

SOCIAL AND ECONOMIC BURDEN OF HEPATITIS C IN RUSSIA

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BACKGROUND

- Approximately 700,000 people are registered by the healthcare facilities with confirmed active hepatitis C virus (HCV) in Russia. However, the real prevalence of HCV infection, including hidden, may be up to 2.3 million¹ (Figure 1).
- A total of 24,514 new cases of HCV infection were detected in 2020, and the incidence rate was 16.7 cases per 100,000 population².



Figure 1. Treatment coverage in 2020.

- Approximately only 0.9% of patients (22,000 people) were provided with direct-acting antiviral drugs (DAAs) at state expense in 2020³ (Figure 1).

OBJECTIVES

- The objective of this study is to evaluate the social and economic burden of HCV infection in Russia as of 2020.

METHODS

- To assess the social and economic burden of HCV infection, we developed a concept model of the impact of this disease on demographic and economic indicators (Figure 2)

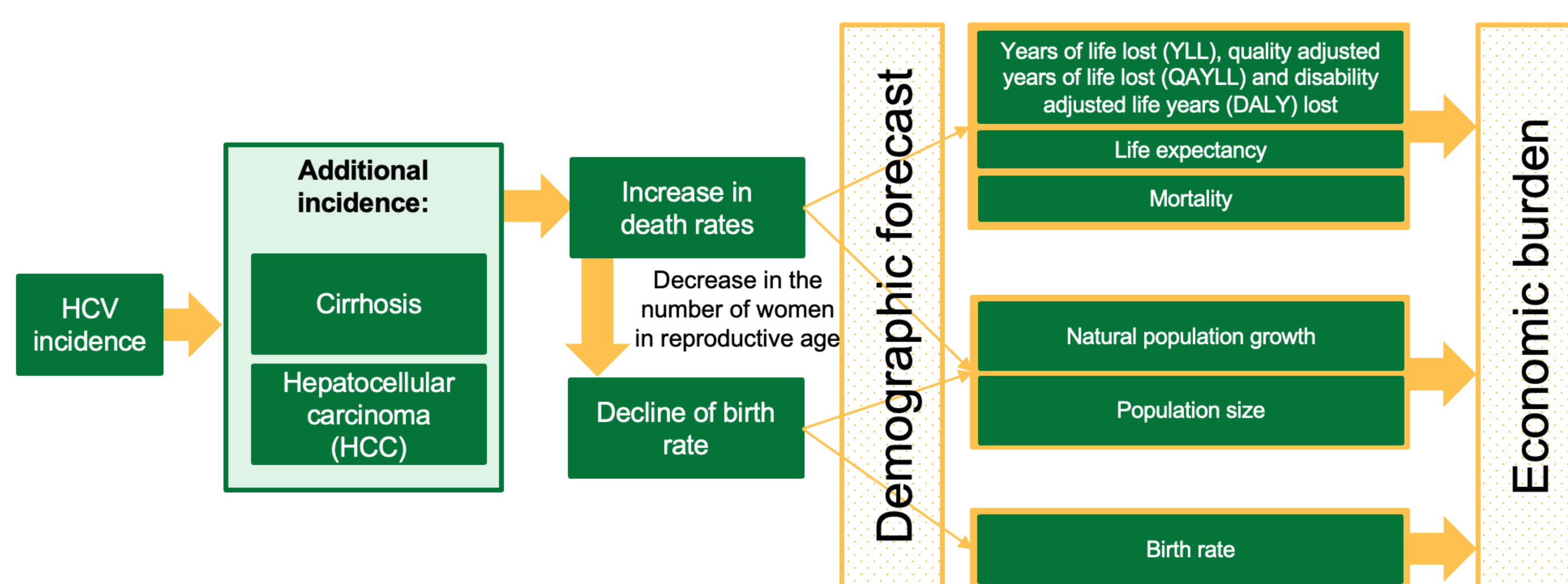


Figure 2. Model structure.

- Demographic (or social) burden** was defined as excess mortality and decrease in life expectancy at birth, fertility, natural population growth and population size.
 - These indicators were estimated for a hypothetical scenario of no excess mortality from HCV infection in Russia and then compared to their actual values in 2020 and national development goals for 2024 and 2030.
- Economic burden** included medical costs of treatment of HCV infection, including costs of DAAs, screening, inpatient and outpatient medical services, direct non-medical costs of disability benefits, and indirect costs of GDP loss due to premature mortality and disability.
- All indicators were estimated for 2020 and no future costs were considered. Indirect costs were estimated using human capital theory.

RESULTS

- In terms of excess mortality of the adult population, HCV infection burden was **16,934 deaths**.
- The mortality rate of the working-age population could have been **13.6 cases** per 100,000 population lower in 2020, assuming successful control of HCV infection.

- Life expectancy at birth in the Russian Federation in 2020 would have been 71.62 years, if HCV infection had been successfully controlled, compared to the actual value of 71.44, so the decrease in life expectancy at birth due to HCV infection for 2020 was **0.18 years** (Figure 3).

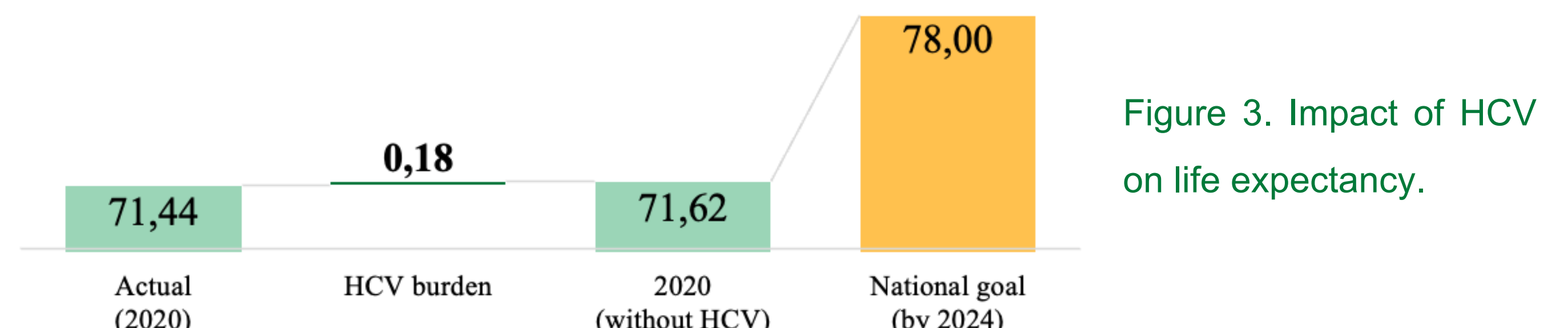


Figure 3. Impact of HCV on life expectancy.

- The total amount of **direct medical expenses** for DAAs procurement, screening, inpatient and outpatient treatment of HCV in Russia in 2020 was **179.4 US\$ million** (Table 1). Among them, the largest share is procurement of DAAs – 103.7 million US\$ or 57.8% of the total direct medical HCV costs. The second largest expenditure item was screening – 44.7 million US\$ or 24.9%. The third largest expenditure item was the inpatient treatment, including liver transplantation – 29.5 million US\$.

	Direct medical costs, US\$	Share from total, %
Procurement of DAAs	103 723 056	57,8%
Outpatient treatment	1 542 357	0,9%
Screening	44 665 115	24,9%
HCV complications hospitalizations, including:	29 453 139	16,4%
HCC	22 889 447	12,8%
Cirrhosis	3 915 058	2,2%
Liver transplantation	2 648 634	1,5%
Total	179 383 668	100%

Table 1. Direct medical costs associated with HCV infection.

- The total amount of direct **non-medical expenses**, which consist of disability benefits, in 2020 was about **35 million US\$**.
- Active HCV infection leads to premature mortality of the population, mainly in the working age, as well as to persistent disability. Taking this into account, the total amount of **indirect costs** in the form of lost output of goods and services (GDP) in 2020 was **601.9 million US\$**.
- Figure 4 summarizes the distribution of HCV infection economic burden among considered categories. The **total economic burden** was **816.3 million US\$** or about 0.05% of GDP. Most of the costs are indirect economic costs - 601.9 million US\$, or 74%. The second largest component in terms of costs is direct medical costs - 179.4 million US\$, or 22%.

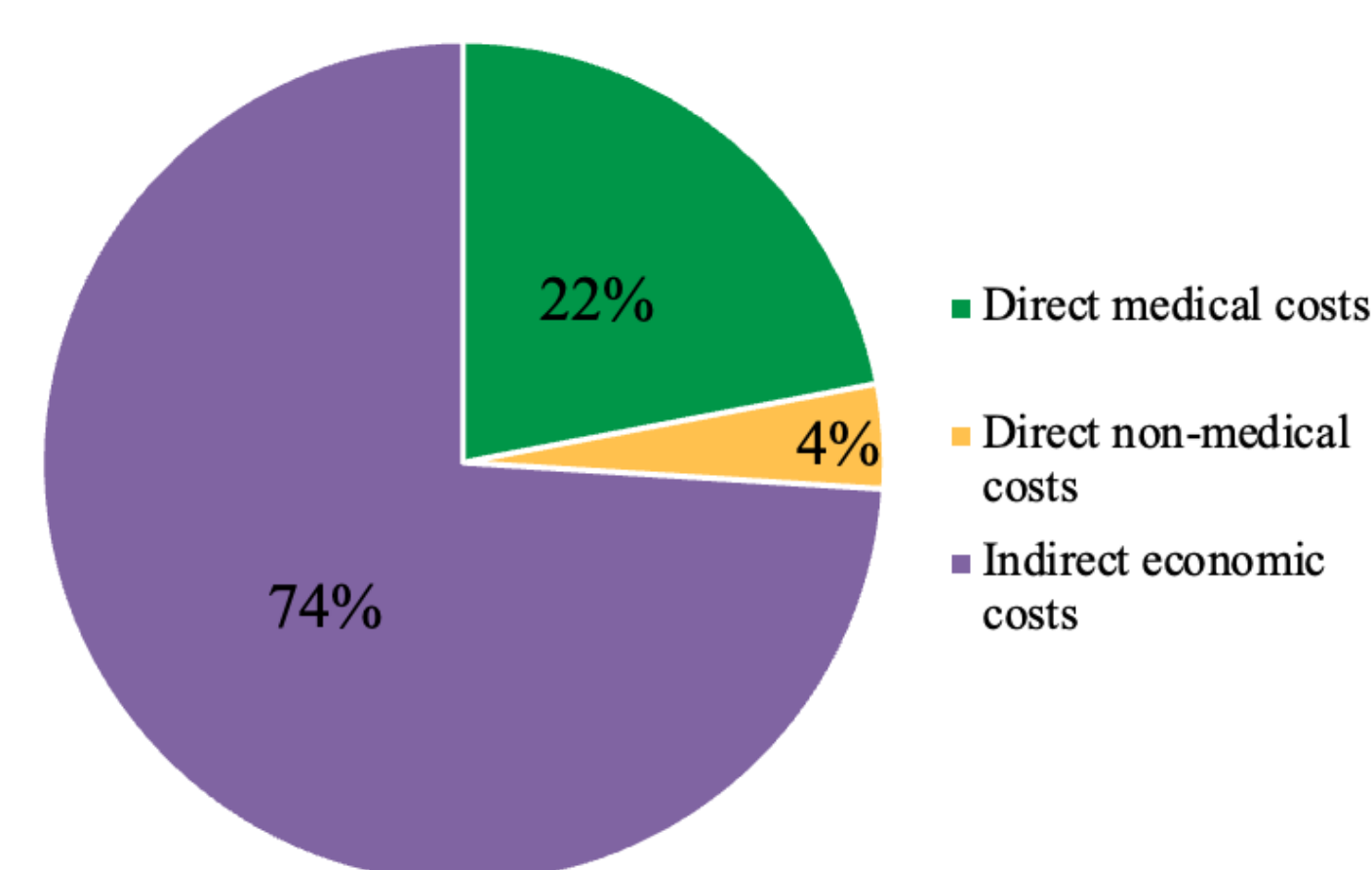


Figure 4. HCV infection economic burden in 2020

CONCLUSIONS

- HCV infection in Russia causes significant burden to the social and demographic development of the country, which includes excess mortality and decrease in life expectancy. The disease mostly affects population of working age, which leads to significant losses in the economy, including income of the population and the budget.
- Such a considerable HCV burden requires implementing new disease control measures. The key point of starting a new and more successful stage of fighting HCV infection in Russia could be launching a stand-alone state program on fighting HCV.

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