

SOCIAL AND ECONOMIC BURDEN OF HIV IN RUSSIA

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BACKGROUND

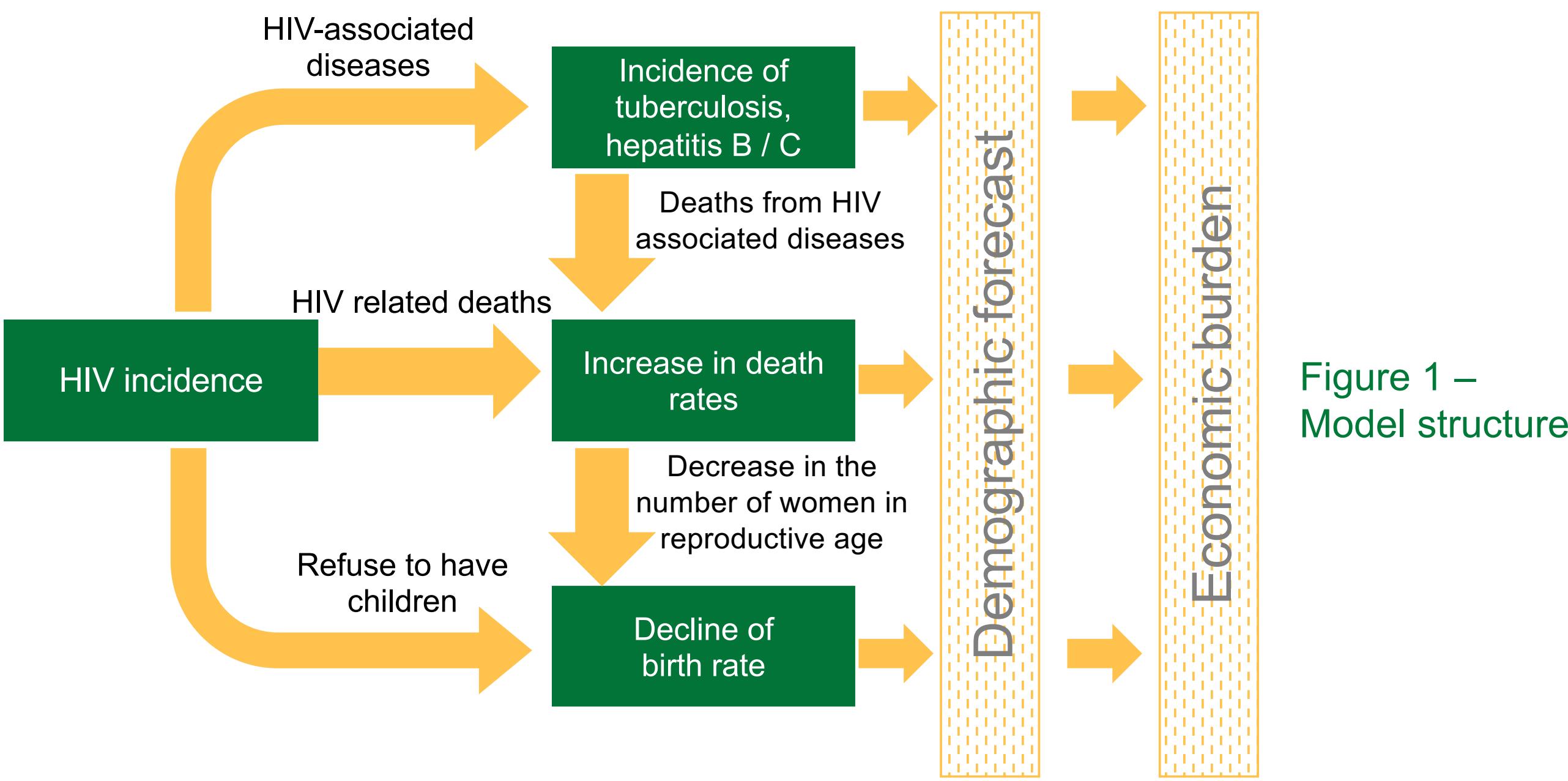
- Russia remains among the world leaders in HIV infection incidence, prevalence and death rates, despite significant progress has been made in past years. As of 2019 Russia has highest incidence rate of HIV among Eastern European and Central Asian (EECA) countries. Russia is also the leader in HIV prevalence among them.
- There were 863,901 people with antibodies to HIV living in Russia in 2019, which was about 0.59% of the total population of the country. Prevalence rate reached 588.6 cases per 100,000 population. A total of 80,124 new cases of HIV infection were detected, and the incidence rate was 54.6 cases per 100,000 population. Total number of HIV-related deaths was 20,088.

OBJECTIVES

- The aim of this study was to estimate social and economic burden of HIV in Russia.

METHODS

- To assess the social burden of HIV infection in Russia, we developed a model its impact on social (demographic) and economic indicators (Figure 1).



- Demographic burden was defined as excess mortality and decrease in life expectancy at birth, fertility, natural population growth and population size, as well as years of life lost (YLL), quality adjusted years of life lost (QAYLL) and disability adjusted life years (DALY) lost
- These indicators were estimated for a hypothetical scenario of no negative impact of HIV on mortality, desire to have children and HIV-associated morbidity in Russia, and then compared to their actual values in 2020
- Economic burden included medical costs of screening, diagnosis, and treatment of HIV, including costs of antiretroviral therapy (ART), direct non-medical costs of disability benefits, and indirect costs of GDP loss due to premature mortality and disability.
- All indicators were estimated for 2019 and no future costs were considered. Indirect costs were estimated using human capital theory. We assumed that both mortality and disability immediately lead to a decrease in labor supply and GDP (with adjustments for sex-age structure of labor participation and productivity).

RESULTS

- Excess mortality of the adult population due to HIV was 19,941, of whom 19,135 (>95%) were of working age. Mortality rate of the working-age population could have been 23.1 cases per 100,000 population lower in 2019, assuming successful control of HIV infection.
- As a result of premature mortality in women of reproductive age and decreased motivation to have children among women living with HIV, number of births decreased by 5,845 people in 2019. Due to additional mortality and reduced fertility caused by HIV infection, the natural growth rate in Russia was 25,786 lower than it would have been, if HIV infection was successfully controlled (Table 2).

	Born	Dead	Difference
Actual (2019)	1 481 074	1 798 307	-317 233
Forecast (if HIV successfully controlled)	1 486 919	1 778 366	-291 447
HIV burden	-5 845	+19 941	-25 786

Table 1. Impact of HIV on natural population growth

- Life expectancy at birth in the Russian Federation in 2019 would have been 73.64 years if HIV infection was successfully controlled, compared to the actual value of 73.33, so the decrease in life expectancy at birth due to HIV infection for 2019 was 0.3 years.
- YLL due to HIV infection in the Russian Federation in 2019 was 9,971, while the number of quality-adjusted YLL was 216,749. Since HIV is associated not only with additional mortality, but also with disability, we calculated DALY due to HIV infection, which was 66,649 in 2019.
- Total amount of direct medical expenses for screening, diagnostics, and treatment of HIV infection in Russia in 2019 was 479 US\$ million (Table 3). The largest share was procurement of ART for HIV-infected people - 368 million US\$ or 76.7% of the total direct medical HIV costs. The major amount of procurement was done by the Ministry of Health (86.5%).

- The second largest expenditure item was outpatient treatment - 32 million US\$ or 6.7%. The third largest expenditure item was provision of anti-tuberculosis drugs for patients with co-infections of HIV and tuberculosis – 30 million US\$.

	Direct medical costs, US\$	Share from total, %
Procurement of ART, including:	367 542 073	76.7%
Procurement by the Ministry of Health of Russia	317 846 432	66.3%
Procurement by regions, federal agencies and departments	49 695 641	10.4%
Procurement of drugs for treatment of tuberculosis in HIV-infected people	30 261 379	6.3%
Procurement of drugs for the treatment of hepatitis B in HIV-infected people	32 142	0.0%
Purchase of drugs for the treatment of hepatitis C in HIV-infected people	10 642 997	2.2%
Diagnostics (testing) of HIV	20 696 434	4.3%
Outpatient treatment	31 997 469	6.7%
Hospitalizations, including:	18 078 532	3.8%
Round-the-clock hospital	17 264 991	3.6%
Day hospital	561 089	0.1%
Palliative care	252 452	0.1%
Total	479 251 026	100%

Table 2. HIV direct medical costs.

- Total amount of direct non-medical expenses, which consist of disability benefits, in 2019 was about 178 million US\$.
- HIV leads to premature mortality of population, mainly in the working age, as well as to persistent disability of some people living with HIV. Taking this into account, total amount of indirect costs in form of lost output of goods and services (GDP) in 2019 was 2.4 billion US\$.
- Figure 2 summarizes the distribution of HIV economic burden among considered categories. Total economic burden was 3.1 billion US\$ or about 0.2% of GDP. Most of loss accounts for indirect economic costs - 2.4 billion US\$, or 78.4%. The second largest component were direct medical costs - 0.5 billion US\$, or 15.7%.

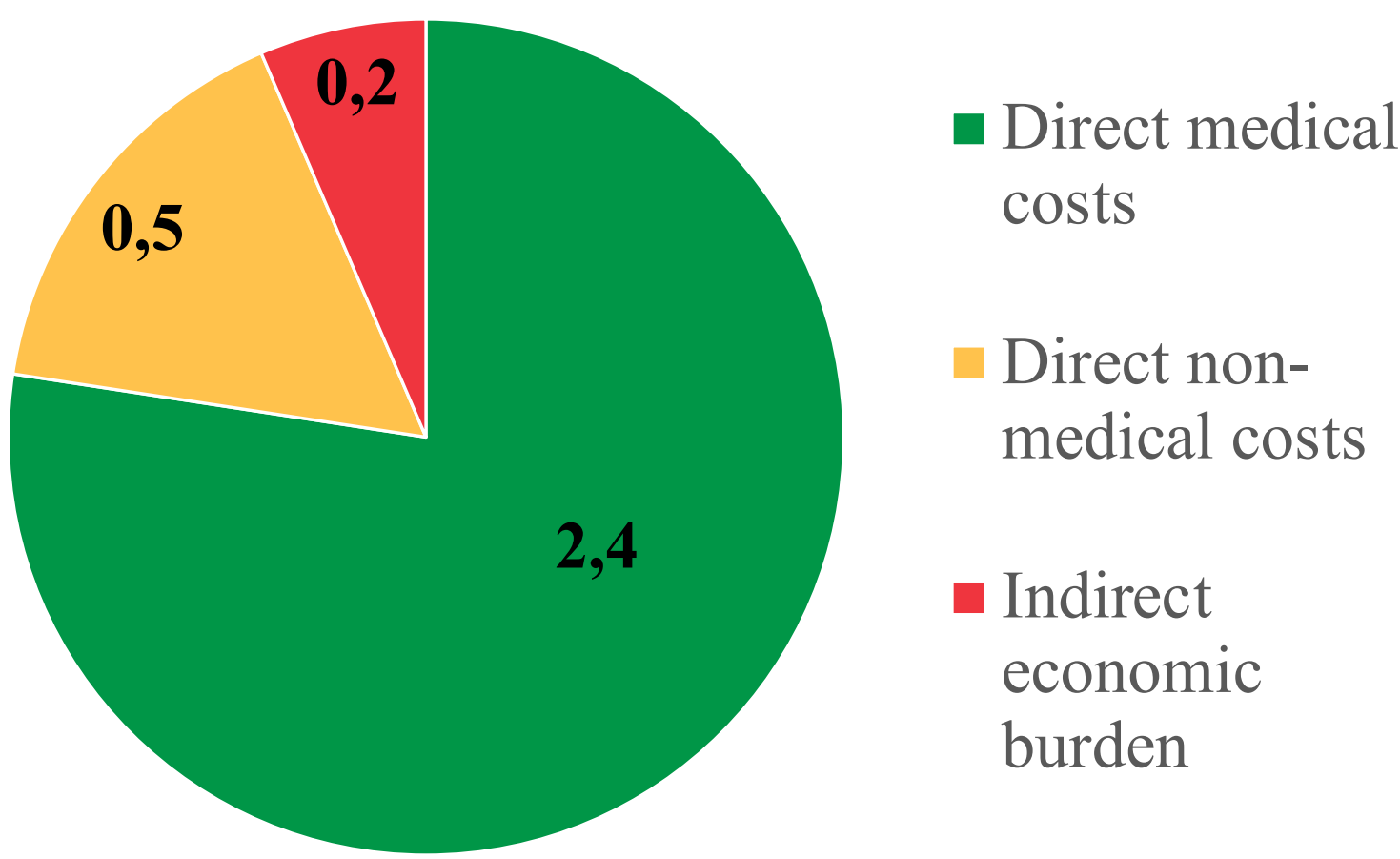


Figure 2. Structure of HIV economic burden in 2019

CONCLUSION

- HIV epidemic in Russia causes significant burden to social and demographic development of the country, which includes increase in mortality, decrease in birth rate and life expectancy in Russia. The disease predominantly affects young population, which leads to significant losses in the economy, including household income and the budget.
- This considerable HIV burden requires implementing new disease control measures. Dominance of indirect economic loss in structure of the economic burden imply that additional spending on diagnosis and treatment of HIV infection should be considered as an investment, since it can be compensated by reducing economic losses.

Funding: This study was funded by the Financial Research Institute.

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