

Psychosocial needs, mental health, and HIV transmission risk behavior among people living with HIV/AIDS in St Petersburg, Russia

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Objectives: The number of new HIV infections in Russia has doubled annually since 1996. A total of 232 424 HIV infections have been officially recorded but the actual number probably exceeds one million. Very little is known about the social, psychological, behavioral, and health care service access of persons living with HIV in Russia.

Design: A cross-sectional sample of 470 persons with HIV/AIDS recruited in 2002 using a representative sampling plan in major St. Petersburg HIV care and service agencies.

Methods: Participants completed anonymous self-administered questionnaires that elicited detailed information about social and psychological characteristics, HIV serostatus disclosure and discrimination experiences, and risk practices since learning of their HIV positive status.

Results: Most participants were young (mean age, 25.3 years), knew of their HIV positive status for about 2 years, and had histories of injecting drug use as well as sexual risk behavior. A large proportion reported encountering discrimination including being forced to sign documents acknowledging their HIV status (47.9%), refusal of general health care (29.6%), being fired from their jobs (9.9%), and being forced from their family homes (9.0%). Over one-third had probable clinical depression. Most remained sexually active since learning of their HIV positive serostatus, approximately half engaged in unprotected sex with HIV negative partners, and condoms were not used one-third of the time with discordant partners. A majority of injecting drug users in the sample still shared needles.

Conclusions: HIV-infected persons in Russia experience a wide range of social, psychological, and care access problems. Improved services are urgently needed for persons living with HIV/AIDS in Russia.

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AIDS 2003, **17**:2367–2374

Keywords: HIV, AIDS, Russia, discrimination, sexual behavior, drug injection, mental health

Introduction

HIV/AIDS has emerged only recently as a grave and wide-scale public health threat in republics of the former Soviet Union. The Soviet period was characterized by conservative, authoritarian state controls over

private behavior, limitations on personal freedom, and harsh enforcement of policies related to the control of drug use, sexually transmitted diseases, and cultural values. Following the collapse of the Soviet system, most post-socialist countries have experienced economic crisis or stagnation, social hardship, sexual value

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Received: 3 December 2002; revised: 3 April 2003; accepted: 15 April 2003.

DOI: 10.1097/01.aids.0000076355.20434.7b

liberalization, greatly increased prevalence of drug use and sexually transmitted diseases, and collapse of the public health infrastructure.

Until the mid-1990s, fewer than 200 HIV infections were diagnosed annually in Russia [1]. New cases officially recorded began doubling each year in 1996, and a total of 232 424 infections have now been officially diagnosed [2]. Russian national and international sources estimate that the actual number of infections is in the range 1 million to 2 million [3–5]. Most HIV infections in Russia are diagnosed among persons aged less than 25 years [6].

The urgent need for HIV prevention programs in post-socialist countries of central and eastern Europe has been widely noted [6–11]. This article reports on a study of the social, psychological, and behavioral characteristics of persons in Russia living with HIV, a population almost totally neglected in the published literature. Studies undertaken in the west before the advent of advanced antiretroviral therapies often showed high levels of depression, low perceived social support, and high levels of anxiety among persons with HIV/AIDS [12–15]. In addition, while most persons aware of their HIV-positive serostatus refrain from unprotected activities, a large number do not [16–18].

There have been few wide-scale governmental AIDS education programs in Russia. Misconceptions about HIV transmission through casual contact are common [7,10]. HIV to date has predominantly affected injecting drug users (IDU), men who have sex with men (MSM), commercial sex workers, and other stigmatized groups [6,8]. Negative social attitudes towards marginalized populations, policies mandating the testing of ‘high-risk’ groups, and limited legal protections based on HIV status may exacerbate stigma, increase vulnerability to discrimination, and complicate the social and psychological adjustment of persons living with HIV/AIDS [19].

Methods

Participants and recruitment venues

The study was carried out in 2002. A total of 470 HIV-infected participants from five St. Petersburg health care and social service agencies privately completed anonymous self-administered survey measures requiring 40–60 min. Of the individuals approached to participate 93% agreed. The sample sizes reported in this article vary depending on the analysis. In most cases, this was due to missing data, inconsistent responses, and skipped responses. For the psychological scales (CES-D, STAI, and SPS), participant responses were retained and means for those items were used in analysis if no more than two items were skipped. If

more responses were omitted, that respondent was omitted from the analysis for that scale.

Measures

Demographic characteristics

The measure requested information about respondents’ age, partnership status, education level, and whether they were presently studying or working. Participants described their sexual orientation using a five-point Likert scale, and indicated how long they knew of their HIV positive status. In addition, participants described how they believed they contracted HIV.

HIV disclosure and discrimination

Participants indicated to whom they disclosed their positive HIV status, whether their HIV testing was with consent, and whether they believed health or official authorities gave others information about their HIV status without permission. The measure listed 12 situations representing potential types of discrimination related to employment, health care, and breach of confidentiality. Participants reported how often they encountered each situation.

Depression

The Center for Epidemiological Studies of Depression Scale (CES-D; [20,21]) consists of 20 statements that tap cognitive, affective, and somatic aspects of depression that do not overlap highly with symptoms of HIV infection [22]. Respondents used 4-point scales to indicate on how many days of the past week each depressive feeling occurred (sample item: ‘I had crying spells’) (Cronbach’s alpha, 0.87).

State anxiety

State anxiety was assessed with the State-Trait Anxiety Inventory, Form Y-1 (STAI;[23]), a measure that asks respondents to use 4-point scales to indicate how much 20 statements describe feelings indicative of current anxiety (sample item: ‘I am tense’). STAI scores range from 20 to 80 (Cronbach’s alpha, 0.87).

Social support

The Social Provisions Scale (SPS; [24,25]) has 24 items that measure perceived social support (sample item: ‘There are people I can depend on to help me if I really need it’). Respondents used 4-point scales to indicate level of agreement with each statement (score range, 24–96). In prior studies with HIV-infected persons, SPS scores predicted depression and continued high-risk behavior [12] and also improved following psychotherapy [26] (Cronbach’s alpha, 0.91).

Sexual behavior

Respondents first indicated their number of same- and different-gender sexual partners for their lifetimes and also since learning of their HIV positive status. All respondents were asked whether they had any vaginal

or heterosexual anal intercourse, and men indicated whether they had any homosexual anal intercourse, first with seroconcordant partners and then with partners of HIV negative or unknown status since learning they were HIV-positive. Participants used a percentage scale to mark how often condoms were used. Finally, respondents reported whether they had a sexually transmitted disease (STD) since learning of their HIV positive status.

Drug use and injection risk behavior

Participants who ever injected drugs were asked how often they injected during the past 3 months. Those who reported any recent drug injection indicated how often they shared needles.

Statistical methods

The total sample ($n = 470$) was broken down by gender (males, $n = 275$; females, $n = 194$). To create risk exposure categories, participants were defined as IDU if they ever used injected drugs and as MSM if they were males who reported any lifetime sexual activities with men. Based on these behaviors, four mutually exclusive risk exposure subgroups were constructed: persons who were neither IDU nor MSM ($n = 64$); IDU who were not MSM ($n = 326$); MSM who were not IDU ($n = 35$); and IDU who were also MSM ($n = 39$). (One participant did not indicate sexual orientation and six participants could not be classified according to injecting drug use because of missing data.)

The t-test compared gender groups with respect to age and psychosocial scales. The Mann-Whitney rank test compared gender groups with respect to number of sexual partners. The chi-square test or chi-square test for trend was used to analyze non-numeric data. For sexual risk behavior subgroup comparisons, a univariate analysis of variance was first performed to determine whether there was a significant overall difference among the four subgroups. If so, multiple comparison tests determined which individual means differed at $P = 0.05$ or lower. These subgroup comparisons were made for psychosocial scale variables and the sexually transmitted disease history variable.

Results

Demographic characteristics

Table 1 shows demographic characteristics of the entire sample, by gender, and by risk exposure subgroup. The average age of study participants was in the mid-20s, although MSM who were not IDU were primarily in their mid-30s. Eighty-six percent of participants were unmarried and most did not have children. The majority did not have education beyond high school

and fewer than half were employed. Eighty-six percent of non-IDU MSM identified themselves as homosexual or bisexual; MSM who were IDU were more likely to identify themselves as heterosexual even though they had sex with men.

With respect to participants' attributions about how they contracted HIV, 60% of participants ($n = 283$) thought it was due to sharing needles, 21% ($n = 98$) believed they became infected through heterosexual intercourse, and 8% ($n = 37$) though homosexual intercourse. The remaining participants (9%, $n = 41$) believed that they became infected during medical procedures or were not sure how they became infected.

Social aspects of living with HIV/AIDS

As Table 1 shows, participants overall knew about their HIV positive status for a mean of 25.0 months (median, 16.0). MSM who were not also IDU knew of their HIV positive status for the longest period (mean, 68.1 months; median, 65.0) and heterosexual IDU the shortest period (mean, 17.8 months; median, 14.0). Respondents most often shared information about their HIV status with close family members (77%, $n = 360$), close friends (60%, $n = 282$), and other HIV positive people (46%, $n = 218$). With respect to circumstances surrounding testing, 68% of participants ($n = 321$) said that their testing was voluntary, 28% ($n = 132$) were tested without their knowledge, and 3% ($n = 14$) said testing was forced. Twenty-six percent ($n = 120$) of participants believed health care or official authorities reported their HIV status to others without first seeking consent.

Table 2 shows the prevalence of discrimination events. Nearly half of participants said they were forced by physicians or police to sign written acknowledgment of their HIV positive status, used to create evidence that may form the basis for criminal charges against those suspected of putting others at risk. Forty-four percent of participants were forced by physicians and 16% by police to provide information about their sexual or drug use partners. Nearly 30% of persons were refused general health care, and 29% were isolated from other patients in a hospital or clinic because of their HIV status. One in 10 respondents had been fired from their jobs or forced by family members to leave their homes because of their HIV positive status. Fifteen percent of persons had been refused health care for HIV disease, dental care, or employment.

Psychosocial adjustment of persons living with HIV/AIDS

Table 3 presents psychosocial scale and sexual behavior findings for the sample as a whole, by gender, and by subsample. The CES-D mean score was 19.9 ($n = 318$). Using cutoffs for interpreting levels of depression [20],

Table 1. Demographic Characteristics and Length of Serostatus Knowledge in the HIV Positive Sample in St Petersburg, Russia

Variable	Entire sample (n = 470) ^a	Subsamples by gender		Subsamples by population			
		Male (n = 275)	Female (n = 194)	Non-IDU/ non-MSM (n = 64)	IDU/ non-MSM (n = 326)	MSM/ non-IDU (n = 35)	IDU/MSM (n = 39)
Age [mean (median)]	25.3 (24.0)	26.3 (24.0)	23.9 (22.0)	28.3 (25.0)	23.5 (23.0)	36.1 (35.5)	24.5 (24.0)
Presently married [% (n)]	14 (67)	11 (30)	19 (37)	27 (17)	13 (42)	9 (3)	13 (5)
Have children [% (n)]	22 (102)	17 (47)	28 (55)	36 (23)	17 (55)	31 (11)	23 (9)
Education level [% (n)]							
High school not completed	23 (110)	25 (68)	22 (42)	10 (6)	28 (91)	6 (2)	26 (10)
Completed high school	47 (221)	47 (129)	47 (91)	36 (23)	50 (160)	37 (13)	59 (23)
Technical school completed	19 (90)	15 (42)	25 (48)	25 (16)	20 (65)	17 (6)	8 (3)
University completed	9 (41)	11 (30)	6 (11)	27 (17)	2 (7)	31 (11)	8 (3)
Postgraduate completed	1 (4)	1 (3)	1 (1)	2 (1)	0 (0)	9 (3)	0 (0)
Presently studying [% (n)]	7 (33)	6 (15)	9 (18)	10 (6)	8 (24)	3 (1)	6 (2)
Presently working [% (n)]	44 (207)	50 (139)	34 (67)	62 (39)	40 (127)	50 (17)	54 (21)
Number of months since HIV positive status known [mean (median)]	25.0 (16.0)	26.1 (17.0)	23.5 (14.0)	37.4 (17.0)	17.8 (14.0)	68.1 (65.0)	21.6 (18.5)
Sexual orientation [% (n)]							
Exclusively heterosexual	73 (341)	72 (197)	74 (143)	82 (51)	86 (269)	6 (2)	47 (18)
Primarily heterosexual	9 (44)	8 (21)	12 (23)	10 (6)	8 (24)	9 (3)	26 (10)
Bisexual	8 (37)	7 (20)	9 (17)	3 (2)	6 (19)	20 (7)	24 (9)
Primarily homosexual	2 (11)	4 (10)	1 (1)	2 (1)	0 (1)	17 (6)	0 (0)
Exclusively homosexual	4 (21)	8 (21)	0 (0)	3 (2)	0 (0)	49 (17)	3 (1)

^aSample includes one participant of unspecified gender. Subsample populations exclude six participants with unspecified IDU history. IDU, Injecting drug users; MSM, men who have sex with men.

Table 2. Types of discrimination based on HIV positive status reported by participants (n = 470)^a.

Discrimination Situation	Ever encountering situation [% (n)]	Participants reporting discrimination [% (n)]		
		Once	Several times	Systematically
Forced by police to provide information about sexual or drug use partners	8.2 (35)	5.2 (22)	2.6 (11)	0.5 (2)
Forced by police to provide personal information about oneself	16.2 (68)	11.7 (49)	4.5 (19)	0.0 (0)
Forced by physicians to provide information about sexual or drug use partners	44.0 (191)	25.6 (111)	15.2 (66)	3.2 (14)
Refused general health care	29.6 (125)	16.5 (70)	10.2 (43)	2.8 (12)
Refused health care for HIV disease	16.7 (70)	9.3 (39)	5.3 (22)	2.2 (9)
Refused dental care	15.6 (65)	6.7 (28)	6.0 (25)	2.9 (12)
Isolated from other patients in a hospital or clinic	29.1 (123)	19.6 (83)	5.7 (24)	3.8 (16)
Forced by physicians or police to sign a statement declaring HIV positive status	47.9 (203)	37.7 (160)	8.0 (34)	2.1 (9)
Refused a job offer	15.0 (62)	8.3 (34)	5.3 (22)	1.5 (6)
Fired from a job	9.9 (41)	6.7 (28)	1.9 (8)	1.2 (5)
Forced to leave one's house by family members	9.0 (37)	6.1 (25)	1.5 (6)	1.5 (6)

^a Between 46 and 58 participants did not answer a given statement and are omitted from the percentage calculation for that item.

60.4% of persons (n = 192) scored at or above 16, the CES-D indicator of possible clinical depression, and 36.5% (n = 116) scored at or above 23, indicating probable clinical depression and major depressive symptomatology. The mean STAI anxiety score was 45.8 (n = 412). Of the participants, 58.5% (n = 241) scored at or above 43, comparable to medical patients with psychiatric components to their health problems [23]. Forty-two percent of participants (n = 173) scored at or above 48 on the STAI, scores comparable to those found among psychiatric inpatients [23]. Finally, the mean SPS total score for this sample was 74.1 (range, 44–96; n = 361). This mean score is similar to the levels of social support found in a sample from the USA of HIV positive persons seeking mental health services before combination therapies became available [26].

Table 3 shows statistically significant mean scale differences between genders and also among the four risk exposure subgroups. Females' state anxiety scores were significantly higher than those of males ($P = 0.04$). In addition, non-MSM IDU reported significantly higher perceived social support than IDU who were also MSM ($P < 0.05$).

Transmission risk behavior among persons living with HIV/AIDS

Fourteen percent of participants in the entire sample reported having an STD since learning of their HIV positive status. STD were reported less often ($P < 0.05$) by persons who were neither IDU nor MSM (2%) than by persons in the other population subgroups (range, 8–20%).

Sexual behavior partnerships

As Table 3 shows, participants in the overall sample had a mean of approximately 40 (median, 15) opposite-gender partners in their lifetimes. MSM who were not IDU had a mean of over 150 (median, 30) lifetime

male partners, although MSM IDU had fewer male partners.

Since learning of their HIV positive status, participants in the overall sample had a mean of approximately six (median, one) opposite-gender partners, and non-IDU MSM had a mean of 36 (median, three) male partners. With respect to the serostatus of their partners, members of the entire sample reported a mean of three (median, one) HIV positive opposite-gender partners; males had a significantly greater ($P = 0.02$) number of opposite-gender HIV positive partners than did females. Participants in the overall sample also had a mean of approximately four (median, none) opposite-gender partners whose HIV status was negative or unknown. MSM who were not IDU reported means of 22 (median, one) and 17 (median, 0.5) same-gender HIV concordant and discordant partners respectively.

Sexual behavior with serodiscordant partners

Table 3 also presents data concerning participants' sexual behavior practices with partners whose HIV status was negative or was unknown since learning of their own infection. Of the sample members, 56% engaged in sex with opposite-gender serodiscordant partners. Of them, over half (55%) had some unprotected vaginal or anal intercourse, and approximately one-third of all intercourse acts were unprotected. A significantly higher percentage of females (63%) than males (48%) had engaged in unprotected intercourse with discordant partners ($P = 0.05$).

Among MSM who were not also IDU, 57% had anal sex with serodiscordant male partners since learning of their own positive status. Almost half (48%) of them had some unprotected anal sex with men, and the 25% of their anal intercourse was unprotected. IDU who were also MSM less often engaged in anal intercourse with serodiscordant male partners than MSM who were not also drug injectors.

Table 3. Psychosocial and sexual behavior characteristics of the HIV positive sample in St Petersburg, Russia.

Variable	Entire sample (n = 470) ^a	Subsamples by sex ^a		Subsamples by population ^a			
		Males (n = 275)	Females (n = 194)	Non-IDU/non-MSM (n = 64)	IDU/non-MSM (n = 326)	MSM/non-IDU (n = 35)	IDU/MSM (n = 39)
Psychosocial scales							
CES-D [mean (SD)]	19.9 (10.5)	19.0 (10.2)	21.0 (10.7)	17.9 (12.0)	20.1 (10.2)	18.4 (8.2)	22.7 (12.2)
Social Provisions [mean (SD)]	74.1 (9.4)	73.4 (9.8)	75.1 (8.8)	72.7 (8.4)	75.0 (9.0)**	73.6 (12.0)	69.7 (10.7)*
Anxiety [mean (SD)]	45.8 (11.0)	44.8 (10.6)*	47.1 (11.5)**	45.4 (10.9)	46.0 (11.1)	42.9 (11.1)	47.8 (10.8)
STD history since HIV diagnosis							
STD since learning of HIV positive status [% (n)]	14% (64)	12% (33)	16% (31)	2% (1)*	16% (51)**	20% (7)**	8% (3)**
Sexual behavior in partnerships							
Number of the lifetime partners [mean (median)]							
Opposite gender	39.9 (15.0)	39.1 (18.0)	41.2 (12.0)	21.9 (10.0)	43.1 (16.0)	19.6 (5.0)	64.3 (16.0)
Same gender (males only)	–	24.2 (0.0)	–	–	–	150.8 (30.0)	17.3 (2.0)
Number of sexual partners since learning of HIV positive status [mean (median)]							
Opposite gender	5.9 (1.0)	4.6 (1.0)	7.8 (1.0)	2.7 (1.0)	6.5 (2.0)	3.4 (0.0)	7.3 (2.0)
Same gender (males only)	–	18.1 (1.0)	–	–	–	36.0 (3.0)	3.6 (1.0)
Number of HIV negative partners since learning of HIV positive status [mean (median)]							
Opposite gender	3.9 (0.0)	2.2 (0.0)	6.1 (0.0)	2.2 (0.0)	4.4 (0.0)	1.8 (0.0)	4.2 (0.0)
Same gender (males only)	–	9.5 (0.0)	–	–	–	17.7 (0.5)	1.2 (0.0)
Number of HIV positive partners since learning of HIV positive status [mean (median)]							
Opposite gender	3.0 (1.0)	3.4 (1.0)**	2.4 (1.0)*	1.4 (1.0)	3.1 (1.0)	4.0 (0.0)	4.5 (1.0)
Same gender (males only)	–	12.1 (1.0)	–	–	–	22.0 (1.0)	3.8 (1.0)
Sexual practices with HIV negative or status-unknown partners since learning of HIV positive status							
Engaging in sex with an HIV negative partner [% (n)]							
Vaginal or anal sex, opposite gender partner	50 (237)	50 (137)	52 (100)	55 (32)	58 (175)	19 (6)	69 (24)
Anal sex, same gender partner (males only)	–	11 (31)	–	–	–	57 (20)	18 (6)
Any unprotected intercourse with an HIV negative partner							
Vaginal or anal sex, opposite gender partner	55 (124)	48 (65)*	63 (59)**	59% (19)	55 (95)	57 (4)	46 (11)
Anal sex, same gender partner (males only)	–	52 (16)	–	–	–	48 (10)	67 (4)
Mean [% (SD)] of intercourse when condoms were used with an HIV-negative partner							
Vaginal or anal sex, opposite gender partner	65.2 (4.1)	69.1 (4.0)	59.8 (4.2)	62.4 (3.8)	64.4 (4.2)	60.0 (4.9)	76.2 (3.6)
Anal sex, same gender partner (males only)	–	66.4 (4.1)	–	–	–	75.2 (3.6)	52.9 (4.5)

^aSample includes one participant of unspecified gender. Percentages for risk behavior and condom use are conditional and include only participants who engaged in that act. The value associated with superscript (*) is significantly lower ($P < 0.05$) than the value associate with superscript (**). IDU, Injecting drug users; MSM, men who have sex with men; SD, standard deviation; STD, sexually transmitted disease.

Multivariate predictors of number of serodiscordant sexual partners

The presence of much higher means than medians for many sexual risk variables suggests that a modest proportion of HIV-infected persons may be most likely to engage in continued high-risk activities. The sample was divided into groups of participants that had two or fewer, versus three or more, sexual partners whose HIV status was negative or unknown. A stepwise logistic regression was performed to model the 'number of partners' classification. It revealed that being an MSM (step 1, coefficient, 0.862; $P = 0.03$), having a lower state anxiety score (step 2, coefficient, -0.055 ; $P = 0.001$), being more depressed (step 3, coefficient, 0.057; $P = 0.001$), and not presently being in a primary relationship (step 4, coefficient, -0.548 ; $P = 0.05$) were independent predictors of larger number of discordant partnerships. This model correctly predicted 55% of participants who had three or more discordant partners and 76% of those with two or fewer partners. (Sample size for the logistic regression was 245 because missing data on any variable excluded a participant from this analysis.)

Drug injection and needle-share practices

Of the 349 IDU in the sample 164, had injected drugs during the past 3 months. Thirty-two percent ($n = 110$) of IDU injected drugs at least weekly. Thirty percent ($n = 104$) had shared needles at least once during the past 3 months, and almost half of them ($n = 46$) shared needles at least once per week.

Discussion

The current study's findings show that HIV discrimination experiences are common in Russia. Large numbers of participants said they were forced to sign written documents acknowledging their HIV positive status; many had been denied general health care, HIV health care, and dental care, and one in 10 participants were fired from jobs or forced by family to leave their houses. Campaigns are needed to counter negative public attitudes towards persons with HIV/AIDS, to reduce stigma, to correct public misconceptions about how HIV is transmitted, and to create policies protecting the rights of persons living with HIV/AIDS.

Participants showed very high psychological distress levels. Over one-third of the Russian sample exceeded cutoffs for probable clinical depression, and over 40% had state anxiety levels comparable to those found in samples of psychiatric patients. The findings are consistent with earlier studies on the prevalence of psychological distress among persons living with HIV in western countries when HIV/AIDS could not be successfully treated [12,22,26]. Enhanced HIV mental

health services are needed by a large proportion of those in Russia with HIV infection.

Most HIV positive participants remained sexually active and many still engaged in sexual and injection-related behaviors that confer high risk for exposing the individual to secondary HIV/STD infections and also for transmitting HIV to others. Only half of males consistently used condoms in their intercourse acts with partners of negative or unknown serostatus. Of great concern is the high proportion of HIV-infected drug users who still frequently share needles. Ongoing risk reduction counseling for persons with HIV/AIDS is needed and should emphasize the need to avoid unprotected sex and needle sharing.

This study has several limitations. All participants were recruited at HIV care agencies in St. Petersburg. These findings may not be representative of HIV-infected persons in other areas of Russia or those not in any HIV care systems. Although this study utilized a self-administered anonymous questionnaire, one cannot rule out the possibility of biased self-reports.

The development of a widescale HIV epidemic in Russia was not anticipated and the needs of persons with HIV/AIDS have not yet been well addressed. At present, only a very small number of HIV-infected persons in Russia receive advanced antiretroviral therapy regimens. It will be critical to expand the capacity of Russia's health care services infrastructure – already in poor condition – to cope with the additional demands of HIV/AIDS care provision and to use advanced antiretroviral drugs.

Acknowledgements

The authors appreciate the assistance of N. D. Panchenko, President of the Society of People Living with HIV/AIDS, who coordinated the fieldwork. We also thank the St Petersburg Municipal Hospital of Infectious Diseases No.30 named after P.S. Botkin, the Municipal Hospital of Infectious Diseases No.10, St Petersburg AIDS Centre, the Self-Support Group of People Living with HIV/AIDS, D.N. Mescheryakov, and R.A. Amirkhanian for their support and cooperation.

Sponsorship: Supported by Center Grant #P30-MH57226 from the United States National Institute of Mental Health.

References

1. Pokrovski VV. *Report of the Russian Federal Centre for Prevention of AIDS*. Moscow, July 2000.
2. Federal Centre for AIDS Prevention of Russia. *HIV infection in Russia*. Moscow: March 2003.

3. United States Intelligence Council. *The Global Infectious Disease Threat and its Implications for the United States*. Washington DC: United States Department of State; 2000.
4. Pokrovski VV. *Report of the Russian Federal Center for Prevention and Treatment of AIDS*. Moscow: 1 July 1 2002.
5. United States National Intelligence Council. *The Next Wave of HIV/AIDS: Nigeria, Ethiopia, Russia, India, and China*. Washington DC: United States Department of State; September 2000.
6. UNAIDS. *Fact Sheet: HIV/AIDS in the Newly Independent States*. Geneva: UNAIDS/WHO Joint Programme on HIV/AIDS; December 2000.
7. Amirkhanian YA, Kelly JA, Issayev DD. **AIDS knowledge, attitudes, and behavior in Russia: Results of a population-based, random-digit telephone survey in St. Petersburg.** *Int J STD AIDS*, 2001, **12**:50–57.
8. Kelly JA, Amirkhanian YA. **The newest epidemic: a review of HIV/AIDS in Central and Eastern Europe.** *Int J STD AIDS* 2003, **14**:361–371.
9. Amirkhanian YA, Kelly JA, Kukharsky AA, Borodkina OI, Gran-skaya JV, Dyatlov RV, *et al.* **Predictors of HIV risk behavior among Russian men who have sex with men: an emerging epidemic.** *AIDS* 2001, **15**:407–412.
10. Amirkhanian YA, Tiunov DV, Kelly JA. **Risk factors for HIV and other sexually transmitted diseases among adolescents in St. Petersburg, Russia.** *Family Planning Perspectives* 2001, **33**: 106–112.
11. Lunin I, Hall TL, Mandel JS, Key J, Hearst N. **Adolescent sexuality in St. Petersburg, Russia.** *AIDS* 1995, **9**(Suppl):550–560.
12. Kelly JA, Murphy DA, Bahr GR, Koob JJ, Morgan MG, Kalichman SC, *et al.* **Factors associated with severity of depression and high-risk sexual behavior among persons diagnosed with human immunodeficiency virus (HIV) infection.** *Health Psychol* 1993, **12**:215–219.
13. Ostrow DG, Monjan A, Joseph J, VanRaden M, Fox R, Kingsley L, *et al.* **HIV-related symptoms and psychological functioning in a cohort of homosexual men.** *Am J Psychiatry* 1992, **146**:737–742.
14. Marzuk PM, Tierney H, Tardiff K, Gross EM, Morgan EB, Hsu M, *et al.* **Increased risk of suicide in persons with AIDS.** *JAMA* 1988, **259**:1333–1337.
15. Kelly JA, Murphy DA. **Psychological interventions with AIDS and HIV: Prevention and treatment.** *J Consult Clin Psychol* 1992, **60**:576–585.
16. Singh BK, Koman JJ, Catan VM, Souply KL, Birkal RC, Golaszewski TJ. **Sexual risk behavior among injection drug-using human immunodeficiency virus positive clients.** *Int J Addictions* 1993, **28**:735–747.
17. Van der Straten A, Gomez CA, Saul J, Quan J, Padian N. **Sexual risk behaviors among heterosexual HIV discordant couples in the era of post-exposure prevention and viral suppression therapy.** *AIDS* 2000, **14**:F47–F54.
18. Blumenthal RN, Kral AH, Gee L, Lorvick J, Moore L, Srol K, *et al.* **Trends in HIV seroprevalence and risk among gay or bisexual men who inject drugs in San Francisco, 1988 to 2000.** *J Acquir Immune Def Syndr* 2001, **28**:264–269.
19. Parker R, Aggleton P. **HIV/AIDS-Related Stigma and Discrimination: a Conceptual Framework and an Agenda for Action.** New York: The Population Council; May 2002.
20. Radloff LS. **The CES-D Scale: a self-report depression scale for research in the general population.** *Appl Psychol Measure* 1977, **1**:385–401.
21. Radloff LS, Locke BZ. **The community mental health assessment survey and CES-D Scale.** In *Community Surveys of Psychiatric Disorders*. Edited by Weissman MM, Myers JK, Ross CE. New Brunswick, NJ: Rutgers University Press, 1986:177–187.
22. Kalichman SC, Rompa D, Cage M. **Distinguishing between overlapping somatic symptoms of depression and HIV disease in people living with HIV/AIDS.** *J Nervous Mental Dis* 2000, **188**:662–670.
23. Spielberger CD. *State-Trait Anxiety Inventory (Form Y)*. Palo Alto, CA: Consulting Psychologists Press; 1983.
24. Cutrona CE. **Ratings of social support by adolescents and adult informants: degree of correspondence and prediction of depression symptoms.** *J Personality Soc Psychol* 1989, **57**:723–730.
25. Cutrona CE, Russell DW. **The provisions of social relationships and adaptation to stress.** *Adv Personal Relationships* 1987, **1**:37–67.
26. Kelly JA, Murphy DA, Bahr GR, Kalichman SC, Morgan MG, Stevenson LY, *et al.* **Outcome of cognitive-behavioral and support group brief therapies for depressed HIV-infected persons.** *Am J Psychiatry* 1993, **150**:1679–1686.