

**EPIDEMIOLOGICAL SURVEILLANCE FOR HIV INFECTION IN THE
REPUBLIC OF UZBEKISTAN**

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Currently, in Uzbekistan, the HIV epidemic is in a concentrated stage and is primarily spreading among vulnerable population groups that are at the highest risk of HIV infection. These groups include people who inject drugs (PWID), individuals engaged in commercial sex work (CSW), and men who have sex with men (MSM).

In recent years, PWID accounted for 10% of HIV-infected individuals, indicating that injection drug use is one of the leading modes of HIV transmission in Uzbekistan. To determine trends in the HIV epidemic in the country, a method of surveillance epidemiological monitoring of HIV infection has been implemented. This method has allowed for the identification of the prevalence of HIV infection among surveyed groups, assessment of the effectiveness of prevention programs, determination of the stage of the epidemic, and forecasting of the situation in monitored areas. This article is dedicated to the results of this monitoring method.

The study revealed a stable trend of decreasing prevalence of HIV and hepatitis C among PWID, as well as a high level of awareness among PWID about HIV infection and an increase in the proportion of PWID using new syringes for injection, indicating the success of prevention measures. However, the level of risky injection and sexual behavior among PWID remains high, particularly among those under 25 years of age.

The results of the study also suggest that preventive methods with this target group are effective, but more active methods of work are needed, including within harm reduction programs.

Keywords: Surveillance epidemiological monitoring, HIV infection, spread of HIV infection, people who inject drugs, assessment of the effectiveness of prevention programs, determination of the stage of the epidemic, forecasting the epidemic situation in monitored groups.

In Uzbekistan, the HIV epidemic is currently in a concentrated stage and primarily spreads among vulnerable populations that are at the highest risk of HIV infection. These populations include people who inject drugs (PWID), individuals who engage in sex work (ESW), and men who have sex with men (MSM).

In recent years, PWID accounted for 10% of HIV-infected individuals, indicating that injection drug use is one of the leading modes of HIV transmission in Uzbekistan. The spread of HIV among drug users is driven by risky injection practices, particularly the sharing of needles .

Due to the fact that people who inject drugs (PWID) belong to closed and hard-to-reach segments of society, certain difficulties arise in studying and assessing the causes and level of HIV infection

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prevalence. In order to determine the trends in the development of the HIV epidemic among high-risk population groups and other target groups in the country, the method of sentinel epidemiological surveillance of HIV infection was introduced [3]. It allows to determine the prevalence of HIV infection among surveyed groups, assess the effectiveness of preventive programs, determine the stage of the epidemic and predict the situation in the sentinel sites. Summarizing the results of sentinel surveillance on the prevalence of HIV infection and epidemiological analogues of HIV, which have common mechanisms of transmission of pathogens: viral hepatitis C and syphilis, together with an analysis of the dynamics of risky behavior, official statistics, and monitoring of prevention projects, will allow assessing the epidemiological situation on HIV infection and making necessary decisions to prevent the spread of HIV among PWID.

Objective: To study the prevalence of HIV infection, viral hepatitis, syphilis, and risk factors for their transmission among people who inject drugs (PWID) for the development and implementation of effective prevention programs, and their evaluation.

Research tasks:

- Assessment of the prevalence of HIV infection, viral hepatitis, and syphilis among PWID.
- Evaluation of the prevalence of behavioral models and risk factors that determine the probability of HIV, viral hepatitis, and syphilis infection.
- Determination of PWID's awareness of HIV transmission routes and measures to prevent infection.
- Accessibility of HIV prevention tools.
- Coverage of PWID by prevention measures.
- The frequency of PWID seeking medical care when symptomatic for STIs.
- The coverage of PWID by HIV testing.

Materials and methods:

PWID who reported intravenous drug use at least once during the last 12 months, both registered and not registered with a drug dispensary, were included in the study. This group is vulnerable to HIV infection due to their risky injection and sexual behavior. Questionnaires were conducted using a developed questionnaire for PWID. Blood samples were taken from a vein or capillary blood for rapid testing with simultaneous collection of a dry blood spot. The study was conducted for HIV, viral hepatitis, and syphilis. The screening was done in the field using rapid testing, and the dry blood spot samples were further analyzed using enzyme immunoassay at the AIDS Centers. The input of questionnaire data was conducted using the Epi Info program.

Results:

The majority of PWID were middle-aged: 30-40 years (39%) and 40 years and older (47.7%). The age trends of PWID have been consistent over the past years, although there has been a slow shift of PWID from younger to older age groups (over 40 years old). From 2013 to 2021, the national

composition of PWID has remained almost unchanged: every second PWID (on average, 53.7%) is Uzbek. 26.7% of PWID (in 2017 - 36.5%) did not have a specific occupation. In recent years, the percentage of working PWID has been increasing. The marital status of PWID participating in the study has remained virtually unchanged, with 42.7% being married (in 2017 - 42.9%). 13.6% of PWID participating in the study were registered with a narcological dispensary (in 2017 - 28.3% of PWID). Every tenth PWID (10.1%) (in 2017 - 19.1%) was registered with the police.

PWID are at increased risk of tuberculosis. This is due to their weakened immune status as a result of drug use, which can be further exacerbated by the presence of HIV infection. As of 2021, 5.1% of PWID were registered with a tuberculosis dispensary, compared to 5.9% in 2017. Some PWID donate blood. In the past year, 3.4% of PWID reported donating blood, up from 1.5% in 2017. Therefore, it is necessary to strengthen the control measures for selecting donors from populations at high risk of HIV and other blood-borne infections.

In 2021, the proportion of those who injected drugs for less than a year was 29%, from 5 to 10 years - 21.4%, and more than 10 years - 33.3%. The use of homemade opium-based drugs (hanka) by intravenous administration accounted for 13.8%, compared to 7.2% in 2017. Heroin use was 15.0%, down from 28.5% in 2015. Overall, there is a shift in the drug scene, with a gradual replacement of heroin with other injectable drugs.

Over the last month, 37.6% of people who inject drugs (PWID) used drugs on average once a day, 32.7% used them once a week. In recent years, the percentage of PWID injecting drugs at least once a day has increased slightly (44.9% in 2021, 31% in 2013).

One of the key safety indicators for injection behavior among PWID is the use of sterile needles and syringes when injecting drugs. In 2021, 85.9% of PWID used sterile needles and syringes for their last injection (compared to 89.2% in 2017). Dangerous practices are noted: 11% of PWID did not use sterile needles and syringes for their last injection.

PWID over 25 years old are more committed to safe injection behavior than younger PWID.

Group drug use is one of the conditions for the transmission of HIV infection in the PWID population. Here we can talk about networks of PWID, which can consist of one person when PWID always injects alone, or be closed - the composition of the PWID group remains constant; semi-open - the main part of the group remains unchanged, but from time to time other PWID join the group, or open when the group is represented by random partners. In a closed network, HIV spreads only among members of the permanent group, while an open network has a greater probability of both HIV entering the group and exiting it.

The proportion of PWID who used drugs individually was 50.8% (compared to 58.5% of PWID in 2017). Since 2013, the percentage of PWID in this group has decreased by 10%.

The percentage of PWID who injected drugs either with unfamiliar PWID or always in a random group was 12%.

Those with the most risky behavior, who injected drugs with unfamiliar PWID or always in a random group over the last 12 months, accounted for a small percentage - 1.2% (0.5% in 2017). 71.0% of PWID (73.3% in 2017) injected drugs intravenously with people they knew.

In 2021, over the last month, 3.3% of PWID used someone else's syringe, 23.4% shared common utensils, 4.5% transferred drugs from another syringe, 8.3% passed the syringe around, and 12.1% used a syringe refilled by others. The use of someone else's syringe has decreased over the years (12.4% in 2009, 4% in 2015, and 2.3% in 2017). Similarly, such dangerous practices as transferring drugs from another syringe (7.9% in 2009), using common water to clean the syringe (15.3% in 2009), and refilling a syringe with someone else's drug (13.6% in 2009) have also decreased over the years. However, the use of common utensils has increased (14% in 2013), and the dangerous practice of adding blood continues, possibly related to the increase in the production of PWID drugs from poppy.

The use of a common syringe is one of the most dangerous injection practices, as it is one of the main ways of transmitting parenteral infections. The experience of using someone else's syringe increases the risk of HIV infection. According to research, one in ten drug injections is done with a common syringe. Compared to 2017, the risk of transmission through someone else's syringe has doubled. The use of a syringe "around the circle" has also doubled.

Thus, 21.8% of drug injections posed a risk of transmitting HIV infection, viral hepatitis B and C, and other parenterally transmitted infections. The prevalence of dangerous injection behavior among PWID is increasing. Prevention, timely detection, and treatment of STIs are key measures to prevent HIV infection during sexual contact, as the presence of STIs increases the risk of HIV infection multiple times. In 2021, 57.9% of female PWID had unusual genital discharges, and 67.5% experienced pain in the lower abdomen, while 7.9% of female PWID had sores in the genital area. 66.2% of male PWID had discharge from the penis, and 48.1% experienced pain and swelling of the scrotum; 13.4% of male PWID had sores in the genital area. Compared to 2017, abdominal pain in women has increased sixfold, and penile discharge in men has tripled. Meanwhile, sores in the genital area have decreased by 2.8% in women and tripled in men.

Of the PWID who had symptoms of STIs, 15.2% sought medical help from a clinic, and 22.5% sought help from a familiar healthcare worker. The remaining PWID either did nothing (12.7%) or self-medicated (6.4%).

In 2021, a total of 43.5% of PWID were tested for HIV. Compared to 2013, HIV testing among PWID increased by 13.5%, but decreased slightly (by 0.9%) compared to 2017. Of the PWID who were tested for HIV, 93.3% know their test results.

According to the 2021 Survey, the weighted prevalence of HIV among PWID was 2.9%, hepatitis C prevalence was 7.8%, and syphilis prevalence was 2.7%.

The prevalence of HIV and hepatitis C among PWID has decreased from 2004 to 2021.

The prevalence of HIV among female PWID is 1.1% higher than among male PWID. The prevalence of hepatitis C among male PWID is 3.1% higher than among female PWID.

The prevalence of all three infections is higher among PWID over 25 years old compared to younger PWID.

Conclusions: Thus, there is a stable trend of decreasing HIV and hepatitis C prevalence among PWID, a high level of awareness about HIV infection among PWID, and an increase in the

proportion of PWID who use new needles for injection, indicating the success of preventive measures. At the same time, the level of risky injection and sexual behavior among PWID remains high, particularly among those under 25 years old.

The study results also provide grounds to assert that prevention methods for this target group are effective, but the development and implementation of more active methods of work are needed, including within harm reduction programs.

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