% in 2009 and 1.4% in 2012 ( $p=0.03$ ). Syphilis sero-prevalence was 0.6% in 2009 and 0.85 in 2012 ( $p=0.74$ ).

Comparing the key indicators for knowledge and risk behaviors of 2009 to 2012, the proportion for adequate knowledge about HIV prevention improved significantly in Kabul but not in Herat. Condom use during last sex with FSW improved in both prison population but statistically significant in Herat but not in Kabul. The proportion of people who ever got test improved in 2012 in both prison populations but the proportion of prison participant who

got tested and received their HIV test results in the past year decreased in 2012 compared to 2009, statistically significant in Kabul but not in Herat.

<b>Table 15: Key variables among prisoners comparison, Herat and Kabul, 2009 vs. 2012 IBBS</b>			
	<b>2009 N (%)</b>	<b>2012 N (%)</b>	<b>p-value</b>
<b>Herat</b>			
Adequate HIV prevention knowledge*	9 (2.8)	8 (2.3)	0.66
Used condoms during last paid sex with FSW in past 12 months	2 (18.2)	6 (75.0)	0.01
Ever tested for HIV	21 (9.6)	43 (15.9)	0.04
Tested and received HIV test results in past 12 months	7 (87.5)	19 (73.1)	0.40
<b>Kabul</b>			
Adequate HIV prevention knowledge*	8 (2.3)	40 (10.8)	<0.001
Used condoms during last paid sex with FSW in past 12 months	1 (20.0)	20 (62.5)	0.07
Ever tested for HIV	24 (7.7)	51 (19.2)	0.04
Tested and received HIV test results in past 12 months	11 (91.7)	20 (57.1)	0.03

## SUMMARY OF RESULTS

While approximately 3 out of 4 respondents in Herat and Kabul have heard of HIV, there is still considerable room for improvement in the knowledge of modes to protect against HIV. Only 2% in Herat and 11% in Kabul prisoner respondents had adequate knowledge about HIV prevention. Misconceptions about HIV among prisoners in both cities were high. The poor knowledge among prisoners about risk factors for HIV/STI is concerning.

Prisoners who participated in the surveys admitted to engaging in various high-risk behaviors for HIV and STI before imprisonment. At least 1 out of 4 prisoners in each site admitted to having paid for sex. However, only 25% of Kabul and 36% of Herat prisoners stated that they have ever used condoms. It is encouraging that more prisoners who had paid for sex in the last 12 months stated that they used condoms with the FSW (63% Kabul and 75% in Herat) prior to imprisonment. Close to half of the Herat prisoners and close to 1 out of every 5 participants in Kabul admitted to having used drugs in the past, many of whom continue to use drugs while in prison.

Few prisoners have been tested for HIV (16% in Herat and 19% in Kabul). This could be related to the poor provisions for prisoners to get HIV testing confidentially.

When comparing the key findings among prisoners in 2009 to 2012, the HIV knowledge, sexual practice of condom use with last paid sex with FSW and getting HIV test results improved significantly among Kabul prisoners but not for Herat.

The disease sero-prevalence comparison of 2009 to 2012 showed no significant change for HIV results in either city. HBV sero-prevalence decreased from 7.8% to 6.0% among Kabul prisoners in the 2012 sample but prevalence in Herat remained the same (from 4.1 to now 4.8%), the changes were not significant. There was a significant change in HCV sero-prevalence. In the Kabul sample there was an observed increase in HCV sero-prevalence from 1.7% to 4.6%, while in Herat sample the prevalence decreased from 4.1% to 1.4. The reasons for these changes were unclear and needs to be investigated. Lastly, there were no significant changes in syphilis sero-prevalence in either prison sites.

## RESULTS SECTION C: MEN WHO HAVE SEX WITH MEN

### IMPLEMENTATION PROCESS

The potential for transmission of HIV between MSM has been identified as a problem since the start of the HIV epidemic. Studies conducted around the world consistently find that the MSM subpopulation tend to be underserved, understudied, and have much higher risk of HIV acquisition than the heterosexual population, even in countries with generalized epidemics (19). While HIV rates in the general population are declining in many locations, the number of MSM with HIV is increasing in many countries in the world, along with a rise in syphilis cases, signaling a possible change in sexual risk behavior (20-23).

### SURVEY SITE

The survey site for the MSM sample was located in Kabul. Participants were eligible to participate in the study if they were 18 years of age and older, had anal sex with another man in the past 12 months, and lived in Kabul at the time of the survey.

### SAMPLING METHOD AND SAMPLE SIZE CALCULATION

As there is no existing estimate of the prevalence of high-risk behavior among MSM in Afghanistan, the sample size was calculated for this study using the prevalence of high-risk sex of men in Central Asia. For this Central Asia reference population, between 45% and 52% of MSM had participated in high-risk sex (any anal sex) in a one-year period (24). Taking the mean of these prevalence, the expected prevalence is 48.5%. Based on these data, the sample size needed assuming the mean prevalence of 48.5% of MSM who engage in high-risk behavior, a type 1 error = 0.05 and power = 0.80 and a margin of error of 15% and a 15% missing data was 206 participants. At the end of the data collection, our sample size was 207 participants were recruited to participate in the survey.

Respondent-Driven Sampling (RDS) is a network-based chain referral sampling method that was used to recruit individual participants into the study. Sampling started with a purposive selection eight seed participants from the MSM population. The seeds were the starting point for the chain-referral sampling scheme. Seeds were selected based on the demographic and behavioral characteristics that were felt to be representative of the MSM population in Kabul, based on formative work. In total 28 seeds were selected and the maximum number waves reached was 11.

### IMPLEMENTATION

The survey was implemented from August 2012 to end of September 2012. JHU sub-contracted a local NGO, Youth and Health Development Organization (YHDO), to carry out the implementation and data collection for the project. The physical location of the IBBS site was arranged to ensure participant's privacy and confidentiality. Separate rooms for interviewers and laboratory technicians/counselors were arranged. Documents were properly

and safely stored to address participant's confidentiality. JHU Kabul office provided on-site quality assurance oversight every two weeks through its surveillance officers.

## RESULTS

### DEMOGRAPHIC CHARACTERISTICS

After adjustment in RDS, nearly half of participants (48.6%) were less than 25 years old and 71.4% were never married. More than half (54.8%) were of Tajik ethnicity, while 27.5% were Pashtun. About 25% of participants earn less than 5,000 Afs/month, about 40% earn between 5,000-10,000 Afs/month and slightly more than 35% earned more than 10,000 Afs/month. More than half of participants (53.3%) could not read or write.

**Table 16: RDS-weighted demographic characteristics among MSM in Kabul, 2012**

Characteristics	MSM n=207 (100%)
<b>Age (years)</b>	
18-30	96 (48.6)
31-40	54 (26.8)
41-50	20 (6.0)
51-60	37 (18.6)
<b>Ethnicity</b>	
Pashtun	63 (27.5)
Tajik	118 (54.8)
Haraza	10 (9.3)
Uzbek	6 (3.9)
Other	10 (4.4)
<b>Literacy</b>	
Can not read or write	113 (53.3)
Can read only	87 (39.4)
Can read and write	7 (7.3)
<b>Marital Status</b>	
Single	138 (71.4)
Married	69 (28.6)
Other	0 (0)
<b>Income (AFS)</b>	
<1000	4 (1.9)
1000-5000	47 (22.7)
5001-10,000	83 (40.1)
10,001-20,000	37 (17.9)
>20,000	36 (17.4)

## GENERAL HIV/STI KNOWLEDGE

Among the 207 participants, about 100 participants (55.5%) had never heard of STIs. Only 115 (51.6%) participants had heard of HIV. Knowledge of HIV protection was low: 76 (31.3%) knew that having sex with one faithful, uninfected partner protects against HIV infection; 89 (36.4%) knew that condoms protected against HIV infection; and 92 (40.3%) knew that abstinence protects against infection. Out of the 207 total participants, only 20 (4.7%) had adequate knowledge about HIV prevention.

**Table 17: RDS -weighted estimates for MSM general knowledge on STI and HIV prevention in Kabul, 2012**

	<b>MSM N (%)</b>	<b>Yes n (%)</b>	<b>No n (%)</b>	<b>Don't Know n (%)</b>
Have you ever heard of STI?	207 (100)	92 (43.7)	110 (55.5)	5 (0.8)
Have you ever heard of a condom?	207 (100)	150 (73.4)	57 (26.5)	0
Have you heard of HIV?	207 (100)	115(51.6)	92 (48.3)	0
Can having sex with only one faithful uninfected sex partner reduce the risk of HIV transmission?	207 (100)	76 (31.3)	109 (57.2)	22 (11.4)
Can using condoms reduce the risk of HIV transmission?	207 (100)	89 (36.4)	96 (53.3)	22 (10.3)
Can people protect against HIV by abstaining from sex?	207 (100)	92 (40.3)	100 (51.3)	15 (8.4)
Can a person get HIV from mosquito bites?	207 (100)	57 (27.3)	125 (57.9)	25 (14.8)
Can a person get HIV by sharing meal with someone who is infected?	207 (100)	32 (17.2)	150 (68.8)	25 (14.1)
Adequate knowledge about HIV prevention	207 (100)	20 (4.7)	187 (95.3)	0 (0)

\*\*\*Total may not add up due to missing

## SEXUAL RISK BEHAVIORS

Sexual risk behaviors were reported more often than substance abuse in this cohort. Only 4 (3.7%) of MSM participants reported injecting drugs in the last 12 months, and 65 (34.6%) reported at least one drink of alcohol in the last 12 months. Of significance, more than 40% reported ever being raped by another male and almost half had ever bought sex from a female. Out of the 202 participants who responded to multiple male sex partner inquiry (5 refused to respond), more than 84% (187) admitted to having more than 1 male sex partners in the last 12 months. Out of the 207 participants, 141 (65%) participants had unprotected insertive anal sex with a male in the last 12 months, and 165 (66.9%) had unprotected receptive anal sex with a male in the last 12 months. About 57.5% (136) admitted to having been paid for sex in the last 12 months and 31.5% (68) stated they had paid for sex with a man in last 12 months.

**Table 18: RDS-weighted estimates of risk behavior and risk factors among MSM in Kabul, 2012**

	Category n (%)			
	Yes	No	--	--
Injected in last 12 months	4 (3.7)	203 (96.3)	--	--
At least one drink of alcohol in last 12 months	65 (34.6)	142 (65.4)	--	--
Ever been raped	119 (43.8)	88 (56.2)	--	--
Ever bought sex from a female	83 (49.5)	124 (50.5)	--	--
Number of male sex partners in last 12 months	1 15 (15.5)	2-9 64 (40.9)	10-19 35 (17.2)	20+ 88 (26.3)
Had unprotected insertive anal sex with male in last 12 months	141 (65.0)	66 (35.0)	--	--
Had unprotected receptive anal sex with male in last 12 months	165 (66.9)	42 (33.1)	--	--
Paid for sex with a man in past 12 months	68 (31.5)	138 (68.5)		
Been paid for sex with a man in past 12 months	136 (57.5)	71 (42.5)	--	--

## HIV TESTING AND PREVENTION

Use of preventive methods to protect against HIV was low. Only 36 out of 207 (15.8%) participants used a condom during the last time they had sex. About 20 participants (10.8%) had ever used MSM-friendly health services. Only 49 (14.7%) had ever tested for HIV, and only 35 (10.8%) reported having been tested and received HIV test results in the past year.

**Table 19: RDS-weighted estimates of HIV testing and prevention among MSM in Kabul, 2012**

	Yes n (%)	No n (%)
Condom use at last sex	36 (15.8)	171 (84.2)
Use of MSM services	30 (10.8)	177 (89.2)
Ever tested for HIV	49 (14.7)	158 (85.3)
HIV test in last 12 months	36 (11.3)	171 (88.7)
Received results of HIV test	35 (10.8)	172 (89.2)

\*\*\*Total may not add up due to missing



## DISEASE SERO-PREVALENCE

One participant out of 207 tested positive for HIV (because of the small numbers, RDS was unable to adjust the prevalence or 95% confidence interval). Other diseases did have enough sero-positives to adjust in RDS: 1.6% were seropositive for hepatitis B, 5.3% were seropositive for hepatitis C and 10.2% tested positive for syphilis (table 20).

**Table 20: Overall 2012 disease sero-prevalence among MSM in Kabul, 2012**

Disease	Prevalence	95% CI
HIV	0.4	NA
HBV	1.6	(0.2-4.8)
HCV	5.3	(0.2-13.0)
Syphilis	10.2	(3.1-19.5)

## POPULATION SIZE ESTIMATION

The population size estimation for the number of MSMs living in Kabul, Afghanistan was achieved using the unique object multiplier method. YHDO had distributed 370 unique objects to the general MSM population in Kabul immediately prior to data collection. For these, 44 participants (or 21.4% out of a total of 206 study participants) had stated during their interview that they had received the unique object. Using the multiplier method, the calculation is 370 objects distributed, divided by 21.4%, which gives an estimated 1,729 MSM in Kabul.

It is likely that this is a low population size estimate, given the population of Kabul is more than 3 million. Explanations include the possibility that people who received the object were also more likely to be recruited into the study, as the organization did the object distribution and the data collection. Also, it is possible that the MSM community is not well networked, so participants may not have enough knowledge of the MSM community to give a well-educated estimate. Further, multiple MSM networks may exist in Kabul, which are only minimally interconnected.

## SUMMARY OF RESULTS

The low levels of education among the MSM participants (53.3% cannot read or write) may be one of the primary reasons why knowledge about HIV and STI is so poor. Less than half (43.7%) had heard of STI and only about half have heard of HIV (51.6%). Only 4.7% of the all MSM participants had adequate knowledge about HIV prevention.

The fact that many of the MSM participants were entertainers was consistent with their very high reported levels of risky behaviors. These high-risk behaviors are more sexual behaviors rather than substance abuse related behaviors. About 187 (84%) reported having two or more sexual partners in the past year and about 141 (65%) reported unprotected insertive anal sex with a male partner in the last year. Only 36 (16%) stated they had used a condom

during their last sexual encounter. About 136 (58%) stated having been paid for sex with a man in the last 12 months. Most concerning was the result that about 44% stated that they have been raped at least once in their lifetime.

It was alarming to learn that only 49 (15%) have ever been tested for HIV and only 35 (11%) stated that they tested and received HIV test results in the past 12 months. Only 30 (11%) have used health services that are oriented to the needs of the MSM population. Despite the high prevalence of high-risk behaviors, the HIV prevalence was low, with only 1 out of 207 participants testing positive. The syphilis (10%) and HCV (5%) sero-prevalence were similar to other groups in Afghanistan.

## RESULTS SECTION D: PEOPLE WHO INJECT DRUGS

### IMPLEMENTATION PROCESS

Injecting drug use is associated with high morbidity and mortality from HIV and other blood borne diseases (e.g. HCV). The main mechanism for HIV and blood borne disease transmission is through the using and sharing of non-sterile injecting equipment.

HIV has been identified as an important contributor to the burden of disease related to injection drug use. Once HIV is established within the people who inject drugs (PWID) population, the virus has the potential to spread to the general population by sexual contact. Although not as highly stigmatized and discriminated against in Afghanistan as female sex work or MSM, PWIDs are a highly marginalized population, which limits the ability of the government and others to provide access to services to prevent and control the spread of infectious diseases within this group.

### SURVEY SITE

Survey sites were located in five cities within Afghanistan: Kabul, Herat, Charikar, Jalalabad and Mazar-e-Sharif. Survey sites were located within the cities to be convenient to the PWID population, yet not too close to any risk reduction centers, which could bias the sample. Security was a fundamental factor for site selection. Participant's privacy was ensured by the use private enclosed rooms, which included the laboratory. A waiting area was also provided in addition to the rooms used for screening, interviewing, testing and coupon management. When clinics or businesses neighbored the site, they were informed before the start of the survey that a health clinic was to be temporarily established. This was done to mitigate any concern that neighbors might have about the flow of participants.

### SAMPLING METHOD AND SAMPLE SIZE CALCULATION

The sample size for each city was calculated using the high-risk behavior of using non-sterile injecting equipment prevalence (from data that was reported in the 2009 IBBS), a 95% confidence interval, a power of 80%, a margin of error of 10% in Kabul and 15% in the other sites. A 15% missing data was also factored into the sample size.

**Table 21: Calculation of Sample Size for PWID Survey**

City	P (%)	Final sample size
Kabul	39.2	420
Herat	28.1	175
Mazar-i-Sharif	28.1	175
Jalalabad	28.1	175
Charikar	28.1	175
Total		1120

Estimations of high-risk behavior prevalence was inconclusive in Mazar-i-Sharif in 2008 survey because of the small sample size and high-risk behavior estimates are not available for

the new sites of Jalalabad and Charikar. Consequently, we used the prevalence of sharing of non-sterile injecting equipment among PWIDs in Herat as estimates for Charikar, Jalalabad and Mazar-i-Sharif (see table 21).

## LOGISTICS

The survey sites were open from 8 am to 2 pm, five days a week. Data were collected from July 2012 to the end of September 2012. JHU sub-contracted with the local NGO, Medical Management Refresher Courses for Afghanistan (MMRCA), for the implementation and data collection for the project. The physical arrangement of the IBBS site was arranged to ensure participant's privacy and confidentiality. Documents were properly and safely stored to protect participant's confidentiality. JHU Kabul office provided on-site quality assurance supervision visits every two weeks by its surveillance officers.

All the tables shown in the results section refer to the RDS-weighted estimates. The crude estimates are shown in tables that are included in the annex section.

The number of seeds and number of RDS waves are listed below:

**Maximum number of waves reached and number of seeds by site during the second round of IBBS**

Site	Maximum number of waves reached	Number of seeds
People who inject drugs		
Kabul	7	15
Mazar-i-Sharif	9	20
Herat	9	18
Jalalabad	8	21
Charikar	7	13

## RESULTS

### DEMOGRAPHIC CHARACTERISTICS

Out of 1163 (100%) PWIDs surveyed in all five cities, most of them were 18-30 years of age. Ethnicity varied according by city. While most of Kabul's participants were Tajik (52.3%), Tajiks composed 32.4% of our sample in Herat and 27.5% in Mazar-i-Sharif. Except for Herat, more than half of the PWID participants in each city could not read. Over 80% of the surveyed participants reported having some level of employment, with all of Kabul's participants reporting being currently employed. Approximately 8 out of every 10 of those who reported having a monthly income said that they earned from 1000 to 10,000 AFS (20 USD- 200 USD). More than half of the participants surveyed in each city had lived outside of Afghanistan in the past 10 years. The highest proportion of people who had lived outside of the country in the past 10 years was reported in Herat (93.3%) and the lowest was reported in Charikar (42.4 %).

**Table 22: RDS-weighted proportions of socio-demographic characteristics of PWIDs in Kabul, Herat, Mazar-i-Sharif, Jalalabad, and Charikar, 2012**

Characteristics	Kabul N=369 (100%)	Herat N=186 (100%)	Mazar-i-Sharif N=254 (100%)	Jalalabad N=237 (100%)	Charikar N=117 (100%)
<b>Age (years)</b>					
18-30	242 (65.6)	125 (70.1)	151 (59.6)	196 (85.3)	89 (71.3)
31-40	96 (26.0)	42 (20.3)	76 (28.5)	32 (12.1)	21 (15.4)
41-50	28 (7.6)	16 (8.5)	19 (8.1)	6 (2.0)	7 (12.3) *
51-60	3 (0.8)	3 (1.0)	6 (3.3)	2 (0.6)	
>60	0 (0)	0 (0)	0 (0.5)	0 (0)	
<b>Ethnicity</b>					
Pashtun	58 (15.7)	34 (17.3)	20 (11.6)	215 (91.1)*	10 (8.6)*
Tajik	193 (52.3)	58 (32.4)	79 (27.5)	16 (6.8)*	105 (89.7)*
Hazara	103 (27.9)	91 (48.4)	88 (31.0)	0 (0)*	0 (0)*
Other	15 (0.3)	3 (1.9)	66 (29.8)	5 (2.1)*	2 (1.7)*
<b>Literacy</b>					
Cannot read or write	196 (53.1)	72 (40.1)	161 (67.7)	137 (60.1)	76 (65.7)
Can read only	4 (1.1)	0 (0)	NA	0 (0)	NA
Can read and write	169 (45.8)	114 (59.9)	93(32.3)	99 (39.9)	41 (34.3)
<b>Marital Status</b>					
Single	221 (59.9)	100 (55.7)	134 (52.7)	77(36.6)	57 (44.0)
Married	136 (36.9)	69 (38.5)	103(42.2)	152 (61.4)	57 (53.3)
Other	12 (3.3)	16 (5.8)	17 (5.1)	7 (2.0)	3 (2.7)
<b>Income (AFS)</b>					
<1000	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)*
1000-5000	148 (40.1)	73 (48.0)	125 49.2)	75 (43.9)	25 (21.4)*
5001-10,000	185 (50.1)	107 (49.0)	102 (45.6)	76 (42.6)	72 (61.5)*
10,000-20,000	28 (7.6)	4 (3.0)	12 (4.9)	37 (13.0)	18 (15.4)*
>20,000	8 (2.2)	0 (0)	3 (0.3)	3 (0.5)	2 (1.7)*
<b>Employment</b>					
Employed	369 (100)	185 (99.6)	241 (94.1)	191 (82.6)	113 (96.1)
Unemployed	0 (0)	1 (0.4)	13 (5.9)	45 (17.4)	4 (3.9)
<b>Lived outside Afghanistan past 10 yr</b>					
Yes	234 (63.4)	172 (93.3)	151 (53.5)	127 (54.3)	57 (42.4)
No	135 (36.6)	14 (6.7)	102 (46.5)	109 (45.7)	60 (57.6)

¶ Total % might not add to 100% due to rounding \*\*\*Total may not add up due to missing responses

Y Currency exchange: 1 Afs= 0.217 USD (Oct 12 2012)

\* RDS weighting adjustments not possible because of transition matrix

## KNOWLEDGE OF HIV/STI RISK FACTORS

### Kabul

Most PWIDs in Kabul reported having heard of STIs, while a higher proportion (95.2%) reported having heard of HIV. Many were also able to correctly identify preventive methods. However, most participants still had major misconceptions about HIV infection, with 232

(61.9%) PWIDs reporting that a mosquito could transmit HIV and 216 (58.5%) believed that HIV by sharing a meal with a person infected with HIV. The adequate knowledge about HIV prevention was 11.5% (41) in Kabul.

**Table 23-Kabul: RDS –weighted estimates for PWIDs general knowledge on STI and HIV prevention in Kabul, 2012**

	<b>PWID N (%)</b>	<b>Yes n (%)</b>	<b>No n (%)</b>	<b>Don't Know n (%)</b>
Have you ever heard of STI?	369 (100)	344 (94.1)	25 (5.9)	0
Have you ever heard of a condom?	369 (100)	323 (87.3)	46 (12.7)	0
Have you heard of HIV?	369 (100)	351 (95.2)	18 (4.8)	0
Can having sex with only one faithful uninfected sex partner reduce the risk of HIV transmission?	369 (100)	247 (67.1)	122 (32.9)	0
Can using condoms reduce the risk of HIV transmission?	369 (100)	248 (68.7)	121 (31.3)	0
Can people protect against HIV by abstaining from sex?	369 (100)	260 (70.4)	109 (29.6)	0
Can a person get HIV from mosquito bites?	369 (100)	232 (61.9)	137 (38.1)	0
Can a person get HIV by sharing meal with someone who is infected?	369 (100)	216 (58.5)	153 (41.5)	0
Adequate knowledge about HIV prevention	369 (100)	41 (11.5)	328 (88.5)	0

¶ Total % might not add to 100% due to rounding \*\*\*Total may not add up due to missing

### *Herat*

**Table 23-Herat: RDS –weighted estimates for PWIDs general knowledge on STI and HIV prevention in Herat, 2012**

	<b>PWID N (%)</b>	<b>Yes n (%)</b>	<b>No n (%)</b>	<b>Don't Know n (%)</b>
Have you ever heard of STI?	186 (100)	145 (78.2)	41 (21.8)	0
Have you ever heard of a condom?	186 (100)	159 (83.3)	27 (16.7)	0
Have you heard of HIV?	186 (100)	172 (91.3)	14 (8.7)	0
Can having sex with only one faithful uninfected sex partner reduce the risk of HIV transmission?	186 (100)	155 (83.7)	31 (16.3)	0
Can using condoms reduce the risk of HIV transmission?	186 (100)	155 (83.7)	31 (16.3)	0
Can people protect against HIV by abstaining from sex?	186 (100)	154 (83.5)	32 (16.5)	0
Can a person get HIV from mosquito bites?	186 (100)	55 (30.7)	131 (69.3)	0
Can a person get HIV by sharing meal with someone who is infected?	184 (100)	58 (33.2)	126 (66.8)	0
Adequate knowledge about HIV prevention	186 (100)	74 (38.0)	112 (62.0)	0

¶ Total % might not add to 100% due to rounding \*\*\*Total may not add up due to missing

Out of a sample of 186 (100%) PWIDs surveyed in the city of Herat, 145 (78.2%) reported ever having heard of STIs, while 172 (91.3%) reported ever having heard of HIV. About 83% of respondents were also able to correctly identify HIV preventive methods. About 131

(69.3%) were able to reject misconception that mosquito bites and 126 (66.8%) that sharing meals with HIV infected person could transmit HIV. The adequate knowledge of HIV prevention was 38% (74) among Herat PWIDs.

#### *Mazar-i-Sharif*

Out of a sample of 254 (100%) PWIDs surveyed in the city of Mazar-i-Sharif, 54 (13.9%) PWIDs reported ever having heard of STIs, while 200 (74.1%) reported ever having heard of HIV. Among all participants, with 190 (70.7%) PWIDs identified the use of condoms and sexual abstinence as methods to prevent HIV infection. Approximately 59.2% (165) participants were able to identify “having one faithful uninfected partner” as a method of preventing HIV infection. The proportion with adequate knowledge about HIV prevention was. 39.1% (111).

**Table 23-Mazar: RDS -weighted estimates for PWIDs general knowledge on STI and HIV prevention in Mazar-i-Sharif, 2012**

	<b>PWID N (%)</b>	<b>Yes n (%)</b>	<b>No n (%)</b>	<b>Don't Know n (%)</b>
<b>Have you ever heard of STI?</b>	254 (100)	54 (13.9)	200 (86.1)	0
<b>Have you ever heard of a condom?</b>	254 (100)	206 (78.4)	48 (21.6)	0
<b>Have you heard of HIV?</b>	254 (100)	200 (74.1)	54 (25.9)	0
<b>Can having sex with only one faithful uninfected sex partner reduce the risk of HIV transmission?</b>	254 (100)	165 (59.2)	89 (40.8)	0
<b>Can using condoms reduce the risk of HIV transmission?</b>	254 (100)	190 (70.7)	64 (29.3)	0
<b>Can people protect against HIV by abstaining from sex?</b>	254 (100)	190 (70.7)	64 (29.3)	0
<b>Can a person get HIV from mosquito bites?</b>	254 (100)	112 (48.5)	142 (51.5)	0
<b>Can a person get HIV by sharing meal with someone who is infected?</b>	254 (100)	37 (16.7)	213 (83.3)	0
<b>Adequate knowledge about HIV prevention</b>	254 (100)	111 (39.1)	143 (61.0)	0

\*RDS weighting adjustments not possible because of transition matrix

¶ Total % might not add to 100% due to rounding \*\*\*Total may not add up due to missing

#### *Jalalabad*

Of a sample of 236 (100%) PWIDs surveyed in the city of Jalalabad, 117 (37.9%) reported ever having heard of STIs, while 186 (75.1%) reported ever having heard of HIV. Among all participants, with 90 (44.0%) correctly identified the use of condoms, 88 (43.1%) knew that having one faithful uninfected partner and 88 (42.6%) knew that sexual abstinence as methods to prevent HIV infection. About 62.7% (157) correctly rejected misconceptions about mosquito bites and 53% (152) rejected sharing meals could transmit HIV. There were only 13.7% (31) PWID participants in Jalalabad who had adequate knowledge about HIV prevention.



**Table 23-Jalalabad: RDS -weighted estimates for PWIDs general knowledge on STI and HIV prevention in Jalalabad, 2012**

	<b>PWID N (%)</b>	<b>Yes n (%)</b>	<b>No n (%)</b>	<b>Don't Know n (%)</b>
Have you ever heard of STI?	236 (100)	117 (37.9)	119 (62.1)	0
Have you ever heard of a condom?	236 (100)	177 (71.2)	59 (29.8)	0
Have you heard of HIV?	236 (100)	186 (75.1)	50 (24.9)	0
Can having sex with only one faithful uninfected sex partner reduce the risk of HIV transmission?	236 (100)	88 (43.1)	148 (56.9)	0
Can using condoms reduce the risk of HIV transmission?	236 (100)	90 (44.0)	146 (56.0)	0
Can people protect against HIV by abstaining from sex?	236 (100)	88 (42.6)	148 (57.4)	0
Can a person get HIV from mosquito bites?	236 (100)	79 (37.3)	157 (62.7)	0
Can a person get HIV by sharing meal with someone who is infected?	236 (100)	80 (34.1)	152 (53.0)	0
Adequate knowledge about HIV prevention	236 (100)	31 (13.7)	205 (86.3)	0

¶ Total % might not add to 100% due to rounding \*\*\*Total may not add up due to missing

### *Charikar*

From the sample of 117 (100%) PWIDs surveyed in the city of Charikar, 59 (42.3%) reported ever having heard of STIs, while 68 (49.5%) reported ever having heard of HIV. Among all participants, 46 (33.7%) correctly identified the use of condoms, 58 (40%) knew that having one faithful uninfected partner, sexual abstinence and 60 (42.6) understood correctly that being abstinent as methods to prevent HIV infection. Almost all of the PWIDs sampled at this site (113 of 117 or 96.6%) reported that HIV could be transmitted through a mosquito bite. Out of the 117 total in Charikar, no participants had adequate knowledge about HIV prevention.

**Table 23-Charikar: RDS -weighted estimates for PWIDs general knowledge on STI and HIV prevention in Charikar, 2012**

	<b>PWID N (%)</b>	<b>Yes n (%)</b>	<b>No n (%)</b>	<b>Don't Know n (%)</b>
Have you ever heard of STI?	117 (100)	59 (42.3)	58 (57.7)	0
Have you ever heard of a condom?	117 (100)	51 (39.9)	66 (60.1)	0
Have you heard of HIV?	117 (100)	68 (49.5)	49 (50.5)	0
Can having sex with only one faithful uninfected sex partner reduce the risk of HIV transmission?	117 (100)	58 (40.0)	59 (60.0)	0
Can using condoms reduce the risk of HIV transmission?	117 (100)	46 (33.7)	71 (66.3)	0
Can people protect against HIV by abstaining from sex?	117 (100)	60 (42.6)	57 (57.4)	0
Can a person get HIV from mosquito bites?	117 (100)	113 (96.6)	4 (3.4)	0
Can a person get HIV by sharing meal with someone who is infected?	115 (100)	42 (31.8)	73 (68.2)	0
Adequate knowledge about HIV prevention	117 (100)	0 (0)	117 (100)	0

¶ Total % might not add to 100% due to rounding \*\*\*Total may not add up due to missing responses

## RISK BEHAVIOR AND RISK FACTORS

### Kabul

Out of the 369 (100%) PWIDs from Kabul, 346 (93.8%) reported injecting drugs for less than 3 years, with about half (50.8%) who injected for 1-3 years. The mean time of injecting drugs was of 1.4 years (range 1 month-10 years). Out of our sample, 306 (82.6%) PWIDs in Kabul reported injecting drugs more than once a day. Out of our total sample, 365 (99.6%) reported to have never shared a needle and none reported to have shared a needle in the past 3 months. Out of the 213 (100%) participants who were sexually active in the last 6 months, 73 (29.3%) reported paying for female sex and 13 (1.9%) reported having sex with a boy. Out of our total sample, 110 (26.5%) PWIDs reported being imprisoned at least once.

**Table 24-Kabul: Kabul RDS-weighted Risk behavior and risk factors among PWIDs, 2012**

	PWID N (100%)	Category n (%)					
Length of time injecting drugs (years)	369(100)	<1	1 – 3	> 3	---	---	<i>Mean</i>
		163 (43.6)	183 (50.8)	23 (5.6)	---	---	1.4
Frequency of injecting drugs	369(100)	≤ Once/day	> Once a day			---	<i>Median</i>
		63 (17.4)	306 (82.6)			--	NA
# of sex partners past 6 months		0	1	2 or more	No Response	---	<i>Mean</i>
Female	213(100)	165 (77.5)**	43 (20.2)**	2 (0.9)**	3 (1.4)**		1.18
Male	213(100)	7 (3.3)**	3 (1.4)**	2 (0.9)**	1 (0.5)**		0.77
		PWID N (100%)	Yes n (%)		No n (%)		
Ever shared non-sterile injecting equipment		368 (100)	3 (0.4)		365 (99.6)		
Used non-sterile injecting equipment at least once in the past 3 months		369 (100)	0 (0)		369 (100)		
Had symptoms associated with an STI in past 12 months		369 (100)	34 (9.4)		225 (90.7)		
Ever imprisoned		369 (100)	110 (26.5)		259 (73.4)		
Ever bought sex from a women*		213 (100)	73 (29.3)		140 (70.7)		
Ever had sex with a man *		213 (100)	0 (0)		213 (100)		
Ever had sex with a boy*		213 (100)	13 (1.9)		200 (98.2)		

\*among those who had sex in last 6 months ; \*\* RDS weighting adjustments not possible because of transition matrix; \*\*\*Total may not add up due to missing responses

### Herat

Out of the 186 (100%) PWIDs surveyed in the city of Herat, most reported injecting drug use for 1 to 3 years 99 (52.4%). The mean time of injecting drugs was of 2.9 years (range= 1 month-20 years). All of the PWIDs sampled reported injecting drugs more than once a day. Out of the 186 (100%) PWIDs, 118 (66.8%) reported to have never shared a needle, with 44 (24.5%) reporting sharing non-sterile injecting equipment in the past 3 months. Out of the 158

(100%) participants who were sexually active in the last 6 months, 118 (73.4%) reported ever paying for female sex and 20 (10.4%) reported having sex with a boy at least once in their lifetime. Out of the 186 (100%) PWID, 136 (74%) participants reported being imprisoned at least once.

**Table 24-Herat: Herat RDS-weighted Risk behavior and risk factors among PWIDs, 2012**

	PWID N (100%)	Category n (%)					
<b>Length of time injecting drugs (years)</b>	186 (100)	<b>&lt;1</b>	<b>1 – 3</b>	<b>&gt; 3</b>	---	---	<b>Mean</b>
		42 (25.8)	99 (52.4)	45 (21.8)	---	---	2.9 years
<b>Frequency of injecting drugs</b>	186 (100)	<b>≤ Once/day</b>	<b>&gt; Once/day</b>			---	<b>Median</b>
		0 (0)	186(100)			---	
<b># of sex partners past 6 months</b>		0	1	2 or more	No Response		0
<b>Female</b>	158 (100)	122 (77.2)**	23 (14.6)**	2 (1.3)**	11 (7.0)**		
<b>Male</b>	158 (100)	21 (13.3)**	2 (1.3)**	1 (0.6)**	134 (84.8)**		

	PWID N (100%)	Yes n (%)	No n (%)
<b>Ever shared non-sterile injecting equipment</b>	185 (100)	67 (33.2)	118 (66.8)
<b>Used non-sterile injecting equipment at least once in the past 3 months</b>	186 (100)	44 (24.5)	142 (75.5)
<b>Had symptoms associated with an STI in past 12 months</b>	186 (100)	120 (61.5)	66 (38.5)
<b>Ever imprisoned</b>	186 (100)	136 (74.0)	50 (26.0)
<b>Ever bought sex from a women*</b>	158 (100)	118 (73.4)	40 (26.6)
<b>Ever had sex with a man *</b>	155 (100)	1 (0.7)**	154 (99.3)**
<b>Ever had sex with a boy*</b>	155 (100)	20 (10.4)	135 (89.6)

\*among those who had sex in last 6 months ; \*\* RDS weighting adjustments not possible because of transition matrix; \*\*\*Total may not add up due to missing responses

### *Mazar-i-Sharif*

Out of the 254 (100%) PWIDs surveyed in the city of Mazar-i-Sharif, 158 (63.2%) of them reported injecting drug use for 1 to 3 years. The mean time of injecting drugs was of 2.4 years (range= 1 month-20 years). Out of the 254 (100%) PWIDs, 230 (89.3%) of surveyed PWID reported injecting drugs more than once a day and 239 (93.6%) said to have never shared a needle and 5 (2%) reported using syringes/needles that were not sterile in the past 3 months. Out of the 193 (100%) participants who were sexually active in the last 6 months, 98 (44.5 %) reported ever paying for female sex, 4 (1%) reported having sex with a man and 33 (18.5%) reported having sex with a boy at least once in their lifetime. Out of the 254 (100%) PWID, 101 (31.5%) participants reported being imprisoned at least once.

**Table 24-Mazar: Mazar-i-Sharif RDS-weighted Risk behavior and risk factors among PWIDs, 2012**

	PWID N (100%)	Category n (%)					
Length of time injecting drugs (years)	254 (100)	<1	1 – 3	> 3	---	---	<b>Mean</b>
		49 (18.9)	158 (63.2)	47 (17.8)	---	---	2.4
Frequency of injecting drugs	254 (100)	≤ <b>Once/day</b>	<b>&gt; Once/day</b>			---	<b>Median</b>
		24 (10.7)	230 (89.3)			--	
# of sex partners past 6 months		<b>0</b>	<b>1</b>	<b>2 or more</b>	<b>No Response</b>	---	<b>Mean</b>
Female	193 (100)	117 (51.2)	70 (48.5)	5 (0.3)			
Male	193 (100)	4 (1.0)	189 (99.9)	0 (0)			
		<b>PWID N (100%)</b>	<b>Yes n (%)</b>		<b>No n (%)</b>		
Ever shared non-sterile injecting equipment		253 (100)	14 (6.4)		239 (93.6)		
Used non-sterile injecting equipment at least once in the past 3 months		254 (100)	5 (2.0)		249 (98.0)		
Had symptoms associated with an STI in past 12 months		254 (100)	41 (16.4)		213 (83.6)		
Ever imprisoned		254 (100)	101 (31.5)		153 (68.5)		
Ever bought sex from a women*		193 (100)	98 (44.5)		95 (55.5)		
Ever had sex with a man *		193 (100)	4 (1.0)		189 (90.0)		
Ever had sex with a boy*		193 (100)	33 (18.5)		160 (81.5)		

\*among those who had sex in last 6 months ; \*\*\*Total may not add up due to missing responses

### *Jalalabad*

Out of the 236 (100%) PWIDs surveyed in the city of Jalalabad, 151 (63.5%). of them reported injecting drug use for 1 to 3 years. The mean time of injecting drugs was of 2.3 years (range= 3 month-21 years). Out of the 236 (100%) PWIDs, 167 (79.6%) of the PWIDs surveyed in this city reported injecting drugs once a day or less than once every day and 207 (92.1%) said to have never shared a needle. Out of the 186 (100%) participants who were sexually active in the last 6 months, 115 (55.8%) reported ever paying for female sex and 59 (28.5%) reported having sex with a boy at least once in their lifetime. Out of the 235 (100%) PWID, 107 (37.5%) participants reported being imprisoned at least once.

**Table 24-Jalalabad: Jalalabad RDS-weighted Risk behavior and risk factors among PWIDs, 2012**

	PWID N (100%)	Category n (%)					
Length of time injecting drugs (years)	236(100)	<1	1 – 3	> 3	---	---	<b>Mean</b>
		47 (24.0)	151 (63.5)	38 (12.5)	---	---	2.3
Frequency of injecting drugs	236 (100)	≤ <b>Once/day</b>	<b>&gt; Once/day</b>			---	<b>Median</b>
		167 (79.6)	69 (20.3)			--	--
# of sex partners past 6 months		0	1	2 or more	No Response	---	<b>Mean</b>
Female	184 (100)	22 (14.4)	118 (67.0)	44 (18.6)			
Male	184 (100)	60 (32.3)**	9 (4.8)**	9 (4.8)**	108 (58.1)**		
		<b>PWID N (100%)</b>	<b>Yes n (%)</b>		<b>No n (%)</b>		
Ever shared non-sterile injecting equipment		236 (100)	29 (7.8)		207 (92.1)		
Used non-sterile injecting equipment at least once in the past 3 months		NA	NA		NA		
Had symptoms associated with an STI in past 12 months		236(100)	54 (25.7)		182 (74.3)		
Ever imprisoned		235(100)	107 (37.5)		128 (62.5)		
Ever bought sex from a women*		186(100)	115 (55.8)		71 (44.2)		
Ever had sex with a man *		186 (100)	2 (1.1)**		184 (98.9)**		
Ever had sex with a boy*		186(100)	59 (28.5)		127 (71.5)		

\*among those who had sex in last 6 months ; \*\* RDS weighting adjustments not possible because of transition matrix; \*\*\*Total may not add up due to missing responses

### Charikar

Out of the 117 (100%) PWIDs surveyed in Charikar, 63 (53.2%) of them reported injecting drug use for less than a year. The mean time of injecting drugs was of 1.3 years (range= 2 month-10 years). Out of the 117 (100%) PWIDs, 94 (75.1%) reported injecting drug more than once every day. Most of the PWID surveyed reported never sharing a needle (101 or 91.4%) and most reported using sterile syringes in the past 3 months 109 (95.8%), respectively). Out of the 93 (100%) participants who were sexually active in the last 6 months, 42 (35.4 %) reported ever paying for female sex, 1 (1.3%) reported ever having sex with a man and 16 (18.9%) reported having sex with a boy at least once in their lifetime. Out of the 117 (100%) PWID, 58 (54.1%) participants reported being imprisoned at least once.

**Table 24-Charikar: Charikar RDS-weighted Risk behavior and risk factors among PWIDs, 2012**

	PWID N (100%)	Category n (%)					
Length of time injecting drugs (years)	117 (100)	<1	1 – 3	> 3	---	---	<i>Mean</i>
		63 (53.2)	43 (41.1)	11 (5.7)	---	---	1.3
Frequency of injecting drugs	115 (100)	≤ <b>Once/day</b>	<b>&gt; Once/day</b>			---	<i>Median</i>
		21 (24.9)	94 (75.1)			--	
# of sex partners past 6 months		0	1	2 or more	No Response	---	<i>Mean</i>
Female	93 (100)	22 (24.2)	50 (59.4)	21 (16.4)			
Male	93 (100)	16 (16.7)**	1 (1.0)**	0 (0)**	76 (82.3)**		
		<b>PWID N (100%)</b>	<b>Yes n (%)</b>		<b>No n (%)</b>		
Ever shared non-sterile injecting equipment		116 (100)	15 (8.6)		101 (91.4)		
Used non-sterile injecting equipment at least once in the past 3 months		117 (100)	8 (4.2)		109 (95.8)		
Had symptoms associated with an STI in past 12 months		117 (100)	16 (12.1)		101 (87.9)		
Ever imprisoned		117 (100)	58 (54.1)		59 (45.9)		
Ever bought sex from a women*		93 (100)	42 (35.4)		51 (64.6)		
Ever had sex with a man *		93 (100)	1 (1.3)		92 (97.1)		
Ever had sex with a boy*		93 (100)	16 (18.9)		77 (81.1)		

\*among those who had sex in last 6 months ; \*\* RDS weighting adjustments not possible because of transition matrix; \*\*\*Total may not add up due to missing responses

## HIV TESTING AND PREVENTION

Reported use of condoms during last sex act was assessed among those who had ever heard of condoms in all five cities where the IBBS was conducted. The highest proportion of condom use during the last sex act was reported in Kabul, with 64 (27.3%) participants using them out of the 213 (100%) PWIDs surveyed in Kabul who reported ever heard of condoms. In contrast, the lowest proportion was reported among the PWIDs surveyed in Charikar, with 5 (3.6%) out of 91 (100%) PWIDs reporting its use during the last sex act.

We assessed knowledge about risk reduction services (RRS) and their use among PWIDs living in these five cities. Among those who knew that RRS were provided, we asked them if they had made use of them at some point in their lifetime. The highest proportion of PWIDs who reported awareness of RRS in their city was reported in Mazar-i-Sharif, with 214 out of 254 (80%) PWIDs. The lowest proportion was reported among participants living in Charikar, with 3 out of 117 (2.2%) participants reporting being aware of RRS, and only 1 (0.4%) reporting every using RRS services. Regarding the use of RRS among those who knew that they were being provided, the highest proportion of RRS users was reported in the city of Herat, with 128 (99%) of participants reporting using them at some point in their lifetime.

Finally, we assessed for the number of PWIDs who had ever been tested for HIV among those who had ever heard of HIV. The highest proportion of PWIDs ever tested for HIV was reported in the cities of Herat and Mazar-i-Sharif, with 122 (58.3%) and 122 (59.9%), respectively. The lowest proportion of HIV tested participants was in Kabul where 24 out of the 351 (2.7%) PWIDs had been tested for HIV.

**Table 25: RDS weighted HIV testing and prevention among PWIDS  
– Kabul, Herat, Mazar-i-Sharif, Jalalabad, and Charikar, 2012**

	<b>PWID n (%)</b>	<b>Yes n (%)</b>	<b>No n (%)</b>
<b>Kabul</b>			
Condom use at last sex*	213 (100)	64 (27.3)	149 (72.8)
Awareness of risk reduction services	369 (100)	244 (63.9)	125 (36.1)
Use of risk reduction services	244 (100)	208 (88.1)	37 (11.9)
Ever tested for HIV	351 (100)	24 (2.7)	327 (97.3)
Received HIV testing in past 12 months	24 (100)	18 (75.0)**	6 (25.0)**
Received results of HIV test	18 (100)	14 (77.8)**	4 (22.2)**
<b>Herat</b>			
Condom use at last sex*	157 (100)	36 (18.2)	121 (81.8)
Awareness of risk reduction services	186 (100)	130 (58.9)	56 (41.1)
Use of risk reduction services	130 (100)	128 (99.0)	2 (1.0)
Ever tested for HIV	172 (100)	122 (58.3)	50 (41.7)
Received HIV testing in past 12 months	122 (100)	118 (95.9)**	4 (3.3)**
Received results of HIV test	118 (100)	80 (67.8)**	38 (32.2)**
<b>Mazar-i-Sharif</b>			
Condom use at last sex*	193 (100)	54 (20.4)	139 (79.6)
Awareness of risk reduction services	254 (100)	214 (80.0)	40 (20.0)
Use of risk reduction services	214 (100)	209 (97.3)	5 (2.4)
Ever tested for HIV	199 (100)	122 (59.9)	77 (40.1)
Received HIV testing in past 12 months	122 (100)	84 (68.8)	38 (31.1)
Received results of HIV test	84 (100)	75 (89.3)	9 (10.7)
<b>Jalalabad</b>			
Condom use at last sex*	171 (100)	38 (15.1)	133 (94.9)
Awareness of risk reduction services	236 (100)	153 (58.0)	83 (42.0)
Use of risk reduction services	153 (100)	130 (86.8)	23 (13.2)
Ever tested for HIV	185 (100)	49 (12.6)	136 (87.3)
Received HIV testing in past 12 months	49 (100)	35 (71.4)**	14 (28.6)**
Received results of HIV test	35 (100)	31 (88.6)**	4 (11.4)**
<b>Charikar</b>			
Condom use at last sex*	91 (100)	5 (3.6)	88 (96.4)
Awareness of risk reduction services	117 (100)	3 (2.2)	114 (97.8)
Use of risk reduction services	3 (100)	1 (0.4)	2 (99.6)
Ever tested for HIV	68 (100)	15 (16.0)	53 (84.0)
Received HIV testing in past 12 months	15 (100)	7 (46.7)**	8 (53.3)**
Received results of HIV test	7 (100)	6 (85.7)**	1 (14.3)**

\* among those who have heard of condoms; \*\* RDS weighting adjustments not possible because of transition matrix; \*\*\*Total may not add up due to missing responses

## DISEASE SERO-PREVALENCE



Disease sero-prevalence was assessed using rapid testing kits approved by the World Health Organization and following Afghan national testing guidelines.

**Table 26: RDS-weighted disease sero-prevalence among PWIDs in Kabul, Herat, Mazar-i-Sharif, Jalalabad, and Charikar, 2012**

Disease	Kabul	Herat	Mazar	Jalalabad	Charikar
<b>HIV N(%)</b>	369 (100)	185 (100)	254 (100)	236 (100)	117 (100)
Positive	9 (2.4)	29 (13.3)	6 (0.3)	6 (1.0)	1 (0.9)*
Negative	360 (92.7)	156 (86.7)	248 (99.7)	230 (99.0)	116 (99.1)*
<b>HBV N(%)</b>	369 (100)	185 (100)	252 (100)	236 (100)	117 (100)
Positive	27 (7.3)	11 (4.4)	11 (3.2)	21 (8.3)	7 (5.4)
Negative	342 (92.7)	174 (95.6)	243 (96.7)	215 (91.7)	110 (94.6)
<b>HCV N(%)</b>	369 (100)	185 (100)	254 (100)	236 (100)	117 (100)
Positive	102 (27.6)	131 (70.0)	60 (18.8)	36 (9.5)	33 (25.0)
Negative	267 (72.4)	54 (32.0)	194 (81.2)	200 (90.5)	84 (75.0)
<b>Syphilis N(%)</b>	368 (100)	184 (100)	254 (100)	236 (100)	117 (100)
Positive	21 (6.2)	5 (3.3)	23 (6.9)	18 (3.8)	3 (4.0)
Negative	347 (93.8)	179 (96.7)	231 (93.1)	218 (96.2)	114 (96.0)

\* RDS weighting adjustments not possible because of transition matrix; \*\*Total may not add up due to missing responses

The RDS-weighted HIV sero-prevalence was highest in the city of Herat, where the estimated sero-prevalence was of 29 (13.3%). Lower HIV sero-prevalence estimates were reported in the city of Kabul 9 (2.4%), Jalalabad 6 (1%) and Mazar-i-Sharif 6 (0.3%). The crude HIV sero-prevalence estimate for Charikar was of 1 (0.86%), with only 1 PWID being reactive to all three tests. The overall HIV prevalence among PWIDs in all 5 cities was 4.4% (95% CI, 3.3-5.8)

PWIDs in these cities were tested for HBV. The highest sero-prevalence estimates reported were among PWIDs in the city of Jalalabad where 21 (8.3%) were seropositive and Kabul where 27 (7.3%) tested positive. The lowest sero-prevalence estimate was reported among PWIDs living in Mazar-i-Sharif, with 11 (3.2%) participants testing positive. The overall HBV prevalence among PWIDs in all 5 cities was 6.6% (95% CI, 5.3-8.2)

For HCV infection, the RDS-weighted estimates were highest among those living in the city of Herat, with 131 (70%) out of 185 PWID testing positive. The lowest sero-prevalence estimate was reported in Jalalabad, with 36 (9.5%) out of 236 participants testing positive for HCV. The overall HCV prevalence among PWIDs in all 5 cities was 31.2% (95% CI, 28.5-33.9).

All participants were tested for syphilis. The RDS-weighted prevalence estimates were highest among participants living in the city of Mazar-i-Sharif with 23 (6.9%) seropositive and Kabul, with 21 (6.2%) seropositive for syphilis. The lowest RDS-weighted sero-prevalence was observed among PWIDs in Herat, with a prevalence of 5 (3.3%) out of 185

participants who were tested. The overall syphilis prevalence among PWIDs in all 5 cities is 6.0% (95% CI, 4.7-7.6).

**Table 27: Overall 2012 disease sero-prevalence among PWIDs (combined population from Kabul, Herat, Mazar-i-Sharif, Jalalabad, and Charikar)**

Disease	Prevalence	95% CI
HIV	4.4	3.3-5.8
HBV	6.6	5.3-8.2
HCV	31.2	28.5-33.9
Syphilis	6	4.7-7.6

## POPULATION SIZE ESTIMATION

The unique object multiplier method showed that the population size of PWIDs in Kabul was estimated at 12,541; in Herat there was approximately 1,211 PWIDs; in Mazar-i-Sharif there was about 1,496 PWIDs and in Jalalabad there was approximately 1,471 PWIDs. In Charikar, no participants stated that they had received the unique object (torch/lighter) that was distributed and thus the multiplier method could not be applied.

**Table 28: Population size estimation for PWIDs by sites, 2012**

City	Population size
Kabul	12,541 PWIDs
Herat	1,211 PWIDs
Mazar-i-Sharif	1,496 PWIDs
Jalalabad	1,471 PWIDs
Charikar	NA

## KEY VARIABLES 2009 VS. 2012 IBBS REPORT

We selected key behavioral and biological variables from the data collected from the IBBS conducted in 2009 and 2012 for further analysis based on their epidemiological significance regarding HIV, STI and BBI among PWIDs. These key variables were compared with estimates reported in the 2009 IBBS among PWID living in Kabul, Herat and Mazar-i-Sharif. We explored these variables for statistically significant difference using a student t-test to obtain p-values. For the following tables, crude estimates are being used for the comparisons.

### *Kabul*

In the city of Kabul, we surveyed 286 PWIDs during the 2009 IBBS and 369 PWIDs for the 2012 IBBS. We observed a significantly lower proportion of PWIDs who had correct HIV knowledge in 2012, based on the UNGASS indicator definitions. In 2009 there were 82

(29.4%) PWIDs classified as having correct HIV knowledge and 2012 the number dropped to 41 (11.1%) of PWIDs ( $p<0.001$ ).

PWIDs who have been injecting drugs for more than 3 years were significantly fewer in 2009 (33 (11.5%)) than in 2012 (23 (5.6%)) ( $p=0.006$ ). A significantly lower percentage of PWIDs surveyed in 2012 reported ever being in prison (110 (29.8%)) when compared to 2009 cohort (188 (65.7%)) ( $p<0.001$ ). Finally, a significantly higher proportion of PWIDs reported ever using risk reduction services in 2012 (208 or 84.9%) than in 2009 (200 or 72.2%) ( $p= 0.005$ ).

**Table 29-Kabul: Crude key behavioral variables among PWIDs in 2009 vs. 2012**

	<b>2009 IBBS N (%)</b>	<b>2012 IBBS N (%)</b>	<b>p-value</b>
<b>HIV Knowledge N(%)</b>	286 (100)	369 (100)	
Correct	82 (29.4)	41 (11.1)	<0.001
Incorrect	197 (70.6)	328 (88.8)	<0.001
<b>Time injecting drugs N(%)</b>			
<1 year	122 (43.1)	163 (43.6)	0.89
1-3years	131 (45.8)	183 (50.8)	0.20
>3 years	33 (11.5)	23 (5.6)	0.006
<b># of sex partners N(%)</b>	260 (100)	213 (100)	
0	130 (50)	165 (77.5)	<0.001
1	105 (40.4)	43 (20.2)	<0.001
2	13 (5.0)	2 (0.9)	0.01
≥ 3	12 (4.6)	2 (0.9)	0.01
<b>Condom use last sex N(%)</b>	260 (100)	213 (100)	
Yes	83 (31.9)	64 (30.1)	0.67
No	177 (68.1)	148 (69.5)	0.74
<b>Ever in prison N(%)</b>	286 (100)	369 (100)	
Yes	188 (65.7)	110 (29.8)	<0.001
No	98 (34.3)	259 (70.2)	<0.001
<b>Ever used RRS N(%)</b>	277 (100)	244 (100)	
Yes	200 (72.2)	208 (85.2)	0.005
No	77 (27.8)	36 (14.8)	0.005

\*\*\*Total may not add up due to missing responses

### *Herat*

In Herat, there were 160 PWIDs surveyed using IBBS in 2009 and 186 in 2012. There was a significantly lower proportion of PWID reporting having multiple sexual partners (more than 2) in 2012 compared with 2009 ( $p<0.001$ ). There was also a significantly higher proportion of PWIDs who reported ever using RRS in 2009 (65.9%) compared with 2012 (98.5%) ( $p<0.0001$ ). There were no significant changes observed for correct HIV knowledge, years spent injecting drugs, condom use during the last sex act and having ever being in prison.

**Table 29-Herat: Crude key behavioral variables among PWIDs in 2009 vs. 2012**

	<b>2009 IBBS N (%)</b>	<b>2012 IBBS N (%)</b>	<b>p-value</b>
<b>HIV Knowledge N(%)</b>	160 (100)	186 (100)	
Correct	70 (43.8)	74 (39.8)	0.65
Incorrect	90 (56.3)	112 (60.2)	0.67
<b>Time injecting drugs N(%)</b>	160 (100)	186 (100)	
<1 year	51 (31.9)	42 (22.6)	0.06
1-3years	82 (51.2)	99 (53.2)	0.72
>3 years	27 (16.9)	45 (24.2)	0.11
<b># of sex partners N(%)</b>	160 (100)	158 (100)	
0	36 (22.5)	122 (77.2)	< 0.001
1	59 (36.9)	23 (14.6)	< 0.001
2	29 (18.1)	2 (1.3)	< 0.001
≥ 3	10 (6.2)	0 (0)	< 0.001
<b>Condom use last sex N(%)</b>	135 (100)	157 (100)	
Yes	23 (17.0)	36 (22.9)	0.21
No	112 (83.0)	121 (77.1)	0.20
<b>Ever in prison N(%)</b>	160 (100)	186 (100)	
Yes	119 (74.4)	136 (73.1)	0.83
No	41 (25.6)	50 (26.9)	0.83
<b>Ever used RRS N(%)</b>	126 (100)	130 (100)	
Yes	83 (65.9)	128 (98.5)	<0.0001
No	43 (34.1)	2 (1.5)	<0.0001

\*\*\*Total may not add up due to missing responses

### *Mazar-i-Sharif*

Finally, we compared key behavioral variables in Mazar-i-Sharif PWIDs surveyed in 2009 and 2012. We found a statistically significantly higher proportion of PWIDs with correct HIV knowledge in 2012 (43.7%) than in 2009 (3.9%) ( $p<0.001$ ). The proportion of PWID who had ever used RRS in 2009 was 76.6% compared with 97.7% in 2012 ( $p<0.001$ ). There was also a significantly lower proportion of PWID reporting injecting drugs for less than one year in 2012 (19.3%) than in 2009 (37.2%) ( $p<0.001$ ) and ever being in prison (2009=62.7% vs. 2012=39.8%,  $p<0.001$ ).

**Table 29-Mazar: Crude key behavioral variables among PWIDs in 2009 vs. 2012**

	2009 IBBS N (%)	2012 IBBS N (%)	p-value
<b>HIV Knowledge N(%)</b>	102 (100)	254 (100)	
Correct	4 (3.9)	111 (43.7)	<0.001
Incorrect	98 (96.1)	143 (56.3)	<0.001
<b>Time injecting drugs N(%)</b>	102 (100)	254 (100)	
<1 year	38 (37.2)	49 (19.3)	<0.001
1-3years	47 (46.1)	158 (62.2)	0.006
>3 years	17 (16.7)	47 (18.5)	0.68
<b># of sex partners N(%)</b>	102 (100)	193 (100)	
0	74 (72.6)	118 (61.1)	0.05
1	24 (23.5)	70 (36.3)	0.02
2	0 (0)	2 (1.0)	0.37
≥ 3	4 (3.9)	3 (1.6)	0.22
<b>Condom use last sex N(%)</b>	87 (100)	193 (100)	
Yes	23 (26.4)	54 (28.0)	0.73
No	64 (73.6)	139 (72.0)	0.73
<b>Ever in prison N(%)</b>	102 (100)	254 (100)	
Yes	64 (62.7)	101 (39.8)	<0.001
No	38 (37.3)	153 (60.2)	<0.001
<b>Ever used RRS N(%)</b>	77 (100)	214 (100)	
Yes	59 (76.6)	209 (97.7)	<0.001
No	18 (23.4)	5 (2.3)	<0.001

\*\*\*Total may not add up due to missing responses

**Table 30: Crude key biological variables comparison among PWIDs in Kabul, Herat and Mazar-i-Sharif, 2009 vs. 2012**

Disease Prevalence	2009	2012	p-value
<b>Kabul N(%)</b>	286 (100)	369 (100)	
HIV +	9 (3.2)	9 (2.4)	0.54
HBV +	20 (7.0)	27 (7.3)	0.88
HCV +	106 (37.1)	102 (27.6)	0.01
Syphilis+	22 (7.7)	21 (5.7)	0.31
<b>Herat N(%)</b>	158 (100)	185 (100)	
HIV +	29 (18.3)	29 (15.7)	0.52
HBV +	14 (8.8)	11 (5.9)	0.29
HCV +	92 (57.9)	131 (70.8)	0.01
Syphilis+	3 (1.9)	5 (2.7)	0.62
<b>Mazar-i-Sharif N(%)</b>	102 (100)	254 (100)	
HIV +	1 (1)	6 (2.4)	0.51
HBV +	6 (5.9)	11 (4.4)	0.41
HCV +	26 (25.5)	60 (23.6)	0.69
Syphilis+	17 (16.7)	23 (9.1)	0.03

\*\*\*Total may not add up due to missing responses

We also explored for statistically significant difference within the same city comparing the 2009 vs. 2012 PWID cohort. There was a significantly higher proportion of PWIDs who tested positive for HCV in Herat (57.9% in 2009 compared to 70.8% in 2012, p=0.01) with

an opposite trend observed for HCV among this group in Kabul (37.1% in 2009 compared to 27.6% in 2012,  $p=0.01$ ). In the Mazar-i-Sharif, we observed a significant decrease in the proportion of PWID testing positive for syphilis in 2012 (9.1%) compared with 2009 (16.7%) ( $p=0.03$ ).

## SUMMARY OF RESULTS

During 2012, we surveyed a total of 1163 PWID in five cities in Afghanistan: 369 (31.7%) in Kabul, 186 (16.0%) in Herat, 254 (21.8%) in Mazar-i-Sharif, 237 (20.4%) in Jalalabad and 117 (10.1%) in Charikar. Most of the PWIDs surveyed were between 18-30 years of age, with ethnicity representative of the city where they were surveyed, most were illiterate, and most reported having some type of employment. Of those employed, more 90% had an income of less than 10,000 AFS (200 USD) every month.

Having ever heard of HIV and STIs among PWIDs was highest in Kabul and Herat. The proportion of PWID who had heard of HIV and/or STIs was highest in Kabul (95.2% and 94.1%, respectively) and was lowest in Mazar-i-Sharif for STIs (13.9%) and in Charikar (49.5%) for HIV. Adequate knowledge about HIV was highest in Mazar-i-Sharif (39.1%) and Herat (38%) and lowest in Charikar (0%).

In almost all cities, PWIDs had over 70% of the participants had heard of condoms, except in Charikar where only 40% of PWID reported ever hearing of condoms. Condom use during last sex, however, was low in all cities. The highest proportion of condom use was in in Kabul (27%) and lowest in Charikar (3.6%). Approximately 6 out of every 10 PWIDs in Herat reported having had symptoms of an STI (e.g. genital sore/ulcer, genital discharge or jaundice), in the past 12 months, compared with 1 out every 4 having STI symptoms in Jalalabad. The differences observed among cities in the prevalence of STI symptoms in the past 12 months were significant ( $p<0.001$ ). Ever buying sex from a female was highest in the city of Herat (73.4%). Approximately 40% of the participants living in the other 4 cities reported paying for sex with a female, with differences across cities being statistically significant ( $p<0.001$ ). Ever having sex with a man was rarely reported by participants from any cities, with the exception of Herat where 10.4% of PWIDs reported having sex with a boy at least once in their lifetime. The lowest reported prevalence for this behavior was reported among PWIDs living in Kabul (1.9%). Differences for ever having sex with boys was statistically significant ( $p<0.001$ ) among cities.

The longest average time for the use of injected drugs was reported among PWIDs living in the city of Herat (2.7 years) with the shortest average time in Charikar (1.3 years). In most cities, PWIDs reported the use of injected drugs more than once a day, with the exception of Jalalabad, where 79.6% reported injecting once a day or less. In Herat 33% reported sharing non-sterile injecting equipment. This is a much higher proportion than reported in other cities, ranging from 0.4% to 9%. On average, 26-54% of PWIDs reported ever being imprisoned, with the highest number being in Herat (73.4%). Differences across cities were significant ( $p<0.001$ ).

Awareness and use of risk reduction services was high in all cities except for Charikar where only 2.2% of PWIDs reported knowing that services were provided and only 0.4% reported using them. The proportion of those who ever received HIV testing is still quite low in Kabul (2.7%), Jalalabad (12.6%), and Charikar (16%) ( $p < 0.001$ ). It is unclear as to why there was a significant drop (from 23.8% in 2009 to 2.7% in 2012) in the proportion who ever got tested for HIV in Kabul. This finding does point to the need to conduct further investigations as to explain the significant drop in the proportion (which is beyond the scope of IBBS). However, in HIV testing increased in the Herat (32.5% in 2009 to 58.3%) and Mazar-i-Sharif (23.5% to 59.9%).

The highest RDS-weighted HIV sero-prevalence among the five cities for 2012 was in Herat (13.3%) and Kabul (2.4%). For HCV sero-prevalence it was Herat (70%) and Kabul (27.6%). Comparing the crude prevalence in 2009 to 2012, there were no significant changes noted, except for the increases in HCV sero-prevalence in Herat and Kabul and for syphilis in Mazar-i-Sharif.

The comparison of the key behavior variables among PWIDs in Kabul, Herat and Mazar-i-Sharif from 2009 to 2012 showed a significant decrease in the proportion of PWIDs who had adequate knowledge about HIV prevention in Kabul ( $p < 0.001$ ) and a significant increase in Mazar-i-Sharif. Ever being in prison was significantly lower among PWID surveyed in 2012 in the cities of Kabul and Mazar-i-Sharif, with no change observed in Herat. All three cities showed a significant increase in the proportion of participants who had ever used RRS between the two surveys.



## RESULTS SECTION E: FEMALE SEX WORKERS

### IMPLEMENTATION PROCESS

#### SURVEY SITE

Survey sites were located in three cities within Afghanistan: Kabul, Herat, and Mazar-i-Sharif. Survey sites were located for convenient access by FSWs, yet not too close to any risk reduction centers, which could bias the sample. Security was a fundamental factor for site selection. Participant's privacy was ensured by the use of enclosed rooms, including the laboratory. A waiting area was provided in addition to the rooms used for screening, interviewing, testing and coupon management. When clinics or businesses neighbored the site, they were informed in advance that a health clinic was to be temporarily established. This was done to mitigate any concern about the flow of participants.

#### SAMPLING METHOD AND SAMPLE SIZE CALCULATION

The sample size for each city was calculated using the behavior prevalence (the proportion of condom use among FSWs at the last sexual intercourse of 58.1%) from the information that was reported in the Kabul in the 2009 Integrated Biological and Behavioral Survey, a 95% confidence interval, and margin of error of 10% and a power of 80%. The same behavior prevalence is applied to Herat and Mazar-i-Sharif in 2012.

**Table 31: Calculation of Sample Size for FSW Survey**

City	<i>P</i> (%)	Final sample size
Kabul	58.1	374
Herat	58.1	374
Mazar-i-Sharif	58.1	374
Total		1122

#### LOGISTICS

The survey site was open from 8 am to 2 pm, five days a week. Data were collected from beginning of July 2012 to the end of September 2012. JHU sub-contracted the local NGO, MMRCA, for the implementation and data collection for the project. The physical arrangement of the IBBS site ensured participant's privacy and confidentiality. Documents were properly and safely stored to protect participant's confidentiality. JHU Kabul office provided on-site quality assurance supervision every 2 weeks through its surveillance officers.

The number of seeds and number of RDS waves are presented below:

**Maximum number of waves reached and number of seeds by site during the second round of IBBS**

Site	Maximum number of waves reached	Number of seeds
Female Sex Workers		
Kabul	8	15
Mazar-i-Sharif	8	40
Herat	9	15

## RESULTS

### DEMOGRAPHIC CHARACTERISTICS

**Table 32: RDS weighted Demographic characteristics among Females Sex Workers in Kabul, Herat, and Mazar, 2012**

Characteristics	Kabul N=333 (100%)	Herat N=344 (100%)	Mazar-i-Sharif N=355 (100%)
<b>Age (years)</b>			
18-24	139 (44.4)	97 (28.7)	137 (36.9)
25-29	103 (32.0)	104 (30.4)	77 (20.1)
30-34	45 (11.3)	62 (17.8)	67 (16.4)
≥35	46 (12.2)	81 (23.1)	74 (26.5)
<b>Ethnicity</b>			
Tajik	19 (5.7)	262 (78.2)	166 (41.2)
Pashtun	5 (1.4)	59 (14.2)	74 (20.7)
Hazara	279 (84.9)	16 (5.2)	40 (9.1)
Uzbek	8 (2.3)	5 (2.4)	69 (27.4)
Other	22 (5.7)	0 (0)	6 (1.7)
<b>Literacy</b>			
Cannot read or write	237 (72.3)	111 (30.1)	249 (62.5)
Can read only	23 (6.3)	15 (4.6)	7 (1.4)
Can read and write	73 (21.4)	218 (65.3)	99 (36.2)
<b>Marital Status</b>			
Never married	21 (4.9)	6 (1.7)*	89 (29.7)
Married	207 (63.7)	265 (77.0)*	180 (43.4)
Divorced	30 (10.5)	19 (5.5)*	--
Separated	8 (1.7)	17 (4.9)*	--
Widowed	46 (15.0)	37 (10.8)*	--
Other	21 (4.2)	--	85 (26.9)
<b>Income (AFS)</b>			
<1000	1 (0.3)*	0 (0)*	3 (0.9)*
1000-5000	119 (35.7)*	89 (25.9)*	200 (59.7)*
5001-10,000	160 (48.1)*	202 (58.7)*	84 (25.1)*
10,001-20,000	39 (11.7)*	52 (15.1)*	29 (8.7)*
>20,000	14 (4.2)*	1 (0.3)*	19 (5.7)*

\* RDS weight adjustments not possible because of transition matrix \*\*\*Total may not add up due to missing responses

The most frequent age group was 18-24years in all cities (Herat: 28.7%; Kabul: 44.4%; Mazar: 36.9%). The vast majority of FSW in Herat were Tajik (78.2%), but in Kabul most

were Hazara (84.9%), and in Mazar most were Tajik (41.2%). The majority of FSWs (~85%) in each of the 3 cities reported earning less than 10,000 Afs/month. For some variables (i.e. marital status and monthly income), the transition matrix used by RDS weighting did not allow for RDS analysis to be performed because the significant disproportionately low distribution of the responses in one or more to the strata. Crude percent estimates were used instead for these variables. Most women in Kabul were married (63.7%) and the most common marital status reported in Mazar was also married (43.4%). The majority of FSW in Herat could read and write (65.3%) but not in Kabul (21.6%) or Mazar (36.2%).

#### GENERAL HIV/STI KNOWLEDGE

The majority of participants had heard of STIs in Herat (n=230 or 66%), but not in Kabul (n=113 or 29.2%) or Mazar (n=87 or 28.8%). The proportion of FSWs who have heard of HIV was low: 40% (161) in Kabul; 37.8% (154) in Herat; and 25.4% (83) in Mazar. Adequate knowledge about HIV prevention among FSWs was low in all 3 cities, 19.1% (61) in Mazar-i-Sharif; 15.8% (61) in Kabul; and 8.8% (36) in Herat. The proportion of people who knew that they could protect themselves from infection with condoms, having one faithful and uninfected sexual partner, or abstinence from sexual intercourse, was less than 40% in Herat and Kabul. In Mazar, fewer than 30% of FSWs knew they could protect themselves from HIV infection through these methods. About 314 (90%) participants in Herat and 254 (70%) participants in Kabul had heard of condoms, but just 149 (38.4%) of participants in Mazar knew about condoms.

**Table 33-Kabul: RDS –weighted estimates for FSWs’ general knowledge on STI and HIV prevention in Kabul, 2012**

	<b>FSW N (%)</b>	<b>Yes n (%)</b>	<b>No n (%)</b>	<b>Don’t Know n (%)</b>
<b>Have you ever heard of STI?</b>	333 (100)	113 (29.2)	220 (70.8)	0 (0)
<b>Knowledge of STI symptoms in women*</b>	333 (100)	246 (76.5)	87 (23.5)	0 (0)
<b>Knowledge of STI symptoms in men*</b>	333 (100)	315 (94.8)	18 (5.2)	0 (0)
<b>Have you ever heard of a condom?</b>	333 (100)	254 (70.2)	79 (29.8)	0 (0)
<b>Have you heard of HIV?</b>	333 (100)	161 (39.9)	172 (60.1)	0 (0)
<b>Can having sex with only one faithful uninfected sex partner reduce the risk of HIV transmission?</b>	333 (100)	138 (34.4)	190 (64.5)	5 (1.0)
<b>Can using condoms reduce the risk of HIV transmission?</b>	333 (100)	137 (34.8)	185 (62.2)	11 (3.0)
<b>Can people protect against HIV by abstaining from sex?</b>	333 (100)	135 (32.8)	194 (66.3)	4 (0.9)
<b>Can a person get HIV from mosquito bites?</b>	333 (100)	252 (79.6)	81 (20.4)	0 (0)
<b>Can a person get HIV by sharing meal with someone who is infected?</b>	333 (100)	230 (71.4)	103 (28.6)	0 (0)
<b>Adequate knowledge about HIV prevention</b>	333 (100)	61 (15.8)	272 (84.2)	0 (0)

\*\*\*Total may not add up due to missing responses

**Table 33-Herat: RDS –weighted estimates for FSWs’ general knowledge on STI and HIV prevention in Herat, 2012**

	<b>FSW N (%)</b>	<b>Yes n (%)</b>	<b>No n (%)</b>	<b>Don't Know n (%)</b>
Have you ever heard of STI?	344 (100)	230 (66.0)	114 (34.0)	0 (0)
Knowledge of STI symptoms in women*	344 (100)	114 (34.0)	230 (66.0)	0 (0)
Knowledge of STI symptoms in men*	344 (100)	111 (33.8)	233 (66.2)	0 (0)
Have you ever heard of a condom?	344 (100)	314 (90.0)	30 (10.0)	0 (0)
Have you heard of HIV?	344 (100)	154 (37.8)	189 (62.2)	0 (0)
Can having sex with only one faithful uninfected sex partner reduce the risk of HIV transmission?	344 (100)	132 (32.5)	212 (67.5)	0 (0)
Can using condoms reduce the risk of HIV transmission?	344 (100)	142 (34.7)	202 (65.3)	0 (0)
Can people protect against HIV by abstaining from sex?	344 (100)	127 (30.3)	217 (69.7)	0 (0)
Can a person get HIV from mosquito bites?	344 (100)	287 (84.4)	57 (15.6)	0 (0)
Can a person get HIV by sharing meal with someone who is infected?	344 (100)	282 (83.1)	62 (17.0)	0 (0)
Adequate knowledge about HIV prevention	344 (100)	36 (8.8)	308 (91.2)	0 (0)

\*\*\*Total may not add up due to missing responses

**Table 33-Mazar: RDS –weighted estimates for FSWs’ general knowledge on STI and HIV prevention in Mazar-i-Sharif, 2012**

	<b>FSW N (%)</b>	<b>Yes n (%)</b>	<b>No n (%)</b>	<b>Don't Know n (%)</b>
Have you ever heard of STI?	355 (100)	87 (28.8)	268 (71.2)	0 (0)
Knowledge of STI symptoms in women*	355 (100)	81 (26.3)	274 (73.7)	0 (0)
Knowledge of STI symptoms in men*	355 (100)	65 (22.2)	290 (77.8)	0 (0)
Have you ever heard of a condom?	355 (100)	149 (38.4)	206 (61.6)	0 (0)
Have you heard of HIV?	355 (100)	83 (25.4)	272 (74.6)	0 (0)
Can having sex with only one faithful uninfected sex partner reduce the risk of HIV transmission?	355 (100)	79 (24.8)	274 (74.8)	2 (0.4)
Can using condoms reduce the risk of HIV transmission?	355 (100)	76 (24.2)	274 (75.1)	5 (0.6)
Can people protect against HIV by abstaining from sex?	355 (100)	75 (23.3)	277 (76.0)	3 (0.7)
Can a person get HIV from mosquito bites?	355 (100)	286 (77.7)	69 (22.3)	0 (0)
Can a person get HIV by sharing meal with someone who is infected?	355 (100)	289 (80.0)	66 (20.0)	0 (0)
Adequate knowledge about HIV prevention	355 (100)	61 (19.1)	294 (80.9)	0 (0)

\*\*\*Total may not add up due to missing responses

## RISK BEHAVIOR AND RISK FACTORS

In Herat, about 49.3% (131) of participants averaged 2-3 clients in the last month, compared to 44.4% (128) in Kabul and 16.3% (48) in Mazar. But more than 40% had at 2 clients in the past week in both Kabul and Herat (Mazar-i-Sharif= 25.5% had 2 clients in the past week).

More than half of Herat participants and a little under half of Kabul participants had 1-2 paid sex acts in the past week. About 12% (38) of Herat participants had been in sex work for less than two years, compared to 38.7% (102) in Kabul and 20.2% (74) in Mazar-i-Sharif.

**Table 34- Kabul: RDS weighted Risk behavior and risk factors among Female Sex Workers, 2012**

	<b>FSW N(%)</b>	<b>Category n (%)</b>				
<b>Number of clients in past 1 month</b>	333 (100)	< 2	2 – 3	4 – 5	> 5	Refused/missing
		68 (9.2)	128 (44.4)	101 (34.6)	29 (8.7)	7 (3.0)
<b>Number of clients in past 1 week</b>	333 (100)	0	1	2	> 2	Refused/missing
		9 (2.1)	74 (25.7)	135 (42.3)	103 (28.2)	12 (1.6)
<b>Number of paid sex acts past 1 week</b>	333 (100)	0	1-2	3-4	≥5	Refused/missing
		0 (0)	138 (47.5)	126 (37.4)	48 (11.3)	21 (3.7)
<b>Number of PWID clients past 1 yr</b>	333 (100)	0	>0			Refused/missing
		297 (90.2)	17 (3.8)			19 (6.0)
<b>Number of casual partners past 6 mo.</b>	333 (100)	0	1 +	---	---	Refused/missing
		289 (90.7)	44 (9.3)	---	---	---
<b>Length of time in sex work</b>	333 (100)	< 2 yrs	2 – 3 yrs	4 – 5 yrs	6 yrs +	Refused/missing
		102 (38.7)	139 (39.3)	46 (11.5)	46 (10.4)	---
<b>Age at first sex</b>	333 (100)	< 16	16 – 18	>18	---	Refused/missing
		75 (20.4)	180 (55.5)	75 (24.0)	---	3 (0.1)

\*\*\*Total may not add up due to missing responses

**Table 34-Herat: RDS weighted Risk behavior and risk factors among Female Sex Workers, 2012**

	<b>FSW N(%)</b>	<b>Category n (%)</b>				
<b>Number of clients in past 1 month</b>	344 (100)	< 2	2 – 3	4 – 5	> 5	Refused/missing
		19 (5.6)	131 (49.3)	94 (22.3)	79 (16.3)	21 (6.5)
<b>Number of clients in past 1 week</b>	344 (100)	0	1	2	> 2	Refused/missing
		39 (85)	61 (19.7)	142 (44.8)	101 (26.7)	1 (0.3)
<b>Number of paid sex acts past 1 week</b>	344 (100)	0	1-2	3-4	≥5	Refused/missing
		0 (0)	166 (54.0)	123 (35.4)	14 (1.5)	41 (9.1)
<b>Number of PWID clients past 1 yr</b>	344 (100)	0	>0			Refused/missing
		271 (79.3)	49 (13.6)			24 (7.2)
<b>Number of casual partners past 6 mo.</b>	344 (100)	0	1 +	---	---	Refused/missing
		296 (85.1)	48 (14.9)	---	---	---
<b>Length of time in sex work</b>	344 (100)	< 2 yrs	2 – 3 yrs	4 – 5 yrs	6 yrs +	Refused/missing
		38 (12.0)	84 (27.6)	96 (28.2)	126 (32.2)	---
<b>Age at first sex</b>	344	< 16	16 – 18	>18	---	Refused/missing
		73	113	158	---	---

	(100)	(23.5)	(30.7)	(45.8)		
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\*\*\*Total may not add up due to missing responses

**Table 34-Mazar-i-Sharif: RDS weighted Risk behavior and risk factors among Female Sex Workers, 2012**

	FSW N(%)	Category n (%)				
Number of clients in past 1 month	355 (100)	< 2	2 – 3	4 – 5	> 5	Refused/missing
		56 (16.4)	48 (16.3)	115 (36.2)	119 (29.2)	17 (1.8)
Number of clients in past 1 week	355 (100)	0	1	2	> 2	Refused/missing
		90 (25.3)	65 (18.1)	91 (25.5)	101 (28.4)	8 (2.7)
Number of paid sex acts past 1 week	355 (100)	0	1-2	3-4	≥5	Refused/missing
		6 (1.7)	105 (29.7)	95 (26.8)	51 (14.4)	97 (27.4)
Number of PWID clients past 1 yr	355 (100)	0	>0			Refused/missing
		247 (69.8)	23 (6.5)	---	---	84 (23.7)
Number of casual partners past 6 mo.	355 (100)	0	1 +	---	---	Refused/missing
		268 (75.7)	78 (22.0)	---	---	8 (2.3)
Length of time in sex work	355 (100)	< 2 yrs	2 – 3 yrs	4 – 5 yrs	6 yrs +	Refused/missing
		74 (20.2)	109 (37.3)	61 (16.4)	111 (26.1)	---
Age at first sex	355 (100)	< 16	16 – 18	>18	---	Refused/missing
		49 (16.1)	137 (0.76)	168 (53.2)	1 (0.0)	---

\*\*\*Total may not add up due to missing responses

About 12% (43) of participants in Herat had been forced to have sex, compared to 5.5% (24) in Kabul. About 20.7% (65) of Herat participants, 60% (202) of Kabul participants and 8.1% (26) of Mazar participants had STI symptoms in the last 12 months. Also in Kabul, more than two thirds (71.6% or 151) of participants had sex with a client while having STI symptoms, compared to 18.1% (56) in Herat and 4.6% (11) in Mazar. Kabul participants were also the most likely (44.4% or 98) to get treatment at a clinic or hospital while having symptoms. Drug use was low in Herat, Mazar-i-Sharif and Kabul (11.7%, 5.5% and 1.7%, respectively). But only 7.1% (32) of Herat, and less than 1% of Kabul (1 or 0.1%) and Mazar participants (0%) had ever injected.

**Table 35-Kabul: RDS weighted Risk behaviors and risk factors among Female Sex Workers**

	FSW N (%)	Yes n (%)	No n (%)
Lived outside Afghanistan in past 10 years	332 (100)	87 (21.7)	245 (78.3)
Had symptoms associated with an STI in past 12 month	333 (100)	202 (60.6)	131 (39.4)
Had sex with a client while having STI symptoms*	202 (100)	151 (71.6)	51 (28.4)
Sought care at a clinic or hospital while having STI symptoms*	202 (100)	98 (44.4)	104 (55.6)
Ever been forced to have sex	333 (100)	24 (5.5)	309 (94.5)
Ever used drugs	333 (100)	9 (1.7)	324 (98.3)
Ever injected drugs	332 (100)	1 (0.1)	331 (99.9)

\*Among those who reported having symptoms consistent with an STI in the past 12 months

\*\*\*Total may not add up due to missing responses

**Table 35-Herat: RDS weighted Risk behaviors and risk factors among Female Sex Worker**

	FSW N (%)	Yes n (%)	No n (%)
Lived outside Afghanistan in past 10 years	344 (100)	59 (18.7)	274 (81.3)
Had symptoms associated with an STI in past 12 months	344 (100)	65 (20.7)	279 (79.3)
Had sex with a client while having STI symptoms*	344 (100)	56 (18.1)	287 (81.9)
Sought care at a clinic or hospital while having STI symptoms*	344 (100)	36 (12.4)	306 (87.6)
Ever been forced to have sex	344 (100)	43 (12.4)	299 (87.6)
Ever used drugs	344 (100)	47 (11.7)	295 (88.3)
Ever injected drugs	344 (100)	32 (7.1)	297 (92.9)

\*Among those who reported having symptoms consistent with an STI in the past 12 months

\*\*\*Total may not add up due to missing

**Table 35-Mazar: RDS weighted Risk behaviors and risk factors among Female Sex Worker**

	FSW N (%)	Yes n (%)	No n (%)
Lived outside Afghanistan in past 10 years	354 (100)	79 (23.8)	275 (76.2)
Had symptoms associated with an STI in past 12 months	354 (100)	26 (8.1)	328 (91.9)
Had sex with a client while having STI symptoms*	354 (100)	11 (4.6)	343 (95.4)
Sought care at a clinic or hospital while having STI symptoms*	354 (100)	25 (8.0)	329 (92.0)
Ever been forced to have sex	354 (100)	15 (4.2)**	330 (93.2)**
Ever used drugs	354 (100)	19 (5.5)	335 (94.5)
Ever injected drugs	354 (100)	0 (0)	354 (100)

\*Among those who reported having symptoms consistent with an STI in the past 12 months

\*\* RDS adjustments not possible because of transition matrix

\*\*\*Total may not add up due to missing responses

## HIV TESTING AND PREVENTION

The majority of Herat (93.2%) and Kabul (96.2%) participants had ever tested for HIV, but only 21.7% of participants in Mazar-i-Sharif had ever tested for HIV. However, Mazar-i-Sharif participants (13.1%) were the most likely to have used risk reduction services for sex workers (compared to 1.5% in Herat and 4.7% in Kabul). The proportion of FSWs who used a condom at their last sex act with any partner in Kabul was 64% (225) and in Herat 67% (226), and in Mazar-i-Sharif was only 26% (89).



**Table 36: RDS weighted HIV testing and prevention among Female Sex Workers in Kabul, Herat, Mazar, 2012**

	Yes n (%)	No n (%)
<b>Kabul (n=333)</b>		
Condom use at last sex	225 (64.0)	107 (36.0)
Use of risk reduction services	39 (4.7)	294 (95.3)
Ever tested for HIV	312 (96.2)	21 (2.8)
Received results of HIV test	17 (81.0)*	3 (14.3)*
Received HIV testing in past 12 months	12 (57.1)*	9 (42.9)*
<b>Herat (n=344)</b>		
Condom use at last sex	226 (67.0)	114 (33.0)
Use of risk reduction services	6 (1.5)	338 (98.5)
Ever tested for HIV	316 (93.2)	28 (6.8)
Received results of HIV test	22 (78.6)*	5 (17.9)*
Received HIV testing in past 12 months	21 (75.0)*	7 (25.0)*
<b>Mazar-i-Sharif (n=355)</b>		
Condom use at last sex	89 (26.1)	259 (73.9)
Use of risk reduction services	41 (13.1)	306 (86.9)
Ever tested for HIV	89 (21.7)	259 (78.3)
Received results of HIV test	63 (96.9)*	2 (3.1)*
Received HIV testing in past 12 months	28 (43.1)*	37 (56.9)*

\* RDS weight adjustments not possible because of transition matrix; \*\*Total may not add up due to missing responses

## DISEASE SERO-PREVALENCE

**Table 37: RDS weighted Disease sero-prevalence among Female Sex Worker in Kabul, Herat, and Mazar-i-Sharif, 2012**

Disease	City	Cases (n)	Prevalence (%)
<b>HIV</b>	Kabul	0	0
	Herat	3	0.9
	Mazar-i-Sharif	0	0
<b>HBV</b>	Kabul	2	1.0
	Herat	6	1.8
	Mazar-i-Sharif	12	3.5
<b>HCV</b>	Kabul	0	0
	Herat	2	0.6
	Mazar-i-Sharif	6	1.7
<b>Syphilis</b>	Kabul	0	0
	Herat	3	0.9
	Mazar-e-Sharif	7	2.0

**Table 38: Overall 2012 disease sero-prevalence among FSW  
(combined population from Kabul, Heart, and Mazar-i-Sharif)**

Disease	Prevalence	95% CI
<b>HIV</b>	0.3	0.0-0.8
<b>HBV</b>	1.9	1.2-3.0
<b>HCV</b>	0.8	0.3-1.5
<b>Syphilis</b>	1	0.5-1.8



HIV sero-prevalence among FSW participants was 0% in Kabul and Mazar-i-Sharif and 0.9% (3) in Herat. The overall combined HIV sero-prevalence among all surveyed FSW was 0.3% (95% CI, 0.0 – 0.8). The sero-prevalence for Hepatitis B was 1% (2) in Kabul, 1.8% (6) in Herat, and 3.5% (12) in Mazar-i-Sharif. The overall HBV sero-prevalence was 1.9% (95%CI, 1.2-3.0). The Hepatitis C sero-prevalence was 0 in Kabul, 0.6% (2) in Herat and 1.7% (6) in Mazar-i-Sharif. The overall HCV sero-prevalence was 0.8% (95%CI, 0.3-1.5). The prevalence of syphilis was 0 in Kabul, 0.9% (3) in Herat and 2% (7) in Mazar-i-Sharif. The overall syphilis sero-prevalence was 1% (95%CI, 0.5-1.8)

#### POPULATION SIZE ESTIMATION

The unique object multiplier method was used to estimate the size of the FSW population in Kabul was 2,800 and in Herat was 2,134. The unique object multiplier method could not produce an estimate of FSWs in Mazar-i-Sharif. About 61% of FSW participants in Mazar-i-Sharif stated they had received the unique object. This high proportion of women who received the unique object was clearly outside the expected range and consequently significantly underestimated the size of the FSW population in Mazar-i-Sharif. We were not able to accept or report this unreliable estimate. It was possible that the key chain unique object was a common jewelry that many women used in Mazar-i-Sharif.

**Table 39: Population size estimation of FSW by sites, 2012**

	Unique object distribution
Kabul	2,800
Herat	2,134
Mazar-i-Sharif	NA

#### COMPARISON OF KEY VARIABLES: 2009 VS. 2012 IBBS

Kabul was the only site where FSW data collection was done in 2009. Comparing the two rounds of data, there was no statistical difference in the disease sero-prevalence for HIV and hepatitis C among FSWs. Between 2009 and 2012, the prevalence of hepatitis B increased significantly from 3.5% to 6% and the prevalence of syphilis decreased significantly from 5% to 0.

Comparing the two rounds, there were marginal differences in the number of paid sex acts. The proportion of FSWs with their age of sexual debut at less than 16 years was smaller in 2012, but the age of sexual debut occurring between the ages 16-18 years has increased, probably as a consequence. There was a significant increase in the number of sexual encounters, during which condom was used from 58% to 68%. There was also an increase utilization of health services by FSWs in 2012 (12%) from the 1% in 2009.

**Table 40: Comparison of key variables from Kabul FSW, 2009 and 2012**

	2009 N (%)	2012 N (%)	p-value
<b>Disease prevalence</b>			
HIV	0	0	0
HBV	13 (3.5)	20 (6.0)	0.008
HCV	3 (0.8)	0	0.10
Syphilis	20 (5.4)	0	<0.001
<b>Number of paid sex acts in last week</b>			
0	-	-	-
1-2	128/368 (34.8)	137/332 (41.4)	0.07
3-4	105/368 (28.5)	125/332 (37.8)	0.009
5-7	39/368 (10.7)	45/332 (13.5)	0.26
7 +	37/368 (10.1)	3/332 (0.9)	<0.001
<b>Age of first sex act</b>			
<16	136/368 (37.0)	75/332 (22.7)	<0.001
16-18	150/368 (40.8)	180/332 (54.5)	<0.001
18+	82/368 (22.3)	75/332 (22.7)	0.90
<b>Condom use at last sex</b>	213/368 (58.1)	225/332 (67.8)	0.008
<b>Access to health services</b>	5/368 (1.4)	39/332 (11.7)	<0.001

## SUMMARY OF RESULTS

The majority of FSWs in all cities were of the aged groups 18-24 years. The majority of FSWs (~85%) in each of the 3 cities reported earning less than 10,000 Afs/month. While a large number of participants cannot read or write in Kabul (72%) and in Mazar-i-Sharif (63%), about 65% of FSW participants in Herat can read and write.

Knowledge about methods to prevent HIV was low in three sites. The proportion of adequate knowledge about HIV prevention among FSWs was 19.1% (61) in Mazar-i-Sharif; 15.8% (61) in Kabul; and 8.8% (36) in Herat. Of concern was that only 38% of FSWs in Mazar-i-Sharif have heard of condoms.

In Kabul, 60% of FSWs participants in Kabul reported having had STI symptoms in the past 12 months and 72% reported having had sex with clients while having STI symptoms. About 44% sought treatment for STI. It could be possible that Kabul FSWs are more informed of STI symptoms and thus higher reporting in Kabul, compared to Herat and Mazar-i-Sharif, where reporting of having had STI symptoms in the past 12 months was low (21% in Herat and 8% in Mazar-i-Sharif).

Condom use during last sex act was 26% in Mazar-i-Sharif, 64% in Kabul and 67% in Herat. Similarly, having ever been tested for HIV was much lower in Mazar-i-Sharif (22%) compared to Kabul (96%) and Herat (93%).

The disease of greatest sero-prevalence among FSWs was hepatitis B (3.5% in Mazar, 1.8% in Herat and 1% in Kabul). Syphilis sero-prevalence among FSWs was low in all cities (2%

in Mazar, 1% in Herat and 0 in Kabul). Hepatitis C was also low among FSWs in the three cities (1.7% in Mazar, 0.6% in Herat and 0 in Kabul). Only 1% of FSWs tested positive for HIV in Herat and none in Kabul or Mazar-i-Sharif.

## DISCUSSION

Since 2009, the Afghan National AIDS Control Program (NACP) and Johns Hopkins University (JHU) have collaborated towards the improvement and strengthening of the national surveillance system for HIV, sexually transmitted infections (STIs) and blood borne infections (BBI). On the basis of the information available in 2008, regarding the epidemiological characteristics of these diseases in the Afghanistan, it was decided that an approach that focused specifically on populations at high-risk of infection would be the most cost-effective and efficient approach towards increasing context specific knowledge about the HIV epidemic.

The first round of Integrated Biological and Behavioral Survey (IBBS) was completed in 2009. In 2012, the second round of the IBBS was implemented. In addition to surveying the same sites and at-risk populations as in the 2009, the second round expanded its coverage to include more cities. These were. Jalalabad and Charikar for people who inject drugs (PWIDs) and Herat and Mazar-i-Sharif for female sex worker (FSWs) and to include more populations who are at increased risk of HIV such as men who have sex with other men (MSM) in the city of Kabul.

The specific objectives of the 2012 IBBS were:

- To assess baseline knowledge and awareness, modes of transmission and modes of protection against STIs, with emphasis on HIV and HCV;
- To characterize sexual behaviors among key populations at higher risk;
- To estimate the prevalence of HIV, HBV, HCV and syphilis among each of the most at-risk populations and to trend the changes between the two periods of data collection;
- To estimate population size of MSM, PWID and FSW populations in various locations;
- To identify changes in key behavioral and biological variables when comparing data collected during the 2009 IBBS and 2012 IBBS.

The recruitment of participants who belong to the MSM, PWID and FSW populations in Afghanistan had been very difficult because these populations are marginalized and face significant societal stigma and discrimination. The IBBS studies used respondent driven sampling (RDS) to recruit participants from these hidden populations. For road transport workers/road transport workers assistants (RTW/RTWa) and prisoners, systematic random sampling (SRS) methodology was used to collect data.

### ***People Who Inject Drugs (PWIDs)***

In addition to the sites that were included for the 2009 IBBS, Kabul, Herat and Mazar-i-Sharif, the survey was expanded to two additional sites, Jalalabad and Charikar, with the

objective of expanding the current behavior and sero-prevalence knowledge of this population.

The IBBS data from 2012 are broadly consistent with the 2009 results. PWIDs remained the population with the highest prevalence for HIV and HCV infection among all of the at-risk populations. The PWID population living in Herat continued to have the highest disease prevalence in both survey rounds. Out of the 2012 sample of 185 (100%) PWIDs in Herat, the RDS-adjusted HIV prevalence was 13.3% (29 cases) and the HCV prevalence was 70% (131 cases). The HIV and HCV prevalence in Herat were significantly higher than any of the other cities ( $p < 0.001$  and  $p < 0.001$ ).

From the total 2012 sample of PWIDs in all five cities, several factors could potentially contribute to the increased HIV and BBI transmissions among PWIDs and among other most-at-high-risk populations.

The association of HIV transmission with the social ecology (i.e. poverty, illiteracy, access to health and education services, marginalization of certain groups of the population, and other social vulnerabilities) is complex (34,39,40). Poverty has been a well-recognized factor that increased HIV transmission among PWIDs (27). This IBBS survey found that almost 50% of the PWIDs surveyed live below the poverty line in 2012, with an average monthly income of less than 5000 Afs/month. Of the 1163 (100%) PWIDs surveyed in all five cities, 642 (55.2%) were illiterate. The highest proportion of illiteracy was noted in the city of Mazar-i-Sharif, where 161 (67.7%) PWIDs did not know how to read or write. There were 744 (64.0%) PWIDs who knew about risk reduction services (RRS), but only 676 (58.1%) of the participants reported ever using these services. Use of RRS was particularly low in Charikar, where only one PWID reported ever using RRS services. Only 332 (28.6%) participants reported ever being tested for HIV, with the lowest testing prevalence being in Kabul (2.7%). The low socio-economic status of PWIDs, combined with high prevalence of illiteracy, were likely contributing factors to the low general knowledge of HIV and the limited awareness of methods of prevent HIV. Certainly this also contributed to the lack of knowledge of HIV as a local threat among PWIDs, and to the low awareness and low use of available services offered at risk reduction services. These combined factors, ultimately, will lead to the higher HIV and HCV transmission rate among PWIDs in Afghanistan (42). Although the association between HIV and poverty is complex and context-specific, there seems to be an association between location, gender, a population's mobility, age and the social ecology of HIV transmission with HIV infection (34,39,40). In addition, poverty decreases the probability for an individual of being in contact with health services and increases the individual vulnerability (39,41). This leads to decreased access to HIV related information and services directed to PWIDs (such as sterile needles and syringes, antiretroviral treatment) and the increased risk for HIV infections associated with vulnerability (34,42).

There were other additional factors that were associated with the transmission of HIV and BBI in other key populations at higher risk. For the 1163 (100%) PWID surveyed, most were married, sexually active, injecting drugs more than once every day with an average duration of injecting drug between 1 and 3 years. Also, 446 (38.4%) reported buying sex from a female at least once in their life, 512 (44.0%) participants reported ever being in prison, and 141 (12.2%) reported having sex with a boy at least once. These results showed that PWIDs have a high proportion of high-risk behaviors that put them at increased risk for HIV and BBI (42). PWIDs remained to be the principal driver for HIV infection in Afghanistan. These results also showed the intersection and potential transmission of HIV from PWIDs to other at-risk populations (FSW, MSM, prisoners and RTW) and into the general population.

The current health status of PWIDs in Afghanistan could be improved by increasing access and use of health services that provide needle and syringes, antiretroviral therapy and opiate substitution therapy. The scale-up of outreach programs can improve knowledge about HIV among PWIDs (42). In other settings, these combined interventions have decreased the incidence of HIV by as much as 50% among this highly vulnerable and stigmatized population (43,44).

### ***Female Sex Workers***

In 2009, the IBBS among FSWs was conducted only in Kabul. The IBBS in 2012 expanded to include Herat and Mazar-i-Sharif, in addition to Kabul. The survey recruited 1032 FSW participants in all three cities in 2012, with 333 (32.3%) FSW surveyed in Kabul, 344 (33.3%) in Herat and 355 (34.4%) in Mazar-i-Sharif.

Disease sero-prevalence of HIV among FSWs is low, with only 3 cases being reported in Herat and no cases found in Kabul or Mazar-i-Sharif. HBV prevalence was highest in the city of Mazar-i-Sharif (3.5%), followed by Herat (1.8%), and Kabul (1.0%). HCV cases were also low among FSW in all three sites, with the highest number of cases (6 cases) reported in the city of Mazar-i-Sharif, for a prevalence of 1.7%. Finally, syphilis prevalence was low among FSWs, with most cases being reported in the city of Mazar-i-Sharif (7 cases) for a disease prevalence of 2.0%.

A low prevalence of HIV among this group was reported in the 2009 IBBS, where no cases were identified. Other research conducted between 2006 and 2008 in Kabul, Jalalabad and Mazar-i-Sharif documented the HIV prevalence 0.2% among 520 FSWs (1,45). When comparing the sero-prevalence in Kabul in 2009, HBV sero-prevalence increased significantly (2009= 13 cases (3.5%) vs. 2012=20 cases (6.0%),  $p=0.008$ ) and syphilis decreased significantly (2009=20 cases (5.4%) vs. 2012=0 (0%),  $p<0.001$ ). Todd *et.al* reported a similar sero-prevalence among FSWs for HBV (6.4%) and for syphilis (0%) in work conducted between 2006 and 2008 (45).

Despite the low prevalence of HIV and BBI among FSWs, this population is highly vulnerable to HIV infection, especially in areas where HIV prevalence is high. Multiple

sexual partners; low condom use; cultural gender inequities that limit the FSW's ability to negotiate condom use with their clients; sexual relations with men who have sex with men; poverty, illiteracy; stigmatization and social exclusion; poor knowledge about HIV and prevention methods; and limited use of health services are all factors that contribute towards the risk of HIV infection within this population. These factors are linked to the results of the IBBS, as discussed below.

Out of the 1032 (100%) participants, 858 (83.1%) reported a monthly income of less than 10000 Afs. Illiteracy was high with 237 (72.3%) in Kabul and 249 (62.5%) in Mazar-i-Sharif being illiterate. Similar to the PWID population, these structural factors (low income and low education) undoubtedly account for the decreased access to health services and indirectly increase the risk of HIV infection among FSWs.

At the individual level, behavioral factors (such as the number of partners, condom use, drug use, etc) and personal characteristics (such as. gender, ethnicity, STI co-infection, age) were explored to understand the direct and indirect impact on HIV transmission dynamics and HIV incidence. Out of the 1032 (100%) FSW surveyed, 889 (86%) reported having two or more clients in the past month but only 540 (52%) reported using condom during their last sexual encounter. As noted in the PWID discussion section, 38% of the PWIDs surveyed admitted to having paid for sex at once in their lifetime. Additionally, 638 (62%) FSW reported ever using drugs and but only 33 (3.2%) reported ever injecting drugs. It is important to highlight that 32 of the 33 (97.0%) of FSW reporting injecting drugs were living in Herat. This was significantly higher than that in Kabul or Mazar-i-Sharif ( $p < 0.001$ ). These risk factors indicated an important interaction between the PWID and the FSW population and a potential pathway of disease transmission between these two groups and to the general populations through FSW's clients, husbands and through mother to child transmission.

Lastly, the number of FSWs accessing risk reduction services was very low: in Kabul 39 (4.7%) Herat 6 (1.5%) and Mazar-i-Sharif 41 (13.3%). These proportions were significantly lower than the global estimates of FSWs who access risk reduction services of 50%, as estimated by UNAIDS. This indicator raised concern that HIV and STI prevention and treatment for FSWs is not reaching those in need. It is urgent that interventions are improved to not only increase availability of services but to also promote the use of risk reduction services by FSWs.

### ***Men who have sex with men***

Since the first cases of AIDS were identified in 1981 among MSM in the United States, this group is considered at higher risk of HIV infection (47). The understanding of high-risk behaviors practiced and the disease prevalence of HIV and BBI infection among MSMs in Afghanistan has been previously limited. Recent meta-analysis showed that in Central Asia the HIV epidemic among MSM primarily driven by injection drug use (38).



The IBBS implemented among MSMs in Kabul is, to the best of our knowledge, the first attempt to use probability-based methods to characterize behavior and disease seroprevalence among MSM in Afghanistan. Out of the 207 (100%) MSM surveyed in Kabul, there was one (0.4%) case of HIV infection, 15 (1.6%) cases of HBV, 7 (5.3%) cases of HCV and 36 (10.2%) cases of syphilis.

Among the 207 MSMs sampled, the overall knowledge of HIV prevention methods was low (ranging from 31% to 42%). MSM participants engaged in high-risk behaviors with 84% stating that they had more than one male sex partner in the past year; 67% admitted to engaging in unprotected receptive anal sex in the past year; and only 36 (15.8%) reporting condom use during their last sex act. Recent epidemiological literature about HIV risks among MSMs noted that the per-sex act probability of HIV transmission was 1.4% (95% CI 0.2-2.5) and the per-partner probability of transmission was 40.4% (95% CI 6.0-74.9) (49). The probability of HIV transmission is 18 times higher than that of HIV transmission through vaginal intercourse (38, 49). Taken in this context, behavioral practices engaged by MSMs in Kabul place this population at very high risk of HIV infection (38,46).

Among the 207 (100%) MSM surveyed, we found that only 30 (10.8%) had ever used services that are provided to address the specific needs of this population. The potential barriers to accessing available services for MSMs were not captured in the IBBS questionnaire. These barriers include stigma and discrimination, human rights issues and legal structures within the Afghan society. Identification of these barriers would be important in developing preventive strategies in this context (46).

The IBBS study conducted showed that our understanding of the MSM culture in Afghanistan is not complete. Our study did reveal that some of the prisoners, RTW and PWIDs reported having sex with boys. It was unclear whether men who have sex with boys (MSB) should be interpreted in the same light as men who have sex with men, in terms of sexual risk and socio-cultural issues. The risk for HIV infection remained the same. A more in-depth understanding of the individual, social and structural factors that shape the epidemic among MSM and MSB would facilitate the development of programs that train health care providers to provide culturally appropriate care for this population (50).

### ***Prisoners***

Higher risk of HIV and STI transmission has been reported in prison settings since 2002, according the Joint United Nations HIV/AIDS Program Global Report UNAIDS report on the global AIDS epidemic. The incarcerated populations were particularly vulnerable to HIV and BBI because of limited access to health services, overcrowding, high proportion of PWIDs and high turnover of inmates (50-52).

The IBBS survey of prisoners in Kabul and Herat was conducted in 2009. A follow up survey was implemented in 2012, where a total of 719 (100%) participants were recruited (51.6% in Kabul and 48.8% in Herat). In both rounds of IBBS, the HIV prevalence among

prisoners in Herat and Kabul was low. There was no statistically significant change observed for HIV sero-prevalence between the two surveys. This was also true for HBV and syphilis sero-prevalence among prisoners. HCV sero-prevalence in Herat significantly decreased from 4% to 1% ( $p=0.03$ ). In contrast, Kabul showed the opposite trend, with a significant increment of HCV prevalence from 1.7% in 2009 to 4.6% in 2012 ( $p=0.03$ ). The practical implication of these statistical differences is probably negligible, given the small numbers.

Out of the 719 (100%) inmates surveyed in 2012, 508 (70.7%) were married, with 561 (50.2%) being illiterate and 184 (52.4%) prisoners in Kabul and 287 (78.0%) in Herat reporting being in prison for less than one year. Reporting of ever using drugs among prisoners was significantly higher in Herat than in Kabul, (163 [46%] and 62 [16%] respectively,  $p<0.001$ ). Reported drug use while in prison was 69% (43 participants) in Kabul and 26% (43 participants) in Herat, ( $p=1.0$ ). Injection drug use was significantly higher among inmates in Kabul, with 21 (5.6%) reporting injecting drug use while in prison, compared to only 1 (0.03) in Herat ( $p<0.001$ ). One prisoner in Kabul out of the 21 who reported injecting drug use tested positive for HIV, while the only one PWID in Herat was also positive for HIV.

Data from other countries noted that the proportion of prisoners who inject drugs was commonly higher than the proportion of PWIDs in the general population. However this was not noted in Herat. This may be due to under reporting among prisoners in Herat, due to fear of information being shared with prison authorities. Priority should be placed on the availability of confidential voluntary HIV testing and counseling services in prisons. It is also important to provide services that specifically address the needs of prisoners who are PWIDs (e.g. needle and syringe exchange and opiate substitution therapy). Further surveillance activities should continue to be implemented among prisoners with the objective of improving the knowledge risk behaviors while inside the prison compared when prisoners live outside of prison. This will help characterize the HIV epidemic among prisoners and facilitate the development of health programs that fit the needs of this population (54).

### ***Road Transport Workers***

Research conducted among RTW in Africa, Latin America and Asia has shown that significant interaction takes place between RTW and FSW, which facilitates the spread of HIV/STIs among the general population. A body of research has identified RTW to be at higher risk of HIV infection (54-62), with stigma and discrimination playing a significant role (63). It has been estimated that there are 2000 international and 60,000 domestic truck drivers in Afghanistan (64).

Out of the of 380 (100%) RTW/RTWa surveyed, there were no cases of HIV. Sero-prevalence of HBV was 20 cases (5.3%); HCV was 7 cases(1.8%); and 1 case of syphilis(0.26%). There was a significantly lower prevalence of HCV in 2012 (2009=8.2% vs.

2012=5.3%,  $p<0.001$ ), though the importance of this change is probably minimal. No other changes were observed.

Out of the of 380 (100%) RTW/RTWa surveyed, 133 RTW (65.5%) and 154 RTWa (86.9%) were between 18-30 years of age, with 368 being Pashtun (96.8%), 248 being illiterate (65.3%) and with marriage being reported as the current marital status by 163 (80.3%) of RTW and 111 (62.7%) of RTWa. Previous research conducted in Azerbaijan among 3763 RTW from 21 different countries reported that not being married (OR= 2.79, 95% CI= 1.25-9.19) and having a previous STI (and OR= 4.66, 95% CI= 2.6-8.36) were significant risk factors for HIV infection (58). However, among the RTW/RTWa sampled for the IBBS, this association was not observed for HBV and HCV ( $p=0.83$  and  $p=0.42$ , respectively). A significantly higher risk of HBV was observed with RTW/RTWa who reported having symptoms of STIs in the past 12 months ( $p<0.001$ ). The association between HBV and reported symptoms of STIs in the previous 12 months requires further analysis.

Regarding reported high-risk behavior, out of the of 380 (100%) RTW/RTWa surveyed, 90 (23.7%) reported ever buying sex from a female. Out of which 26 of the 90 who paid for sex (28.9%) reported having multiple paid sexual partners in the last 6 months. About 25 (6.6%) RTW/RTWa reported ever having sex with a men/boy with 8 (2.1%) reporting having multiple men/boy sex partners in the past months. Overall, condom use was low, with only 12 (4.0%) reporting using one during their last sex act with any partner. Finally, there was a significant increase in the proportion of RTW/RTWa who reported paying for sex in the last 6 months in the 2012 data (6.8%) compared to 2009 data (0.3) ( $p<0.001$ ) and who reported drug use (2009=17% vs. 2012=25.5%) ( $p=0.003$ ). There was also a significantly higher proportion of RTW/RTWa in 2012 (7.6%) that had been tested for HIV compared to 2009 (2.7%) ( $p=0.003$ ).

Although no HIV cases were reported, HBV sero-prevalence was similar to that found among other RTWs in the region (66). There was a high variability for HCV infection between 2009 (6.6%) and 2012 (1.8%). Expansion to other regional transport routes the country should be considered for future surveillance. Provision of basic health information (e.g. HIV and STIs) and services (e.g. condom provision and voluntary counseling and services) should be provided at crossing-points.

### Limitations

Some of the limitations of this survey are related to working with populations that are hard to reach. To be able to generalize our findings to PWIDs, FSW and MSM living in the cities where data collection took place, we used respondent driven sampling (RDS). To date, there has been on-going discussion about the effectiveness of RDS in different socio-cultural setting and among certain key population at higher risk for HIV and BBI. RDS methodology has been widely used in many different countries and is considered one of the most effective and efficient epidemiological methodology to sample and survey hard-to-reach populations (11-15). Although implementation of RDS methodology was carried out successfully in this IBBS survey, the RDS method by its very nature depended heavily on how well networked

the populations were within their community. Sufficient waves of recruitment are needed to ensure that the sample reaches the specific equilibrium state, such that distributions of key variables of interest remain stable despite accrual of additional participants. Post-stratification weights are meant to correct the inherent sampling bias, but some research indicates that it cannot fully account for bias introduced by non-random selection from personal networks, and is at risk for measurement error as it depends on participants accurately recalling their social network size. If some social subsets of the population are disconnected from the rest of the population are not reached, then generalizability is limited. RDS also works most effectively when the number of population members in the city is significantly larger than the number of people sampled. The current data did reveal consistent disease patterns among the FSWs and PWIDs.

As this is the first attempt to conduct RDS among MSM, a highly vulnerable and stigmatized population, it was not clear at this point how well connected were the seeds to the network of MSM in Kabul. One of the key risk behaviors that drive HIV transmission among MSMs in Central Asia is injection drug use among MSMs (38). A larger sample may yield better characterization of risk behaviors among MSMs in Afghanistan, and could reveal more injecting drug use than the current findings in IBBS 2012.

The primary aim of the IBBS is to understand the prevalence of HIV among the most at risk populations. Therefore, the study concentrated its efforts on ensuring quality of test results of HIV rapid tests by adhering to the three-test strategy (as recommended by WHO) and by confirmation testing via ELISA for every 15<sup>th</sup> HIV rapid tests (regardless of test result) and every 5<sup>th</sup> reactive HIV rapid test. Because of budget limitations, the IBBS could not perform supplemental serologic test on the positive rapid test results of HBV, HCV and syphilis. Specifically, the syphilis anti-TP rapid test cannot differentiate between previous treated syphilis infection and current active infection. The IBBS reports on only the prevalence (and not incidence) of syphilis infection among the sampled participants. A supplemental serologic test for HCV would help to refine the true prevalence of HCV among the most at risk population.

For sampling of the PWID population, it would have been ideal to include cities in the Southern region of Afghanistan where there is large cultivation and trafficking of drugs. The original sampling had included Kandahar as one of the cities to sample PWIDs. However, securities risks were too high and the safety of the data collectors could not be ensured at the time of data collection. Consequently, Charikar was chosen in place of Kandahar for PWID sampling.

The population size estimation of key populations at higher risk was an issue in two cities. The study primarily used the unique object (UO) multiplier method to estimate the size of the target population in each study site. In Charikar, we had zero UO (torch/lighter) received by the PWIDs surveyed. Application of the multiplier method was not possible for population size estimation of PWIDs at this site. In Mazar, a very high percentage of FSW participants stated they had received the unique object. It was likely that the time period for distribution of the unique object was not independent from the time when recruitment of participants

initiated. This high proportion of women who received the unique object was clearly outside the expected range and consequently significantly underestimated the size of the FSW population in Mazar.

In addition to the above limitations, we also have a common limitation that is inherent to any face-to-face interview, which is the social desirability bias. In this respondents might be more inclined to give a response that is approved by the interviewer. We tried to limit this bias by the rigorous training of our interviewers and by conducting the interviews in a non-threatening environment, where the interviewee could feel safe and secure. Also, cross-sectional surveys by their nature cannot provide an indication of causality.

## RECOMMENDATIONS

The recommendations below are a cumulative set of recommendations, based on findings from the following evaluations conducted by JHU. The recommendations are aimed at improving the disease epidemiologic characteristics of the populations at higher risk for HIV. Recommendations are also focused on interventions to prevent and control the HIV and BBI epidemic in Afghanistan.

### 1. CONTINUE TO CONDUCT SURVEILLANCE ACTIVITIES AMONG PWIDS TO MONITOR BEHAVIOR AND HIV/STI EVERY TWO YEARS FOR PWID POPULATION.

The IBBS should be conducted at minimum on a two-yearly basis. Although no significant changes were observed among PWIDs comparing estimated HIV prevalence in 2009 vs. 2012, we did observe changes in HCV prevalence, with a high proportion of this population reporting low HIV knowledge, high risk-behavior and low utilization of risk reduction services. Other countries in Central Asia have reported rapid increases in HIV among the PWID population within just a one-year time period.

### 2. CONTINUE TO CONDUCT SURVEILLANCE ACTIVITIES AMONG THE FSW, MSM, AND PRISONER POPULATIONS TO MONITOR BEHAVIOR AND HIV/STI EVERY THREE TO FOUR YEARS.

While the disease sero-prevalence among these high-risk populations were low, the high proportion of these populations reporting low HIV knowledge, high risk-behavior practices and low utilization of risk reduction services showed that they are vulnerable and remain at high risk to HIV and BBI transmissions.

### 3. COLLABORATE WITH KEY MEMBERS OF THE TARGET POPULATION TO INCREASE AWARENESS AND PARTICIPATION OF SURVEILLANCE STUDY

As RDS is a chain-referral sampling process that relies on the network of the participants to recruit, it is important to collaborate with key members of the target-hidden population to facilitate RDS implementation and data collection, such as identification of demographic and behavioral characteristics that are representative of target population for selection of seeds; identification of barriers to implementation of RDS sampling; and promotion of study to increase awareness among target population.

### 4. DEVELOP PROGRAMS TO INCREASE HIV KNOWLEDGE AND PREVENTION AMONG ALL AT RISK POPULATION

Results of the IBBS show low correct HIV knowledge among all target populations who are sampled. Misconceptions about HIV are high. Critical to HIV prevention is to educate to



increase HIV knowledge among the populations who are most at risk for HIV; to address misconceptions; and to improve understanding of methods to prevent contracting HIV.

#### **5. IMPLEMENT STRATEGIES TO FIGHT STIGMA AND DISCRIMINATION.**

Stigma and discrimination are deeply rooted towards high-risk groups in Afghanistan. The IBBS included a set of questions that were designed to identify stigma and discrimination towards people living with HIV. Information contained in this report shows that stigma and discrimination are common within members of populations at higher risk. Stigma and discrimination was also present among government officials and stakeholders in the KAB evaluation. Severe legal and cultural penalties placed on drug possession or selling sex or engagement in same sex relationships will likely intensify stigma and discrimination. Strategies aimed at improving the level of HIV knowledge, improving risk reduction and treatment services and meeting the needs of the key populations at higher risk are required to be able to fight stigma and discrimination across all of Afghan society. As noted in the KAB study, it is important to involve religious leaders in the development and implementation of these strategies as religion plays an important role in influencing identities, practices and moral positions in the country.

#### **6. INCREASE AWARENESS AND UTILIZATION OF RISK REDUCTION SERVICES AMONG FSW, MSM, PRISON, AND RTW POPULATIONS**

While awareness and utilization of risk reduction services among PWIDs are reasonably high, the other populations who are at-risk for HIV (FSWs, MSMs, Prisoners and RTWs) are not aware and not utilizing risk reduction services that are available. There is a need for programing to increase awareness, access and utilization of risk reduction services to FSWs, MSMs, Prisoners and RTWs.

#### **7. INCREASE AVAILABILITY OF CONFIDENTIAL HIV TESTING AMONG PRISONERS**

Many prisoners admitted to various high-risk behaviors for HIV, even continued drug use while in prison. Yet, the proportion of prisoners who tested for HIV is low. In addition to the need for HIV risk reduction services to be made available in prison to increase awareness and prevention of HIV, it is also necessary to allow for mechanisms where prisoners can get HIV counseling and testing confidentially.

#### **8. DEVELOP TARGETED PREVENTION PROGRAMS TO ADDRESS HIGH-RISK BEHAVIORS AMONG THE RTW, PWID, PRISON AND FSW POPULATIONS.**

As reported in both rounds of IBBS, we found low prevalence of HIV/STIs among these groups. However, we did identify substantial intersection between the key populations at higher risk (e.g. PWIDs paying for sex with FSWs, PWIDs reporting having sex with men/boys, PWIDs being in prison; RTWs paying for sex with FSWs and having with men and boys; prisoners using drugs and admitting to injection drug use while in prison). These



most at-risk population also have contacts with the general population, most of whom reported being married or having sex with casual non-paid partners. It is important to strengthen understanding of the specific dynamics of the Afghan epidemic to be able to effectively implement, evaluate and adapt preventive and treatment strategies that have been proven to be cost-effective and successful among high-risk groups. It is important to improve access to condoms, especially among FSW; voluntary counseling and testing services for all at-risk populations and the general population; and to educate and empower the at-risk population with information that will allow them to make correct choices related to the risks they take.

#### **9. SHARE FINDINGS AND RECOMMENDATION WITH OTHER GOVERNMENT AGENCIES AND STAKEHOLDERS.**

The results of the Knowledge, Attitude and Beliefs report (KAB Report) conducted in 2012 showed that there was a communication gap within the various ministries of the government and to other stakeholders. Results from this report should be shared and presented among these groups and agencies to facilitate and generate the support necessary for policy change.

#### **10. IMPLEMENT PROGRAMS TO MONITOR AND EVALUATE THE EFFICACY AND EFFECTIVENESS OF RISK REDUCTION SERVICES AND HIV/STI PREVENTION, TREATMENT AND CARE SERVICES.**

Given the need to provide the most cost-effective services, the importance of evaluating the effectiveness of intervention and treatment programs is a priority. Evaluation programs should be developed that are sensitive and specific to the needs of the Afghan government for information which will support decision making and program planning that address the health needs of these populations.

#### **11. STRENGTHEN COLLABORATIONS WITHIN THE GOVERNMENT MINISTRIES AS WELL AS WITH NON-GOVERNMENTAL ORGANIZATIONS AND COMMUNITY MEMBERS OF THE TARGET POPULATION TO ADDRESS HIV/STI PREVENTION AND CARE IN AFGHANISTAN.**

HIV/STI prevention requires a multi-sectorial approach and the support of other ministries including ministry of education, social affairs, and finance. This will be critical to the success of implementation of targeted prevention and risk reduction programs. In addition, collaboration with non-governmental organizations (both local and international) and key members of the target at-risk populations can increase the efficiency of programs (through the pooling of expertise) and maximize the benefits obtained from limited resources.

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## ANNEXES A: CRUDE ESTIMATES

**Table 16: Crude demographic characteristics among MSM in Kabul, 2012**

Characteristics	MSM n=207 (100%)
<b>Age (years)</b>	
18-30	96 (46.4)
31-40	54 (26.1)
41-50	20 (9.7)
51-60	37 (17.9)
<b>Ethnicity</b>	
Pashtun	63 (30.4)
Tajik	118 (57.0)
Haraza	10 (4.8)
Uzbek	6 (2.9)
Other	10 (4.8)
<b>Literacy</b>	
Can not read or write	113 (54.6)
Can read only	87 (42.0)
Can read and write	7 (3.4)
<b>Marital Status</b>	
Single	138 (66.7)
Married	69 (33.3)
Other	0 (0)
<b>Income (AFS)</b>	
<1000	4 (1.9)
1000-5000	47 (22.7)
5001-10,000	83 (40.1)
10,001-20,000	37 (17.9)
>20,000	36 (17.4)

**Table 17: Crude estimates for MSM general knowledge on STI and HIV prevention in Kabul, 2012**

	MSM N (%)	Yes n (%)	No n (%)	Don't Know n (%)
Have you ever heard of STI?	207 (100)	92 (44.4)	110 (53.1)	5 (2.4)
Have you ever heard of a condom?	207 (100)	150 (72.5)	57 (27.5)	0
Have you heard of HIV?	207 (100)	115 (55.6)	92 (44.4)	0
Can having sex with only one faithful uninfected sex partner reduce the risk of HIV transmission?	207 (100)	76 (36.7)	109 (52.7)	22 (10.6)
Can using condoms reduce the risk of HIV transmission?	207 (100)	89 (43.0)	96 (46.4)	22 (10.6)
Can people protect against HIV by abstaining from sex?	207 (100)	92 (44.4)	100 (48.3)	15 (7.2)
Can a person get HIV from mosquito bites?	207 (100)	57 (27.5)	125 (60.4)	25 (12.1)
Can a person get HIV by sharing meal with someone who is infected?	207 (100)	32 (15.5)	150 (72.5)	25 (12.1)
Adequate knowledge about HIV prevention	207 (100)	20 (9.7)	187 (90.3)	0 (0)

\*\*\*Total may not add up due to missing

**Table 18: Crude estimates of risk behavior and risk factors among MSM in Kabul, 2012**

	Category n (%)			
Injected in last 12 months	<b>Yes</b>	<b>No</b>	--	--
	4 (1.9)	203 (98.1)	--	--
At least one drink of alcohol in last 12 months	<b>Yes</b>	<b>No</b>	--	--
	65 (31.4)	142 (68.6)	--	--
Ever been raped	<b>Yes</b>	<b>No</b>	--	--
	119 (57.5)	88 (42.5)	--	--
Ever bought sex from a female	<b>Yes</b>	<b>No</b>	--	--
	83 (40.1)	124 (59.9)	--	--
Number of male sex partners in last 12 months	<b>1</b>	<b>2-9</b>	<b>10-19</b>	<b>20+</b>
	15 (7.2)	64 (30.9)	35 (16.9)	88 (42.5)
Had unprotected insertive anal sex with male in last 12 months	<b>Yes</b>	<b>No</b>	--	--
	141 (68.1)	66 (31.9)	--	--
Had unprotected receptive anal sex with male in last 12 months	<b>Yes</b>	<b>No</b>	--	--
	165 (79.7)	42 (20.3)	--	--
Paid for sex with a man in past 12 months	68 (32.9)	138 (66.7)		
Been paid for sex with a man in past 12 months	<b>Yes</b>	<b>No</b>	--	--
	136 (65.7)	71 (34.3)	--	--

**Table 19: Crude estimates of HIV testing and prevention among MSM in Kabul, 2012**

	<b>Yes n (%)</b>	<b>No n (%)</b>
Condom use at last sex	36 (17.4)	171 (82.6)
Use of MSM services	30 (14.5)	177 (85.5)
Ever tested for HIV	49 (23.7)	158 (76.3)
HIV test in last 12 months	36 (17.4)	171 (82.6)
Received results of HIV test	35 (16.9)	172 (83.1)

\*\*\*Total may not add up due to missing

**Table 22: Crude proportions of socio-demographic characteristics of PWIDs in Kabul, Herat, Mazar-i-Sharif, Jalalabab, and Charikar, 2012**

Characteristics	<b>Kabul N=369 (100%)</b>	<b>Herat N=186 (100%)</b>	<b>Mazar-i-Sharif N=254 (100%)</b>	<b>Jalalabad N=237 (100%)</b>	<b>Charikar N=117 (100%)</b>
<b>Age (years)</b>					
18-30	242 (65.6)	125 (67.2)	151 (59.4)	196 (82.7)	89 (76.1)
31-40	96 (26.0)	42 (22.6)	76 (29.9)	32 (13.5)	21 (17.9)
41-50	28 (7.6)	16 (8.6)	19 (7.5)	6 (2.5)	7 (6.0)
51-60	3 (0.8)	3 (1.6)	6 (2.4)	2 (0.8)	
>60	0 (0)	0 (0)	0 (0)	0 (0)	
<b>Ethnicity</b>					
Pashtun	58 (15.7)	34 (18.3)	20 (7.9)	215 (90.7)*	10 (8.5)
Tajik	193 (52.3)	58 (31.2)	79 (31.1)	16 (6.8)*	105 (89.7)
Hazara	103 (27.9)	91 (48.9)	88 (34.6)	0 (0)*	0 (0)
Other	15 (4.1)	3 (1.6)	66 (26.0)	5 (2.1)*	2 (1.7)
<b>Literacy</b>					
Cannot read or write	196 (53.1)	72 (38.7)	161 (63.4)	137 (57.8)	76 (65.0)
Can read only	4 (1.1)	0 (0)	NA	0 (0)	NA
Can read and write	169 (45.8)	114 (61.3)	93(36.6)	99 (41.8)	41 (35.0)
<b>Marital Status</b>					
Single	221 (59.9)	100 (53.8)	134 (52.8)	77(32.5)	57 (48.7)
Married	136 (36.9)	69 (37.1)	103(40.6)	152 (64.1)	57 (48.7)
Other	12 (3.3)	16 (8.6)	17 (6.7)	7 (3.0)	3 (2.6)
<b>Income (AFS)</b>					
<1000	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)*
1000-5000	148 (40.1)	73 (39.2)	125 (49.2)	75 (31.6)	25 (21.4)*
5001-10,000	185 (50.1)	107 (57.5)	102 (40.2)	76 (32.1)	72 (61.5)*
10,000-20,000	28 (7.6)	4 (2.2)	12 (4.7)	37 (15.6)	18 (15.4)*
>20,000	8 (2.2)	0 (0)	3 (1.2)	3 (1.3)	2 (1.7)*
<b>Employment</b>					
Employed	369 (100)	185 (99.5)	241 (94.9)	191 (80.6)	113 (96.6)
Unemployed	0 (0)	1 (0.5)	13 (5.1)	45 (19.0)	4 (3.4)
<b>Lived outside Afghanistan past 10 yr</b>					
Yes	234 (63.4)	172 (92.5)	151 (59.4)	127 (53.6)	57 (48.7)
No	135 (36.6)	14 (7.5)	102 (40.2)	109 (46.0)	60 (51.3)

† Total % might not add to 100% due to rounding \*\*\*Total may not add up due to missing responses

Y Currency exchange: 1 Afs= 0.217 USD (Oct 12 2012)

**Table 23-Kabul: Crude estimates for PWIDs general knowledge on STI and HIV prevention in Kabul, 2012**

	<b>PWID N (%)</b>	<b>Yes n (%)</b>	<b>No n (%)</b>	<b>Don't Know n (%)</b>
Have you ever heard of STI?	369 (100)	344 (93.2)	25 (6.8)	0
Have you ever heard of a condom?	369 (100)	323 (87.5)	46 (12.5)	0
Have you heard of HIV?	369 (100)	351 (95.1)	18 (4.9)	0
Can having sex with only one faithful uninfected sex partner reduce the risk of HIV transmission?	369 (100)	247 (66.9)	122 (33.1)	0
Can using condoms reduce the risk of HIV transmission?	369 (100)	248 (67.2)	121 (32.8)	0
Can people protect against HIV by abstaining from sex?	369 (100)	260 (70.5)	109 (29.5)	0
Can a person get HIV from mosquito bites?	369 (100)	232 (62.9)	137 (37.1)	0
Can a person get HIV by sharing meal with someone who is infected?	369 (100)	216 (58.5)	153 (41.5)	0
Adequate knowledge about HIV prevention	369 (100)	41 (11.1)	328 (88.9)	0

¶ Total % might not add to 100% due to rounding \*\*\*Total may not add up due to missing

**Table 23-Herat: Crude estimates for PWIDs general knowledge on STI and HIV prevention in Herat, 2012**

	<b>PWID N (%)</b>	<b>Yes n (%)</b>	<b>No n (%)</b>	<b>Don't Know n (%)</b>
Have you ever heard of STI?	186 (100)	145 (78.0)	41 (22.0)	0
Have you ever heard of a condom?	186 (100)	159 (85.5)	27 (14.5)	0
Have you heard of HIV?	186 (100)	172 (92.5)	14 (7.5)	0
Can having sex with only one faithful uninfected sex partner reduce the risk of HIV transmission?	186 (100)	155 (83.3)	31 (16.7)	0
Can using condoms reduce the risk of HIV transmission?	186 (100)	155 (83.3)	31 (16.7)	0
Can people protect against HIV by abstaining from sex?	186 (100)	154 (82.8)	32 (17.2)	0
Can a person get HIV from mosquito bites?	186 (100)	55 (29.6)	131 (70.4)	0
Can a person get HIV by sharing meal with someone who is infected?	184 (100)	58 (31.2)	126 (67.7)	0
Adequate knowledge about HIV prevention	186 (100)	74 (39.8)	112 (60.2)	0

¶ Total % might not add to 100% due to rounding \*\*\*Total may not add up due to missing

**Table 23-Mazar: Crude estimates for PWIDs general knowledge on STI and HIV prevention in Mazar-i-Sharif, 2012**

	<b>PWID N (%)</b>	<b>Yes n (%)</b>	<b>No n (%)</b>	<b>Don't Know n (%)</b>
Have you ever heard of STI?	254 (100)	54 (21.3)	200 (78.7)	0
Have you ever heard of a condom?	254 (100)	206 (81.1)	48 (18.9)	0
Have you heard of HIV?	254 (100)	200 (78.7)	54 (21.3)	0
Can having sex with only one faithful uninfected sex partner reduce the risk of HIV transmission?	254 (100)	165 (65.0)	89 (35.0)	0
Can using condoms reduce the risk of HIV transmission?	254 (100)	190 (74.8)	64 (25.2)	0
Can people protect against HIV by abstaining from sex?	254 (100)	190 (74.8)	64 (25.2)	0
Can a person get HIV from mosquito bites?	254 (100)	112 (44.1)	142 (55.9)	0
Can a person get HIV by sharing meal with someone who is infected?	254 (100)	37 (14.6)	213 (83.9)	0
Adequate knowledge about HIV prevention	254 (100)	111 (43.7)	143 (56.3)	0

¶ Total % might not add to 100% due to rounding \*\*\*Total may not add up due to missing

**Table 23-Jalalabad: Crude estimates for PWIDs general knowledge on STI and HIV prevention in Jalalabad, 2012**

	<b>PWID N (%)</b>	<b>Yes n (%)</b>	<b>No n (%)</b>	<b>Don't Know n (%)</b>
Have you ever heard of STI?	236 (100)	117 (49.6)	119 (50.4)	0
Have you ever heard of a condom?	236 (100)	177 (75.0)	59 (25.0)	0
Have you heard of HIV?	236 (100)	186 (78.8)	50 (21.2)	0
Can having sex with only one faithful uninfected sex partner reduce the risk of HIV transmission?	236 (100)	88 (37.3)	148 (62.7)	0
Can using condoms reduce the risk of HIV transmission?	236 (100)	90 (38.1)	146 (61.9)	0
Can people protect against HIV by abstaining from sex?	236 (100)	88 (37.3)	148 (62.7)	0
Can a person get HIV from mosquito bites?	236 (100)	79 (33.5)	157 (66.5)	0
Can a person get HIV by sharing meal with someone who is infected?	236 (100)	80 (33.9)	152 (64.4)	0
Adequate knowledge about HIV prevention	236 (100)	31 (13.1)	205 (86.9)	0

¶ Total % might not add to 100% due to rounding \*\*\*Total may not add up due to missing

**Table 23-Charikar: Crude estimates for PWIDs general knowledge on STI and HIV prevention in Charikar, 2012**

	PWID N (%)	Yes n (%)	No n (%)	Don't Know n (%)
Have you ever heard of STI?	117 (100)	59 (50.4)	58 (49.6)	0
Have you ever heard of a condom?	117 (100)	51 (43.6)	66 (56.4)	0
Have you heard of HIV?	117 (100)	68 (58.1)	49 (41.9)	0
Can having sex with only one faithful uninfected sex partner reduce the risk of HIV transmission?	117 (100)	58 (49.6)	59 (50.4)	0
Can using condoms reduce the risk of HIV transmission?	117 (100)	46 (39.3)	71 (60.7)	0
Can people protect against HIV by abstaining from sex?	117 (100)	60 (51.3)	57 (48.7)	0
Can a person get HIV from mosquito bites?	117 (100)	113 (96.6)	4 (3.4)	0
Can a person get HIV by sharing meal with someone who is infected?	115 (100)	42 (35.9)	73 (62.4)	0
Adequate knowledge about HIV prevention	117 (100)	0 (0)	117 (100)	0

¶ Total % might not add to 100% due to rounding \*\*\*Total may not add up due to missing responses

\*among those who had sex in last 6 months ; \*\*\*Total may not add up due to missing responses

**Table 24-Kabul: Kabul Crude Risk behavior and risk factors among PWIDs, 2012**

	PWID N (100%)	Category n (%)					
Length of time injecting drugs (years)	369(100)	<1	1 - 3	> 3	---	---	<i>Mean</i>
		163 (44.2)	183 (49.6)	23 (6.2)	---	---	xxx
Frequency of injecting drugs	369(100)	≤ Once/day	> Once a day			---	<i>Median</i>
		63 (17.1)	306 (82.9)			--	NA
# of sex partners past 6 months		0	1	2 or more	No Response	---	<i>Mean</i>
Female	213(100)	165 (77.5)	43 (20.2)	2 (0.9)	3 (1.4)		1.18
Male	213(100)	7 (3.3)	3 (1.4)	2 (0.9)	1 (0.5)		0.77
	PWID N (100%)	Yes n (%)		No n (%)			
Ever shared non-sterile injecting equipment	368 (100)	3 (0.8)		365 (99.2)			
Used non-sterile injecting equipment at least once in the past 3 months	369 (100)	0 (0)		369 (100)			
Had symptoms associated with an STI in past 12 months	369 (100)	34 (9.4)		225 (61.0)			
Ever imprisoned	369 (100)	110 (26.5)		259 (70.2)			
Ever bought sex from a women*	213 (100)	73 (29.3)		140 (65.7)			
Ever had sex with a man *	213 (100)	0 (0)		213 (100)			
Ever had sex with a boy*	213 (100)	13 (1.9)		200 (93.9)			



**Table 24-Herat: Herat Crude Risk behavior and risk factors among PWIDs, 2012**

	PWID N (100%)	Category n (%)					
Length of time injecting drugs (years)	186 (100)	<1	1 - 3	> 3	---	---	<i>Mean</i>
		42 (22.6)	99 (53.2)	45 (24.2)	---	---	2.9 years
Frequency of injecting drugs	186 (100)	≤ Once/day	> Once/day			---	<i>Median</i>
		0 (0)	186 (100)			---	
# of sex partners past 6 months		0	1	2 or more	No Response		0
Female	158 (100)	122 (77.2)	23 (14.6)	2 (1.3)	11 (7.0)		
Male	158 (100)	21 (13.3)	2 (1.3)	1 (0.6)	134 (84.8)		
		PWID N (100%)	Yes n (%)		No n (%)		
Ever shared non-sterile injecting equipment		185 (100)	67 (36.2)		118 (63.8)		
Used non-sterile injecting equipment at least once in the past 3 months		186 (100)	44 (23.7)		142 (76.3)		
Had symptoms associated with an STI in past 12 months		186 (100)	120 (64.5)		66 (35.5)		
Ever imprisoned		186 (100)	136 (73.1)		50 (26.9)		
Ever bought sex from a women*		158 (100)	118 (74.7)		40 (25.3)		
Ever had sex with a man *		155 (100)	1 (0.6)		154 (99.4)		
Ever had sex with a boy*		155 (100)	20 (12.9)		135 (87.1)		

\*among those who had sex in last 6 months ; \*\*\*Total may not add up due to missing responses

**Table 24-Mazar: Mazar-i-Sharif Crude risk behavior and risk factors among PWIDs, 2012**

	PWID N (100%)	Category n (%)					
Length of time injecting drugs (years)	254 (100)	<1	1 – 3	> 3	---	---	<i>Mean</i>
		49 (19.3)	158 (62.2)	47 (18.5)	---	---	2.4
Frequency of injecting drugs	254 (100)	≤ Once/day	> Once/day			---	<i>Median</i>
		24 (9.4)	230 (90.6)			--	
# of sex partners past 6 months		0	1	2 or more	No Response	---	<i>Mean</i>
Female	193 (100)	117 (60.6)	70 (36.3)	5 (2.6)			
Male	193 (100)	4 (2.1)	189 (97.9)	0 (0)			
		PWID N (100%)	Yes n (%)		No n (%)		
Ever shared non-sterile injecting equipment		253 (100)	14 (5.5)		239 (94.5)		
Used non-sterile injecting equipment at least once in the past 3 months		254 (100)	5 (2.0)		249 (98.0)		
Had symptoms associated with an STI in past 12 months		254 (100)	41 (16.1)		213 (83.9)		
Ever imprisoned		254 (100)	101 (39.8)		153 (60.2)		
Ever bought sex from a women*		193 (100)	98 (50.8)		95 (49.2)		
Ever had sex with a man *		193 (100)	4 (2.1)		189 (97.9)		
Ever had sex with a boy*		193 (100)	33 (17.1)		160 (82.9)		

\*among those who had sex in last 6 months ; \*\*\*Total may not add up due to missing responses

**Table 24-Jalalabad: Jalalabad Crude Risk behavior and risk factors among PWIDs, 2012**

	PWID N (100%)	Category n (%)					
Length of time injecting drugs (years)	236(100)	<1	1 – 3	> 3	---	---	<b>Mean</b>
		47 (19.9)	151 (64.0)	38 (16.1)	---	---	2.3
Frequency of injecting drugs	236 (100)	≤ <b>Once/day</b>	<b>&gt; Once/day</b>			---	<b>Median</b>
		167 (70.8)	69 (29.2)			--	--
# of sex partners past 6 months		0	1	2 or more	No Response	---	<b>Mean</b>
Female	184 (100)	22 (12.0)	118 (64.1)	44 (23.9)			
Male	184 (100)	60 (32.6)	9 (4.9)	9 (4.9)	108 (58.7)		
		<b>PWID N (100%)</b>	<b>Yes n (%)</b>		<b>No n (%)</b>		
Ever shared non-sterile injecting equipment		236 (100)	29 (12.3)		207 (87.7)		
Used non-sterile injecting equipment at least once in the past 3 months		NA	NA		NA		
Had symptoms associated with an STI in past 12 months		236(100)	54 (22.9)		182 (77.1)		
Ever imprisoned		235(100)	107 (45.5)		128 (54.5)		
Ever bought sex from a women*		186(100)	115 (61.8)		71 (38.2)		
Ever had sex with a man *		186 (100)	2 (1.1)		184 (98.9)		
Ever had sex with a boy*		186(100)	59 (31.7)		127 (68.3)		

\*among those who had sex in last 6 months ; \*\*\*Total may not add up due to missing responses

**Table 24-Charikar: Crude Risk behavior and risk factors among PWIDs, 2012**

	PWID N (100%)	Category n (%)					
Length of time injecting drugs (years)	117 (100)	<1	1 – 3	> 3	---	---	<i>Mean</i>
		63 (53.8)	43 (36.8)	11 (9.4)	---	---	1.3
Frequency of injecting drugs	115 (100)	≤ <b>Once/day</b>	<b>&gt; Once/day</b>			---	<i>Median</i>
		21 (18.3)	94 (81.7)			--	
# of sex partners past 6 months		0	1	2 or more	No Response	---	<i>Mean</i>
Female	93 (100)	22 (23.7)	50 (53.8)	21 (22.6)			
Male	93 (100)	16 (17.2)	1 (1.1)	0 (0)	76 (81.7)		
		<b>PWID N (100%)</b>	<b>Yes n (%)</b>		<b>No n (%)</b>		
Ever shared non-sterile injecting equipment		116 (100)	15 (12.9)		101 (87.1)		
Used non-sterile injecting equipment at least once in the past 3 months		117 (100)	8 (6.8)		109 (93.2)		
Had symptoms associated with an STI in past 12 months		117 (100)	16 (13.7)		101 (86.3)		
Ever imprisoned		117 (100)	58 (49.6)		59 (50.4)		
Ever bought sex from a women*		93 (100)	42 (45.2)		51 (54.8)		
Ever had sex with a man *		93 (100)	1 (1.1)		92 (98.9)		
Ever had sex with a boy*		93 (100)	16 (17.2)		77 (82.8)		

\*among those who had sex in last 6 months ; \*\*\*Total may not add up due to missing responses

**Table 25: Crude HIV testing and prevention among PWIDS  
– Kabul, Herat, Mazar-i-Sharif, Jalalabad, and Charikar, 2012**

	<b>PWID n (%)</b>	<b>Yes n (%)</b>	<b>No n (%)</b>
<b>Kabul</b>			
Condom use at last sex*	213 (100)	64 (30.0)	149 (70.0)
Awareness of risk reduction services	369 (100)	244 (66.1)	125 (33.9)
Use of risk reduction services	244 (100)	208 (85.2)	37 (15.2)
Ever tested for HIV	351 (100)	24 (6.8)	327 (93.2)
Received HIV testing in past 12 months	24 (100)	18 (75.0)	6 (25.0)
Received results of HIV test	18 (100)	14 (77.8)	4 (22.2)
<b>Herat</b>			
Condom use at last sex*	157 (100)	36 (22.9)	121 (77.1)
Awareness of risk reduction services	186 (100)	130 (69.9)	56 (30.1)
Use of risk reduction services	130 (100)	128 (98.5)	2 (1.5)
Ever tested for HIV	172 (100)	122 (70.9)	50 (29.1)
Received HIV testing in past 12 months	122 (100)	118 (96.7)	4 (3.3)
Received results of HIV test	118 (100)	80 (67.8)	38 (32.2)
<b>Mazar-i-Sharif</b>			
Condom use at last sex*	193 (100)	54 (28.0)	139 (72.0)
Awareness of risk reduction services	254 (100)	214 (84.3)	40 (15.7)
Use of risk reduction services	214 (100)	209 (97.7)	5 (2.3)
Ever tested for HIV	199 (100)	122 (61.3)	77 (38.7)
Received HIV testing in past 12 months	122 (100)	84 (68.9)	38 (31.1)
Received results of HIV test	84 (100)	75 (89.3)	9 (10.7)
<b>Jalalabad</b>			
Condom use at last sex*	171 (100)	38 (22.2)	133 (77.8)
Awareness of risk reduction services	236 (100)	153 (64.8)	83 (35.2)
Use of risk reduction services	153 (100)	130 (85.0)	23 (15.0)
Ever tested for HIV	185 (100)	49 (26.5)	136 (73.5)
Received HIV testing in past 12 months	49 (100)	35 (71.4)	14 (28.6)
Received results of HIV test	35 (100)	31 (88.6)	4 (11.4)
<b>Charikar</b>			
Condom use at last sex*	91 (100)	5 (5.5)	88 (96.4)
Awareness of risk reduction services	117 (100)	3 (2.6)	114 (97.8)
Use of risk reduction services	3 (100)	1 (33.3)	2 (99.6)
Ever tested for HIV	68 (100)	15 (22.1)	53 (84.0)
Received HIV testing in past 12 months	15 (100)	7 (46.7)	8 (53.3)
Received results of HIV test	7 (100)	6 (85.7)	1 (14.3)

\* among those who have heard of condoms; \*\*\*Total may not add up due to missing responses

**Table 26: Crude disease sero-prevalence among PWIDs in Kabul, Herat, Mazar-i-Sharif, Jalalabad, and Charikar, 2012**

Disease	Kabul	Herat	Mazar	Jalalabad	Charikar
<b>HIV N(%)</b>	369 (100)	185 (100)	254 (100)	236 (100)	117 (100)
Positive	9 (2.4)	29 (15.7)	6 (2.4)	6 (2.5)	1 (0.9)
Negative	360 (97.6)	156 (84.3)	248 (97.6)	230 (97.5)	116 (99.1)
<b>HBV N(%)</b>	369 (100)	185 (100)	252 (100)	236 (100)	117 (100)
Positive	27 (7.3)	11 (5.9)	11 (4.4)	21 (8.9)	7 (6.0)
Negative	342 (92.7)	174 (94.1)	243 (96.4)	215 (91.1)	110 (94.0)
<b>HCV N(%)</b>	369 (100)	185 (100)	254 (100)	236 (100)	117 (100)
Positive	102 (27.6)	131 (70.8)	60 (23.6)	36 (15.3)	33 (28.2)
Negative	267 (72.4)	54 (29.2)	194 (76.4)	200 (84.7)	84 (71.8)
<b>Syphilis N(%)</b>	368 (100)	184 (100)	254 (100)	236 (100)	117 (100)
Positive	21 (5.7)	5 (2.7)	23 (9.1)	18 (7.6)	3 (2.6)
Negative	347 (94.3)	179 (97.3)	231 (90.9)	218 (92.4)	114 (97.4)

\*\*Total may not add up due to missing responses

**Table 32: Crude demographic characteristics among Females Sex Workers in Kabul, Herat, and Mazar, 2012**

Characteristics	Kabul N=333 (100%)	Herat N=344 (100%)	Mazar-i-Sharif N=355 (100%)
<b>Age (years)</b>			
18-24	139 (41.7)	97 (28.2)	137 (38.6)
25-29	103 (30.9)	104 (30.2)	77 (21.7)
30-34	45 (13.5)	62 (18.0)	67 (18.9)
≥35	46 (13.8)	81 (23.5)	74 (20.8)
<b>Ethnicity</b>			
Tajik	19 (5.7)	262 (76.2)	166 (46.8)
Pashtun	5 (1.5)	59 (17.2)	74 (20.8)
Hazara	279 (83.8)	16 (4.7)	40 (11.3)
Uzbek	8 (2.4)	5 (1.5)	69 (19.4)
Other	22 (6.6)	0 (0)	6 (1.7)
<b>Literacy</b>			
Cannot read or write	237 (71.2)	111 (32.3)	249 (70.1)
Can read only	23 (6.9)	15 (4.4)	7 (2.0)
Can read and write	73 (21.9)	218 (63.4)	99 (27.9)
<b>Marital Status</b>			
Never married	21 (6.3)	6 (1.7)	89 (25.1)
Married	207 (62.2)	265 (77.0)	180 (50.7)
Divorced	30 (9.0)	19 (5.5)	--
Separated	8 (2.4)	17 (4.9)	--
Widowed	46 (13.8)	37 (10.8)	--
Other	21 (6.3)	--	85 (23.9)
<b>Income (AFS)</b>			
<1000	1 (0.3)	0 (0)	3 (0.8)
1000-5000	119 (35.7)	89 (25.9)	200 (56.3)
5001-10,000	160 (48.0)	202 (58.7)	84 (23.7)
10,001-20,000	39 (11.7)	52 (15.1)	29 (8.2)
>20,000	14 (4.2)	1 (0.3)	19 (5.4)

\*\*\*Total may not add up due to missing responses

**Table 33-Kabul: Crude estimates for FSWs' general knowledge on STI and HIV prevention in Kabul, 2012**

	<b>FSW N (%)</b>	<b>Yes n (%)</b>	<b>No n (%)</b>	<b>Don't Know n (%)</b>
Have you ever heard of STI?	333 (100)	113 (33.9)	220 (66.1)	0 (0)
Knowledge of STI symptoms in women*	333 (100)	246 (73.9)	87 (26.1)	0 (0)
Knowledge of STI symptoms in men*	333 (100)	315 (94.6)	18 (5.4)	0 (0)
Have you ever heard of a condom?	333 (100)	254 (76.3)	79 (23.7)	0 (0)
Have you heard of HIV?	333 (100)	161 (48.3)	172 (51.7)	0 (0)
Can having sex with only one faithful uninfected sex partner reduce the risk of HIV transmission?	333 (100)	138 (41.4)	190 (57.1)	5 (1.5)
Can using condoms reduce the risk of HIV transmission?	333 (100)	137 (41.1)	185 (55.6)	11 (3.3)
Can people protect against HIV by abstaining from sex?	333 (100)	135 (40.5)	194 (58.3)	4 (1.2)
Can a person get HIV from mosquito bites?	333 (100)	252 (75.7)	81 (24.3)	0 (0)
Can a person get HIV by sharing meal with someone who is infected?	333 (100)	230 (69.1)	103 (30.9)	0 (0)
Adequate knowledge about HIV prevention	333 (100)	61 (18.3)	272 (81.7)	0 (0)

\*\*\*Total may not add up due to missing responses

**Table 33-Herat: Crude estimates for FSWs' general knowledge on STI and HIV prevention in Herat, 2012**

	<b>FSW N (%)</b>	<b>Yes n (%)</b>	<b>No n (%)</b>	<b>Don't Know n (%)</b>
Have you ever heard of STI?	344 (100)	230 (66.9)	114 (33.1)	0 (0)
Knowledge of STI symptoms in women*	344 (100)	114 (33.1)	230 (66.9)	0 (0)
Knowledge of STI symptoms in men*	344 (100)	111 (32.3)	233 (67.7)	0 (0)
Have you ever heard of a condom?	344 (100)	314 (91.3)	30 (8.7)	0 (0)
Have you heard of HIV?	344 (100)	154 (44.8)	189 (54.9)	0 (0)
Can having sex with only one faithful uninfected sex partner reduce the risk of HIV transmission?	344 (100)	132 (38.4)	212 (61.6)	0 (0)
Can using condoms reduce the risk of HIV transmission?	344 (100)	142 (41.3)	202 (58.7)	0 (0)
Can people protect against HIV by abstaining from sex?	344 (100)	127 (36.9)	217 (63.1)	0 (0)
Can a person get HIV from mosquito bites?	344 (100)	287 (83.4)	57 (16.6)	0 (0)
Can a person get HIV by sharing meal with someone who is infected?	344 (100)	282 (82.0)	62 (18.0)	0 (0)
Adequate knowledge about HIV prevention	344 (100)	36 (10.5)	308 (89.5)	0 (0)

\*\*\*Total may not add up due to missing responses



**Table 33-Mazar: Crude estimates for FSWs' general knowledge on STI and HIV prevention in Mazar-i-Sharif, 2012**

	FSW N (%)	Yes n (%)	No n (%)	Don't Know n (%)
Have you ever heard of STI?	355 (100)	87 (24.5)	268 (75.5)	0 (0)
Knowledge of STI symptoms in women*	355 (100)	81 (22.8)	274 (77.2)	0 (0)
Knowledge of STI symptoms in men*	355 (100)	65 (18.3)	290 (81.7)	0 (0)
Have you ever heard of a condom?	355 (100)	149 (42.0)	206 (58.0)	0 (0)
Have you heard of HIV?	355 (100)	83 (23.4)	272 (76.6)	0 (0)
Can having sex with only one faithful uninfected sex partner reduce the risk of HIV transmission?	355 (100)	79 (22.3)	274 (77.2)	2 (0.6)
Can using condoms reduce the risk of HIV transmission?	355 (100)	76 (21.4)	274 (77.2)	5 (1.4)
Can people protect against HIV by abstaining from sex?	355 (100)	75 (21.1)	277 (78.0)	3 (0.8)
Can a person get HIV from mosquito bites?	355 (100)	286 (80.6)	69 (19.4)	0 (0)
Can a person get HIV by sharing meal with someone who is infected?	355 (100)	289 (81.4)	66 (18.6)	0 (0)
Adequate knowledge about HIV prevention	355 (100)	61 (17.2)	294 (82.8)	0 (0)

\*\*\*Total may not add up due to missing responses

**Table 34- Kabul: Crude Risk behavior and risk factors among Female Sex Workers, 2012**

	FSW N(%)	Category n (%)				
Number of clients in past 1 month	333 (100)	< 2	2 – 3	4 – 5	> 5	Refused/missing
		68 (20.4)	128 (38.4)	101 (30.3)	29 (8.7)	7 (2.1)
Number of clients in past 1 week	333 (100)	0	1	2	> 2	Refused/missing
		9 (2.7)	74 (22.2)	135 (40.5)	103 (30.9)	12 (3.6)
Number of paid sex acts past 1 week	333 (100)	0	1-2	3-4	≥5	Refused/missing
		0 (0)	138 (41.4)	126 (37.8)	48 (14.4)	21 (6.3)
Number of PWID clients past 1 yr	333 (100)	0	>0			Refused/missing
		297 (89.2)	17 (5.1)			19 (5.7)
Number of casual partners past 6 mo.	333 (100)	0	1 +	---	---	Refused/missing
		289 (86.8)	44 (13.2)	---	---	---
Length of time in sex work	333 (100)	< 2 yrs	2 – 3 yrs	4 – 5 yrs	6 yrs +	Refused/missing
		102 (30.6)	139 (41.7)	46 (13.8)	46 (13.8)	---
Age at first sex	333 (100)	< 16	16 – 18	>18	---	Refused/missing
		75 (22.5)	180 (54.1)	75 (22.5)	---	3 (0.9)

\*\*\*Total may not add up due to missing responses

**Table 34-Herat: Crude risk behavior and risk factors among Female Sex Workers, 2012**

	<b>FSW N(%)</b>	<b>Category n (%)</b>				
Number of clients in past 1 month	344 (100)	< 2	2 – 3	4 – 5	> 5	Refused/missing
		19 (5.5)	131 (38.1)	94 (27.3)	79 (23.0)	21 (6.1)
Number of clients in past 1 week	344 (100)	0	1	2	> 2	Refused/missing
		39 (11.3)	61 (17.7)	142 (41.3)	101 (29.4)	1 (0.3)
Number of paid sex acts past 1 week	344 (100)	0	1-2	3-4	≥5	Refused/missing
		0 (0)	166 (48.3)	123 (35.8)	14 (4.1)	41 (11.9)
Number of PWID clients past 1 yr	344 (100)	0	>0			Refused/missing
		271 (78.8)	49 (14.2)			24 (7.0)
Number of casual partners past 6 mo.	344 (100)	0	1 +	---	---	Refused/missing
		296 (86.0)	48 (14.0)	---	---	---
Length of time in sex work	344 (100)	< 2 yrs	2 – 3 yrs	4 – 5 yrs	6 yrs +	Refused/missing
		38 (11.0)	84 (24.4)	96 (27.9)	126 (36.6)	---
Age at first sex	344 (100)	< 16	16 – 18	>18	---	Refused/missing
		73 (21.2)	113 (32.8)	158 (45.9)	---	---

\*\*\*Total may not add up due to missing responses

**Table 34-Mazar-i-Sharif: Crude risk behavior and risk factors among Female Sex Workers, 2012**

	<b>FSW N(%)</b>	<b>Category n (%)</b>				
Number of clients in past 1 month	355 (100)	< 2	2 – 3	4 – 5	> 5	Refused/missing
		56 (15.8)	48 (13.5)	115 (32.4)	119 (33.5)	17 (4.8)
Number of clients in past 1 week	355 (100)	0	1	2	> 2	Refused/missing
		90 (25.4)	65 (18.3)	91 (25.6)	101 (28.5)	8 (2.3)
Number of paid sex acts past 1 week	355 (100)	0	1-2	3-4	≥5	Refused/missing
		6 (1.7)	105 (29.6)	95 (26.8)	51 (14.4)	97 (27.3)
Number of PWID clients past 1 yr	355 (100)	0	>0			Refused/missing
		247 (69.6)	23 (6.5)	---	---	84 (23.7)
Number of casual partners past 6 mo.	355 (100)	0	1 +	---	---	Refused/missing
		268 (75.5)	78 (22.0)	---	---	8 (2.3)
Length of time in sex work	355 (100)	< 2 yrs	2 – 3 yrs	4 – 5 yrs	6 yrs +	Refused/missing
		74 (20.8)	109 (30.7)	61 (17.2)	111 (31.3)	---
Age at first sex	355 (100)	< 16	16 – 18	>18	---	Refused/missing
		49 (13.8)	137 (38.6)	168 (47.3)	1 (0.3)	---

\*\*\*Total may not add up due to missing responses

**Table 35-Kabul: Crude Risk behaviors and risk factors among Female Sex Workers, 2012**

	FSW N (%)	Yes n (%)	No n (%)
Lived outside Afghanistan in past 10 years	332 (100)	87 (26.2)	245 (73.8)
Had symptoms associated with an STI in past 12 months	333 (100)	202 (60.7)	131 (39.3)
Had sex with a client while having STI symptoms*	202 (100)	151 (74.8)	51 (25.2)
Sought care at a clinic or hospital while having STI symptoms*	202 (100)	98 (48.5)	104 (51.5)
Ever been forced to have sex	333 (100)	24 (7.2)	309 (92.8)
Ever used drugs	333 (100)	9 (2.7)	324 (97.3)
Ever injected drugs	332 (100)	1 (0.3)	331 (99.7)

\*Among those who reported having symptoms consistent with an STI in the past 12 months

\*\*\*Total may not add up due to missing responses

**Table 35-Herat: Crude risk behaviors and risk factors among Female Sex Workers, 2012**

	FSW N (%)	Yes n (%)	No n (%)
Lived outside Afghanistan in past 10 years	344 (100)	59 (17.2)	274 (79.7)
Had symptoms associated with an STI in past 12 months	344 (100)	65 (18.9)	279 (81.1)
Had sex with a client while having STI symptoms*	344 (100)	56 (16.3)	287 (83.4)
Sought care at a clinic or hospital while having STI symptoms*	344 (100)	36 (10.5)	306 (89.0)
Ever been forced to have sex	344 (100)	43 (12.5)	299 (86.9)
Ever used drugs	344 (100)	47 (13.7)	295 (85.8)
Ever injected drugs	344 (100)	32 (9.3)	297 (86.3)

\*Among those who reported having symptoms consistent with an STI in the past 12 months

\*\*\*Total may not add up due to missing

**Table 35-Mazar: Crude risk behaviors and risk factors among Female Sex Workers, 2012**

	FSW N (%)	Yes n (%)	No n (%)
Lived outside Afghanistan in past 10 years	354 (100)	79 (22.3)	275 (77.7)
Had symptoms associated with an STI in past 12 months	354 (100)	26 (7.3)	328 (92.7)
Had sex with a client while having STI symptoms*	354 (100)	11 (3.1)	343 (96.9)
Sought care at a clinic or hospital while having STI symptoms*	354 (100)	25 (7.1)	329 (92.9)
Ever been forced to have sex	354 (100)	15 (4.2)	330 (93.2)
Ever used drugs	354 (100)	19 (5.4)	335 (94.6)
Ever injected drugs	354 (100)	0 (0)	354 (100)

\*Among those who reported having symptoms consistent with an STI in the past 12 months

\*\*\*Total may not add up due to missing responses

**Table 36: Crude HIV testing and prevention among Female Sex Workers in Kabul, Herat , Mazar, 2012**

	<b>Yes n (%)</b>	<b>No n (%)</b>
<b>Kabul (n=333)</b>		
Condom use at last sex	225 (67.6)	107 (32.1)
Use of risk reduction services	39 (11.7)	294 (88.3)
Ever tested for HIV	21 (6.3)	312 (93.7)
Received results of HIV test	17 (5.1)	3 (0.9)
Received HIV testing in past 12 months	12 (3.6)	9 (2.7)
<b>Herat (n=344)</b>		
Condom use at last sex	226 (65.7)	114 (33.1)
Use of risk reduction services	6 (1.7)	338 (98.3)
Ever tested for HIV	28 (8.1)	316 (91.9)
Received results of HIV test	23 (6.7)	5 (1.5)
Received HIV testing in past 12 months	21 (6.1)	7 (2.0)
<b>Mazar-i-Sharif (n=355)</b>		
Condom use at last sex	89 (25.1)	259 (73.0)
Use of risk reduction services	41 (11.5)	306 (86.2)
Ever tested for HIV	64 (18.0)	289 (81.4)
Received results of HIV test	62 (17.5)	2 (0.6)
Received HIV testing in past 12 months	28 (7.9)	36 (10.1)

\*\*Total may not add up due to missing responses