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# Correlates Of Access To Hiv/aids Care And Knowledge Of Hiv-Positive Serostatus Among People Who Inject Drugs In St. Petersburg, Russia And Kohtla-Järve, Estonia

Sara Heydari

Yale University, saraheydari5@gmail.com

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Correlates of access to HIV/AIDS care and  
knowledge of HIV-positive serostatus among people  
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Kohtla-Järve, Estonia

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**Sara Heydari**

Master of Public Health Candidate, 2014

Yale School of Public Health  
Epidemiology of Microbial Disease

Readers:

Robert Heimer, PhD, MSc  
Linda M. Niccolai, PhD, ScM

## **Abstract**

This study examined the accuracy of self-reported HIV-positive status as an indicator of entering HIV/AIDS treatment and determined the characteristics and correlates of receiving regular HIV/AIDS care among people who inject drugs (PWID). Data were collected through 1,412 personal interviews conducted in the cities of St. Petersburg, Russia and Kohtla-Järve, Estonia in 2012 and 2013. Overall, in both cities, 81.3% of PWID were accurately aware of their HIV-positive serostatus; in comparison to individual level correlates, structural and service utilization variables such as history of substance abuse treatment and history of incarceration were better determinants of accurate knowledge of HIV serostatus. We found that 32% of PWID in St. Petersburg and 73% of PWID in Kohtla-Järve who were aware of their HIV-positive serostatus had received regular HIV/AIDS care in the past year. Results of this study suggest that awareness of serostatus alone in this region does not necessarily translate into receiving HIV/AIDS care and that there is an urgent need for enhancing access to HIV/AIDS care and treatment among this marginalized population.

## **I. Introduction**

Eastern Europe has experienced rapid growth in its HIV epidemic since the mid-1990s. The HIV epidemic in this region has evolved from approximately 30,000 cases in 1995, which were mostly transmitted through sexual intercourse, to an estimated 1.4 million cases, with PWID accounting for the majority of cases [1]. The rapid increase in the incidence of HIV/AIDS in Eastern Europe over the past decade has been attributed to the social and political conditions in the region after the fall of the Soviet Union [2]. The opening of borders during the reforms of the early 1990s accompanied by increasing poverty, high unemployment, labor migration, poor health care, and the failure of political leaders to confront and mitigate these problems have led to the social conditions that have given rise to expanding injection drug use and ultimately the rapid spread of HIV [2, 3].

The social and political environment after the dismantling of the Soviet Union and the region's current drug use policies have resulted in an HIV epidemic that is concentrated among PWID with low levels of access to HIV/AIDS treatment and care. With over 40% of PWID in Eastern Europe being HIV positive and accounting for up to one-third of new HIV infections, the region is left with a large and growing number of injection drug users who are in immediate need of HIV/AIDS treatment and care [4-6].

The extent of HIV treatment and care services varies greatly throughout the region. Although most of the former Soviet Union countries, with the assistance of international organizations, have taken steps to provide treatment and care services, the limited data available suggests that access to HIV/AIDS care among this marginalized population is low [7]. For instance, although access to HIV care and antiretroviral

treatment (ART) are theoretically universally available in the region, recent studies have shown that despite the high proportion of HIV cases among PWID, less than 15% of patients receiving highly active antiretroviral treatment (HAART) are current or former PWID [8]. Considering the low levels of access to ART, an examination of the steps in the HIV treatment cascade that occurs prior to the prescription of ART will help determine the barriers and facilitators of access to ART among this marginalized population.

The first step in the HIV treatment cascade ensuring that HIV infected individuals receive an optimal treatment outcome is the test to determine whether they are infected followed by informing them of their HIV serostatus. Several studies have demonstrated that once people are aware of their HIV-positive status, they are less likely to participate in high-risk HIV transmission behaviors and will consequently have a lower risk of transmitting HIV [9]. In addition to reducing risky behavior and preventing further spread of infection, knowledge of HIV serostatus is essential for linking the patient to HIV/AIDS care and treatment [10]. Once an infected individual is aware of their HIV serostatus, it is important that they become connected with an HIV Health Care provider who is equipped to provide treatment. Failure to initiate timely HIV care after diagnosis is associated with greater likelihood of disease progression to AIDS and ongoing transmission of HIV to others [11]. After knowledge of serostatus, sustained engagement in HIV care is the next step to receiving successful HIV treatment.

In this report, we examine the accuracy of self-reported HIV-positive status and access to HIV/AIDS care among PWID in St. Petersburg, Russia and Kohtla-Järve, Estonia. The Russian Federation and Estonia are two of only three countries in the region

with an estimated adult HIV prevalence exceeding 1% [8]. Although the region is beginning to see a shift from IDU to heterosexual HIV transmission, the HIV epidemic in St. Petersburg and Kohtla-Järve still remains concentrated among PWID which compromise 1.7% of the population in St. Petersburg and 3.5% of the population in Kohtla-Järve, for people between the ages of 14-55 [6, 12-15]. The estimated HIV prevalence among PWID in 2005 was reported to be 90% in Kohtla-Järve and 43% in St. Petersburg in 2007 [16, 17]. These staggering estimates of HIV prevalence among PWID in St. Petersburg and Kohtla-Järve are indicators of the large and growing number of people that are in immediate need of access to HIV/AIDS care.

Limited data are available on the rate of access to HIV/AIDS care in both cities. Therefore, the objective of this study was to assess the accuracy of self-reported HIV-positive status, as an indicator of entering the HIV/AIDS treatment cascade and determining the characteristics and correlates of receiving regular HIV/AIDS care among PWID in the cities of Kohtla-Järve and St. Petersburg.

## **II. Methods**

### *Study settings, Participants and Procedure*

Data for this study were collected through two anonymous cross-sectional studies of HIV and drug abuse epidemiology, access to prevention and treatment services, and social psychology research on minority and majority ethnic populations of PWID in Kohtla-Järve, Estonia and St. Petersburg, Russia. The study in Kohtla-Järve, Estonia was conducted between May and July of 2012 and recruited a total of 600 current PWID through the Me Aitame Sind (MAS) syringes exchange project facilities located in

Kohtla-Järve, Estonia. The study in St. Petersburg, Russia was conducted between January of 2012 and June of 2013 and recruited a total of 812 current PWID.

Respondent-Driven Sampling (RDS) was used in both cities to recruit current PWID. Recruitment at both sites began with a non-random selection of “seeds” identified through venue-based sampling from substance abuse or HIV treatment programs. All eligible participants were provided with four coupons each to recruit other PWID into the study and recruitment continued until a predetermined sample size was achieved. Participants who completed the survey received a primary incentive, a food coupon equivalent to US\$10.00, for participating in the study and a secondary incentive, a food coupon equivalent to US\$5.00 for each recruited participant.

Eligible participants had to be at least 18 years or older, spoke either Russian or Estonian (in Kohtla-Järve only), reported injection drug use in the last 4 weeks, and were able to provide informed consent. All participants IDU status was verified by checking their skin (arms and leg) for injection marks and/or they were asked to explain the process of preparing drugs for injection.

### Measures

Study participants at both sites completed a similar questionnaire administered in a private setting by trained staff in either Estonian or Russian languages. Data collected for the interview included demographic and socioeconomic characteristic; IDU network and recruitment information; contact with drug treatment services and prison; history of alcohol, tobacco and drug use; HIV risk practices associated with injecting drugs; sexual behavior, sexual partnerships, history of sex work; knowledge of HIV/AIDS and TB;

previous HIV testing, reported HIV antibody status and history antiviral treatment; use of treatment, HIV prevention, social welfare and harm reduction. Participants were also asked to provide a blood sample for serological testing.

Participants' self-reported HIV status was obtained. History of HIV care and treatment was only measured among PWID who self-reported being HIV positive. Access to HIV care was determined by whether the participant had visited an "HIV doctor" at least once in the past 12 months. Current and previous use of ART was also only measured among participants who self-reported HIV positive.

The interview was conducted in approximately 40-60 minutes. After the interview, all participants were offered pre-test HIV counseling, testing, and appropriate medical and social service referrals. During the follow-up meeting, each participant was informed of the results of their HIV test and received post HIV testing counseling.

#### *HIV antibody testing*

In Kohtla-Jarve, whole venous blood specimens were collected from all participants by a trained phlebotomist to detect antibodies to HIV (anti-HIV). Specimens were screened using commercially available test kits ADVIA Centaur(®) HIV Ag/Ab Combo assay (Siemens), which have specificities and sensitivities in excess of 99.5%. At the post-testing counseling, the participants were provided with information on where they could receive official testing. The testing was conducted at the Quattromed HTI laboratory (located in Tallinn, Estonia). In St. Petersburg, on-site oral rapid tests were used.



### Statistical analysis

For the purpose of this study, PWID who tested HIV-positive by serology completed as part of the study were categorized into two groups based on their self-reported HIV status. One category included PWID who self-reported HIV-positive and tested HIV-positive by the serology test. The other group included PWID who self-reported HIV-negative but tested HIV-positive. Those who self-reported HIV negative include respondents who had never been tested for HIV prior to this study and those who had been tested but reported not knowing their HIV status (“Inconclusive”, “Did not get the result”, “don’t know”, and “No answer”).

The sample was described based on their demographic, incarceration history, drug use behavior, self-reported duration of HIV infection, self-reported latest CD4 count, and service utilization variables using standard descriptive statistics.

The following correlates were examined to identify factors associated with accurate knowledge of self-reported HIV-positive serostatus: Demographic; History of incarceration; Injecting drug use behavior; and access to substance abuse treatment services. The indicators for injection drug use included the number of years that the respondent had been injecting drugs and the number of days the respondent reported injecting drugs, at a minimum, at least once in the past thirty days. The history of injection drug use was calculated by subtracting the respondent’s age at the time the study from the age they reported to have injected drugs for the first time for non-medical purposes. To estimate correlates of accurate knowledge of self-reported HIV-positive serostatus, logistic regression models and bivariate measure of association were used.

In addition, among respondents who tested HIV-positive and self-reported HIV-positive, drug use risk behaviors, incarceration history, duration of self-reported HIV infection, and knowledge of where to receive HIV treatment were assessed for their relationship with visiting an “HIV doctor” at least once in the past 12 months. To estimate correlates of accessing HIV care, bivariate and multivariate logistic regression models were used. Covariates that were associated with the outcome of interest using the critical value of  $P < 0.2$  were included in the initial multivariate model. The final model was selected using a manual backward elimination procedure, which eliminated all covariates that did not remain significant at the critical value of  $P < 0.05$ .

All continuous variables were dichotomized based on a priori meaningful cut points that have been used by other studies done among similar PWID populations in the region.

### **III. Results**

A total of 1,412 active PWID were recruited into the study: 812 PWID were recruited in St. Petersburg and 600 PWID were recruited in Kohtla-Järve. Among the 600 respondents in Kohtla-Järve, a total of 22 participants self-reported HIV positive, but tested HIV negative during the study. Of the 22 respondents, a total of 12 were excluded from the study and the remaining 10 were kept in the analysis. The participants excluded from the analysis had not only reported being HIV+ but also reported receiving HIV care. The 10 participants that were retained in the study only reported being HIV+ but did not report being in care. This may be attributed to error in data entry.

### Participant characteristics

Of the 812 injecting drug users recruited in St. Petersburg, a total of 452 (55.7%) of the participants tested HIV positive by serology at the study visit and are described in Table 1. Among those retained for analysis (N=452), the majority were Russian (94.5%) males (79.6%) with an average age of 33.1 years (SD 4.2) who had never married (51.1%). The majority had completed 9-12 years of education (82.3%). Three-fourths (75.7%) of the respondents reported having difficulty getting by on their income but only eight PWID had been homeless in the past six months. The mean duration of injection drug use was 14.4 years (SD 4.6) and 95.3% reported to have injected drugs every day in the past thirty days (mean=20.9, SD=7.8). Thirty nine percent reported to have ever been incarcerated.

Based on the respondents' self-reported first positive HIV test, 379/452 (83.3%) of PWID had been aware of their HIV diagnosis for an average of 6.2 years (SD 3.4). The mean self-reported CD4 count was 346.7 cells/mm<sup>3</sup> (SD 239 cells/mm<sup>3</sup>). The vast majority of PWID (78.3%) were covered by Russian health insurance. The following is a list of health care services utilized by this sample: 32.4% had visited a physician for HIV/AIDS care at least once in the past 12 months; 48.8% had received ART and among those who had received ART, 74.6% were receiving ART at the time the study was conducted; 78.8% of the respondents reported to have received substance abuse treatment and only eleven of those PWID (3.1%) were receiving treatment when recruited into the study.

Of the total 589 PWID in Kohtla-Järve who were retained in the analysis, 370 (62.8%) tested HIV-positive by serology at the study visit and are described in Table 1.

This group was predominantly males (73.4%) with a mean age of 30.4 years (SD 4.5). Approximately half of the respondents had never been married (51.9%) and had completed less than 9 years of education (50.5%). The vast majority were of Russian descent (80%) and only 39 (10.6%) of the PWID were of Estonian descent. Ninety-one percent reported to have a difficult time coping with their income and only 23 (6.2%) had been homeless in the past six months. Fifty-nine percent of PWID self-reported history of injection drug use exceeded eleven years (mean=12.2 years, SD=4.7) and 57.7% reported to have not injected every day in the past 30 days (mean=16.2 days, SD=9.3). Majority of respondents (63.2%) reported a history of incarceration.

Among the 370 HIV-positive PWID, the self-reported duration of HIV infection was calculated from the 290 PWID who self-reported an HIV-positive test result. The mean duration of self-reported HIV-infection was 7.4 years (SD 3.6) and 55.5% reported an HIV infection less than eight years. The mean of the latest self-reported CD4 count was 388 cells/mm<sup>3</sup> (SD 245 cells/mm<sup>3</sup>). The following is a list of health care services utilized by this sample: 73.1% had visited a physician for HIV/AIDS care at least once in the past 12 months; 82.8% had received ART and among those who had received treatment, 86.5% were receiving ART at the time the study was conducted; 60.8% of the respondents reported to have received substance abuse treatment and of those PWID 36.7% were receiving treatment during the course of the study.

Overall, the samples in both cities were similar in terms of age, sex, marital status, ethnicity, financial status and access to state-provided health insurance. In comparison to Kohtla-Järve, a greater proportion of the sample in St. Petersburg had completed more than nine years of education and the history of incarceration was 40% lower. A greater

proportion in Kohtla-Järve tested HIV-positive by serology at the study visit (63% vs. 56%). Although the mean duration of self-reported HIV infection in St. Petersburg was shorter, the respondents reported a higher level of injecting risk behavior in comparison to Kohtla-Järve. The mean number of years of injection drug use in St. Petersburg was 2.2 years greater and three-quarters of the sample in St. Petersburg reported a history of injection drug use that exceeded eleven years. Also, the frequency of injection drug use in the past thirty days on average in St. Petersburg was 25% greater than in Kohtla-Järve.

Access to HIV/AIDS related healthcare was higher in Kohtla-Järve. The proportion of HIV-positive PWID who reported visiting a physician for HIV/AIDS care was 2.5 times higher in Kohtla-Järve. The proportion of HIV-positive respondents who reported ever having taken ART was approximately 30% higher in Kohtla-Järve. The majority of respondents in both cities reported to have received access to substance abuse treatment services in the past.

#### *Knowledge of HIV-positive status*

Among the 812 respondents in St. Petersburg, 760 (93.6%) reported to have been tested for HIV prior to enrollment in the present study. Of those who had been tested, 383/760 (50.4%) self-reported being HIV positive, 366/760 (48.2%) reported that they were HIV-negative, and 14/760 (1.8%) didn't know their status. Ninety percent (531/589) of the respondents in Kohtla-Järve reported ever having been tested for HIV prior to this study. Fifty-six percent (299/531) of those who had been tested previously reported to be HIV positive, 43% (228/531) reported that they were HIV-negative, and 11.5% (61/531) reported not knowing their HIV status.

Accuracy of knowledge of HIV-positive serostatus is presented in Figure 1. Among the 383 PWID in St. Petersburg who self-reported positive serostatus, 100% were HIV positive by serology test. Of the 427 who self-reported HIV-negative, 69 (16%) tested HIV-positive and 358 (84%) accurately reported their HIV-negative status. In Kohtla-Järve, among the 299 who self-reported positive serostatus, 289(97%) were HIV-positive by serology test. Of the 228 who self-reported HIV-negative, 81 (36%) tested HIV-positive by the serology test and 208 (91%) accurately reported their HIV-negative status. Overall, a higher proportion (85% vs. 78%) of respondent in St. Petersburg had accurate knowledge of their HIV-positive status.

#### *Correlates of accurate knowledge of HIV status*

As indicated in Table 2, correlates of accurately reporting HIV-positive status were measured using bivariate analysis. In St. Petersburg, among the 452 respondents with HIV-positive serostatus, in the unadjusted analysis, Russian ethnicity (OR 4.16, 95% CI 1.78-9.69), history of IDU exceeding eleven years (OR 2.66, 95% CI 1.56-4.55), history of receiving substance abuse treatment (OR 2.70, 95% CI 1.56-4.69), and financial hardship (OR 1.85, 95% CI 1.07-3.21) were associated with accurate knowledge of HIV-positive status. Among the 370 PWID in Kohtla-Järve who tested HIV-positive by serology test, in the unadjusted analysis, age exceeding 30 years (OR 1.88, 95% CI 1.13-3.13), history of incarceration (OR 4.38, 95% CI 2.60-7.36), IDU history exceeding eleven years (OR 2.16, 95% CI 1.31-3.55), financial hardship (OR 2.20, 95% CI 1.03-4.68), and history of receiving substance abuse treatment (OR 4.35, 95% CI 2.58-7.35) were all associated with accurate knowledge of the respondents HIV-status.

As indicated in Table 2 (far right column), in the adjusted analysis of the St. Petersburg study, Russian ethnicity (OR 3.95, 95% CI 1.62-9.66), history of IDU exceeding eleven years (OR 2.50, 95% CI 1.44-4.36), and ever receiving substance abuse treatment (OR 2.54, 95% CI 1.43-4.50) remained significantly associated with accurate knowledge of self-reported HIV-positive status. In the adjusted analysis of the Kohtla-Järve study, history of incarceration (OR 3.28, 95% CI 1.90-5.66) and having ever received substance abuse treatment (OR 3.20, 95% CI 1.44-5.53) remained significantly associated with the outcome of interest.

*Correlates of visiting a physician for HIV/AIDS care*

Correlates of visiting a physician for HIV/AIDS care at least once in the past 12 months among PWID in St. Petersburg who tested HIV positive and self-reported HIV-positive is described in Table 3. Among the 383 PWID who were analyzed for the outcome of interest, in the unadjusted analysis, completing over 12 years of education (OR 2.92, 95% CI 1.03-8.27), having health insurance (OR 1.84, 95% CI 1.03-3.26), financial hardship (OR 0.52, 95% CI 0.32-0.86), duration of HIV infection exceeding eight years (OR 2.40, 95% CI 1.46-3.92), knowledge of where to receive HIV treatment (OR 1.93, 95% CI 0.21-17.44) were all significantly correlated with receiving HIV/AIDS care.

Among the PWID in Kohtla-Järve who tested HIV-positive and self-reported HIV-positive, the following correlates were all significantly correlated with the outcome of interest: Male (OR 0.46, 95% CI 1.46-3.92), Russian ethnicity (OR 1.92, 95% CI 1.01-3.61), having health insurance (OR 8.62, 95% CI 4.31-17.25), HIV infection that

exceeded eight years (OR 2.37, 95% CI 1.36-4.13), and knowledge of where to receive HIV care (OR 8.71, 95% CI 1.72-44.10).

In the adjusted analysis, at both sites, having state-issued health insurance (St. Petersburg: OR 1.93, 95% CI 1.06-3.50, Kohtla-Järve: OR 8.92, 95% CI 4.21-18.9) and HIV infection exceeding eight years (St. Petersburg: OR 2.49, 95% CI 1.51-4.13, Kohtla-Järve: OR 2.19, 95% CI 1.18-4.07) remained significantly associated with visiting an “HIV doctor” at least once in the past 12 months. In St. Petersburg alone, in the adjusted analysis, financial hardship (OR 0.47, 95% CI 0.28-0.80) also remained significantly correlated with receiving HIV/AIDS care. In Kohtla-Järve, in addition to the aforementioned covariates, sex (OR 0.33, 95% CI 0.15-0.73) and knowledge of where to receive HIV care (OR 2.0, 95% CI 1.30-42.6) remained statistically significant.

#### **IV. Discussion**

Our findings suggest that the majority of the PWID sample population in St. Petersburg (94%) and Kohtla-Järve (90%) had been tested for HIV prior to this study. An examination of the accuracy of the participant’s self-reported HIV- positive serostatus revealed that a higher proportion of respondents in St. Petersburg (85% vs. 78%) had accurate knowledge of their HIV-positive status. However, we found that only a small proportion (32%) of HIV-positive PWID aware of their serostatus had received HIV/AIDS care in St. Petersburg. In order to better understand the differences in HIV/AIDS care and treatment among the PWID population in St. Petersburg and Kohtla-Järve, we examined various individual and structural level correlates of accurate knowledge of HIV status and access to HIV/AIDS care.



Our analysis of individual and structural-level correlates of accurate knowledge of HIV-positive serostatus revealed several significant relationships. Of the individual level correlates we analyzed, in St. Petersburg, Russian ethnicity and history of injection drug use exceeding eleven years were associated with greater likelihood of having accurate knowledge of HIV-positive serostatus. Among the structural-level variables, in both cities, history of receiving substance abuse treatment and in Kohtla-Järve, history of incarceration were associated with greater likelihood of accurate knowledge of HIV-positive serostatus. The aforementioned covariates – incarceration and entering substance abuse treatment - that we found to be statistically significant are all events that provide contact with settings that require HIV testing. Therefore, it is possible that, in comparison to individual-level correlates, structural and service utilization variables are better determinants of accurate knowledge of HIV status. These findings also suggest that policies aimed at increasing the rate of HIV testing in prison settings and through harm reduction services are reaching many more in this marginalized population.

Our findings suggest that awareness of serostatus alone does not necessarily translate into receiving HIV/AIDS care. We found that 32% of PWID in St. Petersburg and 73% of PWID's in Kohtla-Järve who were aware of their HIV-positive serostatus had visited an "HIV doctor" at least once in the past 12 months. Several important individual and structural-level factors emerged in our analysis as correlates of access to HIV/AIDS care. First, in both cities, PWID aware of their HIV-positive serostatus, who had state-issued health insurance, and self-reported to had been infected with HIV for greater than eight years were significantly more likely to be receiving HIV/AIDS care. This finding suggests that in both cities PWID who had been recently infected and were aware of their

HIV-positive status were not receiving HIV/AIDS treatment and care. Several other studies have reported similar findings on PWID receiving treatment and care later in the course of HIV infection and often after the disease has progressed to AIDS [5, 18]. There are several plausible explanations for the late presentation of PWID for HIV/AIDS treatment and care. For instance, any of the following “socio-political” barriers: social marginalization; risk of criminal sanctions; incarceration; or financial barrier may have played a role in the lack of access to treatment and care among this marginalized population [5, 19, 20]. Our findings revealed that PWID in St. Petersburg who reported experiencing financial difficulties were less likely to have visited an “HIV doctor” in the past 12 months. An additional explanation for the lack of access to treatment might be explained by the lack of post HIV-testing counseling and/or the lack of referrals to HIV/AIDS treatment and care providers. Further research is needed to fully understand the barriers to HIV/AIDS care among this marginalized population in St. Petersburg and Kohtla-Järve.

This study has several limitations that need to be addressed. First, our findings may be affected by the limitations that apply to using self-reported measures of drug abuse behaviors and HIV testing histories. Participants might tend to avoid reporting what they perceive interviewers will judge as socially improper responses on sensitive issues, such as drug abuse behaviors, and provide responses that are more socially desirable [21] . Also, the participants’ duration of HIV infection was calculated from their self-reported HIV testing history and therefor might be subject to unintentional inaccurate reporting due to recall bias [10]. Despite these potential limitations, these

results present the first measurement of access to HIV/AIDS care and treatment among PWID in St. Petersburg, Russia and Kohtla-Järve, Estonia.

The findings of this study have significant policy implications, suggesting an urgent need for enhancing access to HIV/AIDS care and treatment among this marginalized population. Our data revealed sub-optimal coverage of HIV/AIDS care especially among the recently infected IDU population in St. Petersburg, Russia. Further research is needed to investigate the lack of utilization of HIV/AIDS care, in both cities, especially among those who have been recently been infected with HIV.

## **V. Acknowledgment**

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## Appendix

**Figure 1** Classification of PWID by HIV serology test results and self-reported HIV status

		<b><u>Kohtla-Järve (N=588)</u></b>		<b><u>St. Petersburg (N=810)</u></b>	
		<b>Serology test results</b>		<b>Serology test results</b>	
		HIV-Positive	HIV-Negative	HIV-Positive	HIV-Negative
<b>Self-reported status</b>	HIV-Positive	289 (49%)	10 (2%)	383 (47%)	0
	HIV-Negative	81 (14%)	208 (35%)	69 (9%)	358 (44%)

Table 1 - Characteristics of PWID who tested HIV-positive

Characteristic	St. Petersburg n=452(%)*	Kohtla-Järve n=370 (%)*
Age (years), mean ± SD	33.1±4.2	30.4±4.5
<b>Sex</b>		
Male	360/452(79.6)	271/369(73.4)
Female	92/452(20.3)	98/369 (26.5)
<b>Education</b>		
≤ 9 yrs	40/452(8.8)	187/370(50.5)
9-12 yrs	372/452(82.3)	183/370 (49.5)
>12 yrs	40/452(8.8)	0(0)
<b>Marital status</b>		
Married/common law	135/452(29.9)	145/370 (39.2)
Widowed	2/452(0.4)	7/370 (1.9)
Divorced	84/452(18.6)	26/370 (7.0)
Never Married	231/452(51.1)	192/370 (51.9)
<b>Ethnicity</b>		
Russian	427/452(94.5)	299/369 (80.0)
Estonian	0/452(0)	39/369 (10.6)
Other	25/452(5.5)	31/369 (8.4)
<b>Health insurance</b>		
Yes	354/452(78.3)	306/370 (82.7)
No	97/452(21.5)	64/370 (17.3)
<b>Currently coping with income</b>		
Yes	109/449(24.3)	33/367(9.0)
No	340/449(75.7)	334/367 (91.0)
<b>Homeless in the past 6 months</b>		
Yes	8/452(1.8)	23/370 (6.2)
No	444/452(98.2)	347/370 (93.8)
<b>Ever been in prison or jail</b>		
Yes	176/452(38.9)	234/370 (63.2)
No	276/452(61.1)	136/370 (36.8)
<b>History of Injection drug use</b>		
≤11 yrs	111/452(24.6)	151/370 (40.8)
>11 yrs	341/452(75.4)	219/370 (59.2)
	Mean=14.4, SD=4.6	Mean=12.2, SD=4.7
<b>Frequency of IDU in past 30 days</b>		
<30 days	21/452(4.6)	346/369 (93.8)
≤30 days	431/452(95.3)	24/369 (6.5)
	Mean=20.9, SD=7.8	Mean=16.2, SD=9.3
<b>Ever received substance abuse treatment</b>		
Yes	356/452 (78.8)	225/370 (60.8)
No	96/452 (21.2)	145/370 (39.2)
<b>Currently receiving substance abuse treatment</b>		
Yes	11/356(3.1)	83/226(36.7)
No	345/356(96.9)	143/226(63.3)
<b>Received HIV care at least once in the past 12 months</b>		
Yes	125/386 (32.4)	212/290(73.1)
No	261/386 (67.6)	78/290(2.7)
<b>Duration of HIV infection</b>		
≤ 8 yrs	290/379(76.5)	161/290(55.5)
>8 yrs	89/379(23.5)	129/290(44.5)
	Mean=6.2, SD=3.4	Mean=7.4, SD=3.6
<b>Latest CD4 count (cells/mm<sup>3</sup>)</b>		
<350	75/207(36.2)	74/154(48.0)
≥350	132/207(63.8)	80/154(51.9)
	Mean=346.7,SD=239.1	Mean=387.7, SD=245.3
<b>Ever taken any antiretroviral therapy</b>		
Yes	63/129(48.8)	139/169(82.2)
No	66/129(51.2)	29/169 (17.2)
<b>Currently receiving antiretroviral therapy</b>		
Yes	47/63(74.6)	122/141(86.5)
No	16/63(25.4)	19/141(13.5)

\* Numbers may not sum to total due to missing data, and percentages may not sum to 100% due to rounding.

Table 2 - Correlates of self-reported HIV-positive status among PWID in St. Petersburg who tested HIV<sup>+</sup>

Characteristic	HIV <sup>+</sup> Serostatus (n=452)		uOR	95% CI	aOR	95% CI
	SR (n=69)	SR <sup>+</sup> (n=383)				
<b>Age (years)</b>						
≤30	5(36.2)	110(28.7)	Referent	(0.82-2.42)		
>30	4(63.8)	273(71.3)	1.41			
<b>Sex</b>						
Male	58(84.1)	302(78.8)	0.71	(0.35-1.41)		
Female	11(15.9)	81(21.1)	Referent			
<b>Education</b>						
≤ 9 yrs	4(5.8)	36(92.3)	Referent			
9-12 yrs	58(84.1)	314(82.0)	0.60	(0.21-1.75)		
>12 yrs	7(10.1)	33(8.6)	0.52	(0.14-1.95)		
<b>Marital status</b>						
Married/common law	19(27.5)	116(30.3)	0.71	(0.31-1.66)		
Divorced or widowed	9(12.8)	77(20.1)	Referent			
Never married	41(59.4)	190(49.6)	0.54	(0.25-1.17)		
<b>Ethnicity</b>						
Russian	59(85.5)	368(96.1)	4.16	(1.78-9.69)	3.95	(1.62-9.66)
Other	10(14.5)	15(3.9)	Referent		Referent	
<b>Health insurance</b>						
Yes	52(75.4)	302(78.8)	1.23	(0.68-2.25)		
No	17(24.6)	80(20.1)	Referent			
<b>Currently coping with income</b>						
Yes	24(34.8)	85(22.4)	Referent			
No	45(65.2)	295(77.6)	1.85	(1.07-3.21)		
<b>Ever been in prison or jail</b>						
Yes	20(29.0)	156(40.7)	1.68	(0.96-2.94)		
No	49(71.0)	227(59.3)	Referent			
<b>History of Injection drug use</b>						
≤11 yrs	29(42.0)	82(21.4)	Referent		Referent	
>11 yrs	40(58.0)	301(78.6)	2.66	(1.56-4.55)	2.50	(1.44-4.36)
<b>Frequency of IDUPWID in past 30 days</b>						
<30 days	4(5.8)	17(4.4)	1.32	(0.43-4.06)		
≥30 days	65(94.2)	366(95.6)	Referent			
<b>Ever received substance abuse treatment</b>						
Yes	43(62.3)	313(81.7)	2.70	(1.56-4.69)	2.54	(1.43-4.50)
No	26(37.7)	70(18.3)	Referent		Referent	

\* Numbers may not sum to total due to missing data, and percentages may not sum to 100% due to rounding.



Table 2 - Correlates of self-reported HIV-positive status among PWID in Kohtla-Järve who tested HIV<sup>+</sup>

Characteristic	HIV <sup>+</sup> Serostatus (n=370)		uOR	95% CI	aOR	95% CI
	SR (n=81)	SR <sup>+</sup> (n=289)				
<b>Age (years)</b>						
≤30	52(64.2)	141(48.8)	Referent			
>30	29(35.8)	148(51.2)	1.88	(1.13-3.13)		
<b>Sex</b>						
Male	60(74.1)	211(73.3)	0.96	(0.55-1.68)		
Female	21(25.9)	77(26.7)	Referent			
<b>Education</b>						
≤ 9 yrs	38(46.9)	149(51.6)	Referent	(0.51-1.36)		
9-12 yrs	43(53.1)	140(48.4)	0.83			
>12 yrs	0(0)	0(0)				
<b>Marital status</b>						
Married/common law	41(50.6)	104(36.0)	0.60	(0.20-1.81)		
Divorced or widowed	4(4.9)	29(10.0)	Referent			
Never married	36(44.4)	156(54.0)	0.35	(0.12-1.06)		
<b>Ethnicity</b>						
Russian	63(77.8)	236(81.9)	1.30	(0.71-2.37)		
Other	18(22.2)	52(18.1)	Referent			
<b>Health insurance</b>						
Yes	63(77.8)	243(84.1)	1.51	(0.82-2.78)		
No	18(22.2)	46(15.9)	Referent			
<b>Currently coping with income</b>						
Yes	12(14.8)	21(7.3)	Referent			
No	69(85.2)	265(92.7)	2.20	(1.03-4.68)		
<b>Ever been in prison or jail</b>						
Yes	29(35.8)	205(70.9)	4.38	(2.60-7.36)	3.28	(1.90-5.66)
No	52(64.2)	84(29.1)	Referent		Referent	
<b>History of Injection drug use</b>						
≤11 yrs	45(55.6)	106(36.7)	Referent			
>11 yrs	36(44.4)	183(63.3)	2.16	(1.31-3.55)		
<b>Frequency of IDU in past 30 days</b>						
<30 days	0(0)	265(91.7)				
≥30 days	81(100.0)	24(8.3)				
<b>Ever received substance abuse treatment</b>						
Yes	27(33.3)	198(68.5)	4.35	(2.58-7.35)	3.20	(1.84-5.53)
No	54(66.7)	91(31.5)	Referent		Referent	

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Table 3 - Correlates of receiving HIV care at least once every 12 months among PWID who self-reported HIV positive and serotested HIV-positive

Characteristic	St. Petersburg (N=383)		uOR	95% CI	AOR	95% CI
	No (n=259)	Yes (n=124)				
<b>Age (years)</b>						
≤30	76(29.3)	34(27.4)	Referent			
>30	183(70.7)	90(72.6)	1.10	(0.68-1.77)		
<b>Sex</b>						
Male	209(80.7)	93(75.0)	0.72			
Female	50(19.3)	31(25.0)	Referent	(0.43-1.20)		
<b>Education</b>						
≤ 9 yrs	28(10.8)	8(6.4)	Referent			
9-12 yrs	213(82.2)	101(81.4)	1.66	(0.73-3.77)		
>12 yrs	18(6.9)	15(12.1)	2.92	(1.03-8.27)		
<b>Marital status</b>						
Married/common law	83(32.0)	33(26.6)	0.88	(0.47-1.65)		
Divorced or widowed	53(20.5)	24(19.3)	Referent			
Never married	123(47.5)	67(54.0)	1.20	(0.68-2.12)		
<b>Ethnicity</b>						
Russian	249(96.1)	119(96.0)	0.96	(0.32-2.86)		
Other	10(3.9)	5(4.0)	Referent			
<b>Health insurance</b>						
Yes	197(76.1)	105(84.7)	1.84	(1.03-3.26)	1.93	(1.06-3.50)
No	62(23.9)	18(14.5)	Referent		Referent	
<b>Currently coping with income</b>						
Yes	48(18.6)	37(30.3)	Referent		Referent	(0.28-0.80)
No	210(81.4)	85(69.7)	0.52	(0.32-0.86)	0.47	
<b>Ever been in prison or jail</b>						
Yes	107(41.3)	49(39.5)	0.93	(0.60-1.44)		
No	152(58.6)	75(60.5)	Referent			
<b>History of Injection drug use</b>						
≤11 yrs	60(23.2)	22(17.7)	Referent			
>11 yrs	199(76.8)	102(82.3)	1.40	(0.81-2.41)		
<b>Frequency of IDU in past 30 days</b>						
<30 days	62(23.9)	45(36.3)	1.16			
≥30 days	197(76.1)	79(63.7)	Referent	(0.40-3.36)		
<b>Ever received substance abuse treatment</b>						
Yes	212(81.8)	23(18.5)	0.97	(0.56-1.69)		
No	47(18.1)	101(81.4)	Referent			
<b>Duration of HIV disease</b>						
≤8 yrs	208(82.2)	81(65.9)	Referent		Referent	
>8 yrs	45(17.8)	42(34.1)	2.40	(1.46-3.92)	2.49	(1.51-4.13)
<b>Do you know where you can get HIV treatment</b>						
No	4(1.6)	1(0.8)	Referent			
Yes	255(98.5)	123(99.2)	1.93	(0.21-17.44)		

\* Numbers may not sum to total due to missing data, and percentages may not sum to 100% due to rounding.

Table 3 - Correlates of receiving HIV care at least once every 12 months among PWID who self-reported HIV positive and serotested HIV-positive

Characteristic	Kohtla-Järve (N=289)		uOR	95% CI	AOR	95%CI
	No (n=78)	Yes (n=211)				
<b>Age (years)</b>						
≤30	39(50.0)	102(48.3)	Referent			
>30	39(50.0)	109(51.7)	1.07	(0.63-1.80)		
<b>Sex</b>						
Male	65(83.3)	146(69.5)	0.46	(0.23-0.89)	0.33	(0.15-0.73)
Female	13(16.7)	64(30.5)	Referent		Referent	
<b>Education</b>						
≤ 9 yrs	42(53.8)	107(50.7)	1.13	(0.67-1.91)		
9-12 yrs	36(25.7)	104(49.3)	Referent			
>12 yrs	0(0.0)	0(0.0)				
<b>Marital status</b>						
Married/common law	24(30.8)	80(37.9)	1.75	(0.72-4.28)		
Divorced or widowed	10(12.8)	19(9.0)	Referent			
Never married	44(56.4)	112(53.1)	1.34	(0.58-3.12)		
<b>Ethnicity</b>						
Russian	58(74.4)	178(84.8)	1.92	(1.02-3.61)		
Other	20(25.6)	32(15.2)	Referent			
<b>Health insurance</b>						
Yes	47(60.3)	196(92.9)	8.62	(4.31-17.25)	8.92	(4.21-18.9)
No	31(39.7)	15(7.1)	Referent		Referent	
<b>Currently coping with income</b>						
Yes	5(6.5)	16(92.3)	Referent			
No	72(93.5)	193(92.3)	0.84	(0.30-2.37)		
<b>Ever been in prison or jail</b>						
Yes	59(75.6)	146(69.2)	0.72	(0.40-1.31)		
No	19(24.4)	65(30.8)	Referent			
<b>History of Injection drug use</b>						
≤11 yrs	31(39.7)	75(35.5)	Referent			
>11 yrs	47(60.3)	136(64.4)	1.20	(0.70-2.04)		
<b>Frequency of IDU in past 30 days</b>						
<30 days	71(91.0)	194(91.9)	Referent			
≥30 days	7(9.0)	17(8.1)	0.89	(0.35-2.23)		
<b>Ever received substance abuse treatment</b>						
Yes	25(32.0)	66(31.3)	1.04	(0.59-1.81)		
No	53(67.9)	145(68.7)	Referent			
<b>Duration of HIV infection</b>						
≤8 yrs	55(70.5)	106(50.2)	Referent		Referent	
>8 yrs	23(29.5)	105(49.8)	2.37	(1.36-4.13)	2.19	(1.18-4.07)
<b>Do you know where you can get HIV treatment</b>						
Yes	72(92.3)	209(99.0)	8.71	(1.72-44.10)	2.0	(1.30-42.6)
No	6(7.7)	2(0.9)	Referent		Referent	

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