Availability and Affordability of Medicines for the Treatment of Cardiovascular Diseases in Pharmacies in Six Regions of the Russian Federation

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Aim. To evaluate the availability and affordability of medicines used to treat cardiovascular diseases (CVD) in several regions of the Russian Federation with different climatic, geographic, economic and demographic characteristics.

Material and methods. The study was conducted in 6 regional capitals, chosen to differ in geographically, economically, and demographically. In each city, 5 pharmacies providing free medicines to certain categories of citizens (beneficiaries) and 5 private pharmacies serving anyone were selected at random. Medicine availability was assessed in all pharmacies, along with price only in the private pharmacies. Data were obtained for both original drug and appropriate generics. A list of 25 of the most frequently prescribed medicines for cardiovascular diseases was compiled.

Results. Some general findings emerged. With the existence of a generic drug, the original drug was not available in the pharmacy supplying beneficiaries. Diuretics, as well as some ACE inhibitors, are not available in a number of pharmacies for beneficiaries. Enalapril in most licensed pharmacies is represented by generics, lisinopril in a number of cities is represented by both the original drug and generics. The presence of sartans was much lower than ACE inhibitors. Bisoprolol was most common beta-blocker. Calcium antagonists: if amlodipine was present in all licensed pharmacies, at list as generic, then nifedipine was not available in many licensed pharmacies. Among antiplatelet agents, aspirin was available in most pharmacies, and clopidogrel was mostly represented by generics. As for statins, only simvastatin could be found in almost all pharmacies. When analyzing the cost of drugs in licensed pharmacies, it was found that drugs containing furosemide are the cheapest among generics – about 17 rubles. The most expensive treatment with generics of rosuvastatin – about 4,374 rubles a month. The most expensive original medicine was also rosuvastatin – about 4,500 rubles for 30 tablets, the cheapest – the original drug of furosemide – about 35 rubles. On average, the cost of CVD treatment with major classes of drugs, including ACE inhibitor, beta-blocker, antiplatelet drug and statin, is 1,921.9 rubles per month.

Conclusion. The basic cardiovascular medicines were characterized by a relatively high availability in 6 regions of the Russian Federation included in the analysis both by the criterion of the availability of drugs and by the criterion of the minimum price.

Keywords: availability of medicines, affordability of medicines, treatment of cardiovascular diseases, pharmacies for beneficiaries, licensed pharmacies.

районах РФ с различными климато-географическими, экономическими и демографическими характеристиками.

Цель.
Оценить наличие и доступность лекарственных препаратов для лечения сердечно-сосудистых заболеваний (ССЗ) в нескольких регионах Российской Федерации (РФ) с различными климато-географическими, экономическими и демографическими характеристиками.

Материалы и методы.
Исследование было проведено в 6 административных центрах с различными климато-географическими, экономическими и демографическими характеристиками. Были отобраны 5 льготных аптек, предоставляющих некоторым категориям граждан бесплатные лекарственные препараты, а также 5 лицензированных аптек, обслуживающих всех граждан, находящихся на территории данного субъекта РФ. При этом стоимость препаратов оценивалась только в лицензируемых аптеках. Были собраны данные об оригинальном препарате и о соответствующих дженериках в той же дозе, независимо от класса препарата или категории аптеки. Предварительно была сформирован список, состоящий из 25 лекарственных препаратов, наиболее часто назначаемых при сердечно-сосудистых заболеваниях.

Результаты.
Анализ наличия препаратов показал общую закономерность — при существовании препарата-дженерика в льготной аптеке оригинальный препарат отсутствует. Диуретики, также как и некоторые ингибиторы АПФ, отсутствуют в ряде льготных аптек. Эналаприл в большинстве коммерческих аптек представлен дженериками, лиофилизат в ряде городов представлен как оригиналом, так и дженериками.

Заключение.
Основные сердечно-сосудистые препараты характеризуются относительно высокой доступностью в 6-ти выключенчных в анализ регионах РФ как по критерию наличия препарата, так и по критерию минимальной цены.

Ключевые слова: наличие препаратов, доступность препаратов, лечение сердечно-сосудистых заболеваний, льготные аптеки, коммерческие аптеки.


The increase of life expectancy in the Russian Federation (RF) observed in recent decades is due to several factors, one of which is an increase in the survival rate of the elderly, due to a decrease in mortality from chronic noncommunicable diseases, especially from cardiovascular diseases (CVD) [1]. Nevertheless, the death rate in the RF is significantly higher in comparison with other countries with the same level of development [2].

Progress in reducing mortality reflects better diagnosis, treatment and control of major diseases such as arterial hypertension, heart failure and angina, as well as secondary prevention of coronary heart disease [3]. However, this progress varies, partly due to differences in the availability and affordability of drugs [4]. Affordability is the possibility to buy medicines by citizens who have no benefits.

State medical institutions in the RF provide free
medical treatment to all patients but, once discharged, only some are entitled to free medications or at a 50% discount. Those eligible are defined in the Law from 1994. They include children in large families who are under a certain age (3 or 6 depending on family size), those receiving the minimum pension, invalids, veterans of the Great Patriotic War and other military operations, and those involved in the Chernobyl disaster. Entitlement extends to immediate family members. Since 2008, they can choose to receive free or subsidized medications or monetary benefits, under the "Supplementary Drug Provision" (DLO) program [5]. In practice, an increasing number of the 19 million potential beneficiaries choose the latter, so now less than 4 million people receive free drugs, for several reasons [6]. First, free and subsidized medicines are available only in certain pharmacies in specific medical institutions. Secondly, it is commonly believed that essential drugs are often unavailable in these pharmacies. Those choosing monetary compensation can thus obtain their medicines from private pharmacies, albeit at additional cost.

The aim of this study is to evaluate the availability and affordability of medicines used to treat cardiovascular diseases in six regions of the RF with different climatic, geographic, economic and demographic characteristics.

Material and methods
A list of 25 of the most commonly used cardiovascular medicines was compiled using several sources, including the "List of Essential Medicines" [7], the "Russian Register of Medicines" (https://grls.rosminzdrav.ru), and the "List of Vital and Essential Drugs for Medical Use for 2017" [8] and also rating of drugs published every month by independent companies [9] (Table 1).

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of the study, all participants underwent full-time and/or distance learning courses conducted by the staff from the National Medical Research Center for Preventive Medicine to standardize the collection of data into a specially developed Registration Form, and then data entry into the single database for analysis.

The study was conducted in pharmacies providing free medicines to welfare beneficiaries, as well as in licensed pharmacies serving all citizens who live on the territory of this subject of the RF. The cost of the medicines was assessed only in licensed pharmacies.

The 14 pharmacies in various districts from each center were selected: 5 for beneficiaries and 5 of licensed. Recognizing that any pharmacy was vulnerable to transient logistic problems, whereby patients would look in a neighboring outlet, 2 substitutes were identified in each of the categories, to be visited should the initial one lack >50% of the medicines on the list.

The researchers were provided with documentation on the availability and price of the studied drugs on the day of the visit. Data in all regions was collected in August 2017. The data was collected on the second week of the month on Wednesday or Thursday. The drug was considered as «available» if it could be purchased or obtained by the researcher in the selected pharmacy on the day of the visit without prior order or waiting. In licensed pharmacies the price was recorded in rubles for one pack regardless to the number and dosage of tablets. All evaluated drugs were in a single dosage form – in the form of tablets. At the same time, the presence of the studied drug in a different dosage, according to the protocol, was the exclusion criterion. In each pharmacy, data was collected on both the original drug and the generic equivalent, at the same dose. Some medicines are, however, only available in the RF in one of these forms.
It should be noted that, according to the changes in the Federal Law from December 22, 2014 №429-FZ "On Amendments to the Federal Law "On the Circulation of Medicines", from January 1, 2017 the concept «original medicinal drug» was replaced by the concept «reference drug», and the term "generic" was changed to "reproduced drug". However, in this study we use the terms "original drug" and "generic" that are more familiar to the medical community.

Statistical analysis was carried out using the statistical analysis and information delivery package – STATA (Data Analysis and Statistical Software) 14 version. In this paper we report standard descriptive statistics. The monthly cost of treatment was calculated by multiplying the cost for one tablet on the number of tablets per day by 30 days per month.

Results
If a pharmacy supplying beneficiaries had a generic medicine, the original drug was not available.

There were no diuretics in a number of pharmacies for beneficiaries, in licensed pharmacies the presence of indapamide was highest (Table 2). Among beta-blockers – the greatest availability was for bisoprolol, whereas nebivolol was absent in a number of licensed pharmacies, not all pharmacies have carvedilol. Among the ACE inhibitors, enalapril in most of licensed pharmacies was represented by generics, lisinopril in a number of cities was represented by both the original medicine and generics. Fosinopril and perindopril were not available in a number of pharmacies for beneficiaries, but in the licensed pharmacies the availability was noticeably lower. The presence of sartans was markedly lower than of ACE inhibitors – olmesartan and valsartan were absent in four of the five pharmacies at list as generic, then nifedipine (there was no original drug) – only in some. Among antiplatelet agents, acetylsalicylic acid (there was no original drug) was absent in four of the five pharmacies, whereas ticagrelor (generic drugs do not exist) was absent in a number of discount pharmacies. The greatest presence in this group was for simvastatin.  

2 apothecary organizations, servicing all categories of citizens, in the case of reserve cases, if in the pharmacy apothecary organization available not less than 50% of the drugs analyzed per change.

Investigators have provided documentation for adequacy and price of drugs available in pharmacies at day of visit. Results of all regions were collected in August 2017 г. For unification of the approach information collected it was available in the second week of the month or later. Lekarstvennyy preparat considered «in stock» in case, if he can be available or obtained investigator in the pharmacy at point of the apothecary organization in case of they absence without prepayment or it is possible to receive it on the day of the visit. All affordable lekarstvennye substances were available in one lekarstvennaya form – the volume of tablets. At this price of drug is available in pharmacies in the region, we have a pharmacy can be paid by cash or bank card. The price «once» for medicines (for commercial pharmacies) was defined as the price for one tablet on the number of tablets in the package. Every day used to calculate the cost of treatment at the price for one tablet on the number of tablets per day by 30 days per month.

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2 аптечные организации, обслуживавшие все категории граждан, в качестве резервных на случай, если в выбранной аптечной организации доступно менее 50% препаратов из анализируемого перечня.

Исследователям была предоставлена документация по наличию и цене изучаемых препаратов на день визита. Данные во всех регионах были собраны в августе 2017 г. Для унификации подхода информация собиралась во вторую неделю мес в среду или четверг. Лекарственный препарат считался «в наличии» в случае, если он мог быть приобретен или получен исследователем в отобранной аптечной организации в день посещения без предварительного заказа или ожидания. В графе «цена медиамента» (для коммерческих аптек) была указана его полная стоимость в рублях и копейках за упаковку, независимо от количества таблеток в ней. Все оцениваемые лекарственные средства были в единой лекарственной форме – в виде таблеток. При этом наличие изучаемого препарата в другой дозировке, согласно протоколу, являлось критерием исключения. Были собраны данные об оригинальном препарате и о соответствующих «дженериках» в той же дозе, независимо от класса препарата или категории аптеки. Тем не менее, на территории РФ у нескольких препаратов отсутствует либо оригинальный препарат, или дженерик.

Следует отметить, что, согласно изменениям в Федеральном законе от 22 декабря 2014 г. №429-ФЗ «О внесении изменений в Федеральный закон «Об обращении лекарственных средств», с 1 января 2017 г. понятие «оригинального лекарственного препарата» было замено на понятие «референтный лекарственный препарат», а термин «дженерик» изменен на «воспроизводенный лекарственный препарат». Тем не менее, в настоящем исследовании мы использовали более привычные медицинскому сообществу термины «оригинальный препарат» и «дженерик».

Статистический анализ результатов выполнен с помощью пакета статистического анализа и доставки информации – STATA (Data Analysis and Statistical Software) 14 версия. В данном исследовании использованы методы стандартной описательной статистики, в частности, вычисление средних, стандартных отклонений и стандартных ошибок, и ранговых статистик. Стоимость лечения лекарственным препаратом в месяц рассчитывалась произведением стоимости одной таблетки в указанной дозе на количество таблеток в день, согласно рекомендациям по применению данного препарата, на среднее количество дней в мес.

**Результаты**
 Анализ наличия препаратов показал общую закономерность – при существовании препарата-дженерика в льготной аптеке оригинальный препарат отсутствует. Мочегонные препараты отсутствуют в ряде льготных аптек, в коммерческих наиболее высоко присутствие ин-
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When analyzing the cost of drugs in commercial pharmacies, it was found that drugs containing furosemide were the cheapest among generic drugs, treatment with these drugs per month is about 17 rubles (Table 3). Treatment with rosuvastatin generic drugs was the most expensive – about 4374 rubles.

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<th>INN / MHН</th>
<th>Dosage (mg)</th>
<th>Barnaul Барнаул</th>
<th>Khabarovsk Хабаровск</th>
<th>Belgorod Белгород</th>
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Table 3. The cost of treatment with the original drug and a generic drug per month
Таблица 3. Стоимость лечения оригинальным препаратом и дженериком в месяц

<table>
<thead>
<tr>
<th>INN / МНН</th>
<th>Dosage (mg)</th>
<th>Diuretics / Диуретики</th>
<th>The price of treatment with a drug per month (rubles) / Цена лечения препаратом в месяц (руб)</th>
<th>ACE Inhibitors / Ингибиторы АПФ</th>
<th>Calcium channel blockers / Блокаторы кальциевых каналов</th>
<th>Angiotensin II antagonists / Антагонисты аниотенсина II</th>
<th>Antiplatelet medicines / Антиагреганты</th>
<th>Statins / Статины</th>
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<tr>
<td></td>
<td>The price of treatment with a drug per month (rubles) / Цена лечения препаратом в месяц (руб)</td>
<td>Minimum / Минимум</td>
<td>Average / Среднее</td>
<td>Maximum / Максимум</td>
<td>Minimum / Минимум</td>
<td>Average / Среднее</td>
<td>Maximum / Максимум</td>
<td>Minimum / Минимум</td>
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<td>Original / Оригинальный препарат</td>
<td>Generic / Дженерик</td>
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<td>Furosemide</td>
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<td>34.9</td>
<td>58.7</td>
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<td>17.2</td>
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<tr>
<td>Hydrochlorothiazide</td>
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<td>64.2</td>
<td>83.5</td>
<td>96.4</td>
<td>37</td>
<td>41.5</td>
<td>50.5</td>
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<td>325</td>
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<td>407.5</td>
<td>10</td>
<td>114.2</td>
<td>228</td>
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<tr>
<td>Spironolactone</td>
<td>50</td>
<td>162</td>
<td>365.4</td>
<td>422.6</td>
<td>136</td>
<td>293.2</td>
<td>392</td>
<td>-</td>
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<tr>
<td>Lisinopril</td>
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<td>1082.6</td>
<td>1109</td>
<td>1148</td>
<td>72.5</td>
<td>380</td>
<td>712</td>
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<tr>
<td>Nebivolol</td>
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<td>921.4</td>
<td>1079.3</td>
<td>1285.7</td>
<td>123.2</td>
<td>470.7</td>
<td>1090.7</td>
<td>-</td>
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<td>Perindopril</td>
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<td>476.4</td>
<td>604.6</td>
<td>106</td>
<td>238.3</td>
<td>285</td>
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<tr>
<td>Enalapril</td>
<td>10</td>
<td>120</td>
<td>327.8</td>
<td>716</td>
<td>16.7</td>
<td>177.3</td>
<td>353.1</td>
<td>-</td>
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<tr>
<td>Fosinopril</td>
<td>20</td>
<td>450</td>
<td>514.1</td>
<td>583.9</td>
<td>220.7</td>
<td>361.5</td>
<td>583.9</td>
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<tr>
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<td>608.9</td>
<td>690.9</td>
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<td>242.9</td>
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<td>506.2</td>
<td>594.6</td>
<td>12.5</td>
<td>150.7</td>
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<tr>
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<td>264.2</td>
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<td>140.5</td>
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<td>572.1</td>
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<td>2493.2</td>
<td>2971.8</td>
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<td>625</td>
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<tr>
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<td>90</td>
<td>1446.4</td>
<td>2333.4</td>
<td>2814.7</td>
<td>-</td>
<td>-</td>
<td>-</td>
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<td>Acetylsalicilic acid</td>
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<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>15</td>
<td>73.1</td>
<td>151.9</td>
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<td>1131.5</td>
<td>1930.5</td>
<td>2176</td>
<td>180</td>
<td>661.2</td>
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<td>571.3</td>
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<td>3163.9</td>
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<td>80</td>
<td>1685.1</td>
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<td>2102.2</td>
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for a month. The most expensive original drug was also rosuvastatin preparation – about 4500 rubles for 30 tablets, the cheapest – the original drug furosemide – about 35 rubles. The greatest difference in the cost of the original drug and generics was found in the group of preparations containing valsartan, which averaged 1500 rubles. Interestingly, the clopidogrel generic drugs can be bought both for 70 rubles, and for 3241 rubles (45 times more expensive), the same applies to rosuvastatin – the valsartan are practically absent even in all discount pharmacies and a number of commercial. Likewise, losartan found to be predominantly generics. Antagonists of angiotensin II in this group of preparations did not contain valsartan (as the original drug) in the corresponding dose – only in a few cases. Among the antiplatelet agents, acetylsalicilic acid is available in all discount pharmacies and a number of commercial. The corresponding dose of valsartan is not available in 4-5 of the discount pharmacies of Belgorod, 3 times in the discount pharmacies of Khabarovsk.
minimum price of which is 213 rubles, and the maximum is 20 times more expensive. As for the original drugs, the maximum difference in the price was observed for ticagrelor – 1400 rubles.

On average, the cost of CVD treatment for the main classes of drugs, including ACE inhibitor, beta-blocker, antiplatelet agent and statin, was 1921.9 rubles per month (Fig. 1). And, if the drugs were original, then the average price increased to 5902.2 rubles, and in case of buying only generics – dropped to 1299.4 rubles. Interesting, that the minimum price of drugs from 4 groups in the complex was 142 rubles. The most expensive purchase of these drugs was in Vologda, the cheapest – in Kirov. In this case, if one bought all the original drugs in Vologda, then their cost on average would be about 8700 rubles, while generics would cost 5.8 times cheaper. In Kirov, the original drugs in the complex would cost as much as 2834 rubles, and generics – 3772 rubles. It was interesting that if the highest cost of the original drugs was noted in Vologda, then for generics – in Khabarovsk. At the same time, the minimum price of generics was also in Khabarovsk.

Discussion

The Russian government has identified access to affordable medicines as a major priority for its healthcare reforms. For this goal the Federal Supplementary Drug Provision (DLO) program, designed to provide free or subsidized drugs from the regularly updated List of Medicines for certain categories of citizens eligible for state aid, has

Рисунок 1. Расчет средней стоимости лечения в месяц основными классами препаратов (ингибитор АПФ+бета-адреноблокатор+ангиагрегант+статин)

Figure 1. Calculation of the average cost of monthly treatment with the main classes of drugs (ACE inhibitor+beta-blocker+antiplatelet medicine+statin)
been developed [11]. However, some of those who are eligible for these provisions have opted to take the benefits in money instead in accordance with the Federal Law No.122-FZ. They can then use the funds provided to purchase drugs in licensed pharmacies.

The content analysis of media publications conducted by the specialists of the Financial University showed that the lack of medicines in pharmacies are perceived by the people as the most frequent problem related to the health system (31%), followed by increasing prices of drugs (25.5%), refusals by physicians to prescribe the requested medicines to patients (15%) and suggestions of doctors to a patient to purchase a particular medicine at his or her own expense (13.7%) [12]. I.K. Petrukhin and V.A. Kurkin, analyzing the program of preferential drug provision in the Volga Federal District, noted significant regional differences in funding for a single recipient [13].

In this study, the availability of drugs for the treatment of CVD was analyzed in all participating regions. It draws attention that in pharmacies for beneficiaries there were mainly generic drugs. There was also some regional variability in the availability of drugs at the time of the study – for example, the ACE inhibitor fosinopril was completely absent in the pharmacies for beneficiaries of Belgorod and Khabarovsk, and among the licensed pharmacies it was available only in Belgorod – in each of five (both original and generic), in Khabarovsk only in one pharmacy there was the original drug, in three out of five – generics.

It should be noted that in addition to the availability of drugs in the pharmacy, we assessed their affordability, i.e. the cost. In this regard, all the analyzed drugs were in the same dosage for each item, which was chosen based on the recommendations on the use of the drug and in accordance with the “List of Vital and Essential Drugs for Medical Use for 2017” [8]. At the same time, in some cases, at the time of the study, appropriate preparations were available in the pharmacy at other dosages, which, according to the protocol, were not included in the analysis. It should also be noted that the evaluation of the fixed combinations of drugs widely used in the treatment of CVD was not the objective of this study.

In the analysis of affordability, it was found that almost all drugs are represented both in licensed pharmacies and pharmacies for beneficiaries, except for pharmacies for beneficiaries in Belgorod, where at the time of the study there were no calcium channel blockers, and in Vologda, where also there were no antagonists of angiotensin II receptors in pharmacy.

Obсуждение

Повышение доступности лекарственных препаратов – одно из главных направлений реформирования системы здравоохранения в РФ. С этой целью была разработана Федеральная программа ДЛО отдельных категорий граждан, имеющих право на государственную помощь [11], препаратами из регулярно обновляемого Перечня лекарственных средств. Вместе с тем, часть лиц, имеющих право на ДЛО, отказывается от препаратов, согласно Федеральному закону №122-ФЗ пользуясь правом на монетизацию льгот. Такие пациенты приобретают препараты самостоятельно в коммерческих аптеках.

Проведенный специалистами Финансового университета контент-анализ публикаций средств массовой информации показал, что наиболее часто (31%) неодобрение населения вызывает отсутствие лекарственных препаратов в аптеках, далее следуют рост цен на препараты (25,5%), отказы в выдаче льготных рецептов медиками (15%), и предложение врача пациенту купить льготный препарат за свой счет (13,7%) [12] И.К. Петрухина и В.А. Куркин, анализируя программу льготного лекарственного обеспечения в Приволжском федеральном округе, отметили значимые региональные отличия в финансировании на одного льготополучателя [13].

В настоящем исследовании наличие препаратов для лечения сердечно-сосудистых заболеваний анализировалось во всех регионах-участниках, при этом в льготных аптеках в наличии преимущественно были препараты-дженерики. Также отмечается некоторая региональная вариабельность наличия препаратов на момент исследования – так, например, ингибитор АПФ фозиноприл полностью отсутствовал в льготных аптеках Белгорода и Хабаровска, а в коммерческих были в наличии в Белгороде – в каждой из 5-ти (и оригинальный, и дженерики), в Хабаровске только в одной был оригинальный препарат, в 3-х из 5-ти – дженерики.

Следует отметить, что, помимо наличия препаратов в аптеке, нами оценивалась их доступность, т.е. стоимость. Все анализируемые препараты были в одинаковой дозировке по каждому наименованию, которая была выбрана с учетом рекомендаций по применению препарата и в соответствии с «Перечнем жизненно необходимых и важнейших лекарственных препаратов для медицинского применения на 2017 г.» [8]. В некоторых случаях на момент исследования в аптеке были в наличии соответствующие препараты в других дозировках, которые, согласно протоколу, в анализ не включались. Также следует отметить, что в задачи исследования не входило изучение фиксированных комбинаций лекарственных препаратов, широко использующихся в лечении ССЗ.

При анализе доступности обнаружено, что практически все препараты представлены как в коммерческих аптеках, так и в льготных, за исключением льготных аптек в Белгороде, где на момент исследования отсутствовали блока-
macies for beneficiaries. Probably, this is because at present the pharmaceutical industry offers a wide range of drugs to the pharmacy visitor, including several types of generics for each original drug, for the treatment of CVD. In addition, the possibility of replacing drugs in our country is regulated by Government Decree of October 28, 2015 No. 1154 “On the procedure for determining the interchangeability of medicinal products for medical use.” On the Russian pharmaceutical market there is a generally wide variety of generics, the main differences being the manufacturer and the country where the drug was released. Thus, our country ranks third in the share of reproduced drugs in the world after China and India, far exceeding Japan, Germany and the USA [8]. To date, according to research conducted by economists, the choice of the Russian consumer on the pharmaceutical market determines the effectiveness and safety of the drug and its price, unstable under inflation and devaluation of the ruble [6]. I.M. Burykin et al. also showed wide fluctuations in the cost of therapy of one patient with arterial hypertension in the Republic of Tatarstan – from 542.72±98.87 rubles up to 4870.80±1071.93, on the average – 1806.26±416.53 in the prices of 2008 [14]. Similar data were obtained in our study, a wide range of prices not only between the original drug and the generic, but also between the two generics. Often, the price of one generic is several times lower than its analogue. The study conducted in the Republic of Tatarstan on the methodology of WHO (2011-2013), using the example of a pharmacy network, analyzed the consumption of drugs for the treatment of CVD. The authors showed a relationship between the spectrum of drugs sold and the availability of medical facilities nearby. In addition, a volume analysis was carried out for individual groups of drugs (per 1,000 people) – enalapril was the first among the ACE inhibitors, atenolol among the selective beta-blockers, furosemide among the diuretics, among the sartans – losartan (generic Lozap), and in 2012 – losartan (generic Lorista). Among the statins, the authors noted a decrease in the share of simvastatin from 44.8% in 2011 to 15.9% in 2013, while sales of atorvastatin, on the contrary, increased from 9.1% to 29.1%) [15].

The study PURE analyzed the availability and affordability (cost) of drugs for the treatment of CVD (Aspirin, beta-blockers, ACE inhibitors and statins) in connection with the level of economic development of the country. The authors noted a positive relationship between the availability of preparations of all 4 groups analyzed and the level of economic development of the country. The affordability of drugs for beneficiaries. Probably, this is because at present the pharmaceutical industry offers a wide range of drugs to the pharmacy visitor, including several types of generics for each original drug, for the treatment of CVD. In addition, the possibility of replacing drugs in our country is regulated by Government Decree of October 28, 2015 No. 1154 “On the procedure for determining the interchangeability of medicinal products for medical use.” On the Russian pharmaceutical market there is a generally wide variety of generics, the main differences being the manufacturer and the country where the drug was released. Thus, our country ranks third in the share of reproduced drugs in the world after China and India, far exceeding Japan, Germany and the USA [8]. To date, according to research conducted by economists, the choice of the Russian consumer on the pharmaceutical market determines the effectiveness and safety of the drug and its price, unstable under inflation and devaluation of the ruble [6]. I.M. Burykin et al. also showed wide fluctuations in the cost of therapy of one patient with arterial hypertension in the Republic of Tatarstan – from 542.72±98.87 rubles up to 4870.80±1071.93, on the average – 1806.26±416.53 in the prices of 2008 [14]. Similar data were obtained in our study, a wide range of prices not only between the original drug and the generic, but also between the two generics. Often, the price of one generic is several times lower than its analogue. The study conducted in the Republic of Tatarstan on the methodology of WHO (2011-2013), using the example of a pharmacy network, analyzed the consumption of drugs for the treatment of CVD. The authors showed a relationship between the spectrum of drugs sold and the availability of medical facilities nearby. In addition, a volume analysis was carried out for individual groups of drugs (per 1,000 people) – enalapril was the first among the ACE inhibitors, atenolol among the selective beta-blockers, furosemide among the diuretics, among the sartans – losartan (generic Lozap), and in 2012 – losartan (generic Lorista). Among the statins, the authors noted a decrease in the share of simvastatin from 44.8% in 2011 to 15.9% in 2013, while sales of atorvastatin, on the contrary, increased from 9.1% to 29.1%) [15].

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is also closely linked with the level of development of the country – in high-income countries the cost of drugs – 1% of household income, and in low-income countries – from 17% in cities to 49% in rural areas. The data obtained in India stand out – in this country with a low level of economic development thanks to the dynamic growth of the pharmaceutical industry, including producing generic drugs, the availability and affordability of drugs is very different from countries with the same level of the economy [4]. According to the results of our study, it was found that the minimum price of a complex of 4 groups of drugs for the treatment of CVD is 156 rubles, while the average price is about 2 thousand rubles. The data obtained on the one hand undoubtedly testify to the affordability of at least basic classes of drugs for the treatment of CVD. On the other hand, the difference in cost, sometimes very weighty, raises the problem of assessing the effectiveness of the drugs compared. The objectives of this study were not to evaluate the bioequivalence of drugs, but significant differences in the cost of a set of drugs recommended for the treatment of a single disease indicate the need for further study of the problem from this point of view. In their works on the study of the comparative effectiveness of original and reproduced drugs, S.Yu. Martsevich and S.N. Tolpygina raised the need for a wider coverage of the results of such comparisons [16], but the results of such works are more intended for the medical community, whereas the patient in the pharmacy is often forced to make a choice independently or following the advice of the pharmacist without having this information.

Conclusion

Thus, the basic cardiovascular medicines were characterized by a relatively high accessibility in the six regions of the RF included in the analysis both by the criterion of the availability of drugs, and by the criterion of the minimum price.

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