International Collaboration in HIV Prevention Research: Evidence from a Research Seminar in Russia

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Abstract

HIV transmission is a major health concern. Global efforts are necessary to control the spread of infection. International collaborative studies in countries with high rates of new infections are essential for increasing knowledge on the behavioral, social, and biomedical aspects of HIV/AIDS and HIV transmission. Statistics indicate a growing HIV epidemic in Russia. There are alarming proportions of new cases attributed to heterosexual contact, and HIV is increasingly affecting people in the general population who are not part of any traditional high-risk group. Despite recent advances in HIV prevention, data on effective behavioral prevention approaches are limited. There is minimal evidence to suggest which types of prevention will be effective in reducing the risk for HIV transmission among people at risk in the general population. This article presents a review and discussion of an international research seminar, *HIV Prevention Research: Evidence-Based Behavioral Approaches*. Local and international interdisciplinary researchers gathered for the purposes of exchanging research results and information about ongoing studies, identifying gaps in knowledge, and discussing promising prevention strategies. The overarching goal was to advance HIV prevention research through scientific integration. The seminar provided an excellent platform for building research capacity in interdisciplinary HIV research in Russia and integrating research efforts with the international research community to contribute to HIV prevention research throughout the world.

Introduction

OVER THE PAST SEVERAL YEARS, the United States and Russia have developed a collaboration focused on HIV/AIDS research and capacity building. This article presents a review and discussion of an international research seminar *HIV Prevention Research: Evidence-Based Behavioral Approaches*. The seminar took place at St. Petersburg State University (SPSU), Russia, on May 22, 2013. Researchers from the University of Oklahoma Health Sciences Center (OUHSC) and SPSU organized the seminar as a part of the Collaborative Research Partnerships (CRP) in HIV/AIDS research, established by the National Institutes of Health (NIH) and the Russian Foundation for Basic Research (RFBR). The CRP was founded in response to the U.S.-Russia Bilateral Presidential Commission and the 2009 Memorandum of Understanding between the U.S. Department of Health and Human Services and the Ministry of

Health and Social Development of the Russian Federation on Cooperation in the field of Public Health and Medical Science. The initiative aims to increase knowledge and understanding of behavioral, social, and biomedical topics that will eventually impact HIV/AIDS and associated coinfections, comorbidities, and complications worldwide. The OUHSC-SPSU partnership is aimed at developing effective HIV prevention approaches: that was the primary focus of the meeting.

HIV transmission is a major public health concern; global efforts are necessary to control the HIV epidemic.¹ While HIV prevention programs have been successful in stabilizing the number of new infections in the United States² and other countries, some regions including Eastern Europe are experiencing a growing epidemic.³ From 2000 to 2009, the number of people living with HIV in Eastern Europe and Asia tripled, reaching a total of 1.4 million people, with nearly 90% of new HIV cases in the Russian Federation and the

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Ukraine.² Russia has one of the most rapidly increasing HIV epidemics. Statistics indicate that the number of new cases of HIV in Russia is increasing by 7–12.9% every year, while the number of people tested for HIV is decreasing.^{3–5} Between 2001 and 2013, the prevalence of HIV has increased from 121 to 432 per 100,000 people.⁵ The number of new cases has been increasing among all population groups, including pregnant women. In 2011, 11.9% of new HIV cases were among people who did not belong to any traditional high-risk group, such as injection drug users and their partners, people diagnosed with sexually transmitted infections, sex workers, or men who have sex with other men and their partners.⁵ Most HIV-infected individuals are injection drug users (IDUs); Russia has one of the highest prevalence of HIV infection among IDUs (45–50%) in the world.^{6,7} However, the proportion of new cases attributed to IDUs has been stable (56–59%).^{3,5} In contrast, since 2002, the proportion of HIV-positive women in Russia has been on the rise, reaching 36.7% in 2013.^{3,5} Forty-three percent of newly diagnosed HIV patients are women.³ The infection has also increasingly affected youths.⁵ Among young adults aged between 20 and 24 years, HIV prevalence is now higher among women than men of the same age group.⁸

Several factors increase the risk of contracting HIV in Russia and Eastern Europe, including low perception of vulnerability, low acceptance of protective measures such as condom use, high rates of injection drug use, stigma associated with HIV, and widespread risky sexual behaviors.^{9–14} Unlike the United States, where the number of cases attributed to heterosexual contacts has stabilized,¹⁵ this number has continued to increase in Russia. In 2013, unprotected sex was identified as the main HIV transmission factor in 41% of new infections.³ One of the infection pathways in Russia is sexual transmission from male IDUs to their non-IDU female partners.⁸ A recent study reports that the high HIV prevalence among IDUs is associated with low HIV testing rates and poor knowledge of positive serostatus.⁷ Young women with sexual partners who are IDUs are an intermediate “bridge” population, contributing to the spread of HIV and sexually transmitted diseases (STDs) from IDUs to the Russian general population.⁶ A large number of sexually active IDUs reported sexual partnerships with non-IDUs; in most cases, the couples do not practice safe sex.¹⁶ Whereas the majority of new HIV infections among men (74%) were attributed to unsafe injection practices, most new HIV cases among women (65%) were attributed to unprotected heterosexual contacts.³ While self-reported drug use decreased between 1998 (2.2%) and 2013 (1.1%), HIV prevalence among women admitted to a specialized delivery hospital that accepts women who did not receive prenatal care increased from 0.01% to 2.6% during the same time period (personal communication, July 2013).

Alcohol misuse is the major factor contributing to risky sexual behaviors, including having multiple sexual partners, and other behaviors that increase the risk for acquiring STDs, including HIV.^{17,18} The prevalence of alcohol use is traditionally high in Russia. Binge drinking, defined as consuming four or more drinks on an occasion,¹⁹ was prevalent among Russian women of childbearing age (55–77%).²⁰ Having sex after drinking was associated with failure to use condoms and abortions among women attending STD clinics.²¹ It is un-

known how binge drinking-related risk behaviors may influence HIV protective behaviors of women in the general population.

HIV education materials and public announcements have been developed and are available in Russia; however, there is lack of targeted prevention programs for at-risk groups in the general population and limited prevention for traditional high-risk groups, including IDUs, men who have sex with men (MSM), and sex workers. Harm reduction programs, such as needle exchange, have been implemented by nongovernmental organizations. These programs are primarily reliant on international funding and are unavailable in the majority of regions. Drug replacement therapy has not been approved for use in Russia. Programs to reduce vertical transmission from mother to child have been implemented most broadly and effectively. Free services to prevent vertical transmission of HIV have been guaranteed for all citizens by the Russian government. A study of 5-year trends in mother-to-child HIV transmission in St. Petersburg, Russia reported improved clinical services for HIV-infected women giving birth and decreased perinatal HIV transmission.²²

Since the 1990s, a number of HIV prevention studies have been conducted in St. Petersburg and the surrounding regions. The city is a recognized center of basic, medical, and behavioral science research. Several academic centers, such as St. Petersburg (Leningrad) State University, St. Petersburg Pavlov State Medical University, St. Petersburg Bekhterev Research Psychoneurological Institute, and the City and Regional Clinical AIDS Centers, are located in St. Petersburg. This seminar was driven by discussions between scientists from OUHSC and SPSU, and colleagues at international HIV/AIDS and alcohol research meetings. These discussions revealed that although a number of collaborative research and training projects have been conducted in St. Petersburg, communications between research groups have been limited. The discussions indicated a need to increase information exchange about current and completed research studies in the region, to discuss results, and to plan future collaborations in order to integrate efforts and focus on the most pressing issues related to HIV/AIDS.

The HIV prevention research seminar was designed to address these needs and to develop a network of HIV researchers who have been involved in HIV prevention research studies in the St. Petersburg region. The overarching goal was to advance HIV prevention research through scientific integration and to strengthen the HIV research community in Russia.

The seminar organizers, Tatiana Balachova of OUHSC, Kendall Bryant of NIAAA, and Alla Shaboltas of SPSU, obtained information about regional HIV research groups and recently completed and ongoing research studies through (1) a review of publications, (2) collecting information about research projects funded by agencies such as NIH, CDC, and the Russian Federal Medical Agency, and (3) personal communications with local researchers. Researchers from these identified research groups were invited to participate in the seminar. Efforts were made to broadly disseminate seminar information to local researchers by sending information to professional associations and posting announcements at universities.

An Overview of Presentations

Tatiana Balachova, OUHSC, *Preventing FAS/ARND in Russian Children^a and Expansion to Interdisciplinary HIV Prevention in Women^b*,^c described the line of international collaborative research studies initially focused on alcohol and sexual risk in women and prevention of alcohol-exposed pregnancies (AEP) and Fetal Alcohol Spectrum Disorders (FASD). These collaborative studies have expanded to include HIV prevention in women of childbearing age.

Risky drinking may contribute to the high HIV transmission rates in Russia. Alcohol consumption in Russia is among the highest in the world, and heavy drinking has been historically prevalent among Russian men.^{23,24} Recent statistics and research show increasing alcohol use and widespread at-risk drinking among women in Russia.^{20,25} These women in the general population are at greater risk for HIV/STDs.

Alcohol use during pregnancy is a leading preventable cause of birth defects and developmental disabilities.²⁶ In 2003, OUHSC, SPSU, and the Nizhny Novgorod State Pedagogical University established a consortium on FASD prevention research. An interdisciplinary *Prevent FAS Research Group*,^c which includes collaborators from medicine, psychology, and public health in the United States and Russia, was established to conduct formative research and develop prevention of AEP and FASD in Russia. The first phase of the collaboration, *Preventing FAS/ARND in Russian Children (PFAS)* (2003–2006),^d involved capacity building and obtaining data critical to developing FAS prevention in Russia. The overarching goal of this collaboration is to reduce alcohol consumption during pregnancy, the risk for AEP, and FASD in Russian children. Among nonpregnant sexually active women of childbearing age, 65% reported binge drinking in the past 3 months.²⁰ Although only 11% were trying to conceive, 57% of women reported having one or more unprotected sexual encounters during the past 6 months.²⁰ This study revealed that 32% of women in St. Petersburg (SPB) and 54% of women in the Nizhny Novgorod region (NNR) of Russia were at risk for AEP because of at-risk drinking and inconsistent contraceptive use. Women identified obstetrics and gynecology (OB/GYN) physicians as a major influence on their health behaviors.

The second phase of the research (2006–2008)^e focused on the development and evaluation of FASD education materials

for women, training for physicians, and designing a FASD education website to disseminate the materials. The third phase (2007–2013),^a a site-randomized controlled clinical trial to evaluate an AEP prevention intervention at 20 women's clinics in SPB and NNR, is underway. The researchers used two evidence-based FASD prevention interventions, Healthy Moms²⁷ and Project CHOICES,²⁸ to design a brief AEP prevention intervention that can be delivered by OB/GYN physicians during routine women's care visits.²⁹ A total of 1536 women were screened and 767 women at-risk for AEP were enrolled in the study in two regions in Russia.

This is the first randomized FASD prevention clinical trial in Russia. The intervention targets women who reported risky drinking behaviors and unprotected sex, and who therefore may be at high risk for HIV transmission. Because the AEP aspects of the study ask questions about sexual behaviors and contraceptive use, adding a focus on HIV risk behaviors was a natural extension of the project. This study has provided a unique opportunity to identify factors that are involved in the HIV risk of women in the Russian general population. Our experience in FASD prevention led us to conclude that formative assessment is a critical step in identifying effective prevention strategies and is necessary to develop an effective HIV prevention program. The main objective of this HIV risk study is to collect information to develop effective, culturally appropriate HIV risk reduction interventions for Russian women of childbearing age. This study utilizes the ecological model framework³⁰ to understand the complex multilevel risk factors that affect HIV risk and utilization of HIV prevention strategies for women. It provides critical information about the role of alcohol and gender-related cultural factors in HIV transmission, which will help to identify strategies for prevention in women who are at high risk. This information includes cultural, gender, and other factors that are associated with HIV risk in women, and barriers to prevention that are specific to this population.

The research team conducted a formative study utilizing the cohort of 767 women of childbearing age. The women were at-risk drinkers who were at risk for AEP, and were from two regions in Russia. A total of 708 participants were recruited for the HIV risk study at the completion of the FASD study. A survey was developed for the study based on established HIV/AIDS research measures adapted to women in the general population. The survey obtained information about women's own and their partner's HIV testing and HIV status, HIV risk behaviors, as well as knowledge, attitudes, and receptivity to prevention. Detailed information about these women and their partners' alcohol and contraception practices was collected. The survey was administered in face-to-face structured interviews conducted in private. Data collectors were female graduate students of approximately the same age as the interviewees. The graduate students were familiar with culture and local traditions, and were trained and supervised by the study investigators.

Data analysis is ongoing. Preliminary results indicate that HIV risk behaviors, including multiple partners and a lack of condom use, are prevalent among young Russian women who drink at risk. At-risk drinking, alcohol consumption prior to sex, and HIV/STD exposure appear to be the major factors associated with HIV risk in this population. There is a gap between women's perceived risk and the actual HIV/STD

^aThe study is supported by the National Institute on Alcohol Abuse and Alcoholism (NIAAA) and Fogarty International Center (FIC) Research Grant R01AA016234 to T. Balachova at OUHSC.

^bThe study is supported by NIH Research Grant Supplement Award 3R01AA016234-05S1 to T. Balachova at OUHSC and by RFBR, a Research Grant Award to A. Shaboltas at SPSU.

^cThe studies are conducted by the Prevent FAS research group (<http://netfas.net/pro/group.php>); awards information is included in the Acknowledgments.

^dThe project was supported by Brain Disorders in the Developing World: Research Across the Lifespan, the NIH Fogarty International Center, and NIAAA at NIH, Research Grant R21 TW006745 to Barbara L. Bonner, PhD, at the University of Oklahoma Health Sciences Center.

^eThe projects were supported by the Centers for Disease Control and Prevention (CDC), National Center on Birth Defects and Developmental Disabilities (NCBDDD) through a cooperative agreement with the Association of University Centers on Disabilities (AUCD), Research Grants RTO1 2005-999-01 and RTO1 2007-999-02 to B. Bonner and T. Balachova at OUHSC.

risk. Although 78% of women reported having a partner who was at high HIV/STD risk (ever used drugs, had multiple partners, had sex with a man, was incarcerated, had recent STI symptoms, or experienced blood transmission), the majority of women did not perceive themselves to be at risk for HIV infection and never or inconsistently use condoms with their partners. Sixteen percent of women reported never being tested for HIV, while 51% were not tested during the past year. Approximately one-third did not know her partner's HIV status. One female study participant disclosed being HIV positive. Nine percent reported STIs during the past year. This HIV prevalence was lower than expected, based on Russian statistics, and was likely related to underreporting or the lack of HIV testing. This project is also designed to increase the sustainable capacity of Russian researchers to pursue FAS/ARND and HIV prevention research and to provide hands on training in research and human subjects' protection procedures.

Dr. Alla Shaboltas, St. Petersburg State University, focused her presentation on a new study to advance *Interdisciplinary HIV Prevention in Women*.^f Dr. Shaboltas began with an acknowledgment that she completed a post-doctoral fellowship focused on HIV prevention research at Yale University and the Medical College of Wisconsin.^g She has been involved in several studies aimed at risk reduction and developing HIV prevention programs for different population groups, including IDUs,^{h,i} men and women who drink alcohol and seek treatment at STD clinics,^j and at-risk women of childbearing age who drink alcohol.^k These studies were carried out in St. Petersburg by interdisciplinary and international collaborative research groups. Dr. Shaboltas noted that although these projects provided insights into different aspects of risk, HIV transmission remains a major health concern in Russia, and more population groups have been increasingly involved in HIV transmission, including women.

Unlike the United States, where the number of cases attributed to heterosexual contact has stabilized,¹⁵ this number has continued to rise in Russia, reaching 41.9% in 2012.³ The proportion of HIV-positive women among HIV-positive individuals registered in Russia has increased since 2002, reaching 36.3% in 2012.^{3,31} There is minimal evidence to suggest which types of prevention approaches will be effective for women in the general population. There are several barriers to HIV testing in Russia, which are associated with prevalent limited knowledge, misconceptions, and HIV stigma.³² HIV testing is available at State AIDS Centers established in all regions and at some infectious diseases

clinics. If an HIV infection is detected at these clinics, the person would be registered and referred to an AIDS Center for services. However, these services may be difficult for rural residents to access. In addition, testing at specialized clinics may be associated with fear of HIV stigma and privacy concerns. Anonymous HIV testing is available at some private clinics for an out-of-pocket fee. Russia has developed an HIV testing protocol for women who receive a prenatal care protocol at public women's clinics. HIV testing is required for these women three times during pregnancy and is provided free of charge. Although this testing removes some barriers, there may still be stigma associated with official "registration" and referral to an AIDS Center in the event of a positive result. In addition, women who do not receive prenatal care may not have access to this free testing. Recent Russian government reports indicate that except for pregnant women and medical personnel for whom testing is required, testing has decreased in most population groups. This finding includes a 2.6% decrease among IDUs, a 4.1% decrease among prisoners, and a 19.5% decrease among MSM.³ There is a paucity of rigorous studies examining the benefits of different testing strategies, and very few, if any, conducted in the Russian context.

Dr. Shaboltas pointed out that the data from previous studies indicated that there is a need to understand behavioral factors that limit utilization of prevention recommendations among women in the general population. The new study, designed in collaboration with Drs. Balachova and Chaffin of OUHSC, aims to identify the most effective HIV testing promotion strategies for Russian women. Improving HIV testing for at-risk population groups is one of the effective prevention strategies under investigation.³³ A recent study revealed little knowledge of HIV-positive serostatus among IDUs in St. Petersburg.⁷ A number of currently missing pieces of scientific information are needed, including (1) women's health beliefs, attitudes, and knowledge surrounding testing; (2) perceived external barriers to testing, such as access, cost, and privacy; (3) the extent of women's reluctance to identify themselves as at risk and fear of stigma; and (4) the impact of how testing is packaged and presented.

The study utilizes a cohort of the parent FASD prevention study¹ to conduct an adaptive experimental manipulation study in St. Petersburg ($n = 326$). Women who reported high-risk sexual behaviors and no HIV testing in the past 12 months were identified ($n = 51$). Forty-one women chose to participate in the pilot study to evaluate HIV testing behaviors: eight were lost to follow-up and two declined. Dr. Shaboltas reported preliminary data that, at the time of this report, all participants accepted testing at study appointments, indicating that HIV testing behavior may be relatively easy to modify in Russian women. Additional research is necessary to determine if this strategy is effective for increasing testing utilization among women outside of the study cohort. Based on the results of this pilot project, an upcoming larger study will evaluate strategies to increase HIV testing in women at high risk of HIV transmission at primary health care clinics in St. Petersburg. The study will assess whether external (cost, convenience) or internal (low perception of own risk,

^f*Interdisciplinary HIV Prevention in Women*; the award information is included in the Acknowledgments.

^gTraining and Research in HIV Prevention in Russia, funded by the NIH/NIMH/Fogarty International Center, PI Heimer, 5D43TW001028-10.

^h*International Feasibility Study of Pharmacy-Based HIV Prevention*, funded by NIDA, PI Shaboltas, R21 DA027228-02.

ⁱ*Development of DNA Vaccine Against HIV and Epidemiological Monitoring of Molecular Diversity of HIV in St. Petersburg*, funded by the Russian Government, PI Kozlov.

^j*Alcohol and HIV Risk Reduction in St. Petersburg, Russian Federation*, funded by NIAAA, PI Abdala, R01AA17389.

^k*Preventing FAS/ARND in Russian Children*; the award information is included in the Acknowledgments.

¹*Preventing FAS/ARND in Russian Children*, funded by the NIH/NIAAA/Fogarty International Center, PI Balachova, R01AA016234.

reluctance to identify a partner as at risk, fear of stigma) factors drive Russian women's reluctance to be tested, and if peer support impacts their decision. A randomized experimental manipulation, comparing opt-in vs. bundled opt-out testing approaches, followed by focus group discussions and a second-chance testing offer will be used to inform these questions. The answers will enable the international research team to engineer an HIV testing promotion strategy and inform policies and efforts to promote HIV testing in Russia. It is important to identify prevention strategies that will be gender and culturally appropriate and effective in increasing testing in at-risk women of childbearing age. The project will collect data for developing evidence-based HIV prevention for women to reduce heterosexual transmission of HIV in this high-risk population.

*Evgeny Krupitsky, MD, PhD, St. Petersburg Bekhterev Research Psychoneurological Institute and St. Petersburg Pavlov State Medical University, presented on **Opioid Antagonists' Treatment of Opioid Dependence Reduces HIV Risk Behavior**.* Dr. Krupitsky has been involved in several international collaborative research studies to investigate the relationship between drug abuse and HIV disease progression in HIV-infected adults,^m adapt an HIV risk reduction intervention for injecting drug-using women,ⁿ evaluate HIV prevention interventions for drug users admitted to Russian substance abuse treatment settings,^{o,p} and investigate alcohol and zinc impact on inflammatory markers in HIV-infected heavy drinkers.^q The last three studies^{r,s,t} focused on the effects of naltrexone and combining naltrexone with behavioral therapy for the treatment of opiate dependence to reduce HIV risks in opiate-dependent individuals.³⁴⁻³⁶ Dr. Krupitsky estimates that there are between 1.6 and 4 million opiate users in Russia. The majority of these are IDUs, and many are HIV infected.³ Opioid dependence treatment is considered to be one of the HIV prevention strategies that reduce injection drug use and HIV transmission risk.

Dr. Krupitsky notes that methadone and buprenorphine are not approved for use in Russia. The only medication option for drug dependence treatment is detoxification followed by naltrexone therapy. Several studies suggest that the efficacy of oral naltrexone therapy may be improved by using extended-release implantable or injectable naltrexone instead of oral naltrexone, or by combining naltrexone treatment with behavioral counseling.³⁴⁻³⁶ Data indicate that oral naltrexone produces an up to 33% reduction in drug use and drug risk; however, low compliance is a major barrier and may significantly reduce effectiveness.³⁴ Implantable naltrexone has a

more prolonged effect (up to 3 months) and higher drug use reduction than oral naltrexone. However, it requires surgical procedures that have shown high rates of complications.³⁴ The extended release injectable naltrexone (one injection has a 1 month effect) has demonstrated better results than oral or implantable naltrexone, with low rates of complications.^{35,36} Although additional research is necessary, the preliminary data are promising. Injectable naltrexone may have greater efficacy and may be the most cost-effective treatment option to reduce drug use and consequently reduce HIV risk and transmission in this highest risk population group.

*Nadia Abdala, PhD, Yale University, presented on **Alcohol and HIV Risk Reduction Intervention in Russia and What We Learned About Alcohol Use Among STD Clinic Patients**.* Dr. Abdala participated in several studies conducted in St. Petersburg, including a study that used behavioral and molecular epidemiology, medical sociology, and mathematical modeling to improve our understanding of the role of sexual transmission in the HIV epidemics among IDUs.^u She served as PI for Russia on a Collaborative HIV/STD Prevention study, a two-arm randomized community-level trial conducted in five countries (China, India, Peru, Russia, and Zimbabwe).^v The study tested a community-level prevention program that asked community Public Opinion Leaders (POL) in HIV prevention to identify portability and adaptability of the intervention model, cross-nationally and cross-culturally. Results revealed a combination of risk factors in IDUs and their female partners, including alcohol use problems and using alcohol before sex. Heavy sporadic drinking in women who injected drugs or who had sexual partners who injected drugs increased the risk of unprotected sexual intercourse.³⁷

Recently, Dr. Abdala completed a study focused on evaluating the efficacy of an alcohol and HIV risk behavior reduction intervention among patients at sexually transmitted disease (STD) clinics in St. Petersburg.^w Based on the results, a brief theory-based counseling intervention was designed to reduce alcohol and sexual HIV risk behaviors among STD clinic patients. A 1-hour risk-reduction counseling intervention, tested previously in research in other countries,³⁸ was translated and adapted for use in Russia. A total of 307 male and female participants were recruited to participate at two STD clinics in St. Petersburg. Participants were randomly assigned to either the 1-hour intervention session or a control condition (receiving information about HIV prevention). Dr. Abdala presented and discussed the recently published study results.²¹ Alcohol use problems, measured by AUDIT-C, were correlated with multiple sex partners and having unprotected sex during the past year. The intervention group had a significantly greater proportion of condom use and lower occurrence of unprotected sex at 3 months follow-up; however, these effects dissipated by 6 months. At 6 months follow-up, the intervention group had a lower proportion of participants with multiple sex partners. Notably, the study

^m*Clinical Impact of Drug Use in HIV-Infected Persons: A Pilot Study*, NIDA, PI Samet, R21 DA025435.

ⁿ*Woman-Focused HIV Prevention in Russia*, NIDA, PI Wechsberg, R01 DA11609.

^o*Maximizing Opportunity—HIV Prevention in Hospitalized Russian Drinkers*, NIAAA, PI Samet, R01AA016059.

^p*HIV Prevention Partnership in Russian Alcohol Treatment*, NIAAA, PI Samet, R21AA014821.

^q*Alcohol and Zinc Impact on Inflammatory Markers in HIV Disease*, NIAAA, PI Samet, U01AA020780.

^r*Adherence to HIV Therapy in Heroin Addicts: Oral vs. Extended Release Naltrexone*, NIDA, PI Woody, R01DA026336.

^s*Naltrexone and Behavioral Drug and HIV Risk Reduction Counseling in Russia*, NIDA, PI Chawarsky R01DA 027405-01A1.

^t*Linking Russian Narcology and HIV Care to Enhance Treatment, Retention, and Outcomes (LINC)*, NIDA, PI Samet, R01DA032082.

^u*Integrating Sex and Drug Related HIV Risk and Transmission*, NIDA, PI Heimer, U01DA017387.

^v*Sexual Acquisition and Transmission of HIV: NIMH Collaborative HIV/STD Prevention Trial (Russia)*, NIMH, PI Yale sub-contract Abdala, U10MH61536.

^w*Alcohol and HIV Risk Reduction in St. Petersburg, Russian Federation*, NIAAA, PI Abdala, R01AA17389.

found substantial reductions in the use of drugs before sex at 3 months follow-up, although no changes in alcohol misuse or alcohol use before sex were found at either 3 months or 6 months follow-up. Dr. Abdala noted that drinking expectations and drinking motivation had an impact on sexual risk behavior, and drinking motivation varied by gender. She concluded that the results are promising; the positive short-term intervention effects were evident at 3 months and dissipated by 6 months.²¹ Dr. Abdala reports that the 1-hour HIV prevention counseling intervention can be implemented in STD clinics in Russia.

Olga Toussova, PhD, St. Petersburg Pavlov State Medical University, presented the research study entitled *Social Demography and Behavior Patterns of Serodiscordant Couples in St. Petersburg, Russia*. Conducted in collaboration with the University of North Carolina,^x the study examined HIV risk in serodiscordant couples. There is an increasing HIV crisis in Russia and prevention among serodiscordant couples is necessary. Clinical experiences indicate that there is limited motivation to prevent HIV transmission to their sex partners, since the HIV-positive status of one partner is known. Effective interventions to help couples in coping and implementing prevention efforts if a partner's HIV-positive status is identified are currently unavailable in Russia. Therefore, it is imperative to conduct research to determine strategies and adapt risk reduction interventions for serodiscordant couples and to conduct a trial to determine the feasibility and acceptability of prevention among Russian serodiscordant couples.

A structured interview was designed to assess sociodemographic characteristics, needs, and behavioral risks among serodiscordant couples. The researchers sought to identify risky behavior patterns that could be targeted in further interventions. A convenience sample of 29 serodiscordant heterosexual couples and two HIV-negative partners was recruited at the Biomedical Center and at the Municipal AIDS Center in St. Petersburg ($n=60$).³⁹ Descriptive statistics were used for this analysis. Twenty-nine participants were HIV positive (18 males, 11 females) and 31 were HIV negative (12 males, 19 females). The average age was 30 years (range 19–50 years). Eighty-eight percent of participants were either legally married or lived in a civil marriage, and had a secondary or higher level of education. Thirty-six percent were unemployed. Eighty-three percent lived in their own apartments and others shared an apartment with parents or other people; there were no homeless people in the sample.

Eighty-five percent of participants injected drugs in the past (23 HIV negative, 28 HIV positive), but only 18% were current IDUs. Sixty-five percent (23 HIV negative, 16 HIV positive) used alcohol in the past 3 months. The entire sample did not use condoms with their main partner.³⁹ Reported reasons for lack of condom use included disliking condoms and reporting that sex with a condom was less enjoyable. HIV-negative partners either did not insist on condom use from the beginning of the relationship or stopped using condoms because of a belief that the virus would not affect them. In terms of the length of the relationships, couples were

evenly split: one-third had been in a relationship for less than 1 year, another third in a relationship for 1–2 years, and the last third had been in the relationship for more than 2 years. Registration at the AIDS Center was completed by 92% of HIV-positive participants, and 27% of them received antiretroviral therapy.³⁹

The results showed that HIV-negative partners are exposed to HIV through sexual contact with their main partner. Interventions to target and reduce sexual risk are necessary. Further data analysis will be conducted to identify gender differences in perception of risk and barriers to communication among serodiscordant couples.

Alexandra Gaysina, St. Petersburg City AIDS Center (CAC), reported on *Cognitive Disorders at Different Stages of HIV Infection*. Ms. Gaysina serves as a psychologist at CAC and has a particular interest in studying cognitive functioning in HIV-positive patients admitted to the CAC. It is known that HIV infection affects cognitive functions, including information acquisition and processing and decision making. The aim of this study was to evaluate the cognitive functions of patients admitted to the CAC. A total of 103 patients admitted to the CAC during 2010–2012 were recruited for the study. Exclusion criteria were pregnancy, active injection drug use, alcohol abuse, acute somatic, psychiatric, or mental disorders, and intensive pharmacotherapy that could influence cognitive functions. Participants were at different stages of HIV infection: (1) the early stage of HIV infection, before highly active antiretroviral therapy (HAART; $n=25$); (2) the middle stage of HIV infection, after beginning HAART but before opportunistic infections occur ($n=53$); and (3) the advanced stage of HIV infection with opportunistic infections ($n=25$).

A battery of tests, including the Wechsler Memory Scale (WMS), Shulte Tables, and Luria visual tests, were administered to assess memory, attention, psychomotor functioning, language, calculating, orientation, and executive functions. Results indicated that at the early stage of HIV, in which there are no clinical manifestations, 64% of participants had memory dysfunctions, primarily in short-term audio and visual memory, and 52% of participants had attention problems, including exhaustion. At the middle stage of HIV progression, memory dysfunctions were identified in 72% of participants. These dysfunctions included problems with logical, visual, and association memory functions. Attention exhaustion was identified in 66% of participants, and decreased productivity in completing tasks was noted in 23%. At the advanced stage of HIV infection, logical, visual, and associative memory dysfunctions were found in 76% of participants. Attention dysfunctions led to decreased productivity in 33% of participants, lower concentration in 79%, and exhaustion in 92%. Dr. Gaysina believes that although substance use affects cognitive functions, the degree of memory dysfunction was associated with HIV infection status and with CD4 and viral load, indicating the effects of HIV infection.

Olga Koltsova, St. Petersburg City AIDS Center (CAC), is Chief of the Medical and Social Psychology Department at CAC. Her presentation was entitled *Personality Characteristics and Adherence to ARV Treatment in HIV-Infected Patients*. Dr. Koltsova and her team are involved in acute and long-term psychological counseling and case management of HIV-positive city residents who required HAART and

^xThe University of North Carolina at Chapel Hill Center for AIDS Research (CFAR), an NIH-funded training program, P30 AI50410 (PIs Swanstrom/Cohen).

registered at the CAC. Patients' psychological functioning is accessed routinely by staff psychologists and counseling is available at the CAC. Along with providing services, the department is involved in a variety of research activities, including the study of personality factors and determinants of HIV risk. The course of HIV infection is often unpredictable and is associated with fluctuations in well-being. Patients' reactions to drugs and side effects may lead to psychological discomfort and termination of antiretroviral therapy. That is a concern at both personal and population levels: there is an increased probability of the patient's death from AIDS and there is a higher risk of the spread of infection and the growing epidemic.

Dr. Koltsova's study analyzed data from medical records that included documentation about receiving HAART and qualitative observations about preventive behaviors. The Minnesota Multiphasic Personality Inventory (MMPI) was used to identify personality characteristics of HIV-infected patients. The Chi-square test and Pearson's exact significance of Fisher were used for statistical analysis. The sample included 105 patients admitted to the CAC between 2003 and 2009. The medical charts of 83 patients included MMPI results. Among these, 53 were females, 70 were receiving HAART, 60 were IDUs, and 13 were deceased at the time of the chart analysis. Patients who were aware of their HIV status for more than a year ($n=52$) had a higher index on the 4th scale, "impulsivity," than those who learned about the disease less than a year before the analysis ($p<0.05$).⁴⁰ Dr. Koltsova believed this might indicate that patients who have had HIV infections for more than 1 year have more frequent difficulties with social adaptation, impatience, and behavioral risk. The study also revealed an association between high levels of the 9th scale, "optimism," and their rejection of HAART. The majority of patients who were receiving HAART scored within the normal range (30–70T) on the 9th scale, whereas those who refused to start or interrupted the treatment more frequently had elevated scores ($p<0.05$).

At the time of the analysis, 13 patients were deceased. These patients frequently had high scores on the 6th scale, "rigidity," which indicates rigid attitudes, a desire to rely on their own experience, and practicality. Patients who had high scores on the 2nd scale, "depression," especially men, drug users, and patients living with HIV infection for several years, need regular psychological support to decrease pessimism and prevent or reduce depression. Dr. Koltsova concluded that adherence to HAART cannot be sustained if the patient is psychologically unstable, e.g., demonstrates impulsivity and a lack of self-control. Knowledge of personal characteristics of patients can help identify patients who may have difficulties in continuing HAART. Stabilizing psychological reactions to the disease, providing psychological therapy and treatment for depression, and supporting adherence to HAART can promote continuing treatment of HIV-infected patients. Psychological evaluations of patients enable center staff to intervene in a timely manner to assist in monitoring adherence and prevent disruptions of HAART therapy. It was noted that administration of a single personality test was the major study limitation; implementation of interviews or observations might improve the utility of the study results.

Discussion

The seminar brought together scientists from different disciplines to exchange information about their research, examine similarities across studies and methodological issues that arise in international research projects, and discuss research needs in the region. In addition to sharing their research findings to date, the seminar identified gaps in knowledge and priorities for future research.

The seminar participants discussed the growing HIV epidemic in Russia and concluded that there is an urgent need for special measures to reduce the spread of the infection. Although the impact of HIV on the Russian population has not reached the devastating levels of Africa,⁴¹ the participants expressed concerns that HIV infection in Russia has already spread beyond the traditional HIV risk groups. Given the occurrence of alcohol misuse and risky sexual behaviors along with stigma and lack of condom use and voluntary testing, the spread of HIV infection in the general population is a major concern. Several studies reported examining HIV risk and alcohol use among women. Young women of childbearing age, including at-risk drinking women and non-IDU partners of IDUs, have been identified as being at high risk. Most studies conducted in the region have focused on the highest risk groups, such as IDUs and patients of STD clinics. There is little evidence to suggest which types of HIV prevention approaches will be effective in the general population.

In addition, there is a need to expand prevention efforts addressing the behavioral risk factors that increase HIV transmission in Russia. Studies indicated poor knowledge of positive serostatus. Knowledge of what can increase utilization of testing and counseling in the Russian general population is needed. Although injection drug use was highlighted in several presentations, alcohol remains a common comorbidity among almost all substance users, including those who use more common legal substances such as tobacco. Russia has one of the most risky patterns of drinking in the world.⁴² This pattern is reflected in drinking among different population groups, including HIV-positive patients. Estimates of alcohol use disorders among HIV-positive individuals are higher than in the general population and there is no safe level of alcohol use among individuals infected with HIV because alcohol has a negative impact on HIV transmission and disease progression.⁴³ Drinking reduces the levels of adherence to antiretroviral medications and increases the risk of HIV transmission.¹⁷ Many additional comorbidities, such as TB, are often found in the context of drinking and HIV.⁴⁴ That further increases the role that alcohol may play in the transmission of HIV and the need for interventions to reduce drinking and achieve successful treatment and prevention outcomes.⁴⁵

Evaluating the effects of alcohol on the incidence of HIV and assessing the feasibility of alcohol-focused interventions within populations of HIV-positive individuals should be part of integrated treatment and patient management and reducing the risks of acquiring or transmitting HIV in at-risk populations. These interventions can use established approaches for alcohol screening, prevention, and treatment adapted to the Russian setting. Some of these approaches might include brief motivational counseling, cognitive-behavioral treatment, and other lifestyle interventions in individual and

group settings. In addition, attention should be paid to the implementation of interventions for both HIV and alcohol in existing prevention and treatment settings. An example could be the colocation of appropriate services at STD clinics, family planning centers, women's clinics, or substance abuse treatment programs. The common opinion was that the long-term sustainability of evidence-based HIV prevention in Russia is associated with intensive community preparation work, a high level of acceptance from medical officials and physicians, and implementation within the existing official medical system.

Recommendations for research and developing HIV prevention:

1. *Extend efforts beyond the traditional risk groups.* These efforts need to include populations that are currently at lower risk but may be susceptible due to engagement in high-risk behaviors,⁴⁶ including at-risk drinking women and men who are engaged in risky sexual behaviors, female partners of IDUs, and sexual partners of sex workers.

2. *Address alcohol misuse.* Alcohol misuse is the major factor contributing to risky sexual behaviors and HIV sexual transmission.¹⁷ This symposium suggests that the path forward involves research projects focusing on alcohol and HIV risk behaviors and physiological consequences. We seek to further understand the role of alcohol use patterns and the contexts for alcohol use in increasing the risk for HIV transmission and nonadherence to medication. It is important to identify the prevalence of alcohol use among HIV-positive populations, both in and out of treatment, and specific subgroups in which risky alcohol use occurs. Enhanced measures of alcohol use and alcohol use disorders among individuals infected with HIV, whether they are currently receiving treatment or not, must be developed to more fully identify consequences for Russian patients. Furthermore, the proportions of these populations, both men and women, must be determined to design and deliver effective interventions at the individual, group, and population levels. Outcome could include a range of measures related to the control of HIV and reduction of drinking as well as measures targeted to assessing frailty and risk for mortality, quality of life, and comorbidities related to both alcohol and HIV, such as depression, liver injury, and neurocognitive decline.

3. *Develop integrated HIV prevention to reduce the risk among women.* There was a consensus among the seminar participants that reducing HIV infections among women and children should be given the highest priority. Although women in the general population are not at the highest risk of contracting HIV, preventing new HIV infections among women of childbearing age is particularly important, not only for women's health, but also to reduce the risk of HIV infections in children. Because patterns of risky behaviors are gender specific, research must examine complex gender and cultural factors that contribute to increasing HIV prevalence among women, identify barriers to prevention, and design interventions. There is a need to extend the traditional vertical HIV prevention approach to integrate HIV prevention with alcohol harm reduction, women's reproductive health, and other women's needs.⁴⁷

4. *Evaluate prevention strategies.* Several promising strategies were discussed by the seminar participants and need to be evaluated, including increasing HIV testing, utilizing

new medications to improve outcomes of substance abuse treatment, and designing culturally appropriate interventions to target identified risk groups.

5. *Address barriers to implementation.* A further understanding of how to most effectively scale up interventions and assess and monitor outcomes is critical. There is a need to understand the behavioral factors that limit utilization of prevention recommendations, including behaviors of serodiscordant couples, HIV stigma, and gender-related barriers to prevention. Greater priority should be placed on social research to inform the development of community level prevention programs, including removing policy, programmatic, financial, and management barriers to utilization of services and implementation of effective prevention programs.

6. *Conduct international collaborative studies.* International collaborative studies in countries with high rates of new infections provide unique opportunities for HIV research and invaluable information for the HIV field in general, as well as for the regions in which these studies have been conducted. Although research findings indicate an overlap in the goals identified by the different research groups, it has been noted that the studies differed in methodology and data representation. Conducting a meta-analysis of the data from different prevention research using a unified format and parameters was proposed and would be an important task.

The seminar highlighted studies that were conducted by the Prevent FAS Research Group, SPSU-OUHSC research collaboration, Yale University, St. Petersburg Pavlov State Medical University, the City AIDS Center, and other institutions. The discussion concluded with the recognition that high HIV transmission rates in the region, along with St. Petersburg's strong academic traditions and the availability of skilled researchers, provide opportunities for flourishing international collaborative studies and establishing productive long-term collaborations. The seminar provided an excellent platform for information exchange, building sustainable research capacity in interdisciplinary HIV research in Russia, and integrating research efforts with the international research community to contribute to HIV prevention research throughout the world.

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