Regional Expert Group On Migration and Health

Cost analysis on the provision of HIV-related medical services to international migrants in the Russian Federation

STUDY

Authors:
Ekaterina Zayko
Anna Popova
Kirill Barsky
Daniel Kashnitsky

MOSCOW 2021

TABLE OF CONTENTS

ABSTRACT

The study presented herein is dedicated to the problem of foreign citizens living with HIV in the Russian Federation. Over a decade ago, the practices of stigmatization and expulsion of international migrants living with HIV were recognized as inefficient and leading to a hidden epidemic of HIV by the United Nations and other international agencies. Most countries have lifted the restrictions on international travel for foreign citizens living with HIV, since, with proper treatment, this disease ceases to pose a social threat and is considered to be a chronic condition. The study provides an overview of the international experience regarding the effectiveness of antiretroviral therapy and its economic benefits for countries, as well as comparative studies on HIV detection in the resident population and migrants.

Every year, the issue of amending legislation in this area becomes more and more urgent for the Russian Federation considering that among the countries of Eastern Europe and Central Asia Russia has the most challenging situation in terms of HIV incidence. In the recent years, HIV epidemic in the Russian Federation has moved to a generalized stage. We are convinced that control the HIV/AIDS epidemic among migrants as a social group is a necessary step towards curbing the HIV epidemic in the Russian Federation and, thus, in the region of Eastern Europe and Central Asia. So far, the issue of legalizing migrants living with HIV has not been resolved and remains a serious barrier to their official employment, education and long-term stay in the Russian Federation. Many labor migrants hide their HIV status for fear of deportation. As a consequence, those foreign citizens who do not receive antiretroviral therapy have health problems, weakened immunity and may need urgent medical care. According to the current legislation laws, the Russian Federation does not refuse emergency hospital admission and care to foreign citizens or stateless persons.

Most countries have lifted the restrictions on international travel for foreign citizens living with HIV, since, with proper treatment, this disease ceases to pose a social threat and is considered to be a chronic condition

We aim to analyze the costing component of treating an international migrant living with HIV in Russia. For our analysis, we considered two treatment scenarios: outpatient treatment of a patient with HIV, who has recently been diagnosed with HIV or whose HIV infection has been

managed for several years with antiretroviral therapy (ART); and inpatient treatment of a patient living with HIV who is not taking ART, which leads to the development of HIV-associated diseases. The prices for testing and examinations were taken from private health clinics as of February, 2021.

In the first scenario, with no hospital care needed, the cost of examinations and treatment was RUB 83,084 a year. The major part of this sum is the cost of laboratory tests, with average monthly cost of treatment amounting to RUB 6,924. In the second scenario, inpatient treatment of a patient with complications of HIV infection was modeled. In this case, the cost of all the examinations, treatment and other inpatient care for 21 days was RUB 228,572.60.

As for the international migrants living with HIV in the Russian Federation, they can access the first model of care only at their own expense or with support of charities. The second model of care is funded from the national budget of the Russian Federation. In addition to direct medical costs in case of inpatient care, there are also non-medical costs of diagnosing a foreign citizen with HIV, which include detention, trial and deportation, losses in labor force, and personal expensed of the foreign citizen.

To control the spread of HIV, bring international migrants living with HIV out of the shadows, and reduce the budget costs for advanced medical care, we recommend legalizing international migrants living with HIV and introducing the practice of reciprocal interstate transfers to compensate for the costs of antiretroviral therapy for citizens in host countries, at least within the region of Eastern Europe and Central Asia.

INTRODUCTION

Our society has been living with HIV for several decades. Today, people with HIV status are able to live full lives provided that they receive uninterrupted antiretroviral therapy thanks to the continuous research studies in the area of HIV control and prevention. Thus, there are almost no differences between their lives and the lives of other people. When patients receive antiretroviral therapy, their viral load is going down to undetectable levels. As a result, people living with HIV are no longer dangerous to the society. After being considered an uncontrollable disease, HIV infection is now perceived as a quite manageable chronic condition.

The Joint United Nations Programme on HIV/AIDS (UNAIDS) announced its 90-90-90 targets to end the AIDS epidemic for 2016-2020. The UNAIDS strategy is aimed at ensuring that 90% of all people living with HIV know their status, 90% of all people with diagnosed HIV infection receive antiretroviral therapy, and 90% of all people receiving therapy have viral suppression.

In 2020, the Financial Research Institute (FRI) of the Ministry of Finance of the Russian Federation conducted a research study to assess the impact of HIV on the economic and demographic development of the Russian Federation. Based on statistical analysis and mathematical modeling, researchers made a conclusion that the society loses about 200 billion Russian rubles from the uncontrolled spread of HIV in the country. FRI analysis shows that 60% increase in the funding of HIV testing and procurement of antiretrovirals (as compared to 2020) will allow reducing direct non-medical costs by over 100 billion rubles in 2021-2030, while general reduction in the indirect GDP losses will amount to approximately 1.7 trillion rubles. The researchers point out that the current stage of the spread of HIV in Russia is characterized, among other things, by the growing scale of hidden epidemic among labor migrants, who have to keep their HIV status secret.

Currently, Russian laws stipulate unequal opportunities of HIV diagnostics for the Russian citizens and for the international migrants who live in the Russian Federation. Russian citizens have full access to HIV diagnosis, medical services and antiretroviral therapy (ART). Their rights to socialization – rights to education and employment – are protected by law. As for the international migrants living with HIV, they may face expulsion from the Russian Federation: a foreign citizen or a stateless person who tests positive

for HIV may be deported, banned to enter the country, and prohibited to legalize in the Russian Federation in future, in particular through receiving a refugee or asylum seeker status, since every international migrant seeking to obtain a work patent, a temporary residence permit, a residence permit or citizenship of the Russian Federation, has to undergo a medical examination, and the results of such examination are disclosed to the law enforcement agencies of the Russian Federation.

In case if international migrants find out about their HIV status anonymously, without their data being disclosed to the Russian Federal Service for Surveillance on Consumer Rights Protection and Wellbeing (Rospotrebnadzor) and the Ministry of Internal Affairs, the only possibility for them to stay in the country is to find unofficial employment, get treatment and procure ART with their own money or get it covered by their country of origin, while living with a risk of deportation. In the migration laws, there is a number of exemptions for citizens of the Eurasian Economic Union (EAEU) countries in terms of migrant registration and employment requirements, which can make it easier for the EAEU citizens with HIV status to stay in the Russian Federation. However, the researchers would like to point out the risks of such HIV control policies. In some cases, international migrants living with HIV status become involuntary hostages of their situation, breaking the migration laws and not having access to the information about HIV treatment, which poses a threat to their own health as well as public health.

In case if international migrants find out about their HIV status anonymously, without their data being disclosed to the Rospotrebnadzor and the Ministry of Internal Affairs, the only possibility for them to stay in the country is to find unofficial employment, get treatment and procure ART with their own money or get it covered by their country of origin, while living with a risk of deportation.

There are certain drawbacks in the current approach to migrant registration in the Russian Federation, which make it impossible to assess the exact number of international migrants in the country. When collecting data, the Federal Statistics Service makes a number of assumptions, which allow for both underreporting and double counting of migrants. For migrants, it is easier to obtain registration for a shorter period of time, e.g. for three months, than for a longer period of time, while they are not restricted in choosing the term of their registration. If the total period of such "fractional" registration does not exceed nine months a year, the Federal Statistics Service does not consider such migrants as long-term migrants. The situation with migrants who leave the country is also challenging. In 2020, for instance, the Accounts Chamber of the Russian Federation when auditing the Mir migration registration system found a dossier of a foreign citizen with several dates of entry to the Russian Federation, but with no dates of him leaving the country. If

we consider confusing migration statistics, public health threats related to the limited legal status of foreign citizens living with HIV in the Russian Federation take on a new dimension.

The potential damage of such situation for the well-being of society is not only linked to the uncontrolled transmission of HIV among migrants who do not receive ART. According to the Russian laws, first medical aid and emergency care are guaranteed to all people, including citizens of the Russian Federation and foreign citizens. From the experience of Moscow, we know that infectious diseases hospitals provide high-tech health services to foreign citizens in the same scope as to the Russian citizens, while such services are funded from the hospital budget. Thus, when international migrants living with HIV status are left beyond the legal environment of the Russian Federation, it can lead to a higher burden on the health systems both from the side of the general population and from the side of international migrants.

The most promising approach seems to be the one in which international migrants living with HIV have an opportunity to receive antiretroviral treatment with no threat of deportation from the Russian Federation. In this case, their fundamental rights and freedoms, such as their privacy, freedom of movement and free choice of residence, will not be violated.[1] In terms of the financial burden on the budget, antiretroviral therapy to international migrants does not have to be provided at the expense of the Russian Federation (even though it indirectly contributes to the improvement of the epidemiological situation in the country). Foreign citizens can receive their therapy at the expense of their countries of origin. In this case, the Russian Federation does not have to spend its budget funds, but gets additional workforce and improves the public health.

In our review, we present the financial aspects of providing HIV-related services and offer to estimate the costs of providing high-tech inpatient care for severe or complicated cases of HIV infection. In the discussion section, we define the range of possible non-medical expenses and try to describe the positive effect of decriminalization of international migrants living with HIV in Russia.

[1] UNAIDS, 2019. UNAIDS, UNDP Still Not Welcome. HIV-related Travel Restrictions. UNAIDS Explainer. 2019.

HIV IN THE RUSSIAN FEDERATION AND IN THE COUNTRIES OF EASTERN EUROPE AND CENTRAL ASIA

In the post-Soviet period, the Russian Federation became a country of destination for migrants from Eastern Europe and Central Asia. Citizens of Ukraine, Kazakhstan, and Uzbekistan arrived to the Russian Federation.[2] Besides, Russia is a center of gravity for labor migrants, mainly from the countries of Eastern Europe and Central Asia. A simplified visa regime is applied to the EAEU countries. It creates a common labor market for the Russian Federation, the Republic of Belarus, the Republic of Armenia, the Republic of Kazakhstan and the Kyrgyz Republic.[3]

The situation with HIV in the Russian Federation is quite challenging.[4, 5] Based on the data for nine months of 2020, HIV prevalence (the total number of registered HIV cases at a given time) in Russia was 747.7 per 100,000 population.[6] Preliminary figures indicate that HIV incidence (the rate of new cases) in Russia amounted to 40.77 per 100,000 population in 2020.[7] The incidence rate decreased as compared to 2019, which, however, does not reflect the accurate picture due to the challenges in HIV testing in the times of COVID-19. However, HIV incidence rate in the Russian Federation as compared to other countries of Eastern Europe and Central Asia is concerning (table 1). In 2020, the COVID-19 epidemic made it more difficult to implement the HIV prevention interventions.[8]

[2] IOM, 2020. World Migration Report.

[3] EAEU, 2015. Treaty on the Eurasian Economic Union.

[4] Interview of Michel Kazatchkinefor for TASS on 01.12.2020 "UN Special Envoy: the Situaiton with HIV in Russia Remains Serious" (available in Russian).

[5] ECDC, 2020. Report HIV/AIDS surveillance in Europe 2020 – 2019 data.

[6] Rospotrebnadzor, Fact sheet on HIV in the Russian Federation dd. September 30, 2020 (available in Russian).

[7] News dd. 01.02.2021. RIA Novosti, Golikova Announced the Number of Russians Living with HIV (available in Russian).

[8] UNAIDS, 2020. Global AIDS Monitoring 2021

TABLE 1
HIV INCIDENCE IN 2019
(people per 100,000 population)

№	Country	Indicator
1	Russian Federation	54.8
2	Ukraine	39.0
3	Republic of Moldova	22.8
4	Belarus	22.6
5	Kazakhstan	19.8
6	Georgia	16.7
7	Armenia	15.1
8	Tajikistan	14.2
9	Kyrgyzstan	13.2
10	Azerbaijan	7.2

Source: ECDC, 2020. Report HIV/AIDS surveillance in Europe 2020 – 2019 data. P.59[9].

Since the late 1980s, HIV epidemic in Russia has gone from the initial to a concentrated stage, and is now in its generalized stage. It means that HIV has moved beyond the populations who practice risky behaviors (people who inject drugs, men who have sex with men) and is now actively spreading in the general population. In 2020, the majority of newly diagnosed patients became infected with HIV through heterosexual contacts (65.0%), while the share of those infected through drug use was 31.5% and 2.5% were infected through homosexual contacts.[10] According to Rospotrebnadzor, the share of people infected through heterosexual contacts is increasing every year.

In the Russian Federation, the coverage with antiretroviral therapy is far from the UNAIDS 90-90-90 targets. According to the recent reports of Rospotrebnadzor for the third quarter of 2020, the share of people receiving antiretroviral therapy in Russia was 52% (581,555 people) of the total number of those diagnosed with HIV or 75.5% of the number of those officially registered with HIV. The total number of officially registered patients living with HIV is 770,122 people. The actual number of people living with HIV is higher since the desire and the ability to be tested for HIV depend on such factors as awareness of the routes of HIV transmission and the effectiveness of treatment, the availability of testing and treatment, anonymity, etc. According to Vadim Pokrovsky, Head of the Federal Center

[9] https://www.ecdc.europa.eu/sites/default/files/documents/hiv-surveillance-report-2020.pdf
[10] Rospotrebnadzor, Fact sheet on HIV in the Russian Federation dd. September 30, 2020 (available in Russian)

for AIDS Prevention and Control (Rospotrebnadzor department), about 1.5 million people lived with HIV in Russia at the beginning of 2020 and about one third of the estimated number of Russians living with HIV were still not aware of their status.[11]

The annual information bulletin "HIV Infection" published by Rospotrebnadzor states that 40,580,588 Russian citizens were tested for HIV in Russia in 2019 (240,253 of them – anonymously). The following number of positive results were detected among the citizens of the Russian Federation tested for HIV: 396,441 – with enzyme-linked immunosorbent assay (ELISA), 119,372 – with Western blot (WB). In the same year, 2,550,422 foreign citizens were tested for HIV (673 – anonymously). Among the international migrants who tested positive for HIV, 5,867 people received positive results with ELISA and 2,407 people – with WB.[12] HIV incidence among the Russian citizens tested for HIV was 294.2 cases per 100,000 population, among foreign citizens – 94.4 cases per 100,000 population (based on WB). However, if the Russian citizens have full access to both annual examinations and treatment with their compulsory medical insurance (CMI) certificates, international migrants have to look for other ways to preserve their health. According to the Russian laws, the foreign citizens who were diagnosed with HIV not anonymously are under threat of deportation.

HIV incidence among the Russian citizens tested for HIV was 294.2 cases per 100,000 population, among foreign citizens – 94.4 cases per 100,000 population

[11] Interview with V. Pokrovsky dd. 26.02.2020 for AIDS.CENTER NGO (available in Russian)

[12] Rospotrebnadzor, 2019 HIV Infection Bulletin No. 45 (available in Russian)

INTERNATIONAL EXPERIENCE

As opposed to the Russian citizens, foreign citizens living with HIV are not able to access free treatment and care. All foreign citizens are guaranteed anonymous HIV testing as well as first medical aid and emergency care. In fact, emergency hospitalization is the only option to access the required examinations and prescription of adequate treatment for those foreign citizens who are not able to pay for health services.

When we are talking about emergency care, we mean severe diseases and conditions that threaten human life. For instance, it can happen when labor migrants do not take proper care of their health for a long time not knowing about their HIV status. It results in lower immune status causing additional health conditions, which complicate further treatment, affect the expected treatment outcomes and require expensive care. Due to a number of reasons, migrants are not able to access free health check-ups and antiretroviral therapy in the Russian Federation, so they have to go back to their countries of origin. Migrants often fear deportation at the advanced stages of the disease. Thus, foreign citizens with HIV in the Russian Federation have to live behind the scenes, becoming hostages of their situation, worsening their own health and putting other people under threat. They can only rely on themselves, maybe also support of their families and inner circle or assistance of charitable organizations and funds.[13, 14, 15]

International institutions[16] call the states to provide universal access to antiretroviral therapy to all people living with HIV irrespective of their stage of disease, citizenship, social status, etc.[17] ART helps to decrease the viral load so that people can live normal lives not developing any associated diseases. In general, they have the same life expectancy as healthy people.[18] Women living with HIV can have healthy children as they do not transmit the immunodeficiency virus to their children if they receive effective antiretroviral therapy. Following the global 90-90-90 targets proclaimed by the UNAIDS in 2014, in 2015 the World Health Organization (WHO) recommended starting all

[13] Luo J. et al. 2012. Does powerlessness explain elevated HIV risk amongst Tajik labor migrants? An Ethnographic Study. Journal of HIV/AIDS & Social Services. 2012;11(2):105–24.

[14] Pokrovskaya, A.V. et al. 2019. Impact of Migration Processes on the HIV situation (Analytical Review). Annals of the Russian Academy of Medical Science. 74(2):88–97 (available in Russian)

[15] Kashnitsky, D. (2020). The Russian HIV residence ban and state control of migration. Journal of Public Health Policy 41 (4), 453-463.

[16] UNAIDS, 2017. Agenda for zero discrimination in health-care settings. P.5.

[17] UNAIDS, 2014. To help end the AIDS epidemic: United Nations. p. 40.

[18] Samji H et al. Closing the Gap: Increases in Life Expectancy among Treated HIV-Positive Individuals in the United States and Canada. PLoS ONE, 2013, 8: e81355

people on antiretroviral therapy as soon as they were diagnosed with HIV.[19] Up to that moment, most countries applied treatment protocols recommending to start treatment depending on the CD4 count. After a number of randomized controlled trials[20, 21] found lower rates of mortality and opportunistic infections among people living with HIV who started treatment immediately after diagnosis as compared to those who received delayed antiretroviral therapy, WHO recommended starting treatment as soon as HIV infection was diagnosed regardless of the level of CD4 lymphocytes.

In 2014, a research team commissioned by the US National Institute of Allergy and Infectious Diseases (NIAID) conducted an international randomized trial to compare the effects of early and delayed start of antiretroviral therapy in two groups of subjects.[22] The study showed that patients in the group with early ART initiation were 27% less likely to experience primary clinical outcomes (tuberculosis, severe bacterial infections, severe cardiovascular or vascular diseases, severe liver diseases, end-stage renal disease, newly diagnosed diabetes mellitus and non-AIDS-defining malignancies), 36% less likely to develop opportunistic AIDS symptoms and 51% less likely to be diagnosed with tuberculosis. This study proved the idea that early ART initiation for patients living with HIV is reasonable as, in addition to preventing future costs of treating critically ill patients, it also allows to reduce the risk of HIV transmission.

Emergency hospitalization is the only option to access the required examinations and prescription of adequate treatment for those foreign citizens who are not able to pay for health services.

An extensive study of ART efficacy carried out in British Columbia, Canada using 1996–2012 data has proven that this therapy is effective over a long period of time.[23] Based on the study data, researchers calculated that mortality from HIV infection went down from 6.5 to 1.3 per 100,000 population (a decrease of 80%), the development of AIDS went down from 6.9 to 1.4 per 100,000 population (a decrease of 80%), and the number of new HIV cases went down from 702 to 238 cases a year (a decrease of 66%). Using mathematical models, the researchers suggested that an increase in the use of ART for every 100 people led to a decrease in the potential HIV incidence by 1.2%, and an increase in the number of patients receiving ART by 1% led to a proportional decrease in the estimated HIV incidence by 1%.

---

[19] World Health Organization. Guidelines Guideline on When to Start Antiretroviral Therapy and on Pre-Exposure Prophylaxis for HIV: World Heal Organ

[20] UNAIDS. To help end the AIDS epidemic: United Nations; 2014. p. 40.

[21] Forhan Sara E. et al., 2017.Moving toward test and start: learning from the experience of universal antiretroviral therapy programs for HIV-infected pregnant/breastfeeding women

[22] Grinsztejn B et al., 2014. Effects of early versus delayed initiation of antiretroviral treatment on clinical outcomes of HIV-1 infection: results from the phase 3 HPTN 052 randomised controlled trial. Lancet Infect Dis.

[23] Montaner JSG et al., 2014. Expansion of HAART coverage is associated with sustained decreases in HIV/AIDS morbidity, mortality, and HIV transmission: the "HIV treatment as prevention" experience in a Canadian setting. PLoS ONE, 2014, 9:e87872.

In 2011, a study initiated by the Global Fund to Fight AIDS, Tuberculosis and Malaria (Global Fund) was published estimating the total cost of the Global Fund-supported program to implement antiretroviral therapy in middle and low-income countries. The Global Fund co-financed treatment programs for people living with HIV in a cohort of about 3.5 million patients in 98 countries, with 80% of them residing in 20 African countries. To assess the societal-level impact of antiretroviral therapy, three streams of benefits were analyzed: (1) restored labor productivity amongst workers with HIV infection; (2) orphan care expenditures avoided because parents remain alive on ART; (3) delayed end-of-life palliative care costs.[24] Having analyzed the data, the researchers made a conclusion that in 2011–2020 the Global Fund will need to invest USD 14.2 billion to implement the ART program, but this investment will translate into 18.5 million life-years, which will provide a return on investment of USD 13 billion to USD 34 billion. It suggests that the economic benefits of ART substantially offset and likely exceed the costs of the ART programs supported by the Global Fund.

Another longitudinal study of the antiretroviral therapy efficacy was conducted in Mexico in 2006. In addition to the results obtained on the survival probability for four treatment categories, detailed calculations were made to assess the full cost of health care per patient.[25] The analysis included direct costs of the health care provider, which meant that only the costs incurred by the hospital were taken into consideration. It did not include any non-medical costs incurred by the hospital; costs covered by patients (medical and non-medical); or social costs (such as lost productivity). The average total cost was calculated for two treatment options: outpatient and inpatient. Outpatient services included outpatient doctor visits, antiretroviral therapy and other drugs used to treat or prevent comorbidities. This cost also included laboratory tests and medical examinations. Inpatient treatment included the cost of hospitalization, medicines, laboratory tests, X-rays, and surgical procedures.

The cost of an outpatient visit and the cost of a day of hospital stay were estimated using the microcosting method,[26] which included three cost categories: labor, current, and capital costs. Labor costs were calculated based on the salaries and other monetary benefits of medical and administrative personnel. Current costs included the cost of needles, syringes, gloves, etc., as well as building maintenance and utility fees. Capital costs included the cost of using buildings and equipment. This approach

[24] Stephen R et al., 2011. Economic Returns to Investment in AIDS Treatment in Low and Middle Income Countries.

[25] Belkis AG et al., 2008. Costs and benefits of HAART for patients with HIV in a public hospital in Mexico.

[26] Frick, Kevin D. PhD Microcosting Quantity Data Collection Methods, Medical Care: July 2009 - Volume 47 - Issue 7_ Supplement_1 - p S76-S81 doi: 10.1097/MLR.0b013e31819bc064.

was used to calculate the cost of medical care for a patient living with HIV in Mexico. Researchers estimated that every year of comprehensive medical follow-up after diagnosing a patient with HIV costs approximately USD 6,000 per patient, while the cumulative cost of maintaining a patient's health for over 15 years would be USD 280,000.

A somewhat different approach to cost categorization was applied in a study of the costs per patient living with HIV in rural areas of South African Malawi. In 2017, researchers selected a northern region of the country to analyze the cost of treating one HIV patient per year at each of the five health facilities operating in the region.[27] Capital costs included the expenditures on buildings, furniture, equipment, and personnel training. Current costs were calculated based on the time of health workers spent on each service or procedure, i.e. the cost of labor. Besides, current costs included tests, assays, medicines, consumables, and utility fees. Indirect costs included regular audits of the health facilities and related expenditures. The total cost of medical care for one HIV patient per year ranged from USD 90.7 in one of the clinics to USD 115 in a hospital. The average cost of care per one patient living with HIV in five health facilities was about USD 100.

Migrants in different parts of the world tend to be diagnosed with HIV at later stages as compared to the resident population, which poses risks to the health of migrants as well as public health in the host countries.

The overview of research studies presented above gives us an insight into the approaches to determining the societal and individual benefits of early and regular antiretroviral therapy for all people living with HIV. It should be noted that the widespread production of generic drugs allows to decrease the cost of antiretroviral therapy every year. It is no longer an overwhelming burden on the budgets of developing countries, as it was at the dawn of HIV treatment development. However, drug resistance can become a serious risk to treatment success, especially when antiretroviral therapy is interrupted. Resistance requires changing treatment regimens and switching to more expensive drug combinations.

In Australia, researchers observed differences in the degree of HIV diagnosis and treatment among migrants and people born in Australia.[28] They analyzed the history of HIV diagnostics and clinical data from the National HIV Registry for 2013–2017 in two states – New South Wales and Victoria. The researchers compared the extent to which 90-90-90 targets were achieved in different social groups. They concluded that migrants had

[27] Seema V et al., 2020. Assessing the costs and efficiency of HIV testing and treatment services in rural Malawi: implications for future «test and start» strategies.

[28] Marukutira T. et al., 2020. Gaps in the HIV diagnosis and care cascade for migrants in Australia, 2013–2017: A cross-sectional study.

larger gaps in HIV diagnosis and treatment (85-85-93) as compared to non-migrants (94-90-96). There was also a larger gap in achieving those targets between migrants and non-migrants who acquired HIV through homosexual contacts: 84-83-93 versus 96-92-96. Migrants from the countries which did not have Reciprocal Health Care Agreements with Australia had lower target achievement rates (83-85-92) as compared to the migrants eligible for treatment under such Agreements (96-86-95).

A number of studies indicate that migrants in different parts of the world tend to be diagnosed with HIV at later stages as compared to the resident population,[29, 30, 31] which poses risks to the health of migrants as well as public health in the host countries. Thus, this problem is more global than it may appear. In a situation, when foreign citizens have limited access to HIV diagnostics and antiretroviral therapy in the host countries, the risk of therapy interruption significantly rises, which directly leads to higher cost of care in the future. In the next section, we will present the cost of several HIV treatment scenarios in the Russian Federation.

[29] Hoyos J. et al., 2013. Never tested for HIV in Latin-American migrants and Spaniards: prevalence and perceived barriers.
[30] Arco D.A. et al., 2013. HIV testing and counselling for migrant populations living in high-income countries: a systematic review.
[31] Reyes-Urueña J. et al. 2017. Differences between migrants and Spanish-born population through the HIV care cascade, Catalonia: an analysis using multiple data sources.

METHODOLOGY AND LIMITATIONS

In most foreign studies analyzing the cost of HIV care, the parties engaged in the planning and organization of such care (from charities and international organizations to health departments and research groups) usually act in a coordinated manner: government agencies present the statistics on population and health, while health facilities provide information on the cost of treatment and patient care to universities and research laboratories. Such a coordinated approach allows for a more comprehensive situation assessment and an in-depth analysis of the economic benefits or losses.

Our review is focused on the limited legal status of international migrants living with HIV in Russia, whose issues have been raised for a number of years at the highest level, in particular at the Ministry of Health and at the Government of the Russian Federation, but no rational and quick solution has been found yet, which would meet the interests of the whole society.[32] There are limits to what the scientific community can do. It is almost impossible to obtain any open data on the scope of annual budgetary expenditures to treat international migrants living with HIV without research studies initiated by the government agencies. Therefore, we decided to estimate the cost of HIV treatment and monitoring for a foreign citizen who is prescribed antiretrovirals immediately after being diagnosed with HIV, and compare it with the cost of diagnosis and treatment in case of opportunistic diseases developed with no timely antiretroviral therapy. Here we talk about a situation, where a migrant living with HIV fails to receive timely treatment in Russia, and as a result diagnosis and treatment of HIV-associated diseases have to be covered from the state budget of the Russian Federation. This information will be useful to decision-makers, including heads of relevant departments and representatives of government agencies.

We have taken two options to calculate the cost of treatment based on the prices of private health centers and laboratories. We realize that this is a rather rough estimate, but there is also a certain advantage of using market prices – they include all the costs incurred by the clinic when providing services, which allows us to make calculations based not on the microcosting model, but on the current market prices.

[32] News dd. August 10, 2018 "Foreigner citizens with HIV may be allowed to stay in Russia" (available in Russian)

Annex 1 presents the estimated costs for yearly outpatient treatment and monitoring for a person receiving antiretroviral therapy. The prices of laboratory tests and examinations were taken from commercial health facilities. The total treatment cost per year is RUB 83,084 (in 2021 prices). This is the amount to cover the provision of medical services and antiretroviral therapy to a foreign patient for a year. It equals RUB 6,924 per month.

The second option (Annex 2) presents the estimated cost of inpatient care for a patient living with HIV who does not have a possibility to receive antiretroviral therapy and develops an HIV-associated disease (or sometimes a number of diseases) requiring hospitalization. Most often, such patients are admitted to hospital with a diagnosis "HIV infection. Encephalitis of unknown etiology. Pneumonia of unknown etiology," whereas the diagnosis "encephalitis and pneumonia of unknown etiology" in a patient living with HIV often covers not just one pathology, but a combination of conditions, such as tuberculosis, generalized cytomegalovirus infection, pneumocystis pneumonia, primary lymphoma of the central nervous system, etc. Verification of the diagnosis requires a number of laboratory tests and investigations primarily aimed at choosing the right treatment tactics. In this scenario, we included only 21 days of hospital stay, although patients with such severe health conditions may need twice as much time for treatment, recovery and discharge from hospital.

We conducted a series of expert interviews and concluded that this is one of the typical scenarios of HIV infection progression in the absence of timely antiretroviral therapy initiation among patients admitted to infectious diseases hospitals. We made an assumption that the patient would stay in the hospital for 21 days. There he would undergo a range of examinations to select a treatment regimen and will also be prescribed a course of the cheapest antiretroviral therapy for the period of his stay in the health facility costing RUB 1,407 (Annex 2). In this case, the total cost of medical care for such patient would be RUB 228,572,60 (in early 2021 prices).

RESULTS

Two scenarios presented herein model two treatment options for the foreign citizens living with HIV. The first option stipulates that the patient is receiving a number of HIV services every year. The cost of such services would be RUB 83,084 a year or approximately RUB 6,924 a month (Table 2). Here it should be noted that with certain legislative amendments these costs can be covered through reciprocal interstate transfers, i.e. the cost of the migrant's treatment can be covered by the country of origin and not by the state budget of the Russian Federation. Currently, foreign citizens can receive such services in Russia only at their own expense, fearing that their diagnosis will become known and they will be deported.

The second scenario assumes that a foreign living with HIV has not previously received antiretroviral therapy and as a result developed some opportunistic diseases. In this case, 21 days of inpatient care and a course of antiretroviral therapy for the period of stay in a health facility will cost RUB 228,572.60 (Table 2), which is much higher that the annual costs described in the first scenario.

TABLE 2
TREATMENT COSTS: TWO SCENARIOS FOR A PATIENT WITH HIV

Treatment option	*Patient previously received antiretroviral therapy*	*Cost of diagnosis and treatment (in early 2021 prices), RUB*
1. Outpatient treatment of a patient living with HIV per year	Yes/No	83,084
2. Inpatient treatment for HIV-associated diseases, 21 days (with an ART course for the period of hospital stay)	No	228,572.60

It is convenient to use the cost of outpatient treatment per year, since certain medical tests are needed before the ART initiation and every three months thereafter, and thus the annual costs can be used to calculate the average monthly costs of a foreign citizen or the budgetary costs required to cover such treatment.

To sum up, we would like to point out that the second treatment option (Annex 2) is covered from the state budget of the Russian Federation. It means that the more often there is a need in high-tech care for foreign citizens, the more budget funds will have to be allocated for this kind of expenditures, which could have been avoided. It should also be noted that in the second scenario in the absence of antiretroviral therapy the patient discharged from hospital can later be hospitalized again, which will significantly increase the costs.

WHAT IS THE SHARE OF ART COSTS IN THE BUDGET OF A LABOR MIGRANT LIVING WITH HIV IN RUSSIA?

As part of our study, we also want to estimate the share of expenditures for HIV treatment in the monthly budget of labor migrants living with HIV who receive treatment on their own and pay for testing and antiretrovirals out of their own pocket. The socio-economic conditions of labor migrants in Russia vary greatly. Contrary to popular belief, a large proportion of migrants in Russia are quite financially secure. However, as we stated in our introduction, HIV is a significant barrier to legalization, so the biggest part of migrants living with HIV are foreign citizens who are not able to obtain a legal status and who are thus only able to work with no official labor contracts. Usually, they have unstable jobs with lower wages than the market average.

As part of the Situation Analysis of HIV-Related Health Services for Foreign Migrants in the Russian Federation conducted by the Regional Expert Group (REG) on Migration and Health in December 2020 – February 2021, we calculated the average monthly budget of a migrant living with HIV in Russia. As an example, we took a young man (men prevail in the structure of labor migration in Russia) from Uzbekistan (Uzbeks rank first in terms of the number of labor migrants coming to Russia).[33]

The study conducted by the Russian Presidential Academy of National Economy and Public Administration (RANEPA) showed that the median salary of a foreign labor migrant in Moscow is 33,000 Russian rubles (or 450 US dollars at the exchange rate as of March 15, 2021).[34] Let us take this amount as a starting point in our calculations.

Income: RUB 33,000

Mandatory expenses (from interviews with migrants, prices as of December 2020):

1) housing rental, a bed in Moscow (approx. RUB 7,000);

2) food, communication, travel costs (approx. RUB 9,000);

3) money transfer to relatives in the country of origin (approx. RUB 15,000);

4) health care and unforeseen expenses, such as fines and informal payments (approx. RUB 2,000).

Total expenses: RUB 33,000

[33] Migration statistics 2020 (available in Russian)

[34] A.L. Rocheva, Y.A. Varshaver, N.S. Ivanova. 2020. Vulnerable populations in emergency situations: solidarity and trust to government as the basis of migrant strategies in Russia during the COVID-19 pandemic. Media and communications during the COVID-19 pandemic. Public Opinion Monitoring No. 6 (160) (available in Russian)

Given the high level of stigma related to HIV in Eastern Europe and Central Asia, [35] migrants often choose not to tell their family members about their disease and do their best to continue sending fixed sums of money to their families every month.

If the rule on the expulsion of foreign citizens living with HIV from the Russian Federation was canceled, migrants diagnosed with HIV could go to their countries of origin to register at the AIDS center and receive ART on a regular basis, even if they spent most of the year in the host country as migrants, which would significantly reduce their own expenses for the services related to HIV treatment and care.

A migrant earning a median salary in Moscow has extremely limited resources to pay for the outpatient treatment of HIV infection.

We see that a migrant earning a median salary in Moscow has extremely limited resources to pay for the outpatient treatment of HIV infection. The monthly expenses for outpatient treatment of a patient with HIV in Russia are RUB 6,924, which is 21% of the median monthly income of a labor migrant in Moscow. This is clearly a significant part of the migrant's expenses. If migrants had an opportunity to legalize in Russia and receive ART drugs at the AIDS centers of their countries of origin, their personal expenses would be significantly reduced. Besides, if they could stay in Russia legally, their labor would be protected by employment contracts, which would minimize the situations of non-payment of salaries and compensations in case of injuries at the workplace.

[35] Kashnitsky, D. (2020). The Russian HIV residence ban and state control of migration. Journal of Public Health Policy 41 (4), 453–463.

DISCUSSION

Despite the fact that our review did not take into account any non-medical costs of other agencies related to the detention, trial and deportation of international migrants living with HIV, social costs or personal expenditures of patients, we estimate that the budget costs for the treatment of severe HIV cases among foreign citizens are very high and amount to at least RUB 200,000 per patient.

The laws of the Russian Federation stipulate detention and deportation of foreign citizens living with HIV. Therefore, to the costs of treating severe diseases we can also add the costs of detention, escort, communication with diplomatic missions, interpreter (if needed), legal proceedings, stay of foreign citizens in special detention centers, travel costs and airfare – all those costs create a financial burden for the Russian state budget.[36]

Besides, it should be noted that in practice deportation is an administrative procedure hard to implement, since the decision on expulsion is made by Rospotrebnadzor, and then the data is given to the Ministry of Internal Affairs, which is authorized to execute the decision. Finding a person for physical expulsion is a measure, which is expensive, ineffective and rarely used. In practice, the Ministry of Internal Affairs usually enters the data of foreign citizens with HIV diagnosis on the list of persons banned from entering the Russian Federation.[37] In the future, if such foreign citizens leave the territory of the Russian Federation, they will no longer be able to return. This is a widely used practice of "soft deportation." However, migrants living with HIV are aware of this practice and are reluctant to leave the Russian Federation as they fear to lose their jobs and thus postpone the start of their treatment.[38]

We believe that there is a need to calculate all the relevant expenses to fully understand the government costs associated with the practice of expulsion of foreign citizens living with HIV.

In our opinion, a promising solution would be to lift the restrictions on the entry and stay of international migrants living with HIV in Russia. In this case, part of them will not be hiding their status and endangering their own health and the health of Russian citizens in fear of expulsion.

[36] Order of the Ministry of Internal Affairs dated April 24, 2020 No. 239 "On approval of the Procedure for deportation of foreign citizens and stateless persons by the Ministry of Internal Affairs of the Russian Federation and its territorial bodies" (available in Russian).

[37] Schenk C. Why control immigration? Strategic uses of migration management in Russia. Toronto: University of Toronto Press; 2018.

[38] Kashnitsky, D. (2020). The Russian HIV residence ban and state control of migration. Journal of Public Health Policy 41 (4), 453-463.

When talking about the legalization of foreign citizens living with HIV, the main stumbling block is determining the source of funding to ensure their uninterrupted treatment. A rational solution would be to introduce a mechanism of reciprocal interstate transfers to reimburse for the costs of antiretroviral therapy in the host countries, especially in the light of active convergence and integration of the EAEU countries in the recent years.

Deterioration of people's health and the related burden on the health care system is not a desirable scenario for any of the parties – neither for the host country nor for the country acting as a donor of migrants. Therefore, steps should be taken to reduce the risks and prevent future economic losses. Currently, HIV incidence in Russia is significantly higher than in the countries of origin of the main flows of labor migrants, which is against the popular opinion often presented in media that migrants bring infections to Russia and threaten the local population.[39] This phenomenon can only be countered by joint efforts with awareness-raising campaigns to reduce the level of stigma against people living with HIV.

Migrants living with HIV are aware of soft deportation and are reluctant to leave the Russian Federation as they fear to lose their jobs and thus postpone the start of their treatment

The rights of international migrants who come to the Russian Federation for different purposes are not equal. Foreign citizens who come to Russia as tourists do not have to get tested for HIV, but they are not long-term residents, unlike labor migrants or students, who bring certain benefits to the Russian Federation in the form of direct and indirect tax revenues over a long period of time as well as their contribution to GDP. It should be taken into account that the health of long-term foreign residents directly affects the economic well-being of the host country. In 2020, the number of foreign citizens in Russia significantly decreased due to the COVID-19 pandemic. However, they will come back with regular transport connection and revival of the economy. This moment can be used to revise and update the laws regarding international migrants living with HIV.

In 2019, UNAIDS published a report analyzing the restrictions on international travel and stay for people living with HIV. At the time of publication, various restrictions were applied in 48 countries. The Russian Federation and Turkmenistan had the most stringent rules for international migrants living with HIV (7 out of 7 restrictions), while other countries had fewer restrictions in place.[40]

[39] Schenk C. Why control immigration? Strategic uses of migration management in Russia. Toronto: University of Toronto Press; 2018.

[40] SUNAIDS, 2019. Still Not Welcome: HIV-related Travel Restrictions.

CONCLUSIONS

Foreign citizens living in Russia are forced to look for alternative ways to preserve their health. According to the Russian laws, if international migrants are tested and diagnosed with HIV not anonymously, Rospotrebnadzor bans them from staying in the country, which is a big barrier to HIV detection in this population. HIV incidence among the Russian citizens tested for HIV is 294.2 cases per 100,000 population, while among international migrants this rate is 94.4 cases per 100,000 population (data of the Central Research Institute of Epidemiology for 2019), but this is the data only for those foreign citizens who are officially tested.

This study is aimed at analyzing the economic component of treating an international migrant with HIV in Russia. For our analysis, we took two treatment scenarios: outpatient treatment of a patient with HIV, who is diagnosed with HIV at an early stage or whose HIV infection has been managed for several years; and inpatient treatment of a patient living with HIV who is not taking antiretroviral therapy, which leads to the development of HIV-associated diseases. The prices for testing and examinations were taken from private health clinics as of the beginning of 2021.

In the first scenario, with no hospitalization required, the cost of treatment and examinations was RUB 83,084 a year. In the second scenario, inpatient treatment of a patient with complications of the HIV infection was modeled. In this case, the cost of all the examinations, treatment and inpatient care for 21 days was RUB 228,572.60. In addition to direct medical costs in case of inpatient care, there are also non-medical costs of diagnosing a foreign citizen with HIV, which include detention, trial and deportation, losses in labor force, and individual patient costs, which should also be calculated in further studies.

RECOMMENDATIONS

1. To the Russian public authorities

To control the spread of HIV, bring international migrants living with HIV out of the shadows, and reduce budgetary costs for high-tech medical care, we recommend:

- Legalize international migrants living with HIV
- Introduce a practice of reciprocal interstate transfers to reimburse for the costs of antiretroviral therapy in the host countries.

2. To the governments of the countries of migrants' origin in Eastern Europe and Central Asia

- Introduce into the national programs a strategy of comprehensive support for migrants, with a particular focus on health issues: prevention, early diagnosis and provision of health services, in particular in the area of HIV, tuberculosis, and sexually transmitted infections, based on a situation analysis carried out with a broad engagement of civil society organizations, taking into account international recommendations and the Sustainable Development Goals.
- Allocate funds from state budgets to civil society organizations working in the areas of migration, HIV, and tuberculosis to work with outgoing and returning migrants.
- Sign bilateral and multilateral agreements among states in the areas of HIV and tuberculosis, and in those countries where such agreements exist, monitor their implementation with the engagement of civil society.

3. To international organizations

- Provide technical assistance to the countries of origin of migrants in arranging cross-border cooperation and signing interstate agreements on providing migrants with HIV-related services in the countries of origin and destination.
- Maintain and, if needed, scale up the funding of assistance programs for migrants with regard to HIV and tuberculosis, taking into account the needs of migrants as well as specifics and restrictions of the host countries.
- Initiate and support inter-country platforms for knowledge exchange and dialogue on cross-border cooperation for the countries of Eastern Europe and Central Asia.

4. To civil society organizations

- Develop HIV-related services that take into account specific characteristics and needs of migrants (language, status, socio-economic situation) and include the cross-border cooperation component.
- Develop cooperation with migrant NGOs in the host country.

ANNEXES

ANNEX 1.
COSTS OF EXAMINATIONS FOR A PERSON LIVING WITH HIV (WHO RECEIVES ANTIRETROVIRAL THERAPY)

Procedure	*Times per year*	*Cost (in Russian rubles)*	*Total cost*
Examination of an infectious disease doctor	4	2,000	8,000
Biochemical profile			
Alanine aminotransferase (ALT)	4	250	1,000
Aspartate aminotransferase (AST)	4	250	1,000
Creatinine	4	260	1,040
Glucose	4	245	980
Total protein	4	265	1,060
Total bilirubin	4	260	1,040
Urea	4	260	1,040
Lipid profile (low density lipoproteins, high density lipoproteins, cholesterol, triglycerides)	2	1060	2120
Syphilis	1	640	640
Hepatitis B and	1	840+420	1 240
Complete blood count	4	495	1 980
HIV RNA	4	8 900	35 600
CD4 count	4	1 890	7 560
Antiretroviral therapy (Efavirenz — RUB 600, Lamivudine — RUB 400, Tenofovir — RUB 407)	12	1 407	16 884
Chest X-ray	1	1 900	1 900
Total			**83 084**

Prepared based on the Guidelines on treating HIV and associated diseases and chemoprophylaxis of HIV, Rospotrebnadzor, 2019[41]

[41] Guidelines on treating HIV and associated diseased and chemoprophylaxis of HIV. V.V. Pokrovsky, O.G. Yurin, A.V. Kravchenko, V.V. Belyayeva, T.N. Yermak, V.G. Kanestri, V.I. Shakhgildyan, N.V. Kozyrina, V.V. Buravtsova, R.S. Narsiya, O.N. Khokhlova, A.V. Pokrovskaya, O.S. Yefremova, V.V. Konnov, U.A. Kuimova, A.A. Popova, Y.Y. Voronin, L.Y. Afonina, I.A. Vasilyeva, V.N. Zimina et al. Rospotrebnadzor, 2019.

ANNEX 2.
COSTS OF THE EXAMINATION AND TREATMENT OF A PATIENT WITH HIV INFECTION, ENCEPHALITIS OF UNKNOWN ORIGIN, PNEUMONIA OF UNKNOWN ORIGIN

Procedure	*Times during inpatient treatment*	*Cost (in RUB)*	*Total cost*
Examination of an infectious disease doctor	21	1,200	25,200
Patient day (hospital stay in a double ward per day)	21	3,500	73,500
Examination of a tuberculosis specialist	1	1,950	1,950
Examination of a neurologist	1	1,800	1,800
Examination of an eye physician	1	1,850	1,850
Laboratory tests			
Biochemical profile			
Alanine aminotransferase (ALT)	4	250	1,000
Aspartate aminotransferase (AST)	4	250	1000
Creatinine	4	260	1040
Glucose	4	245	980
Total protein	4	265	1060
Total bilirubin	4	260	1040
Urea	4	260	1040
Lipid profile (low density lipoproteins, high density lipoproteins, cholesterol, triglycerides)	2	1,060	2120
Syphilis (RPR)	1	365	365
Hepatitis B surface antigen (HBsAg) qualitative assay	1	360	360
Hepatitis B e-antigen (HBeAg) qualitative assay	1	690	690
Hepatitis B, antibodies to Hepatitis B e-antigen (anti-HBeAg) qualitative assay	1	690	690
Hepatitis B virus, total antibodies to nuclear antigen, qualitative	1	675	675
Hepatitis virus DNA, quantitative assay (plasma)	1	3,690	3,690
Hepatitis C (total a-HCV)	1	535	535
a-HIV	1	445	445
Immunoblot		2,700	2,700
Complete blood count	4	495	1,980
Urinalysis	2	320	1,280

Procedure	*Times during inpatient treatment*	*Cost (in RUB)*	*Total cost*
HIV RNA	2	8,900	17,800
CD4 count	2	1,890	3,780
Mycobacterium Tuberculosis DNA, qualitative	2	365	730
Herpes Simplex Virus, Type 1 and Type 2 DNA, qualitative	1	365	365
Varicella-Zoster virus DNA, qualitative	2	375	750
Toxoplasma gondii DNA, qualitative	1	355	355
Herpesviruses DNA, quantitative	1	830	830
Sputum culture for Mycobacterium tuberculosis	3	640	1,920
Culture for Mycobacterium tuberculosis 1	1	1,120	1 120
CSF culture for Mycobacterium tuberculosis	1	1,200	1,200
Herpesviruses, DNA, quantitative in blood cells (whole blood)	1	1,250	1,250
Pneumocystis jirovecii (carinii), DNA, qualitative	1	490	490
Microbiological (culture-based) blood test for sterility determining sensitivity to antimicrobial and antimycotic agents in case of pathogen detection	1	2,490	2,490
Microbiological (cultural) assay for aerobic and facultative anaerobic flora with determination of sensitivity to an extended range of antimicrobial agents	2	1,500	3,000
Puncture fluid cytology	2	845	1,690

Procedure	*Times during inpatient treatment*	*Cost (in RUB)*	*Total cost*
	Examinations (procedures)		
Chest X-ray	1	1,900	1,900
Electrocardiogram (ECG)	1	1,500	1,500
Bronchoscopy	1	5,681	5,681
Chest CT scan	1	3,100	3,100
Brain CT scan	1	3,000	3,000
Abdominal ultrasound	1	2,700	2,700
Lumbar puncture	1	10,000	10,000
	Treatment		
ART (Efavirenz — RUB 600, Lamivudine — RUB 400, Tenofovir — RUB 407)	1	1,407	1,407
Biseptol 480 IV	14 days* 4 ampules*2 times	33,8 — 1 ampule	3,785.6
Ceftriaxone	2*5 days	88	1,760
Cymevene (1 vial)	2*10 days	1,615	32,300
Total for 21 days			**228 572,6**

Prepared based on the Guidelines on treating HIV and associated diseases and chemoprophylaxis of HIV, Rospotrebnadzor, 2019