**УДК 616.41**

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**Priority ways of the health care system for patients with diseases of the circulatory system in the Far-Eastern Federal district**

*The article shows the urgent questions of cardiovascular care for citizen of the Far East Region, as well as the main results of a comprehensive analysis of the activities of clinics providing cardiovascular medical care, assessment of cardiovascular care through the analysis of duty journeys, the quality of patient selection for surgery, study the views of patients, physicians and health authorities about the organization, the level of accessibility and quality of health services. Urgent problems of high-tech medical care (HTMC) providing to the population in the Far East Region were formed. Ways to optimize the medical care system for patients with cardiovascular disease were identified and scientifically based.*

### **Приоритетные пути развития системы оказания медицинской помощи пациентам с болезнями системы кровообращения в Дальневосточном федеральном округе**

*В статье освящены актуальные вопросы оказания медицинской помощи при болезнях системы кровообращения (далее – БСК) жителям Дальневосточного федерального округа (далее – ДФО), а также основные результаты проведенного авторами комплексного анализа деятельности учреждений, оказывающих медицинскую помощь при сердечно-сосудистой патологии; оценки оказания медицинской помощи при БСК посредством анализа (выездная форма работы), качества отбора пациентов на оперативное лечение, изучения мнения пациентов, врачей первичного звена и руководителей системы здравоохранения об организации, уровне доступности и качестве медицинских услуг. Сформированы актуальные проблемы оказания высокозатратной лечебно-диагностической помощи населению при БСК в ДФО. Определены и научно обоснованы пути оптимизации системы оказания медицинской помощи пациентам с сердечно-сосудистой патологией.*

***Keywords:*** *healthcare, diseases of the circulatory system, management, the Far East of Russia.*

***Ключевые слова:*** *здравоохранение, болезни кровообращения, управление, Дальний Восток России.*

Despite the fact that in 2014 the level of primary morbidity of cardiovascular diseases (hereinafter – CVD) was 2 878.3 per 100 thousand population, and decreased by 3.7% compared to 2013 year (2 989.1 per 100 thousand population), and in 2015 the incidence of CVD in Russia wasn’t changed (+ 0.03%), the WHO forecast indicates a further tendency to increase the prevalence of CVD in the world, and the total number of predictable deaths from various forms of CVD could grow by the year 2020 significantly. Last several years CVD are still taking first place in the structure of causes of death [1 – 5].

The special situation was in remote areas of the country, where the regional features have additional influence on the state of morbidity and mortality from CVD as well as the development of medical care. With the largest territory in the Russian Federation (more than 6 million square kilometers – 36.4% of the territory of Russia), the Far East Region(hereinafter – FER) is one of the most sparsely populated regions of the country. The population here is 6211.4 thousand, which is 1.3% less than in 2010 [6]. Thus, the main geographical features of the Far East are low population density, remoteness and problems to reach the most areas of the region. This DFO is the only region in the country that has an extremely high mortality rate (696 per 100 thousand population) 1.3 times exceeded the average mortality rate in the year 2013 [7]. During the Soviet period of the years 1991 – 2010 the region lost 1780 thousand people, or 22.1% of its population including 225.5 thousand people (12.7%) were the natural decline and 1554.5 thousand people (87.3%) we reimmigrants [8].

For the period of the years 2013 – 2015 morbidity rate of CVD was increased: in 2013 it grew plus 0.9%, in 2015 - plus 0.4% [2 – 5].

The main reasons for the increasing morbidity of CVD in the region were start to aging of the local population, environmental degradation, increasing the influence of external factors. A potential cause of CVD morbidity growth in frame of orientation of the Russian Federation Government in the Far East could be an increase in migration to the Far East and, at the same time, the growth of the CVD as one of the most common pathologies of population due to the worsening of chronic diseases and increasing adaptive risks for the predictable increase in migration inflow. The second point can serve an improving the economic attractiveness of medical tourism in the FER. These and other reasons not only worth to take into account in the forecast of the need for medical care for CVD in the FER in the near future, but also to conduct preliminary training, as well as it worth to actively influence the ways of the region development. It is not possible to determine the need and anticipate necessary resources without the modern information support today (e. c. programs of database creation, formalized criteria for including of patients in the database) [9].

The vast territory of the FER and the low density of its population determine the features of the structure and composition of primary health care in the region and the routing of patient’s flows. This situation, in turn, leads to the need to regulate activities on the formation of a three-tier system of medical care. Under this system, the medical organization of the first level are presented as the close to the place of residence organizations providing medical care for the most common diseases; medical institutions of the second level are presented as the specialized inter-municipal centers, primarily for emergency and planning specialized medical care for diseases that are major causes of mortality; medical organizations of the third level are presented as regional, territorial and republican hospitals, specialized hospitals and centers for not only specialized medical care but also high-tech one.

According to the Minister of Health of the Russian Federation V. Skvortsova in the framework of the Eastern Economic Forum at September 2-3, Vladivostok, since the year 2012 a three-tier health care system in the FER has successfully built. Already, more than 70% of health care volumes in the Far East is in primary care [10]. However, the problem providing skilled medical care for CVD in the first levelof medical care in the FER is very serious today. Remote areas of the region often don’t have not only cardiologists but also therapists. There is a need for qualified specialists of cardiac care to the population of the Far East, as well as the precise system of patient’s referrals in stages providing them with medical care.

Since 2012 HTMC quotas are approved specifically for healthcare institutions (without reference to the subjects of the Russian Federation) [11], which required institutes to work independently with regional health authorities to attract patients. The referral of patients to the surgical treatment by the subjects of the region was woefully inadequate. The reasons were the same: the territorial problems in the health sector and the lack of qualified specialists (cardiologists, cardiovascular surgeons) and modern equipment for diagnostics of CVD in remote areas.

Underestimating of the general condition of the patient at outpatient level, completeness of diagnostics according to the standard of preliminary preparation, as well as indications and contraindications for surgical treatment could cause the reason of rejection to the patient in the hospital for planned surgery, which entails a physical, psychological and financial inconvenience for the patient and working with them medical personnel. Referral institutions often don’t take into account contraindications to surgery for patients.

It should be noted that the cost of bed-days in hospitals of various types is significantly different and one of the most expensive among them is cardiac surgery hospital [12]. The need for repetition of the diagnostic studies performed in outpatient clinics, because of dissatisfaction with the results of studies in the outpatient sector leads to prolongation of hospital stay and increases the cost of services up to 25%, which in terms of expensive heart surgery, requires the creation of qualified units for preoperative preparation [13,14].

Focus of state programs on the technical equipment of outpatient care, staffing and skill level of personnel, adherence to algorithms of preoperative examination and reducing the volume of examinations in the hospital should have a positive impact on the level of diagnostics and to shortening the duration of hospitalization.

In order to ensure access to medical care and improve the efficiency of health care services, according to the Russian State Program "Health development", a number of activities for the prevention, diagnosis and treatment of CVD, including improving the Procedure of medical examination of certain groups of the adult population, the organization of field works of health centers in rural areas and remote settlements, the expansion of schools for arterial hypertension, ischemic heart disease and stroke, monitoring of the package of measures implementation aimed at improving medical care for patients with CVD [2 – 5]. However, the measures undertaken in FER are not enough.

The basis of these recommendations is a comprehensive analysis of medical care for CVD in the FER, which includes evaluation of medical and demographic situation for CVD; patterns of care for CVD (including the "Cardiovascular Surgery"); satisfaction of the population and health professionals (practitioners, managers and health administrators) the level of care for CVD, as well as the scientific basis of measures to improve the HTMC system for CVD in the FER. Developing a set of measures to optimize for the medical care system to patients with CVD in the FER was identified the aim of this research. In accordance with the intended purpose and objectives, the medical care system to patients with CVD in the profile "Cardiovascular Surgery" was the object of this research.

For the purpose of effective implementation of the proposed model of providing high-tech medical care for CVD it was recommended to health authorities of RF subjects, as well as the heads of institutions of the RF subjects providing medical care to patients with CVD:

1. In order to address accessibility problems and quality of examination of patients before admission to the cardiac surgery hospital within the obligatory medical insurance system to organize a “route flows” of patient’s streams through regional and municipal diagnostic centers with high intensity, modern diagnostic base, high quality specialist, timeliness and quality surveys; to consider the possibility of introducing a quota system for clinical diagnostic examinations; to organize pre-hospital control of the completeness of the patients’ survey referred for consultation and treatment within HTMC, the functioning of the "feedback" system between the Centre and outpatient care. To this aim integration of federal level institutions of medical care for CVD should be undertaken in the program of clinical examination and prophylaxis program. The interaction with the institutions involved in the primary and secondary prevention for CVD should be determined as the main purpose of integration. Responsibility for a “route flows” at the level of the RF subjects should be entrusted to the health authorities of subjects of the Russian FER.

2. To develop telecommunications technology using implementation of unified information (radiology, ultrasound and etc.) telecommunication systems advanced medical devices with remote data transmission (electrocardiogram telemetry devices and implanted anti-arrhythmic remote monitoring). It becomes particularly relevant in the conditions vast areas of FER. Promoting and monitoring of this system development and implementation in the subjects of FER should be assigned to the health authorities of individual subjects.

3. It is also recommended to health management authorities of the RF subjects:

a) to lead a detailed analysis of the service and control elements;

b) to ensure the reforming of the structure and function of institutions providing medical care for CVD, the profile separation of health care volumes, depending on the needs of the population of the region. It is recommended also to carry out a separation of emergency and routine medical care, primary diagnosis of CVD for a variety of institutions the following: emergency care should be held in institutions offering medical care within the acute coronary syndrome assistance; providing surgical care for CVD routinely should be concentrated in a limited number of specialized institutes (depending on the needs of the region and hospital facilities). Reprofilin gof "unprofitable" hospitals and departments, providing surgical care for CVD routinely in therapeutic or diagnostic hospitals and emergency departments or ones for early postoperative rehabilitation of patients with CVD should be noticed.

c) to consider the establishment of a centralized regional fund of support and development of high-cost medical care and impute it the function of planning of HTMC volumes reserving and the revision of cost ratios for cardiovascular interventions included in Territorial program of Government guarantee to the level of their economic viability for medical institutions, as well as other aspects of activityto solve the problem of providing high-cost technologies inhabitants of the FER. Precautions of health institutions and the regional authorities to the changing health care needs and planning backup HTMC volumes will allow to actively influencing favorable issues for the region and ways of development of the likely projected situation in health service.

4. It is could be offered management authorities of Health of the Russian Federation:

a) to include in the annual statistical reports of the Ministries of Health of the Russian Federation subjects information on the prevalence and regular medical check-up of patients for certain types of CVD, as well as to organize regular current forecast of dynamics of morbidity and prevalence of the major forms of CVD in the regions with their high social significance. In addition, it is necessary to organize the conduct of clinical registries of patients with individual nosological forms of CVD in need of surgical treatment. The complete date of surgical interventions needs for CVD will allow health authorities to realistically assess the opportunities and properly plan activities to improve the health care system as a whole.

b) To form proven cost norms for the majority of clinical-and-statistical groups of CVD, taking into account lacks of quality import substitution in cardiovascular surgery in our country today, as well as problems of providing high-class diagnostic equipment. For example, the economic viability of peripheral arterial reconstructions within Territorial program of Government guarantee could become the “de facto” guarantee of reducing of the lower extremities amputations and, as a consequence, the grow of disableds due to critical ischemia of the lower extremities.

Thus, based on the goal to improve the profitability and efficiency of the hospital activities established the state program of the Russian Federation "Health development" is an organization of successive control between specialists of inpatient and outpatient care in the pre-hospital stage of preparation of patients for expensive surgical treatment. The results of activities outpatient and inpatient care specialists in local and regional health institutes, their continuous interaction with each other and with federal experts determine the volume and justify the stages and types of medical care at the federal level. The development of modern medical technologies and telecommunications on the one hand, and the restoration of the principles of conscientious attitude to their duties, responsiveness and attention to patients and colleges (including management staff), on the other hand, should enhance the confidence level for patients to health care specialists, as well as become a basis for professional development of the specialists and improve their level of professional motivation. Reducing the cost of treatment in HTMC hospitals, by improving their surgical activity due to the hospitalization of patients directly for the HTMC will be justified only if the complete algorithm of preoperative examination and the system of interaction between HTMC hospital and preoperative preparation departments will be carried out. Differentiation between diagnostic and treatment (therapeutic and surgical) institutions and institutions providing HTMC depending on the needs of the region and hospital facilities should improve the quality and accessibility of medical care, regardless of place of patients’ residence.

The proposed ways of the implementation of health care model to the population of the FER allow optimizing the activity and interaction of medical institutions of local, regional and federal levels, which is the basis for the improvement of CVD medical care, as well as its availability and quality for the population. Identified financial and organizational health system reserves in the FER will be aimed at improving of the level of satisfaction of the population medical care needs due to the rationalization of the structure of its provision and differentiation of resource flows following these recommendations [15].

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