

17 "Пределно допустимые концентрации (ПДК) загрязняющих веществ в атмосферном воздухе городских и сельских поселений» / [Электронный ресурс] // Электронный фонд правовой и нормативно-технической документации. URL: <http://docs.cntd.ru/document/556185926> / (дата обращения: 26.02.2021).

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УДК 616.97:616.98

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ИНФЕКЦИИ, ПЕРЕДАВАЕМЫЕ ПОЛОВЫМ ПУТЕМ, В  
КОГОРТЕ ВИЧ-ПОЗИТИВНЫХ ЛИЦ РЕГИОНА С ВЫСОКИМ  
УРОВНЕМ ПОРАЖЕННОСТИ НАСЕЛЕНИЯ ВИРУСОМ  
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SEXUALLY TRANSMITTED INFECTIONS IN A COHORT OF HIV-  
POSITIVE PEOPLE IN A REGION WITH A HIGH INCIDENCE OF  
HUMAN IMMUNODEFICIENCY VIRUS IN THE POPULATION**

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**Аннотация.** В статье представлена оценка уровня и структуры заболеваемости инфекциями, передаваемыми половым путем (ИППП) за период 2009-2018 гг. в популяции ВИЧ-положительных жителей региона России с высокой превалентностью ВИЧ-инфекции (Свердловская область). Установлено, что показатель заболеваемости ИППП среди людей, живущих с ВИЧ (ЛЖВ), имеет устойчивый тренд к снижению, но продолжает превышать

региональные значения. При этом среди ИППП преобладают заболевания вирусной этиологии. Скрининг на ИППП больным ВИЧ-инфекцией в рамках диспансерного наблюдения в территориальных центрах по профилактике и борьбе со СПИД (ОЦ СПИД) эффективен, и целесообразно его расширение. Высокие показатели заболеваемости бактериальными половыми инфекциями и трихомонозом у ЛЖВ свидетельствуют о распространенной среди них практике рискованного сексуального поведения и пренебрежении мерами индивидуальной профилактики. Своевременная диагностика и лечение ИППП у ЛЖВ – одна из мер по противодействию ВИЧ-инфекции.

**Annotation.** The article presents an assessment of the level and structure of the incidence of sexually transmitted infections (STI) for the period 2009-2018 in the population of HIV-positive residents of the region of Russia with a high prevalence of HIV infection (Sverdlovsk region). It was found that the incidence rate of STIs among people living with HIV (PLHIV) has a steady downward trend, but continues to exceed regional values. At the same time, viral etiology diseases prevail among STIs. Screening for all STIs in patients with HIV is effective within the framework of dispensary observation in the territorial centers for the prevention and control of AIDS (RC AIDS), and it is advisable to expand it. The high incidence rates of bacterial sexually transmitted infections and trichomoniasis in PLHIV suggest the widespread practice of risky sexual behavior among them and the neglect of individual prevention measures. Timely diagnosis and treatment of STIs in PLHIV is one of the measures to counteract HIV infection.

**Ключевые слова:** ВИЧ-инфекция, инфекции, передаваемые половым путем, люди, живущие с ВИЧ.

**Key words:** HIV infection, sexually transmitted infections, people living with HIV.

### **Introduction**

HIV infection is unique in its way because it largely depends on the "classic" bacterial and viral STIs. The presence of erosive and ulcerative defects, inflammatory and dysplastic processes on the skin and mucous membranes, often associated with STIs, inevitably increases the infectivity of the HIV-positive person and the susceptibility of the HIV-negative partner to acquiring HIV during sexual intercourse without means of preventing STIs. The risk degree of HIV transmission / acquisition depends on the nosological of the existing STI. This risk increases 2.3-8.6 times in the presence of syphilis [8], 2.7 times in case of anogenital herpesviral infection (AHVI) [2], 1.9 in case of genital HPV infection [3], 1.5 times in the presence of trichomoniasis [9]. Concomitant gonococcal and chlamydial infections also contribute to both HIV transmission and infection [4]. In this regard, timely diagnosis and treatment of STIs help prevent HIV transmission.

HIV-associated immunodeficiency contributes to the manifestation of previously STIs and infection with new pathogens.

**The aim of the study** is to analyze the incidence rate and structure of STIs in the cohort of PLHIV in the region with a high level of HIV prevalence (Sverdlovsk region, hereinafter referred to as SR) in the period 2009-2018 in comparison with similar indicators of the general population, the study of the age and sex composition of those suffering from co-infection, the assessment of the role of RC AIDS specialists in identifying STIs in PLHIV in the constituent entity.

### Material and methods of research

The analysis of information on forms No. 9, 34, 61 of the RC AIDS, statistical materials "Resources and activities of dermatovenerological medical institutions" for 2009-2018 was carried out. The calculation of the primary morbidity rate of STIs in HIV-positive persons was calculated in terms of 100 thousand PLHIV. When analyzing the time series, the rank aggregation method was used with the allocation of two 5-year periods (2009-2013 and 2014-2018).

### Research results and their discussion

According to the statistical data of the RC AIDS and dermatovenerologic institutions of the SR, since the registration of the first case of HIV infection in the region (1990), two peaks in the incidence of STIs and two increases in HIV infection have been registered (Fig. 1). The first peak in the incidence of HIV infection in the SR (2001) was preceded by an epidemic rise in the incidence, first of gonorrhea (1993), and four years later (1997) - of syphilis. A similar synchronous dynamics was observed in the Russian Federation [1, 5-7].

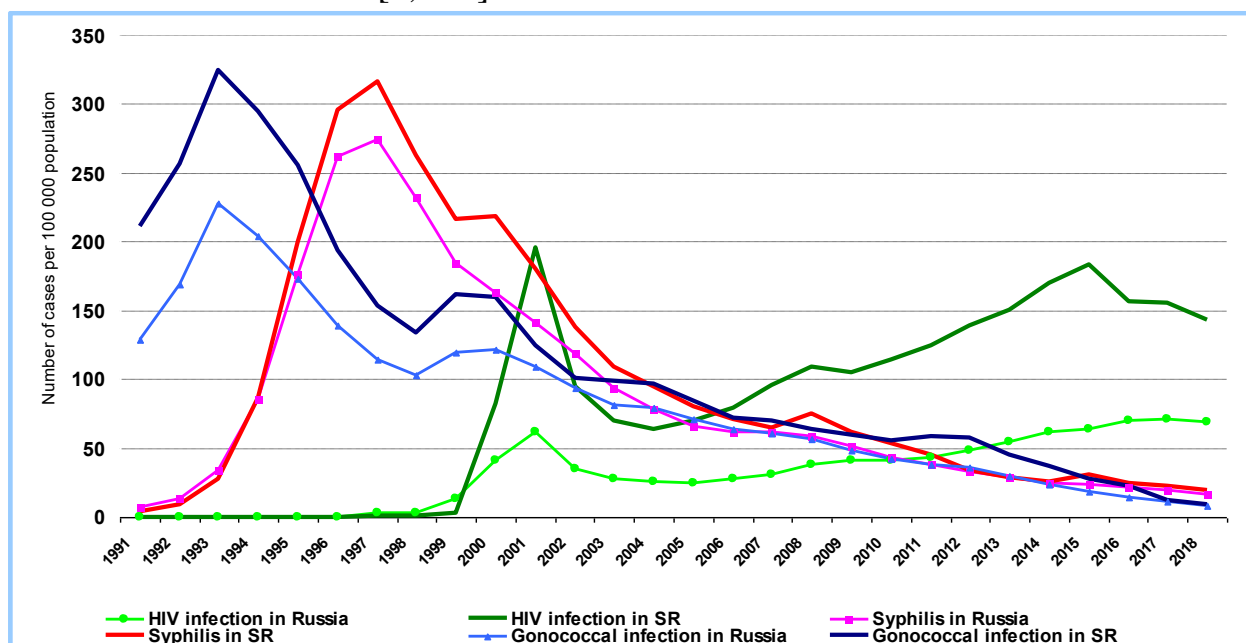


Fig. 1. Dynamics of the incidence of syphilis, gonococcal infection, HIV infection in the Russian Federation and the Sverdlovsk region for 1991-2018

As of December 31, 2020, the SR ranks third among other constituent entities of Russia in terms of the incidence of HIV infection (1875.2 per 100 thousand population), 1.5% of the region's residents are infected. In the SR, as well as in Russia as a whole, since 2016 the sexual transmission of HIV prevails (in 2019 - 70%). The

median (Me) of the annually registered the number of STI cases in PLHIV in the SR was 438.5. Among all newly diagnosed cases of STIs in the region, 3.3% (Me) are persons with co-infection (Me is 2.2% in 2009-2013, 4.6% in 2014-2018).

The incidence rate of STIs among PLHIV in the SR within the period 2009-2018 averaged 820.0 per 100 thousand people living with HIV-positive status. In the rank aggregation format, this indicator reached 984.3 in the first period and 655.8 in the second period (a decrease of 33.4%). Among the residents of the SR, there were 412.8 and 222.8 cases per 100 thousand of the population, respectively (-44.6%).

In 2009-2018 the incidence rate of syphilis among PLHIV averaged ( $M\pm m$ )  $135\pm 23$ , gonococcal infection (GI) -  $105.9\pm 19.7$ , AHVI -  $142.1\pm 13.9$ , trichomoniasis -  $146\pm 14.1$ , anogenital warts (AW) -  $262.8\pm 23.4$  and chlamydial infection (CI) -  $28.2\pm 9.1$  per 100 thousand HIV-positive persons versus  $34.2\pm 4.7$ ,  $37.2\pm 6.3$ ,  $33.3\pm 3.5$ ,  $117.8\pm 15.7$ ,  $40.8\pm 4.7$  and  $57.6\pm 9.9$ , respectively, in the general population of the constituent entity.

In the last year of the study period (2018), the incidence rate of PLHIV with syphilis exceeded regional values 2.9 times, GI and AHVI 2.8 and 5.2 times, trichomoniasis and venereal warts 1.4 and 3.9 times, respectively. Only the incidence rate of CI among PLHIV was 3.9 times lower when compared with the indicators of the general population of the region.

Throughout the entire studied period, the share of AW prevailed in the structure of STIs among PLHIV (Me - 31.7%). In the population of the SR, trichomoniasis occupied the first rank position in 2009-2017 and the incidence of AW also reached leading values in 2018.

Among all cases of co-infection, STIs of viral etiology (AHVI and AW) prevailed, making up in 2009-2018 on average 51% (minimum in 2009 - 43.9% and maximum in 2018 - 67.1%).

Every year, about half of all STI cases in PLHIV are detected by the specialists of the RC. In 2018 according to nosological forms, it was as follows: 30% of patients with GI, 43.2% of syphilis, 53.6% of trichomoniasis, 57.1% of CI, 74.2% of AHVI, 82.7% of patients with AW were detected in RC AIDS.

It is the availability of diagnostic methods that can partly explain the results obtained. The diagnosis of AHVI and AW is known to be established in the overwhelming majority of cases based on clinical manifestations and does not require additional examination. Trichomoniasis and GI are diagnosed by a routine, publicly available method of bacterioscopy, and screening for syphilis is carried out for HIV-positive persons when the diagnosis of HIV infection is established and then annually with dispensary follow-up. On the contrary, the diagnosis of CI requires special research methods (PCR) and is not included in the screening of HIV-infected patients, and therefore the low incidence of CI among PLHIV does not reflect the real situation.

As for gender, since 2011 there has been a steady downward trend in the proportion of men in the structure of HIV / STI patients. If in 2011 men accounted for 61% of the total number of persons with co-infection, then in 2015 - 52.1%, and 2018 - 38.5%. On the contrary, the proportion of women is growing steadily.

However, special attention should be paid to the increase in the proportion of men who have sex with men (MSM) in the total structure of men with syphilis from 12.3% in the first period to 24.5% in the second one. Early forms of syphilis in MSM were diagnosed in 84% of cases versus 61% in heterosexual men. It is these clinical forms of syphilis that represent the greatest epidemiological danger. The prevailing opinion of both MSM and heterosexual men about the safety of orogenital contacts is erroneous and contributes to the spread of STIs. It is necessary to raise awareness of PLHIV, and especially MSM, on the constant and correct use of condoms during anal and orogenital sexual intercourse.

The increase in the life expectancy of PLHIV due to the use of antiretroviral therapy, the detection of new cases of HIV infection in recent years mainly in older age groups led to a 1.7-fold increase in the proportion of patients with co-infection aged 30 years and older in terms of 2009/2018 (from 48.1 to 80.2%).

Among patients with co-infection, both in general and in terms of nosological forms, the proportion of people who were diagnosed with HIV before contracting STIs increases annually. The proportion of such patients in 2009 accounted for 60.2%, in 2015 - 61.9%, and in 2018 reached 91.2%.

The practice of preferential sex with partners with agreed HIV status without the use of condoms (serosorting), pre-exposure prophylaxis of HIV infection and subsequent unprotected sex are factors contributing to the spread of STIs.

#### **Conclusion:**

1. The incidence rate of STIs in the cohort of PLHIV of the Sverdlovsk region in the period 2009-2018 had a steady downward trend, reflecting a similar trend in the general population. At the same time, the incidence of all STIs subject to registration, except for CI, exceeded regional values.

2. In the structure of STIs among PLHIV, diseases of viral etiology (AW, AHVI) predominated, and persons with previously identified HIV infection prevailed among those who became ill.

3. Regular screening of PLHIV for STIs within the framework of dispensary follow-up in the RC AIDS is justified. Moreover, the list of screening needs to be expanded to include molecular biological research methods for GI, CI, AHVI, trichomoniasis to identify asymptomatic forms.

4. The high incidence rates of syphilis, GI and trichomoniasis among patients with previously identified HIV infection indicate the neglect of individual prevention measures by the sick.

5. A comprehensive approach, including timely diagnosis of STIs through regular screening, the widespread use of condoms, development and implementation of preventive programs aimed at changing the model of risky sexual behavior, taking into account sexual orientation and other characteristics inherent in HIV positive persons, the involvement of non-profit organizations working in the field of HIV prevention, "peer" counseling in the implementation of these programs should have the greatest chances of success in combating co-infection.

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УДК 614.88

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