

# Analysis Of The Economic Affordability Of Antiviral Medicines Included In The Restrictive Lists Of Medicines

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## ABSTRACT

One of the main indicators characterizing the efficiency of the medicines circulation system functioning is the economic affordability of medicines. During the research, a pharmaco-economic assessment of cost indicators, of the average price of a course of treatment with antiviral medicines having an immunomodulatory effect and considering the level of consumer income was carried out. Identifying aspects in the analysis of the most important restrictive lists and proposing recommendations for their optimization are of high practical importance for improving the quality of medicine supply to the population.

**Keywords:** antiviral medicines, list of vital and essential medicines, minimum range of medicines, affordability index, affordability of medicine supply

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## INTRODUCTION

In terms of prevalence, viral infections are not inferior to bacterial ones, so according to the WHO, 90-95% of all infectious diseases are influenza and acute respiratory viral infection [18]. Every year, more than 1 billion acute respiratory viral infection patients are registered in the world, in Russia - up to 40 million. In 2019, the influenza incidence rate in the Russian Federation was 54,745 cases per 100,000 thousand population, which was 41% of the increase compared to 2018. Every year, according to the WHO, up to 650 thousand people die from influenza and complications associated with this disease. [19,20].

The goal of the state medicine policy is the timely provision of the population with affordable, effective and safe medicines. By the decree of the President of the Russian Federation No. 204 of May 7, 2018, an increase in life expectancy from 72.7 to 78 years and a decrease in mortality rates were determined among the main national development goals of the Russian Federation for the period up to 2024 [3]. The achievement of this goal certainly depends on many factors, and taking into account the current situation with influenza and acute respiratory viral infection, one of such factors in the field of medicine supply to the population is the economic affordability of antiviral medicines, which was the purpose of our study.

The task of increasing the affordability of medicines for the population and medical institutions in the provision of medical care, within the framework of state guarantees, is performed by the list of vital and essential medicines. Due to the minimum range of medicines, the country's population has access to the most demanded and necessary medicines for the provision of medical care. The presence of the minimum range of medicines in pharmacy organizations is an institutional rule enshrined in the federal law of April 12, 2010 No. 61-Φ3 "On the

circulation of medicines". It should be noted that according to the governmental decree of the Russian Federation of August 28, 2014 No. 871 "On approval of the rules for the formation of lists of medicines for medical use and the minimum range of medicines necessary for the provision of medical care", the list of minimum range of medicines, like other restrictive lists, is formed only based on the list of vital and essential medicines, which is established by state regulation of prices. Formation of viral and essential medicines lists is based on a comprehensive assessment of medicines, including integral scales of clinical and clinical-economic assessment with preferences to domestic manufacturers or localization of production in the Russian Federation. [1,2,4,5,6].

It should be noted that people with weakened immunity are more at risk of contracting influenza and acute respiratory viral infection. Taking this into account, we analyzed the economic affordability of antiviral medicines with immunomodulatory effects.

It should also be noted that due to the spread of the SARS-CoV-2 virus, which is responsible for the Covid-19 infection around the world, antiviral medicines are gaining particular relevance. It is necessary to search and develop innovative antiviral medicines. Due to the high susceptibility of the human organism to viruses, timely prevention, the availability of antiviral drugs and adequate treatment are the guarantee of health and longevity.

## MATERIALS AND METHODS

The objects of the study are regulations, lists of vital and essential medicines and minimum range of medicines for pharmacy organizations, as well as the procedure for their formation; range of antiviral medicines included in lists of vital and essential medicines and of minimum range of medicines; analytical data on the main indicators

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of the development of the pharmaceutical market; standards of medical care, "cost and efficiency" method of pharmaco-economic analysis.

In the course of the research, a complex of scientific methods of systemic, logical, marketing, and structural types of analysis was used.

To achieve the aim of the research, the following objectives were achieved:

1. To determine the antiviral medicines included in the lists of viral and essential medicines and of minimum range of medicines.
2. To allocate antiviral medicines for the treatment of influenza and acute respiratory viral infection with

immunomodulatory effect, and to determine the ratio of their manufacturers.

3. To calculate the price of antiviral medicines treatment.

4. To determine the estimated price of the course of treatment, taking into account a consumer's income level.

As part of the objective's achievement, at the first stage, on the basis of structural analysis, antiviral medicines were identified in the restrictive lists we studied for 2017-2019. Antiviral medicines in the lists of vital and essential medicines and of minimum range of medicines are considered in accordance with the international classification of diseases ICD-10 Version:2019, developed by WHO.

Table 1  
Antiviral medicines included in the list of vital and essential medicines

No.	Year	International non-propriety name - INN (number)	including those for viral infections treatment (%)				
			Influenza and acute respiratory viral infection	Human immunodeficiency virus	Herpes	Hepatitis B	Hepatitis C
1.	2017	35	11,43	71,4	2,86	11,43	2,86
2.	2018	38	10,52	65,79	2,63	7,89	13,6
3.	2019	39	10,25	74,35	2,56	10,25	15,38

Table 2  
Antiviral medicines included in the list of minimum range of medicines

No.	Year	International non-propriety name - INN (number)	including those for viral infections treatment (%)	
			Influenza and acute respiratory viral infection	Herpes
1.	2017	4	75	25
2.	2018	4	75	25
3.	2019	5	80	20

Antiviral medicines for the treatment of influenza and acute respiratory viral infections in the lists of vital and essential medicines and of minimum range of medicines include 4 INNs - oseltamivir, kagocel, umifenovir, and imidazolyl ethanamide pentandioic acid. It should be noted that out of 4 INNs, only oseltamivir acts directly on viral particles, and the other 3 (kagocel, umifenovir, and imidazolyl ethanamide pentandioic acid) also have an immunomodulatory effect. Imidazolyl ethanamide of pentandioic acid (Ingavirin) is included in the list of minimum range of medicines by a special commission of the Ministry of Health of the Russian Federation on the formation of lists of medicines in 2019.

In total, there are 156 trade names (TN) of antiviral medicines included in the list of vital and essential medicines in 2017, and in the list of minimum range of medicines - 26.

The calculation of the ratio of antiviral medicines for the treatment of influenza and acute respiratory viral infections with immunomodulatory effect to the entire group of antiviral medicines was carried out according to the following formula "number of TNs of antiviral medicines with immunomodulatory effect / total number of TNs x100%".

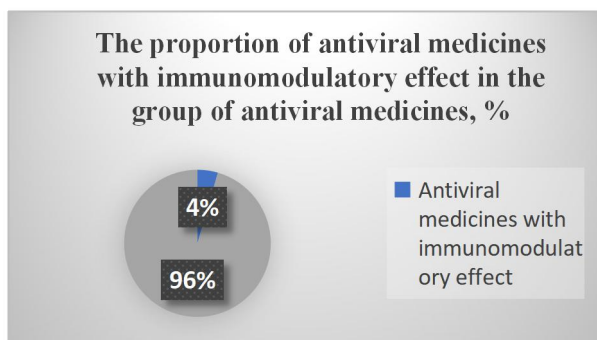


Figure 1. The ratio of antiviral medicines and antiviral medicines with immunomodulatory effect in the list of vital and essential drugs for 2017-2019.

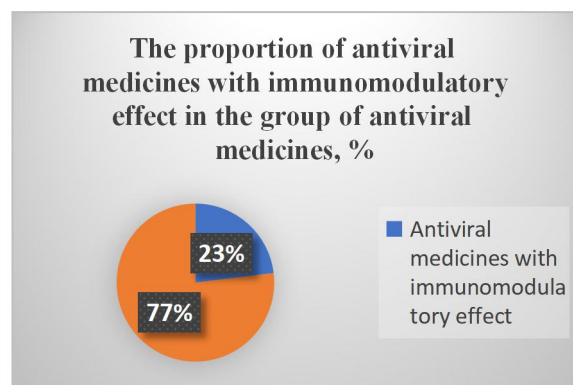


Figure 2. The ratio of antiviral medicines and antiviral medicines with immunomodulatory effect in the list of minimum range of medicines for 2017-2018

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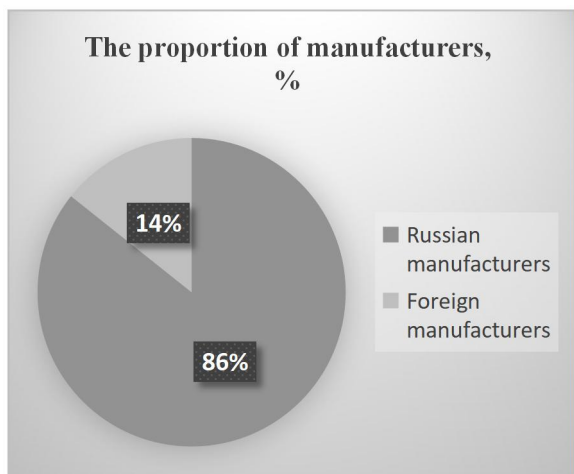


Figure 3. The ratio of manufacturers of antiviral medicines with an immunomodulatory effect in the list of vital and essential medicines for 2017-2019

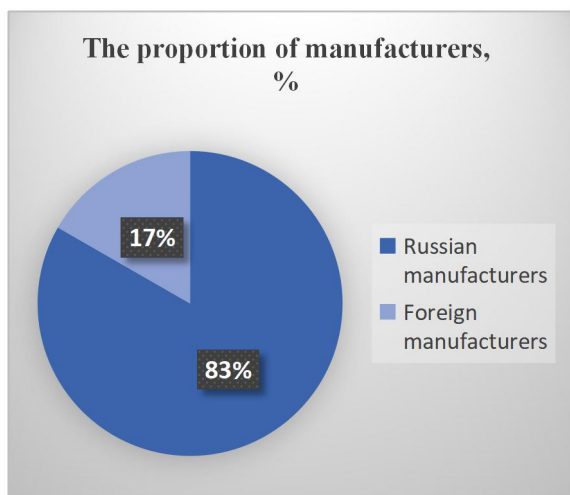


Figure 4. The ratio of manufacturers of antiviral medicines with an immunomodulatory effect in the list of minimum range of medicines for 2017-2018

Our analysis of the lists of vital and essential medicines and of minimum range of medicines for 2018 in terms of the ratio of antiviral medicines and antiviral medicines with an immunomodulatory effect, and also in terms of the proportion of manufacturers, did not change significantly from the level of the previous year. There were 163 TNs of antiviral medicines included in the list of vital and essential medicines in 2018, while the list of minimum range of medicines included 26 TNs.

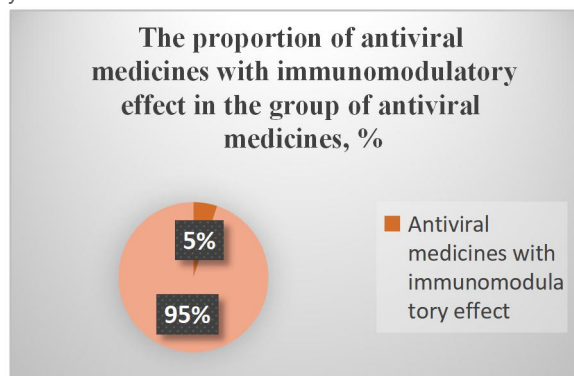


Figure 5. The ratio of manufacturers of antiviral medicines with an immunomodulatory effect in the list of vital and essential medicines for 2019

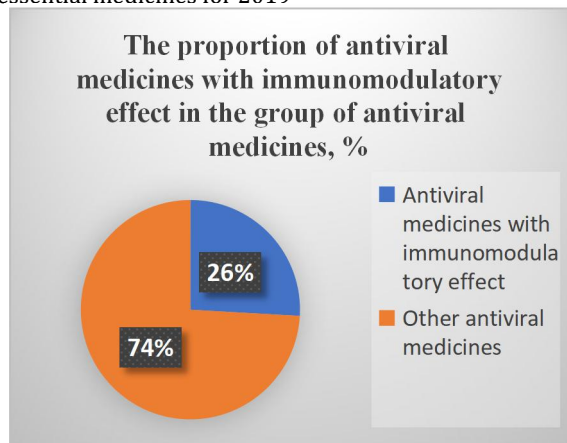


Figure 6. The ratio of antiviral medicines and antiviral medicines with immunomodulatory effect in the list of minimum range of medicines for 2019

In 2019, the proportion of antiviral medicines with an immunomodulatory effect in relation to antiviral medicines increased by 1%, which amounted to 5%, and the ratio of domestic and imported manufacturers remained at the level of the previous analyzed periods. Antiviral medicines included in the list of vital and essential medicines are represented by 39 INNs and 135 TNs, and the list of minimum range of medicines included 5 INNs and 27 TNs.

The ratio of domestic to foreign manufacturers of antiviral medicines with an immunomodulatory effect in the list of minimum range of medicines for 2019 was 14% to 86%.

At the next stage of our research, we calculated cost indicators of the treatment with antiviral medicines with immunomodulatory effect included in the lists of vital and essential medicines and of minimum range of medicines.

Table 3

Cost indicators of the treatment with antiviral medicines with immunomodulatory effect included in the lists of vital and essential medicines and of minimum range of medicines

No.	ATC code	INN	TN	Presentation	Manufacturer	Package, pcs.	Price of vital and essential medicine	Pills for course	Packages for course	Price of the course of treatment, RUB

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1	J05AX other antivirals	Imidazolyl ethanamide pentandioic acid	Ingavirin;*®	Capsules 90 mg, 7 pcs	JSC Valenta Pharm	7	427.53	7	1	427.53
2	J05AX other antivirals	Imidazolyl ethanamide pentandioic acid	Ingavirin;*®	Capsules 90 mg, 10 pcs	JSC Valenta Pharm	10	610.76	7	1	610.76
3	J05AX other antivirals	-	kagocel	Pills 12 mg, 10 pcs	NEARMEDIC PLUS LLC	10	220.14	18	2	440.28
4	J05AX other antivirals	-	kagocel	Pills 12 mg, 20 pcs	NEARMEDIC PLUS LLC	20	438.12	18	1	438.12
5	J05AX other antivirals	-	kagocel	Pills 12 mg, 30 pcs	NEARMEDIC PLUS LLC	30	633.06	18	1	633.06
6	J05AX other antivirals	Umifenovir	Umifenovir	Capsules 100 mg, 10 pcs	«OZON» Pharmaceutical company	10	185.35	40	4	741.40
7	J05AX other antivirals	Umifenovir	Umifenovir	Capsules 100 mg, 20 pcs	«OZON» Pharmaceutical company	20	370.80	40	2	741.60
8	J05AX other antivirals	Umifenovir	Umifenovir	Capsules 50 mg, 10 pcs	«OZON» Pharmaceutical company	10	92.67	80	8	741.36
9	J05AX other antivirals	Umifenovir	Umifenovir	Capsules 50 mg, 20 pcs	«OZON» Pharmaceutical company	20	185.40	80	4	741.60
10	J05AX other antivirals	Umifenovir	Arbidol® Maximum	Capsules 200 mg	JSC Pharmstandard	10	403.93	20	2	807.86
11	J05AX other antivirals	Umifenovir	Arbidol®	Capsules 100 mg, 10 pcs	JSC Pharmstandard	10	202.36	40	4	809.44
12	J05AX other antivirals	Umifenovir	Arbidol®	Capsules 100 mg, 20 pcs	JSC Pharmstandard	20	404.52	40	2	809.04
13	J05AX other antivirals	Umifenovir	Arbidol®	Capsules 100 mg, 40 pcs	JSC Pharmstandard	40	810.66	40	1	810.66

\* the medicine is included in the list of vital and essential medicines only

Due to the fact that the state regulates the prices of the manufacturers, of wholesale and of retail structures of the circulation of medicines sphere for the entire list of vital and essential medicines and, accordingly, for the list of minimum range of medicines, prices for antiviral medicines remained at the same level for the analyzed period.

According to the data in the table, it follows that the price range of antiviral medicines is represented by the minimum price for Umifenovir (capsules 50 mg, 10 pcs.) – 92.67 RUB. and the maximum price for Umifenovir (capsules 100 mg, 40 pcs.) - 810.66 RUB.

Thus, the restrictive lists of medicines for the treatment of influenza and acute respiratory viral infections include medicines that differ not only in the presentations, but also in price categories.

Further there are the costs of a consumer for the course of treatment with antiviral drugs, which were calculated by us, amounted to the following indicators:

- the minimum amount is 427.53 RUB when using the medicine - Ingavirin (capsules 90 mg, 7 pcs.)
- the maximum amount is 810.66 RUB when using the medicine - Umifenovir (capsules 100 mg, 40 pcs.)

To assess the economic affordability of antiviral medicines for a consumer, an integral index was calculated - the sum of the coefficients of the ratio of the average price of a medicine and the average price of treatment course for a given medicine, depending on the average salary and the amount of the subsistence wage (affordability index (Ia) total):

$Ia\ total = (Ia\ 1 + Ia\ 2 + Ia\ 3 + Ia\ 4) / 4$ , where

$Ia\ 1 = (\text{the average price of a medicine} / \text{the average$

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salary) x100;

Ia 2 = (the average price of a medicine / the amount of the subsistence wage) x100;

Ia 3 = (the average price of treatment course / the average salary) x100;

Ia 4 = (the average price of treatment course / the amount of the subsistence wage) x100.

Based on the formulas presented above, it follows that *the lower the value of the affordability index is, the more the consumer's ability to purchase given medicines increases.*

When making calculations, we took into account the data on the prevailing average salary in the country for 2017 - 38,049.00 RUB. and on the amount of the subsistence wage - 10 329.00 RUB [21].

Table 4  
Calculation of the affordability indexes of antiviral medicines with immunomodulatory effect (the lists of vital and essential medicines and of minimum range of medicines for 2017)

No.	ATC code	Medicine name	Presentation	Average price (RUB)	Course price (RUB)	Ia1	Ia2	(Ia1+Ia2)/2	Ia3	Ia4	(Ia3+Ia4)/2	Ia total	place
1	J05AX other antivirals	Ingavirin®	Capsules 90 mg, 7 pcs	427.53	427.53	1,12	4,14	2,63	1,12	4,14	2,63	2,63	3
2	J05AX other antivirals	Ingavirin®	Capsules 90 mg, 10 pcs	610.76	610.76	1,61	5,91	3,76	1,61	5,91	3,76	3,76	10
3	J05AX other antivirals	Kagocel	Pills 12 mg, 10 pcs	220.14	440.28	0,58	2,13	1,35	1,16	4,26	2,71	2,03	1
4	J05AX other antivirals	Kagocel	Pills 12 mg, 20 pcs	438.12	438.12	1,15	4,24	2,70	1,15	4,24	2,70	2,70	4
5	J05AX other antivirals	Kagocel	Pills 12 mg, 30 pcs	633.06	633.06	1,66	6,13	3,89	1,66	6,13	3,89	3,89	12
6	J05AX other antivirals	Umifenovir	Capsules 100 mg, 10 pcs	185.35	741.40	0,49	1,79	1,14	1,95	7,20	4,56	2,85	5
7	J05AX other antivirals	Umifenovir	Capsules 100 mg, 20 pcs	370.80	741.60	0,97	3,59	2,28	1,95	7,20	4,56	3,42	8
8	J05AX other antivirals	Umifenovir	Capsules 50 mg, 10 pcs	92.67	741.36	0,24	0,90	0,57	1,95	7,20	4,56	2,56	2
9	J05AX other antivirals	Umifenovir	Capsules 50 mg, 20 pcs	185.40	741.60	0,49	1,79	1,14	1,95	7,20	4,56	2,85	6
10	J05AX other antivirals	Arbidol® Maximum	Capsules 200 mg	403.93	807.86	1,06	3,91	2,48	2,12	7,82	4,97	3,73	9
11	J05AX other antivirals	Arbidol®	Capsules 100 mg, 10 pcs	202.36	809.44	0,53	1,96	1,24	2,13	7,83	4,98	3,11	7
12	J05AX other antivirals	Arbidol®	Capsules 100 mg, 20 pcs	404.52	809.04	1,06	3,92	2,78	2,13	7,83	4,98	3,87	11
13	J05AX other antivirals	Arbidol®	Capsules 100 mg, 40 pcs	810.66	810.66	2,13	7,85	4,99	2,13	7,85	4,99	4,99	13

\* the medicine is included in the list of vital and essential medicines only

The data presented in the table indicate that when comparing the price of antiviral medicines with the average salary in the country and the amount of the subsistence wage, Umifenovir (capsules 50 mg, 10 pcs.), Umifenovir (capsules 100 mg, 10 pcs.), and Umifenovir (capsules 50 mg, 20 pcs.) have the best ratio ((Ia1 + Ia2) / 2). When comparing the average price for a course of treatment with the above social indicators ((Ia3 + Ia4) / 2), the most affordable medicine is Ingavirin (capsules 90 mg, 7 pcs.). The second and third positions are for

medicines Kagocel (pills 12 mg, 20 pcs.) and Kagocel (pills 12 mg, 10 pcs.)

According to the integral index Ia total, the 1st place is taken by Kagocel (pills 12 mg, 10 pcs.), Umifenovir (capsules 50 mg, 10 pcs.) takes the 2nd place, and the 3rd place is for Ingavirin (capsules 90 mg, 7 pcs.).

In 2018 the average salary in the country was 42 550.00 RUB, and the amount of subsistence wage was 9 786.00 RUB [21].

Table 5  
Calculation of the affordability indexes of antiviral medicines with immunomodulatory effect (the lists of vital and essential medicines and of minimum range of medicines for 2018)

No.	ATC code	Medicine name	Presentation	Average price (RUB)	Course price (RUB)	Ia1	Ia2	(Ia1+Ia2)/2	Ia3	Ia4	(Ia3+Ia4)/2	Ia total	place
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1	J05AX other antivirals	Ingavirin*®	Capsules 90 mg, 7 pcs	427.53	427.53	1,00	4,36	2,68	1,00	4,36	2,68	2,68	2
2	J05AX other antivirals	Ingavirin*®	Capsules 90 mg, 10 pcs	610.76	610.76	1,44	6,24	3,84	1,44	6,24	3,84	3,84	11
3	J05AX other antivirals	Kagocel	Pills 12 mg, 10 pcs	220.14	440.28	0,52	2,25	1,38	1,04	4,50	2,76	2,07	1
4	J05AX other antivirals	Kagocel	Pills 12 mg, 20 pcs	438.12	438.12	1,03	4,48	2,75	1,03	4,48	2,75	2,75	4
5	J05AX other antivirals	Kagocel	Pills 12 mg, 30 pcs	633.06	633.06	1,49	6,47	3,97	1,49	6,47	3,97	3,97	12
6	J05AX other antivirals	Umifenovir	Capsules 100 mg, 10 pcs	185.35	741.40	0,44	1,89	1,17	1,74	7,58	4,66	2,91	5
7	J05AX other antivirals	Umifenovir	Capsules 100 mg, 20 pcs	370.80	741.60	0,87	3,78	2,32	1,74	7,58	4,66	3,49	8
8	J05AX other antivirals	Umifenovir	Capsules 50 mg, 10 pcs	92.67	741.36	0,22	1,36	0,79	1,74	7,58	4,66	2,72	3
9	J05AX other antivirals	Umifenovir	Capsules 50 mg, 20 pcs	185.40	741.60	0,44	1,89	1,17	1,74	7,58	4,65	2,91	6
10	J05AX other antivirals	Arbidol® Maximum	Capsules 200 mg	403.93	807.86	0,95	4,13	2,54	1,89	8,26	5,07	3,81	9
11	J05AX other antivirals	Arbidol®	Capsules 100 mg, 10 pcs	202.36	809.44	0,48	2,07	1,27	1,90	8,27	5,09	3,18	7
12	J05AX other antivirals	Arbidol®	Capsules 100 mg, 20 pcs	404.52	809.04	0,95	4,13	2,54	1,90	8,27	5,09	3,82	10
13	J05AX other antivirals	Arbidol®	Capsules 100 mg, 40 pcs	810.66	810.66	1,91	8,28	5,10	1,91	8,28	5,10	5,10	13

*\* the medicine is included in the list of vital and essential medicines only*

When comparing the price of antiviral medicines with the average salary and the amount of subsistence wage, pharmacotherapy for the course of treatment ( $(Ia3 + Ia4) / 2$ ), the analysis of economic affordability for a consumer showed that the ratio of the medicines considered by us did not change for the first three most affordable medicines of the previous year.

According to the integral index  $Ia$  total, Kagocel (pills 12 mg, 10 pcs.) is on the 1st place, Ingavirin (capsules 90 mg, 7 pcs.) takes the 2nd place, and the 3rd place is for Umifenovir (capsules 50 mg, 10 pcs.).

When calculating the affordability indexes of antiviral medicines for 2019, the average salary was 47,468.00 RUB, the subsistence wage was 12,130.00 RUB. [21].

Table 6

Calculation of the affordability indexes of antiviral medicines with immunomodulatory effect (the lists of vital and essential medicines and of minimum range of medicines for 2019)

No.	ATC code	Medicine name	Presentation	Average price (RUB)	Course price (RUB)	Ia1	Ia2	$(Ia1 + Ia2) / 2$	Ia3	Ia4	$(Ia3 + Ia4) / 2$	Ia total	place
1	J05AX other antivirals	Ingavirin®	Capsules 90 mg, 7 pcs	427.53	427.53	0,90	3,52	2,21	0,90	3,52	2,21	2,21	3
2	J05AX other antivirals	Ingavirin®	Capsules 90 mg, 10 pcs	610.76	610.76	1,29	5,04	3,17	1,29	5,04	3,17	3,17	11
3	J05AX other antivirals	Kagocel	Pills 12 mg, 10 pcs	220.14	440.28	0,46	1,81	1,14	0,93	3,63	2,28	1,71	1
4	J05AX other antivirals	Kagocel	Pills 12 mg, 20 pcs	438.12	438.12	0,92	3,61	2,27	0,92	3,61	2,27	2,27	4
5	J05AX other antivirals	Kagocel	Pills 12 mg, 30 pcs	633.06	633.06	1,33	5,22	3,28	1,33	5,22	3,28	3,28	12
6	J05AX other antivirals	Umifenovir	Capsules 100 mg, 10 pcs	185.35	741.40	0,39	1,53	0,96	1,56	6,11	3,84	2,4	5
7	J05AX other antivirals	Umifenovir	Capsules 100 mg, 20 pcs	370.80	741.60	0,78	3,06	1,92	1,56	6,11	3,84	2,88	8
8	J05AX other antivirals	Umifenovir	Capsules 50 mg, 10 pcs	92.67	741.36	0,20	0,76	0,48	1,56	6,11	3,84	2,16	2

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9	J05AX other antivirals	Umifenovir	Capsules 50 mg, 20 pcs	185.40	741.60	0,39	1,53	0,96	1,56	6,11	3,84	2,40	6
10	J05AX other antivirals	Arbidol® Maximum	Capsules 200 mg	403.93	807.86	0,85	3,33	2,09	1,70	6,66	4,18	3,14	9
11	J05AX other antivirals	Arbidol®	Capsules 100 mg, 10 pcs	202.36	809.44	0,43	1,67	1,05	1,71	6,67	4,19	2,62	7
12	J05AX other antivirals	Arbidol®	Capsules 100 mg, 20 pcs	404.52	809.04	0,85	3,33	2,09	1,70	6,67	4,19	3,14	10
13	J05AX other antivirals	Arbidol®	Capsules 100 mg, 40 pcs	810.66	810.66	1,71	6,68	4,20	1,71	6,68	4,20	4,20	13

From the data in the table it follows that when comparing the price of antiviral medicines with the average salary in the country and the amount of the subsistence wage ((Ia1 + Ia2) / 2), the best ratio remained at the level of the previous two years, i.e. for the following medicines - Umifenovir (capsules 50 mg, 10 pcs.), Umifenovir (capsules 100 mg, 10 pcs.), Umifenovir (capsules 50 mg, 20 pcs.). When comparing the average price per course of treatment ((Ia3 + Ia4) / 2), it is still the 1st position for Ingavirin (capsules 90 mg, 7 pcs.), which is followed by Kagocel (pills 12 mg, 20 pcs.) and Kagocel (pills 12 mg, 10 pcs.).

According to the integral index - Ia total the antiviral medicine with immunomodulatory effect Kagocel (pills 12 mg, 10 pcs.) is on the 1st place, the antiviral medicine Umifenovir (capsules 50 mg, 10 pcs.) in on the 2nd place, and the 3rd place goes to Ingavirin (capsules 90 mg, 7 pcs.).

## RESULTS

Having evaluated the obtained data, we came up with the following results:

1. In the lists of vital and essential medicines and of minimum range of medicines for the analyzed period, antiviral medicines tend to expand INN. The percentage ratios of medicines for the treatment of viral infections (average values for the analyzed period) were determined: the list of vital and essential medicines - influenza and acute respiratory viral infection (10.4%), human immunodeficiency virus (70.5%), hepatitis B and C (9.9% and 10.6%), herpes (2.7%); the list of minimum range of medicines - influenza and acute respiratory viral infection (76.7%), herpes (23.3%).

2. It was revealed that out of 4 INNs included in the lists under study, only Oseltamivir, Kagocel, and Umifenovir act directly on viruses, imidazolyl ethanamide pentanedioic acid, in addition to antiviral effect, also have an immunomodulatory effect. In the ratio of manufacturers of antiviral medicines with immunomodulatory effect, domestic manufacturers predominate (83-86%).

3. When calculating the cost indicators of the treatment with antiviral medicines with an immunomodulatory effect, the price range of medicines was set from 92.67 RUB up to 810.66 RUB and the price of course treatment from 427.53 RUB - Ingavirin (capsules 90 mg, 7 pcs.) up to 810.66 RUB - Umifenovir (capsules 100 mg, 40 pcs.).

4. The economic affordability of assessing the price of a course of treatment, taking into account a consumer's income level, has been determined. It has been defined that when comparing the price of the medicine, the most attractive is Umifenovir (capsules 50 mg, 10 pcs.); the most affordable in the course of treatment is imidazolyl

ethanamide pentanedioic acid (capsules 90 mg, 7 pcs.); Kagocel (pills 12 mg, 10 pcs) is the best by the integral index.

## DISCUSSION OF RESULTS

The results of our research confirm the relevance of antiviral medicines; during the analyzed period, there is an increase in INN in the studied lists. The ratio of antiviral medicines in the lists of vital and essential medicines and of minimum range of medicines - 10.4% and 76.7% respectively - corresponds to the solution of their goals and objectives. The regulator should pay attention to the decrease in the list of vital and essential medicines of antiviral medicines for the treatment of influenza and acute respiratory viral infection (from 11.4% to 10.2%) regarding the overall picture in the treatment of viral infections.

For the treatment of influenza and acute respiratory viral infections, in the lists of vital and essential medicines and of minimum range of medicines oseltamivir is presented. It is the medicine which directly suppresses the process of viral reproduction. In these lists there are also antiviral medicines that increase the body's resistance. The quantitative ratio of these medicines confirms their importance in the pharmacotherapy of influenza and acute respiratory viral infection.

The proportion of domestic antiviral medicines with immunomodulatory effect (83% -86%) as a part of the implementation of the import substitution policy in the pharmaceutical industry shows a positive trend (in the vital and essential medicines nomenclature by 2024, the proportion of Russian medicines should reach 93%) [7]. For the entire analyzed period Ingavirin (capsules 90 mg, 7 pcs.) occupies a stable position as the most affordable medicine in the course of treatment. Previously, we proposed a method for determining the financial burden (encumbrance) on a pharmacy organization when a medicine is introduced into the minimum range using the example of this medicine [10]. According to the integral indicator such a stable position is occupied by Kagocel (pills 12 mg, 10 pcs).

In connection with the different level of average salaries in the constituent entities of the Russian Federation and continuing the topic of approval at the level of the constituent entities of the "regional" lists of minimum range of medicines in accordance with the structure of their diseases, it is necessary to use an estimate of the price of a course of treatment with a specific medicine, considering a consumer's income level, based on the social indicators not of the whole country, but of a particular region [9,12].

It should be noted that due to the spread of Covid-19, it is possible to supplement the list of minimum range of

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medicines with personal protective equipment (masks, gloves, and hand sanitizers).

The relevance of the use of blockchain technologies in the field of medicine circulation, which opens up innovative opportunities for improving the quality of medicine care for the population should be also noted [11].

Summarizing the results of our research, it should be mentioned that in the near future, the improvement of medicine supply in Russia will be associated with the development of the national institute for the interchangeability of medicines, with the functioning of the Common Market for Medicines of the Eurasian Economic Union, as well as with the strategy for the development of the domestic pharmaceutical industry and adaptive management of the range of medicines in pharmacy organizations [8,13,14,15,16,17].

### FINDINGS

The results of our research allow us to assert that when comparing the price of antiviral medicines having immunomodulatory effect with the average salary in the country and the amount of the subsistence wage, comparing the average cost for a course of treatment and according to the integral indicator, in our opinion, the most important criterion is the affordability of the average price of the course of treatment with a specific medicine.

It should be noted that a full course of treatment with antiviral medicines with immunomodulatory effect helps to alleviate the symptoms of influenza and acute respiratory infection, and to reduce the risk of complications. The high social significance of this nosology is primarily due to temporary disability and possible complications in case of inadequate treatment.

It should also be noted that it is necessary to timely update the lists of vital and essential medicines and of minimum range of medicines in accordance with the actual needs of the population based on the launch of the newest medicines on the market.

### CONCLUSION

Development of methodological approaches and optimization of certain aspects in the analysis of the most important restrictive lists of vital and essential medicines and of minimum range of medicines is an urgent scientific problem, the solution of which is intended to improve the availability of medicine supply to the population.

In this regard, the analysis of the economic affordability of antiviral medicines is an important aspect of the activity, which makes it possible to give an objective assessment of the work of the executive power and subjects of the sphere of medicine circulation in the formation of an accessible range of restrictive lists of medicines.

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