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Risks for HIV Infection Among Gay, Bisexual, and Other Men Who Have Sex with Men in Moscow and St. Petersburg, Russia

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Abstract

The majority of early cases of HIV in Russia were among men who have sex with men (MSM). Despite this and the current resurgence of HIV among MSM globally, little systematic work has been done to assess current HIV risks. We conducted a rapid assessment of HIV and associated risk behaviors among MSM in Russia. An anonymous, cross-sectional study was performed among MSM in Moscow and St. Petersburg (January 2008). Participants were enrolled by local NGO partners via peer-recruitment, underwent a brief behavioral survey, and were offered rapid, oral HIV screening. Factors associated with HIV infection were assessed using logistic regression. A total of 401 participants were enrolled. HIV prevalence was comparable in the two cities (6.0% in Moscow, 5.5% in St. Petersburg). Approximately half (49.3%) were under age 25, 75.1% of all men reported unprotected anal intercourse (UAI), and 21.5% reported engaging in unprotected exchange sex in the prior 12 months. HIV infection was the highest (7.7%) among the youngest MSM, those aged 18–22 years. Never having tested for HIV (AOR = 6.2; 95% CI: 1.8, 21.9) and ever injecting drugs (AOR = 11.3; 95% CI: 2.6, 50.4) were independently associated with HIV infection. We found significant overall HIV prevalence among MSM in Moscow and St. Petersburg, particularly among the youngest men. The majority of men reported ongoing high-risk behaviors, indicating the potential for further spread. HIV prevention efforts need to specifically focus on urban MSM in Russia, encourage testing, and target injection risks to address this epidemic.

Introduction

According to the most recent UNAIDS Epidemic Update, Russia borders on a generalized epidemic with an HIV prevalence of 1.0% and, combined with Ukraine, accounts for almost 90% of newly diagnosed HIV infections in Central Asia and Eastern Europe.[1] Russia's HIV epidemic has been highly concentrated among injection drug users (IDU), their sex partners, sex workers, men who have sex with men (MSM), and vulnerable youth.[2,3] Russian national HIV/AIDS epidemiologic data on MSM are limited and difficult to interpret, but there are indications that MSM are at substantial risk of HIV infection and may account for an expanding proportion of new HIV infections. A regional analysis report presents the MSM population size with a range of 1,350,000–3,400,000, making this population among the largest HIV risk groups.[4] Despite this, the prevention response has been slow: UNAIDS estimates that only 1% of MSM are being reached by prevention programs in Russia.[5] What research has been done suggests that high-risk sexual practices, including unprotected anal intercourse, multiple and concurrent partnerships, and transactional sex, are prevalent among these men.[6–9] With recent evidence of the efficacy of oral antiviral chemoprophylaxis for MSM and the vigorous research effort underway for rectal chemoprophylaxis, there is a need to characterize the burden of HIV and sexually transmitted infections among MSM and to investigate associations of HIV infection.[10,11]

In preparation for a collaborative HIV research program among MSM in Russia, two nongovernmental organizations (NGO) recently conducted linked HIV prevalence and risk factor assessments in Moscow and St. Petersburg. The purpose of these rapid epidemiologic probes was 2-fold; namely, (1) to collect preliminary data on HIV infection and risk practices among MSM in these cities, and (2) to assess the

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feasibility of implementing respondent-driven sampling (RDS) in these settings. We report here on the analyses of these data, which suggest that MSM in Russia are at substantial risks for HIV infection.

Materials and Methods

Sampling design and recruitment

This anonymous, cross-sectional study accrued a convenience sample of MSM in Moscow and St. Petersburg in January of 2008 using peer-referral or snowball sampling. Accrual was initially planned with RDS, which has been successfully used to sample hard-to-reach populations, including MSM.[12,13] NGO field staff identified MSM key informants in the two cities who were asked to recruit other men who they knew were MSM. They were each given three recruitment coupons and asked to direct their recruits to NGO offices in the two cities. These recruits were then asked to recruit others until a sample size of 200 per city was achieved. The abbreviated nature of our sampling approach, due to budgetary and time constraints, meant that we did not keep links between the recruiter and the recruited. In addition, the truncated timeline of the study did not allow for a large number of recruitment waves to materialize. Therefore, the resulting sample was analyzed as a convenience sample of MSM in Moscow and St. Petersburg. Two AIDS service NGO, namely, AIDSinfoshare in Moscow and Population Services International (PSI) in St. Petersburg, conducted these surveys. Johns Hopkins investigators assisted with the analyses of these data.

Data collection

Men recruited by peers presented their recruitment coupons to NGO field staff at the corresponding offices in Moscow and St. Petersburg. Men were eligible to participate if they presented a valid study coupon, were of male gender, were 18 years of age or older, were residents of the corresponding metropolitan area, and had not participated at a prior time. HIV status, sexual practices, and identities did not preclude study participation. After verbal informed consent was obtained, trained interviewers administered a face-to-face questionnaire that collected no identifiable information. Data were collected on recruitment (e.g., relationship with the person who recruited them, size of MSM social network), demographics (e.g., age, ethnicity, residency), sexual practices in the 12 months preceding the survey (e.g., number of partners, condom use, sex with men and women), drug use (e.g., ever and in prior 12 months; IDU and non-IDU, types of drugs), access to medical care [e.g., ever tested for HIV, in prior 12 months visited doctor, tested for sexually transmitted infection (STI), received an STI diagnosis, used HIV prevention services], and use of the Internet.

Upon completion of the questionnaire, participants were asked to provide oral fluid for rapid HIV screening with a commercial salivary assay [Aware HIV-1/2 OMT (oral fluid); Calypte Biomedical Corp., Portland, OR]. Positive results were given to participants as presumptive results and appropriate referrals were made for confirmatory HIV testing, counseling, and medical follow-up, according to national guidelines.

The study was approved by the Federal Service for Supervision of Consumers Protection and Welfare in Russia and by the Institutional Review Board of the Johns Hopkins Bloomberg School of Public Health.

Statistical analysis

Associations between demographic variables and lifetime HIV risk practices with HIV infection were explored only among those participants who had ever reported sexual contact with another male in the 12 months prior to the survey ($N=401$). Sample size calculations were based on measuring risk associated with unprotected anal intercourse (UAI). Assuming that UAI increases risk of HIV transmission by approximately 80% with a significance level of 0.05 and a power of 80%, the minimum necessary sample size was 150 men per site.[14] Rounding up, the planned sample size was 200 for each of the two sites for a total of 400 men. Univariate associations were examined using the chi-square statistic and, when variables had an expected cell size of 5 or less, the Fisher's exact test. Unadjusted odds ratios (OR) were calculated with corresponding 95% confidence intervals (95% CI). Variables that showed a significant association with HIV infection (p value ≤ 0.05), as well as common confounders (age, city of residence), were analyzed by multivariate logistic regression analysis; these results are shown as adjusted odds ratios (AOR) with their corresponding 95% CI. All statistical procedures were performed using SAS (Version 9.1; SAS Institute, Cary, NC).

Results

Demographic and recruitment characteristics

A total of 401 participants were enrolled in a 1-month period (January 2008): 201 in Moscow and 200 in St. Petersburg. Recruitment characteristics are shown in Table 1. The majority of participants (76.3%) were recruited by a friend or acquaintance; 8.6 % were recruited by a main and 6.0% by a casual sex partner. We observed statistically significant differences in terms of recruitment between Moscow and St. Petersburg; in Moscow participants were less likely to be

Table 1. Recruitment Attributes Among Men Who Have Sex with Men, Russia, 2008

	Total (%) N = *401*	*Moscow (%)* n = *201*	*St. Petersburg (%)* n = *200*
Recruited by			
Main sex partner	35 (8.7)	7 (3.5)	28 (14.0)**
Casual sex partner	24 (6.0)	5 (2.5)	19 (9.5)*
Friend	192 (47.9)	62 (30.9)	130 (65.0)**
Relative/family	4 (1.0)	2 (1.0)	2 (1.0)
Acquaintance	114 (28.4)	95 (47.3)	19 (9.5)**
Stranger	12 (3.0)	12 (6.0)	0 (0.0)**
Don't know	13 (3.2)	11 (5.5)	2 (1.0)*
MSM network size			
Median	30	40***	30
≤20 men	122 (33.0)	55 (35.4)	67 (33.5)
21–40 men	101 (27.3)	37 (21.8)	64 (32.0)
41–100 men	93 (25.1)	47 (27.7)	46 (23.0)
More than 100 men	54 (14.6)	31 (18.2)	23 (11.5)

*p-value <0.05.
**p-value <0.001.
***Missing = 31.
MSM, men who have sex with men.

recruited by friends (30.9% vs. 65.0%; p value <0.01), more likely to be recruited by acquaintances (47.3% vs. 9.5%; p value <0.01), and less likely by main (3.5% vs. 14.0%; p value <0.01) or casual (2.5% vs. 9.5%; p value <0.05) sex partners. The median MSM network size overall was 30 men; when participants were asked how many men they knew who were MSM, they reported a median of 40 men in Moscow and 30 men in St. Petersburg (p value $=0.06$). Approximately half of the men (49.3%) were under age 25 and 7.3% of men were married to a woman or living with a woman at the time of the survey (Table 2).

HIV risk practices

The majority of men (Table 2), 73.0%, identified as gay/homosexual. In the 12 months prior to the survey some 30.2%

Table 2. Prevalence and Risk Factors for HIV Infection Among Men Who Have Sex with Men, Russia, 2008

Characteristic	*Total (%)* N=*401*	*HIV*$^+$ n *(%)*	*OR (95% CI)*	p-*value*	*AOR (95% CI)*	p-*value*
City						
Moscow	201 (50.1)	12 (6.0)	0.92 (0.39, 2.13)	0.84	1.21 (0.38, 3.88)	0.75
St. Petersburg	200 (49.9)	11 (5.5)	1		1	
Age group (years)						
18 to 22	91 (22.8)	7 (7.7)	1.97 (0.60, 6.41)	0.38		
23 to 25	106 (26.5)	6 (5.7)	1.42 (0.42, 4.78)	0.95		
26 to 28	80 (20.0)	5 (6.3)	1.57 (0.44, 5.67)	0.83		
≥29	123 (30.8)	5 (4.1)	1			
Marital status						
Married/cohabitating with a woman	29 (7.3)	1 (3.5)	0.56 (0.07, 4.30)	0.58		
Single/other	366 (92.7)	22 (6.0)	1			
Sexual identity						
Homosexual/gay	292 (73.0)	16 (5.5)	1			
Bisexual	89 (22.2)	6 (6.7)	1.25 (0.48, 3.30)	0.65		
Heterosexual/straight	19 (4.8)	1 (5.3)	0.96 (0.12, 7.67)	0.97		
Prior HIV test (ever)						
No	52 (13.0)	7 (13.5)	3.24 (1.26, 8.29)	0.01	6.23 (1.77, 21.95)	0.0044
Yes	349 (87.0)	16 (4.6)	1		1	
Accessed HIV prevention services (prior 12 months)						
No	120 (30.4)	4 (3.3)	1			
Yes	275 (69.6)	18 (6.6)	2.03 (0.67, 6.14)	0.2		
Sex with men or women (prior 12 months)						
Sex with men only	263 (69.8)	13 (4.9)	1			
Sex with men and women	114 (30.2)	7 (6.1)	1.26 (0.49, 3.24)	0.63		
Number of male sex partners (prior 12 months)						
1–2	103 (26.6)	5 (4.9)	1			
3–5	95 (24.6)	4 (4.2)	0.86 (0.22, 3.31)	0.55		
6–14	93 (24.0)	6 (6.5)	1.35 (0.40, 3.59)	0.60		
≥15	96 (24.8)	6 (6.3)	1.31 (0.39, 4.43)	0.66		
UAI with men (prior 12 months)						
No	95 (24.9)	3 (3.2)	1			
Yes	287 (75.1)	17 (5.9)	1.93 (0.55, 6.74)	0.42		
UI with male or female exchange partners (prior 12 months)						
No	299 (78.5)	13 (4.4)	1			
Yes	82 (21.5)	8 (9.8)	2.38 (0.95, 5.95)	0.06		
Injected drugs (ever)						
No	380 (96.7)	17 (4.5)	1		1	
Yes	13 (3.3)	5 (38.5)	13.35 (3.95, 45.14)	<0.001	11.33 (2.55, 50.39)	0.0014
Prior STI diagnosis (ever)[a]						
No	276 (87.3)	15 (5.4)	1		1	
Yes	40 (12.7)	6 (15.0)	3.07 (1.12, 8.45)	0.02	2.78 (0.85, 9.09)	0.09
Use of internet gay chat rooms, last 12 months						
None/once a month or less	112 (28.0)	4 (3.6)	1			
Once or several times a week	148 (37.0)	8 (5.4)	1.56 (0.46, 5.31)	0.48		
Once or several times a day	140 (35.0)	11 (7.9)	2.32 (0.72, 7.51)	0.16		

[a]Total does not add up to 401 due to missing values.

CI, confidence interval; OR, odds ratio; AOR, adjusted OR; UAI, unprotected anal intercourse; UI, unprotected intercourse; STI, sexually transmitted infection.

reported having also had sex with a woman, 75.1% reported UAI with another male, 73.4% reported three or more male sex partners, and 21.5% reported unprotected intercourse (UI) with a male or female exchange partner. A total of 72% of 401 respondents had used the Internet at least once a week to visit gay or bisexual chat rooms in the prior 12 months.

Only 13% of participants reported not ever having been tested for HIV, whereas 69.6% participated in a one-on-one conversation with an outreach worker, counselor, or prevention program worker or a group session about ways to protect themselves or their partners from getting HIV/STI; however, 12.7% reported that they had ever received an STI diagnosis from a provider and 3.3% reported ever injecting illicit drugs.

HIV Prevalence and factors associated with HIV infection

HIV prevalence was comparable in the two cities (6.0% in Moscow, 5.5% in St. Petersburg; Table 2). HIV infection was highest (7.7%) among participants aged 18–22 years. Univariate analyses indicated statistically significant associations (p value <0.05) between HIV infection and never having tested for HIV, ever injecting drugs, accessing a gay/bisexual chat room on the Internet, and ever receiving an STI diagnosis (Table 2). Men who reported using gay chat rooms more than once or several times a week or once or several times a day had higher HIV infection proportions than less frequent Internet users (5.4% and 7.9%, respectively, vs. 3.6%).

Multivariate logistic regression resulted in never having tested for HIV (AOR = 6.2; 95% CI: 1.8, 21.9) and ever having injected nonprescribed drugs (AOR = 11.3; 95% CI: 2.6, 50.4) being independently associated with HIV infection. The subset of MSM reporting IDU was small ($N = 13/401$, 3.3%) but 38.5% of these men were HIV infected. The prevalence of injecting drug use among MSM did not appear to differ between the two cities (p value = 0.75).

Discussion

We found significant overall HIV prevalence (5.7%) among MSM in Moscow and St. Petersburg, but this was most marked among the youngest men (7.7%), suggesting recent infection and an emerging epidemic scenario. These results suggest that to address the HIV prevention needs of adolescent MSM is critically important, similar to what has been observed among U.S. adolescent MSM.[15] The HIV prevalence was lower than that observed in a study of male sex workers in Russia completed at nearly the same time,[16] a not unexpected finding since male sex workers generally have many more HIV exposures than other MSM. Multiple partnerships, bisexual practices, and transactional sex were both commonly reported, but only a history of never having had an HIV test and being an MSM/IDU was independently associated with HIV. These findings suggest an underserved population in terms of access to or uptake of voluntary counseling and testing (VCT) services. Sociological research has highlighted the perceptions and experiences of stigma among MSM in Russia[4] and avoidance of testing due to anticipated stigma[17]; further research is warranted to assess the impact of stigma and discrimination on access to and uptake of services. With the recent evidence of antiviral treatment at higher CD4 cell counts to decrease viral load and subsequent transmission risks, VCT is clearly a priority component of a package of services for MSM in Russia.[18] The findings further reinforce the need to provide appropriate prevention for the parenteral transmission and acquisition risks associated with injecting drug use among dual risk IDU MSM.

Use of the Internet for communicating with other men was practiced by a majority of participants, and there are indications that increased frequency of Internet use may play a role in HIV transmission or acquisition (chi-square for trend p value = 0.05). There has been little formal research on MSM use of the Internet in Moscow, but Internet usage in Russia is growing rapidly, increasing from 4 million users in 2000 to more than 59.7 million in 2010, representing 43% of the population,[19] an estimate that, while one of the greatest in the regions, is dwarfed by the proportion of Internet users in this study. These findings are indicative of the use of social media by MSM and opportunities for HIV prevention interventions through social media and technology. Our collaborative group is currently investigating Internet-based recruitment strategies among MSM in Moscow and preliminary results are expected in 2012

There are limitations to this study. Inferences as to the temporal relationship of the associations presented here cannot be determined due to the cross-sectional study design. Demographic and HIV risk practice data were self-reported, thus there may be misreporting due to poor recall or the urge to give socially desirable answers. Furthermore, there is the potential for enrollment bias, which we were not measuring. Finally, the findings of this study are not generalizable to all MSM in these two cities. Due to the short duration of the probe, we did not attempt to complete the respondent-driven sampling process, so these preliminary data were drawn from what constitutes a convenience sample of MSM in Moscow and St. Petersburg. RDS incorporates several elements designed to improve recruitment and reduce sample bias relative to other chain-referral approaches, including the ability to identify linkages between participants and the provision of incentives to participants for each couple recruited into the study. As opposed to snowball sampling, RDS limits the number of couples that each participating couple may recruit, forcing the recruited population further from the initial seeds. This allows recruitment to introduce a diversity of characteristics so that the sample may begin to approximate the underlying population group and also reach more hard to reach subgroups. This study demonstrated that RDS was a logistically feasible method for future recruitment efforts studying this high-risk population and in these cities and is currently being used to accrue MSM in Moscow for future participation in rectal microbicide research among these men.

These data are preliminary, but remain valuable, especially in the case of Moscow where HIV prevalence and risk practice estimates among MSM are lacking. Our results suggest that urban MSM in Russia are at substantial risk for HIV infection, corroborating other reports.[20–22] The youngest men, those men who have not had HIV VCT, and MSM/IDU are higher risk subgroups requiring urgent targeted preventive interventions. There is a Russian federal response to the HIV /AIDS epidemic in place and federal funding for the response has increased more than 20-fold since 2005. In 2006–2007, 109 billion roubles (US $436 million) were allocated under the National Priority Project on Health and the

subprogram AntiAIDS of the Federal Program to Prevent and Control Significant Social Diseases 2007–2010 received 1.081 billion roubles (US $43 million).[23] However, these funding efforts focus primarily on treatment of AIDS rather than prevention, care, and support.[5] The majority of harm reduction measures are supported by the Global Fund to Fight AIDS, Tuberculosis and Malaria implemented through NGO, including the Russian Harm Reduction Network and the Global Efforts Against AIDS in Russia (GLOBUS) consortium.[24]

The largest HIV prevention program targeting MSM in the Russian Federation is the LaSky project implemented by PSI/Russia Center for Social Development and Information. It was launched in 1999 in Moscow and has expended operation in 19 cities of 15 regions. LaSky activities include MSM outreach, distribution of condoms and lubricants, counseling and social support, seminars, trainings and discussion panels for MSM, medical services (distribution of appointment cards to STI, HIV testing and treatment), and prevention education campaigns in media and MSM venues (http://www.lasky.ru/psi/about/). The results from these data suggest the need for increased scale and targeting of HIV prevention services for young MSM. In addition, in the age of HIV treatment as prevention, increased case finding through enhanced VCT will facilitate linkage to care services, which will likely decrease the probability of onward HIV transmission.[18,25]

The implementation of this study also demonstrates that RDS sampling is feasible in these settings, to accrue MSM for research but also as a tool to access a hidden population in need of services. However, careful preparatory work and selection of nongay identified seeds will likely be required to access a representative sample of MSM. This study provides an assessment of an at-risk population for HIV acquisition and a foundation for future epidemiological and prevention research efforts.

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Author Disclosure Statement

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