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EPIDEMIOLOGICAL CHARACTERISTICS OF HIV INFECTION IN MULTIDISCIPLINARY HOSPITALS OF A LARGE METROPOLIS (MOSCOW)

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The aim of this study was to evaluate the epidemiological characteristics of patients in multidisciplinary hospitals of a large metropolis (Moscow) and assess the representativeness of the data for estimating current trends in HIV prevalence in Moscow.

Materials and methods. At the first stage of the study, the hospitalised contingent of Moscow multidisciplinary hospitals was characterized, including their socio-demographic data, as well as their affiliation with the profile of specialised medical care. Then, after assessing the representativeness of the sample, the prevalence of HIV infection among the adult Moscow city population was estimated. Continuous variables between groups were compared using Student's t-test. Categorical variables between groups were compared using appropriate criteria (the Fisher's exact test with Bonferroni multiplicity correction and the Pearson's chi-squared test). A p -value <0.05 was considered statistically significant.

Results and discussion. The prevalence of HIV infection in the hospitalised population was 0.39% (95% CI: 0.37–0.41%). The highest HIV prevalence ($p<0.01$) was found in the profiles: Toxicology, Psychosomatics, Purulent surgery, Therapy and Intensive care. The lowest prevalence was noted for the profiles of Oncology, Gynecology and Cardiology. Among all patients in multidisciplinary hospitals with detected HIV infection, the largest proportion was accounted for by residents of Moscow — 51.96%; among newly diagnosed HIV infected patients — by non-resident citizens (43.24%). The estimated number of adult people living with HIV (PLWH) in Moscow was 42 271.

Conclusions. Thus, 96% adult of PLWH in Moscow are aware of their HIV status, which marks the effective work of the health care system on HIV infection in Moscow.

Keywords: HIV-1; PLWH, epidemiology; prevalence; multidisciplinary hospitals

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ЭПИДЕМИОЛОГИЧЕСКАЯ ХАРАКТЕРИСТИКА ВИЧ-ИНФЕКЦИИ В МНОГОПРОФИЛЬНЫХ СТАЦИОНАРАХ КРУПНОГО МЕГАПОЛИСА (г. МОСКВА)

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Целью данного исследования была оценка эпидемиологических характеристик пациентов многопрофильных стационара крупного мегаполиса (Москва) и оценка репрезентативности данных для прогнозирования текущих тенденций распространённости ВИЧ в Москве.

Материалы и методы. На первом этапе исследования была охарактеризована популяция госпитализированных московских многопрофильных больниц, включая их социально-демографические данные, а также принадлежность к профилю специализированной медицинской помощи. Затем, после оценки репрезентативности выборки, была оценена распространённость ВИЧ-инфекции среди взрослого населения г. Москвы. Непрерывные переменные между группами сравнивались с использованием *t*-критерия Стьюдента. Категориальные переменные между группами сравнивались с использованием соответствующих критериев (точный критерий Фишера с поправкой Бонферрони на множественные сравнения и критерий хи-квадрат Пирсона). Значение $p < 0,05$ считалось статистически значимым.

Результаты и их обсуждение. Распространённость ВИЧ-инфекции среди госпитализированных пациентов составила 0,39% (95% ДИ 0,37–0,41%). Наиболее высокая распространённость ВИЧ ($p < 0,01$) была выявлена в отделениях: токсикологии, психосоматики, гнойной хирургии, терапии и интенсивной терапии. Самая низкая распространённость отмечена в отделениях онкологии, гинекологии и кардиологии. Среди всех пациентов многопрофильных больниц с выявленной ВИЧ-инфекцией наибольшую долю составили жители Москвы — 51,96%; среди пациентов с впервые диагностированной ВИЧ-инфекцией — нерезиденты (43,24%). Предполагаемое число взрослого населения, живущего с ВИЧ/СПИД (ЛЖВС) в Москве, составило 42 271.

Заключение. Таким образом, 96% взрослого населения ЛЖВС в Москве осведомлены о своем ВИЧ-статусе, что свидетельствует об эффективной работе системы здравоохранения по борьбе с ВИЧ-инфекцией в Москве.

Ключевые слова: ВИЧ-1; ЛЖВС, эпидемиология; распространённость; многопрофильные больницы

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Introduction

At present, HIV infection remains a global public health issue. Epidemiological monitoring is one of the components of a set of measures to track HIV infection, which allows timely assessment of the epidemic situation and trends in its development, including taking into account various socio-demographic processes and behavioural trends observed in society. Epidemiological monitoring is also aimed at assessing the coverage of the population with prevention, testing and dispensary care, effective treatment and support for HIV infection. Such multifactor dynamic monitoring allows to assess and, if necessary, adjust the effectiveness of management decisions and health care activities in the field of HIV infection¹.

In June 2021, the Joint United Nations Programme on HIV/AIDS (UNAIDS) adopted the 95–95–95 strategy, according to which 95% of people living with HIV (PLWH) should to know their status; 95% of them should receive antiretroviral thera-

py (ART); and 95% of those receiving ART should reach an undetectable viral load. The goal of this strategy is to substantially reduce the emergence and spread of new cases of HIV infections globally and, potentially, to eliminate AIDS by 2030². In order to assess the achievement of the set targets, it is necessary to know the number of PLWH. Given the impossibility of testing 100% of the population (both technically and ethically), UNAIDS estimates this number using all applicable available data, including officially registered cases, as well as sentinel surveillance data from high-risk groups or pregnant women and other data sources. UNAIDS notes that estimates of the number of PLWH based on officially registered cases may be underestimated in settings where voluntary medical advice and HIV testing is limited, while sentinel surveillance data in high-risk populations may lead to overestimates of HIV-1 prevalence in these groups³. Studies of HIV infections in acute care hospitals have noted the possibility of consider-

¹ The Chief State Sanitary Doctor of the Russian Federation. Methodological guidelines MU 3.1.3342–16 «Epidemiological surveillance of HIV infection». Dated 26 February 2016. <https://www.garant.ru/products/ipo/prime/doc/71263114/?ysclid=mcitb03nlg989867065> [Internet]. Accessed on 17.06.2025. (In Russ.).

² The Joint United Nations Programme on HIV/AIDS (UNAIDS). Understanding measures of progress towards the 95–95–95 HIV testing, treatment and viral suppression targets. <https://www.unaids.org/en/resources/documents/2024/progress-towards-95-95-95> [Internet]. Accessed on 17.06.2025. (In Russ.).

³ The Joint United Nations Programme on HIV/AIDS (UNAIDS). Understanding the latest estimates in the 2007 AIDS Epidemic Update Report. https://data.unaids.org/pub/epislides/2007/2007epi_qa_methodologybackgrounder_ru.pdf [Internet]. Accessed on 17.06.2025. (In Russ.).

ing this medical organisation as a sentinel organisation for monitoring of HIV prevalence [1].

The epidemiological monitoring system in the Russian Federation is characterised by high HIV testing coverage: in 2023, a total of 51 002 495 HIV tests were conducted in Russia, representing 64 % of all HIV tests registered in the WHO European Region for that year¹. However, as the volume of testing increases, there is a significant downward trend in HIV incidence and a significant upward trend in HIV prevalence [2]. It should be noted, however, that these indicators may differ in the context of regions, and large cities and industrial centres may contribute significantly to the spread of HIV infection due to high population density, high rates of internal and external migration and urbanisation rates [3]. Thus, monitoring of HIV infection trends in large megacities is an extremely important task.

The aim of this study was to evaluate the epidemiological characteristics of patients in multidisciplinary hospitals within a large metropolis, using Moscow as a case study. Additionally, the study sought to assess the representativeness of the data for estimating current trends in HIV prevalence in Moscow.

Materials and Methods

The source of data for this study was various statistical forms and reports, as well as data from the laboratory information system of the laboratory diagnostics and clinical epidemiology departments at the Moscow City Center for AIDS Prevention and Control (Moscow AIDS Center).

A retrospective study was conducted among patients who received stationary treatment during the period 2022–2024 (6 months) in large multidisciplinary hospitals in Moscow:

1. Sklifosovsky Research Institute for Emergency Medicine («SKLIF»);
2. Moscow City Multidisciplinary Clinical Center «Kommunarka»;
3. City Clinical Hospital No. 15 named after O. M. Filatov.

The source of patient data was the reporting form No. 016/u — «Summary statement of the movement of patients and bed stock of a medical organisation providing inpatient medical care, in day hospital setting».

Each case of HIV infection detection in hospitals was subjected to a comprehensive analysis using the laboratory information system of the laboratory diag-

nostics and clinical epidemiology departments at the Moscow AIDS Center, as well as the Federal Register of persons living with HIV (FRHIV). HIV testing was performed with the informed consent of the patient or his/her legal representative included in the study in accordance with the Declaration of Helsinki. All confirmatory tests for HIV infection were performed at the central laboratory of the Moscow AIDS Center.

To assess the epidemic situation of HIV infection in multidisciplinary hospitals, the prevalence rate was calculated using formula 1:

$$\text{Prevalence} = \frac{\text{Number of patients in multidisciplinary hospitals with detected HIV infection}}{\text{Total number of patients}} \times 100\%, (1)$$

When assessing the HIV infection prevalence rate in the hospitalised contingent of multifunctional hospitals in Moscow, each patient was assigned to a profile of specialised medical care of the 12 presented: therapy, cardiology, gynecology, oncology, traumatology, general surgery, neurosurgery, purulent surgery, toxicology, psychosomatics, intensive care and other profiles (included reception and diagnostic department, endocrinology, ophthalmology, neurology and hematology).

All patients diagnosed with HIV-infection were grouped as follows:

1. newly diagnosed HIV infected patients and persons with previously diagnosed HIV infection (a diagnosis of HIV infection was considered to be previously established when the following conditions were simultaneously fulfilled: 1. the date of the positive immune blot was registered before the present study, 2. there is relevant data on the patient in the laboratory information system of the laboratory diagnostics and clinical epidemiology departments at the Moscow AIDS Center and/or the FRHIV);
2. by territorial affiliation: Moscow residents, non-resident citizens, foreign citizens, and persons without a fixed place of residence.

In addition, analysis of sociodemographic and clinical-epidemiological data was performed for newly diagnosed HIV infected Moscow residents.

Based on the results of these studies, we estimated the prevalence of HIV infection in the Moscow city population. The source of data on the number of the adult population of Moscow for the period under study was the statistical reporting forms of the

¹ The World Health Organization. HIV/AIDS surveillance in Europe (2024). https://www.ecdc.europa.eu/sites/default/files/documents/HIV_Surveillance_Report_2024.pdf [Internet]. Accessed on 17.06.2025. (In Russ.).

Federal State Statistics Service of the Russian Federation (Rosstat)¹. Finally, the results obtained were compared with data based on information including officially registered cases of HIV infection (according to the Statistical observation form No. 61 «Information on HIV infection» and operational data from the Moscow AIDS Centre).

Continuous variables (HIV prevalence) between the two groups (in two different time periods) were compared using Student's t-test. Categorical variables between the groups (profiles of specialised medical care or groups by territorial affiliation) were compared using the Fisher's exact test with Bonferroni multiplicity correction and the Pearson's chi-squared test, respectively. A p -value <0.05 was considered statistically significant.

The data analysis was performed using the Microsoft Excel tabular processor and IBM SPSS Statistics 27 software package.

The study acknowledges certain limitations, in particular the possibility of biased estimates due to possible uneven distribution of the sample across risk groups, in particular in relation to commercial sex workers. Therefore, caution is recommended when interpreting the results. It should be noted that both emergency and planned medical care in a hospital setting is provided to all risk groups. Therefore, despite the existing limitations, we posit that our analysis, covering 453 468 patients of multidisciplinary hospitals in Moscow, of different genders, ages (18 years and older), belonging to different risk groups, and with different territorial and social affiliation, serves as an essential component of the epidemiological monitoring of HIV infection.

Results and Discussion

Characteristics of the Hospitalised Contingent of Moscow Multidisciplinary Hospitals

During the study period, 453 468 patients were examined in clinical and intensive care units of multidisciplinary hospitals (Sklifosovsky Research Institute for Emergency Medicine, Moscow City Multidisciplinary Clinical Center «Kommunarka» and City Clinical Hospital No. 15 named after O. M. Filatov). At the same time, 1761 cases of hospitalisation of patients with HIV infection were detected, which accounted for 0.39% (95% CI: 0.37–0.41%) of the total number of patients examined. During the study period, the prevalence of HIV

infection among patients in multidisciplinary hospitals did not change statistically significant.

The prevalence of HIV infection varied significantly depending on the profile of specialised medical care. The results are presented in Table 1.

The highest prevalence ($p<0.01$, Fisher's exact test with Bonferroni multiplicity correction) of HIV infection was found in the following profiles of specialised medical care: Toxicology, Psychosomatics, Purulent surgery, Therapy and Intensive care. The lowest prevalence was noted for the profiles of Oncology, Gynecology and Cardiology.

When assessing the epidemiological situation in multidisciplinary hospitals, we also analysed the territorial affiliation of the examined patients with HIV infection (Figure 1, Table 2).

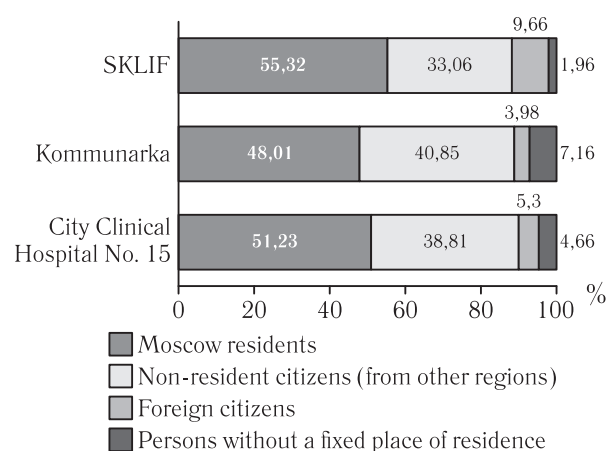


Fig. 1. Territorial affiliation of patients in Moscow multidisciplinary hospitals with detected HIV infection

Рис. 1. Территориальная принадлежность пациентов с выявленной ВИЧ-инфекцией в московских многопрофильных больницах

Among all patients in Moscow multidisciplinary hospitals with detected HIV infection, the largest proportion was accounted for by residents of Moscow — 51.96% (jointly for the three multidisciplinary hospitals), non-resident citizens (from other regions) accounted for 37.25%, persons without a fixed place of residence — 6.53% and foreign citizens — 4.26% of cases.

According to the long-term epidemiological monitoring of the Moscow AIDS Center, between 1987 and 2023, residents of Moscow accounted for 45.7% of all diagnosed cases of HIV infection in Moscow, 39.3% — for non-resident citizens, 10.4% — for foreign citizens and 4.6% — for persons without a fixed place of residence.

¹ Federal State Statistics Service. Demographics; Federal State Statistics Service: Moscow, Russia, 2024. <https://rosstat.gov.ru/folder/12781> [Internet]. Accessed on 17.06.2025. (In Russ.).

Table 1
Distribution of patients of Moscow multidisciplinary hospitals by profiles of specialised medical care
Таблица 1
Распределение пациентов московских многопрофильных больниц по профилям специализированной медицинской помощи

Profiles of specialised medical care	2022			2023			2024			Total	
	Total number of patients	Number of patients with detected HIV infection	Prevalence, % (95% CI)	Total number of patients	Number of patients with detected HIV infection	Prevalence, % (95% CI)	Total number of patients	Number of patients with detected HIV infection	Prevalence, % (95% CI)	Total number of patients	Number of patients with detected HIV infection
Therapy	5805	54	0.93 (0.71–1.21)	6514	56	0.86 (0.66–1.11)	3780	23	0.61 (0.41–0.91)	16 099	133
Cardiology	7202	21	0.29 (0.19–0.45)	8406	11	0.13 (0.07–0.23)	7566	7	0.09 (0.04–0.19)	23 174	39
Gynecology	7520	10	0.13 (0.07–0.24)	9628	18	0.19 (0.12–0.3)	7830	11	0.14 (0.08–0.25)	24 978	39
Oncology**	9053	8	0.09 (0.04–0.17)	8042	6	0.07 (0.03–0.16)	3651	2	0.05 (0.02–0.2)	20 746	16
Traumatology	6228	30	0.48 (0.34–0.69)	7145	29	0.41 (0.28–0.58)	5335	22	0.41 (0.27–0.62)	18 708	81
Neurosurgery	4541	7	0.15 (0.07–0.32)	5113	19	0.37 (0.24–0.58)	2677	12	0.45 (0.26–0.78)	12 331	38
General surgery	25 965	92	0.35 (0.29–0.43)	30 042	166	0.55 (0.47–0.64)	20 739	68	0.33 (0.26–0.42)	76 746	326
Purulent surgery	3460	50	1.45 (1.1–1.9)	4654	60	1.29 (1.0–1.66)	3458	30	0.87 (0.61–1.24)	11 572	140
Toxicology*	2349	63	2.68 (2.1–3.42)	2173	143	6.58 (5.61–7.7)	1138	50	4.39 (3.35–5.75)	5660	256
Psychosomatics*	489	17	3.48 (2.18–5.5)	424	22	5.19 (3.45–7.73)	240	6	2.5 (1.15–5.35)	1153	45
Intensive care	12 249	125	1.02 (0.86–1.21)	10 141	51	0.5 (0.38–0.66)	4148	41	0.99 (0.73–1.34)	26 538	217
Other profiles***	87 680	208	0.24 (0.21–0.27)	81 781	161	0.2 (0.17–0.23)	46 302	62	0.13 (0.1–0.17)	215 763	431
Total	172 541	685	0.4 (0.37–0.43)	174 063	742	0.43 (0.4–0.46)	106 864	334	0.31 (0.28–0.35)	453 468	1761

Note: *The toxicology and psychosomatic care profiles are available exclusively at the «SKLIF», **The Oncological care profiles are available solely at the «Kommunarka», ***The «Other» category includes the following departments: reception and diagnostic department, endocrinology, ophthalmology, neurology and haematology.

Примечания: *Профили токсикологической и психосоматической помощи доступны исключительно в «СКЛИФ», **Профили онкологической помощи доступны исключительно в «Коммунарке», ***В категорию «Прочее» входят следующие отделения: приемно-диагностическое отделение, эндокринология, офтальмология, неврология и гематология.

Table 2

Structure of detected HIV-infection cases among hospitalised patients in Moscow’s multidisciplinary hospitals

Таблица 2

Структура выявленных случаев ВИЧ-инфекции среди госпитализированных пациентов в многопрофильных больницах Москвы

	Cases of HIV infection (n1), abs; of them first detected (n2), abs, %							
	2022		2023		2024		Total	
	n1	n2	n1	n2	n1	n2	n1	n2
Sklifosovsky Research Institute for Emergency Medicine («SKLIF»)								
Residents of Moscow	97	13 (13.40%)	172	24 (13.95%)	69	3 (4.35%)	338	40 (12%)
Non-resident citizens (from other regions)	50	12 (24.0%)	120	33 (27.5%)	32	10 (31.25%)	202	55 (27%)
Persons without a fixed place of residence	20	11 (55.0%)	28	18 (64.29%)	11	4 (36.36%)	59	33 (56%)
Foreign citizens	3	1 (33.33%)	8	2 (25.0%)	1	0	12	3 (25%)
Total	170	37 (21.76%)	328	77 (23.48%)	113	17 (15.04%)	611	131 (21.44%)
Moscow City Multidisciplinary Clinical Center «Kommunarka»								
Residents of Moscow	73	16 (21.92%)	78	16 (20.51%)	30	7 (23.33%)	181	39 (21.55%)
Non-resident citizens (from other regions)	78	23 (29.49%)	50	15 (30.0%)	26	11 (42.31%)	154	49 (31.82%)
Persons without a fixed place of residence	12	5 (41.67%)	3	1 (33.33%)	0	0	15	6 (40.0%)
Foreign citizens	15	7 (46.67%)	3	2 (66.67%)	9	4 (44.44%)	27	13 (48.15%)
Total	178	51 (28.65%)	134	34 (25.37%)	65	22 (33.85%)	377	107 (28.38%)
City Clinical Hospital No. 15 named after O. M. Filatov								
Residents of Moscow	175	33 (18.86%)	140	27 (19.29%)	81	17 (20.99%)	396	77 (19.44%)
Non-resident citizens (from other regions)	125	45 (36.0%)	112	32 (28.57%)	63	11 (17.46%)	300	88 (29.33%)
Persons without a fixed place of residence	24	14 (58.33%)	11	7 (63.64%)	6	2 (33.33%)	41	23 (56.1%)
Foreign citizens	13	8 (61.54%)	17	7 (41.18%)	6	3 (50.0%)	36	18 (50.0%)
Total	337	100 (29.67%)	280	73 (26.07%)	156	33 (21.15%)	773	206 (26.65%)
Total								
Residents of Moscow	345	65 (19%)	390	66 (17%)	180	28 (16%)	915	159 (17%)
Non-resident citizens (from other regions)	253	83 (33%)	282	81 (29%)	121	33 (27%)	656	197 (30%)
Persons without a fixed place of residence	56	31 (55%)	42	26 (62%)	17	6 (35%)	115	63 (55%)
Foreign citizens	31	18 (58%)	28	15 (54%)	16	7 (44%)	75	40 (53%)
Total	685	188 (27.45%)	742	184 (24.79%)	334	72 (21.56%)	1761	444 (25.21%)

Characteristics of the Cohort of Newly Diagnosed HIV Infected Patients Hospitalised in Moscow Multidisciplinary Hospitals

Out of 1761 detected cases of HIV infection in patients of multidisciplinary hospitals in Moscow, 444 (25%) were newly diagnosed, which accounted for 0.1 % of all examined patients (Table S1).

The distribution of newly diagnosed HIV-infected patients by territorial affiliation is presented in Figure 2.

Among all newly diagnosed HIV infected patients in Moscow multidisciplinary hospitals, the largest proportion was accounted for by non-resident citizens (from

other regions) — 43.24% (jointly for the three multidisciplinary hospitals), residents of Moscow accounted for 35.14%, persons without a fixed place of residence — 13.96% and foreign citizens — 7.66% of cases.

In 2023, according to the operational data from the Moscow AIDS Center, among the newly diagnosed HIV-infection cases, only 23% were among residents of Moscow, 53% — among non-resident citizens, 20% — among foreign citizens and 4% — among persons without a fixed place of residence.

A comparative analysis of the structure of HIV detection among hospitalised patients during the

study period revealed that there were statistically significantly ($p < 0.01$, chi-square test) fewer cases of first- diagnosed HIV infection among Moscow residents compared to other groups (non-resident citizens, persons without a fixed place of residence, foreign citizens) (Table 2). Thus, the majority of Moscow residents were diagnosed with the HIV infection before hospitalisation.

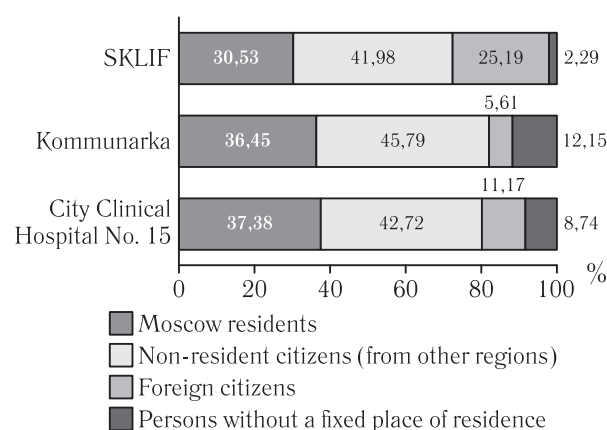


Fig. 2. Territorial affiliation of newly diagnosed HIV infected patients in Moscow multidisciplinary hospitals

Рис. 2. Территориальная принадлежность пациентов с впервые диагностированной ВИЧ-инфекцией в московских многопрофильных больницах

The total number of Moscow residents with HIV-infection diagnosed for the first time was 156 people, and a comprehensive analysis including sociodemographic and clinical-epidemiological data was carried out for them.

In the study cohort, there was a predominance of males (95/156, 60.89%), the percentage ratio of males to females was 61:39. The mean age of the study cohort was 43 years, ranging from 18 to 73 years. For most patients, the route of infection was not precisely identified (77/156, 49.36%), of those known, the most common risk factor for infection was heterosexual contact (44/156, 28.21%), followed by infection through substance use (22/156, 14.1%) and infection through homosexual contact (13/156, 8.33%).

The prevalence of HIV infection in the study cohort also varied significantly depending on the profile of specialised medical care provided (Table 3).

In general, the results obtained were similar to those obtained for all patients in Moscow multidisciplinary hospitals with detected HIV infection.

Additionally, CD4⁺-lymphocyte counts were analysed in a study cohort. Data were available for 65 patients, among whom CD4⁺-lymphocyte counts of less than 200 cells/ μ L were found in 26 patients (40%), in the range of 200–349 cells/ μ L — in 13

patients (20%), in the range of 350–500 cells/ μ L — in 11 patients (16.92%) and in more than 500 cells/ μ L — in 15 patients (23.08%). The obtained results had statistically significant differences with the data of official statistics (the Statistical observation form No. 61 «Information on HIV infection»), according to which 15.7% of first diagnosed HIV-infected patients in Moscow had CD4⁺-lymphocyte count less than 200 cells/ μ L, 28.3% — the number of CD4⁺ cells in the range of 200–349 cells/ μ L, 48.1% — in the range of 350–500 cells/ μ L, 7.9% — more than 500 cells/ μ L.

Estimation of HIV Prevalence in the Moscow City Population

The average prevalence of HIV infection among patients in multidisciplinary hospitals in Moscow over the entire study period was 0.39% (95% CI: 0.37–0.41%).

Given the multidisciplinary nature of the hospitals included in the study, their close in number bed stock, as well as the representation of patients of different gender, age, and territorial and social affiliation in the study sample, it is possible to consider these medical organisations as sentinels, and to estimate the overall HIV prevalence in the Moscow city population on the basis of the results obtained.

Then, transforming formula 1, we obtained:

$$0.39\% = \frac{\text{Number of people living with HIV in Moscow}}{\text{Average number of adult } (\geq 18 \text{ years}) \text{ population of Moscow over the study period}} \times 100\%$$

$$\text{Number of people living with HIV in Moscow} = \frac{0.39\% \times 10\,838\,759}{100\%} = 42\,271$$

The obtained estimated number of adult PLWH in Moscow was compared with official statistics data:

- Statistical observation form No. 61 «Information on HIV infection» (39 358 persons);
- Operational data from the Moscow AIDS Center on the number of city residents with positive results of HIV antibody tests (41 970 persons).

Thus, an estimated 301 to 2913 adult PLWH in Moscow are not informed about their HIV status. And the proportion of PLWH (18 years and older) in Moscow informed about their HIV status averages 96% [93–99%].

Discussion

The key aspects of the HIV epidemic process in Moscow are the high population density, complex structure of social connections, and the intensity of migration flows [3]. Moscow is the capital of Russia and acts as a major connection link for many regions of the country. All this can have a direct impact on the

Table 3

The prevalence of HIV infection in the cohort of newly diagnosed HIV infected patients (Moscow residents) in Moscow multidisciplinary hospitals by profiles of specialised medical care

Таблица 3

Распространенность ВИЧ-инфекции в когорте пациентов с впервые диагностированной ВИЧ-инфекцией (жители Москвы) в московских многопрофильных больницах по профилям специализированной медицинской помощи

Profiles of specialised medical care	2022			2023			2024			Total	
	Total number of patients	Number of patients with detected HIV infection	Prevalence, % (95% CI)	Total number of patients	Number of patients with detected HIV infection	Prevalence, % (95% CI)	Total number of patients	Number of patients with detected HIV infection	Prevalence, % (95% CI)	Total number of patients	Number of patients with detected HIV infection
Therapy	5805	10	0.17 (0.09–0.32)	6514	5	0.08 (0.03–0.18)	3780	2	0.05 (0.01–0.19)	16 099	17
Cardiology	7202	1	0.01 (0–0.08)	8406	1	0.01 (0–0.07)	7566	1	0.01 (0–0.07)	23 174	3
Gynecology	7520	1	0.01 (0–0.08)	9628	1	0.01 (0–0.06)	7830	1	0.01 (0–0.07)	24 978	3
Oncology**	9053	0	0 (0–0.04)	8042	0	0 (0–0.05)	3651	0	0 (0–0.11)	20 746	0
Traumatology	6228	4	0.06 (0.02–0.17)	7145	6	0.08 (0.04–0.18)	5335	6	0.11 (0.05–0.25)	18 708	16
Neurosurgery	4541	1	0.02 (0–0.12)	5113	1	0.02 (0–0.11)	2677	1	0.04 (0.01–0.21)	12 331	3
General surgery	25 965	10	0.04 (0.02–0.07)	30 042	11	0.04 (0.02–0.07)	20 739	5	0.02 (0.01–0.06)	76 746	26
Purulent surgery	3460	6	0.17 (0.08–0.38)	4654	7	0.15 (0.07–0.31)	3458	4	0.12 (0.04–0.3)	11 572	17
Toxicology*	2349	0	0 (0–0.16)	2173	4	0.18 (0.07–0.47)	1138	0	0 (0–0.34)	5660	4
Psychosomatics*	489	2	0.41 (0.11–1.48)	424	2	0.47 (0.13–1.7)	240	0	0 (0–1.58)	1153	4
Intensive care	12 249	11	0.09 (0.05–0.16)	10 141	10	0.1 (0.05–0.18)	4148	4	0.1 (0.04–0.25)	26 538	25
Other profiles****	87 680	17	0.02 (0.01–0.03)	81 781	11	0.01 (0.01–0.02)	46 302	10	0.02 (0.01–0.04)	215 763	38
Total	172 541	63	0.04 (0.03–0.05)	174 063	59	0.03 (0.03–0.04)	106 864	34	0.03 (0.02–0.04)	453 468	156

Note. *The toxicology and psychosomatic care profiles are available exclusively at the «SKLIF», **The Oncological care profiles are available solely at the «Kommunarka», ***The «Other» category includes the following departments: reception and diagnostic department, endocrinology, ophthalmology, neurology and haematology.

Примечание. *Профили токсикологической и психосоматической помощи доступны исключительно в СКЛИФ. **Профили онкологической помощи доступны исключительно в «Коммунарке». ***В категорию «Прочее» входят следующие отделения: приемно-диагностическое отделение, эндокринология, офтальмология, неврология и гематология.

epidemiological indicators of the disease both in the region and in the country as a whole¹.

During the period of active HIV spread in Russia, in 1998–1999, the capital occupied the leading position among European capitals. However, over the next 5 years, there was a decrease in the number of newly detected HIV-infection cases among city residents (on average by 7% annually) and stabilisation of the epidemic situation². This trend was also noted in a number of further studies – incidence and prevalence rates among the capital's population were significantly lower than the Russian average [1].

One of the key components of counteracting the spread of HIV infection in the Russian Federation is to ensure coverage of the population with effective HIV screening in order to maximise the detection of people with HIV infection and their further involvement in health care services. At the same time, notification and medical certification mechanisms should be confidential and destigmatised in order to reach all population groups³. In earlier studies it was noted that the frequency of HIV-infected persons in such medical institutions as emergency hospitals or multidisciplinary hospitals can serve as a kind of indicator of epidemiological well-being in a certain territory, since the provision of medical care on their basis is often necessary, sometimes urgent, and thus ensures coverage of different population groups, including vulnerable ones [1].

We conducted a comprehensive study of the hospitalised contingent of three large multidisciplinary hospitals in Moscow: 1. Sklifosovsky Research Institute for Emergency Medicine («SKLIF»), 2. Moscow City Multidisciplinary Clinical Center «Kommunarka», 3. City Clinical Hospital No. 15 named after O. M. Filatov.

Analysis of the distribution of patients in multidisciplinary hospitals in Moscow by profiles of specialised medical care revealed the highest prevalence of HIV infection in the following profiles: Toxicology, Psychosomatics, Purulent surgery, Therapy and Intensive care. This can be explained directly by the nature of patients' pathology. Thus, specialised toxicological and psychosomatic care is required for patients with substance poisoning, as well as for the management of psychotic conditions that develop in the context of substance use, respectively. In turn, substance users are a group with high rates of HIV infection [4–6]. Patients with abscesses and phlegmons due to non-medical parenteral manipulations are also more frequently detected among patients in the department of purulent surgery, which is also

characteristic of the most vulnerable group of injecting drug users (IDUs) to HIV infection⁴ [7, 8].

At the same time, a statistically significant ($p < 0.001$, t-test) decrease in HIV prevalence among toxicology patients over the last 10 years was revealed within the framework of the study. Thus, while this indicator averaged 10.87% in 2012–2014, it decreased to 4.55% in the period 2012–2024 in this study [1]. This observation correlates with current trends in HIV infection, which show a shift in the main route of infection from injecting drug use to sexual transmission [2].

The relatively high prevalence of persons hospitalised for vital indications in intensive care units (excluding transfers within the hospital) may also be related to pathologies caused both by acute substance poisoning and the development of life-threatening complications of secondary (opportunistic) diseases in HIV infection [6, 9]. The detected prevalence among patients in therapy profile of specialised medical care may be due to a wide range of pathologies, including such HIV-associated diseases as community-acquired pneumonia, as well as a number of chronic gastrointestinal and central nervous system diseases that may occur with the progression of immunodeficiency [9–12].

Low prevalence of HIV infection was noted for Oncology, Gynecology and Cardiology. Patients with these pathologies are the most committed to treatment and follow-up, as well as to compliance with the requirements of their attending physician, which may contribute to increased attention to their health status and lifestyle, and, as a consequence, to low HIV prevalence. The low HIV prevalence among female patients in gynecology profile of specialised medical care may also be due to the lower involvement of women in the epidemic process compared to men [13]. The identified characteristics of HIV prevalence by profiles of specialised medical care were characteristic both for all patients with HIV infection and for those who were detected for the first time.

Analysis of the distribution of patients in Moscow multidisciplinary hospitals by their territorial affiliation revealed the predominance of Moscow residents among all detected patients with HIV infection (54.96%), while residents of other regions (43.24%) prevailed among newly diagnosed HIV-infected patients. It is worth noting that the results obtained generally correspond to the official data of the Moscow AIDS Centre on long-term monitoring of HIV infection and note the high level of HIV screening in Moscow. At the same

time, the large share of residents of other regions among patients of multidisciplinary hospitals in Moscow with first diagnosed HIV-infection can be associated with intensive labour migration typical for the capital, as well as internal medical tourism due to the high quality of medical care in the capital.

The analysis of the cohort of newly diagnosed HIV-infected patients among patients of multidisciplinary hospitals in Moscow showed characteristics of the sex-age structure and routes of infection that are typical for Russia as a whole and for individual regions, namely: the predominance of men, an increase in the average age in the population of PLWH, and the predominance of the share of infections through heterosexual contacts [2, 14]. Analysis of clinical and laboratory data ($CD4^+$ -lymphocyte counts) showed differences with official statistics (Statistical observation form No. 61 «Information on HIV infection»), but this may be due to the small sample size of patients for whom these data were available. Thus, patients with low immune status were significantly more frequent among the hospitalised population compared

to the general cohort of HIV-infected individuals detected for the first time in Moscow. The results obtained emphasise the validity of the current strategy to cover the population with HIV screening, especially among patients in emergency and ambulance departments, in order to detect late cases of HIV infection, and also indicate that early detection of the disease mainly occurs at the pre-hospital stage, during outpatient examination [13].

At the final stage of the study, the number of adult PLWH in Moscow was estimated, which revealed that 96% of PLWH in the Russian capital know their HIV status, which meets the first goal of the 95–95–95 strategy.

Conclusions. This is the first study of the epidemiological characteristics of patients in multidisciplinary hospitals in the large metropolitan area of Moscow. The main results coincided with official statistics. An assessment of the number of adult PLWH in Moscow showed that 96% of PLWH in the Russian capital know their HIV status, which corresponds to the first goal of the 95–95–95 strategy.

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