

Modern Approaches To The Treatment Of Cardiovascular Diseases, A Systematic Review Of Clinical Recommendations And Practices

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ABSTRACT

The article is devoted to a systematic review of modern approaches to drug and non-drug therapy of cardiovascular diseases based on current clinical recommendations and data on real clinical practice in the Russian Federation.

The consistency of national recommendations with international documents is analyzed, as well as the specifics of their adaptation to Russian conditions. Special attention is paid to therapeutic strategies for arterial hypertension, coronary artery disease and chronic heart failure as the most common nosological forms.

It is shown that the national clinical guidelines approved by the Ministry of Health of the Russian Federation and the Russian Society of Cardiology generally reflect the concept of evidence-based medicine and the priority of early initiation of combination therapy, enhanced control of risk factors and widespread use of drugs with proven effects on prognosis. At the same time, evidence from actual practice studies indicates incomplete implementation of recommendations, continued underuse of certain classes of drugs, regional differences, and significant influence of organizational and socio-economic factors.

Based on an interdisciplinary analysis, the directions for improving the therapeutic therapy of cardiovascular diseases in the Russian Federation are formulated, including optimizing patient routing, increasing adherence to therapy, developing preferential drug provision programs and strengthening interaction between levels of medical care.

Keywords: cardiovascular diseases, arterial hypertension, coronary heart disease, chronic heart failure, clinical recommendations, pharmacotherapy, real clinical practice, evidence-based medicine.

INTRODUCTION

Cardiovascular diseases are an extensive group of pathological conditions affecting the heart and blood vessels and accompanied by chronic damage to the vascular wall, impaired hemodynamics and a high risk of acute vascular disasters. They occupy consistently leading positions in the structure of morbidity and mortality of the adult population, determining not only medical, but also pronounced socio-economic consequences for society. In the Russian context, the burden of cardiovascular diseases is increased by a combination of demographic characteristics, a high prevalence of modifiable risk factors and heterogeneity in the availability of specialized care, which makes the optimization of therapeutic therapy a central element of public health policy.

Modern approaches to the treatment of cardiovascular diseases in this study are understood as a set of pharmacological and organizational solutions based on the principles of evidence-based medicine and enshrined in clinical guidelines [11]. Clinical recommendations are interpreted as systematized documents in which standardized algorithms for diagnosis, treatment, and secondary prevention are formulated based on the analysis of the results of randomized clinical trials, meta-analyses, and real-world practice data. For the Russian Federation, these documents are of a dual nature: on the one hand, they serve as a scientific condensation of

modern knowledge, on the other, they act as a normative basis for assessing the quality of medical care and resource planning.

The concept of real clinical practice in the framework of the article is used to denote the totality of actual medical decisions made by doctors in the specific conditions of a medical organization, taking into account the availability of medicines and technologies, the level of training of specialists, the socio-economic status of patients and the regional characteristics of the organization of care. Real practice is not limited to following recommendations mechanically, it reflects the complex interplay of regulatory requirements, clinical experience, patient expectations, and constraints of the healthcare system. A comparison of the content of clinical recommendations and data on actual practice makes it possible to identify gaps between the ideal model of therapy and its implementation, as well as to identify areas requiring managerial and educational intervention.

The special significance of such a comparison is manifested in relation to arterial hypertension, coronary artery disease and chronic heart failure, which are considered as supporting nosological groups. Detailed national recommendations have been developed for them, integrating international approaches, but the doctor's day-to-day decisions are often shaped by time constraints, insufficient patient commitment, restrictions on preferential drug provision and uneven availability of high-tech care. As a result, modern therapeutic strategies involving early initiation of combination therapy, the use of drugs with proven effects on prognosis and active management of risk factors are implemented in fragments [8].

In the Russian healthcare system, clinical recommendations on cardiovascular diseases acquire the status of a key regulator of medical practice due to their inclusion in the list of classification headings of the Ministry of Health of the Russian Federation, their alignment with criteria for the quality of medical care and their use in the examination system. This creates formal prerequisites for the unification of approaches to therapy in the country. However, the actual implementation of these documents largely depends on the level of organizational maturity of a particular region, the development of a cardiology service, the sustainability of drug provision programs and the availability of continuing medical education.

Under these conditions, a systematic review of modern approaches to the treatment of cardiovascular diseases, based on the analysis of clinical recommendations and Russian practices of their application, is becoming particularly relevant. It allows not only to describe the substantive accents of the current documents, but also to identify characteristic models of therapeutic tactics, typical deviations from recommended algorithms, as well as factors determining the stability or vulnerability of therapeutic strategies [10]. This approach creates the basis for a deeper understanding of how solutions in the field of treatment of cardiovascular diseases are formed and implemented in modern Russia, and which areas of improvement are the most promising in terms of clinical effectiveness and organization of care.

The purpose of this article is a systematic review of modern approaches to the treatment of cardiovascular diseases with an emphasis on Russian clinical guidelines and real practice.

MATERIALS AND METHODS OF RESEARCH

The study was conducted in the format of a systematic review of official clinical recommendations and publications on the treatment of cardiovascular diseases in adults.

It included clinical recommendations published in the Russian Ministry of Health's rubric and on the website of the Russian Society of Cardiology, approved in recent years and related to the leading nosological forms: arterial hypertension, coronary heart disease, chronic heart failure and a number of other clinically significant conditions.

Additionally, scientific articles in Russian peer-reviewed journals, available in open electronic libraries, as well as reviews of innovative methods of treatment of cardiovascular diseases, reflecting current trends in cardiological pharmacotherapy and interventional interventions, were analyzed.

The substantive analysis was carried out in several stages. First, the main therapeutic approaches outlined in the recommendations were highlighted, with an emphasis on the principles of choosing starting therapy, treatment intensification strategies, targets and priority classes of drugs. Then, these provisions were compared with the results of real-world practice studies, which made it possible to assess the degree of compliance of the prescriptions with the regulatory framework, identify typical discrepancies and possible reasons for non-compliance with the recommendations.

RESULTS AND DISCUSSION

Modern Russian clinical guidelines for the treatment of cardiovascular diseases are similar in structure and methodological principles to those of the European Society of Cardiology and other international professional associations. They are based on systematic reviews and meta-analyses, the results of which are classified according to the level of evidence and the degree of persuasiveness of recommendations.

An important feature of Russian documents is their regulatory status: their inclusion in the list of classification headings of clinical recommendations of the Russian Federation Ministry of Health and their connection with the criteria for the quality of medical care make these texts not only scientific, but also regulatory tools. For a practicing physician, they become a mandatory basis for choosing treatment tactics, and for the healthcare organization system, they become a guideline in shaping routing, training programs, and quality control [5].

Table 1. The main clinical recommendations for the treatment of cardiovascular diseases included in the review

Nosological group	Development organization	Year of the current version (at the time of the review)	Main therapeutic accents	Features of adaptation to the practice of the Russian Federation
Arterial hypertension in adults	Russian Society of Cardiology, Ministry of Health of the Russian Federation	around 2020–2024	Priority of early combined antihypertensive therapy, control of risk factors, individualization of goals	The structure of the Russian population is taken into account, the high prevalence of combined pathology
Chronic heart failure	The Russian Society of Cardiology and specialized Societies	2020 and updates	Step-by-step formation of a basic neurohumoral blockade scheme, addition of new classes of drugs, rehabilitation	Detailed regulation of the organization of supervision, emphasis on outpatient management
Stable coronary heart disease	Russian Society of Cardiology, Ministry of Health of the Russian Federation	2020 and beyond	Combination of antianginal, antithrombotic and lipid-lowering therapy, widespread use of revascularization	Consideration of the availability of interventional technologies in the regions, regulation of routing to vascular centers
Acute coronary syndrome without ST segment elevation and with ST elevation	Russian Society of Cardiology	around 2020-2021	Early reperfusion strategy, intensive antithrombotic therapy, secondary prevention	Regulation of time "windows" for patient delivery, development of a network of regional vascular centers
Rhythm disturbances, including atrial fibrillation	Russian Society of Cardiology	The 2020s	Frequency and rhythm control, prevention of thromboembolic complications, use of anticoagulants	The availability of various anticoagulants and the preferential system are taken into account.

Arterial hypertension remains one of the key goals of cardiological therapy in the Russian Federation. Russian guidelines for the treatment of hypertension in adults emphasize the need for early antihypertensive therapy in patients with confirmed elevated blood pressure and risk factors for cardiovascular complications. Priority is given to the use of drugs of the main classes with a proven effect on the prognosis, as well as the use of fixed combinations to improve adherence.

From the point of view of therapeutic logic, the first step for most patients is the appointment of combination therapy, which allows them to act on several pathophysiological links. This approach makes it possible to achieve the target level of blood pressure control faster, reduce variability and reduce the risk of complications. The need to assess concomitant pathology is emphasized separately, which affects the choice of a specific combination of drugs, for example, in the presence of diabetes mellitus, chronic kidney disease or coronary heart disease [12].

Studies of actual clinical practice in the Russian Federation indicate that, despite the widespread recommendations, some patients still receive monotherapy even with a marked increase in blood pressure, and the use of fixed combinations remains insufficient. In addition, there is an incomplete use of drugs with a proven advantage in preventing complications and preserving the function of target organs [1].

An important organizational aspect is the role of primary health care. It is at the level of a general practitioner or therapist that the issue of early diagnosis of hypertension, the appointment of initial therapy and the motivation of the patient for long-term treatment is resolved. With a high workload for the district doctor and limited appointment time, the formation of a stable patient's commitment to combination therapy becomes a difficult task. Therefore, even with clear algorithms, recommendations may not be fully implemented.

The Russian guidelines for the treatment of coronary heart disease are based on a combination of three key areas. The first is related to the control of symptoms and improvement of quality of life due to antianginal drugs and load optimization. The second is aimed at reducing the risk of acute coronary events through antithrombotic and lipid-lowering therapy. The third is realized through the use of revascularization interventions, which are becoming more and more accessible in Russian conditions due to the expansion of the network of angiographic laboratories and vascular centers [6].

In acute coronary syndrome, the recommendations emphasize the importance of an early reperfusion strategy, the active use of modern antithrombotic regimens, and subsequent aggressive secondary prevention. Organizationally, these approaches are supported by a patient routing system aimed at minimizing the time before reperfusion and concentrating specialized care in regional vascular centers.

In the daily practice of the Russian Federation, the problem of late treatment of patients with the development of acute symptoms persists, which limits the possibilities of timely reperfusion. In a number of regions, there are differences in the availability of high-tech interventions, which requires flexible adaptation of therapeutic strategies: if primary intervention is not possible, the focus shifts to optimizing drug therapy and thorough secondary prevention. Of particular interest is the use in Russia of modern antiplatelet agents, lipid-lowering drugs and other means for secondary prevention. Drug market research and prescribing data show that, despite the availability of a wide range of drugs, in real practice some patients do not receive sufficient doses of lipid-lowering therapy and combined antithrombotic regimens for the required duration, which reduces the potential impact on long-term prognosis [4].

Russian clinical guidelines on chronic heart failure regulate in detail the stages of pharmacotherapy, emphasizing the need to form a basic neurohumoral blockade, supplement therapy with new classes of drugs with proven efficacy, and consider the possibility of non-drug interventions and devices in severe cases of the disease. In the logic of the recommendations, treatment of chronic heart failure is based on the sequential addition of drugs that affect key pathogenetic mechanisms, taking into account the clinical status, ejection fraction and concomitant pathology. The issues of dose titration, tolerance control, organization of follow-up and rehabilitation are separately regulated.

In real Russian practice, achieving optimal drug doses in a significant proportion of patients is hampered by the presence of comorbidity, age-related characteristics, limited availability of specialized cardiology centers, and an insufficient number of structured follow-up programs. There is a situation when basic therapy is prescribed, but not always brought to the levels associated with maximum benefit, and new classes of drugs are introduced unevenly [2].

To systematize pharmacotherapeutic approaches, it is advisable to present them in the form of a summary table.

Table 2. The main directions of pharmacotherapy of cardiovascular diseases in modern Russian guidelines

Nosological group	Priority pharmacotherapeutic areas	Expected clinical effects	Implementation features in the Russian Federation
Arterialhypertension	The use of combinations of antihypertensive drugs of the main classes, preference for fixed combinations	Achieving sustainable blood pressure control, reducing the risk of complications	Dependence on the availability of combination drugs and preferential treatment programs
Coronaryheartdisease	Antianginal therapy, antithrombotics, intensive lipid-lowering therapy	Reducing the frequency of seizures, preventing myocardial infarction and death	Differences in the level of availability of modern drugs and availability of revascularization
Acute Coronary Syndrome	Early reperfusion strategy, multicomponent antithrombotic therapy, subsequent secondary	Reduction of early and long-term mortality, reduction in the frequency of repeated	The important role of the vascular center routing and readiness system

	prevention	events	
Chronic heart failure	Step-by-step formation of a neurohumoral blockade scheme, addition of modern drugs, rehabilitation	Improvement of symptoms, reduction of hospitalizations and mortality	Difficulties in achieving target doses, heterogeneous introduction of new classes of drugs
Rhythm disturbances and thromboembolism prevention	Frequency and rhythm control, the use of anticoagulants to prevent stroke	Reduction of the incidence of thromboembolic complications and related hospitalizations	Different availability of different anticoagulants, the need to assess the risk of bleeding

Antithrombotic therapy occupies a central place in the prevention of complications in patients with coronary artery disease, atrial fibrillation and a number of other conditions. Russian recommendations emphasize the need for an individual assessment of the risk of ischemic and hemorrhagic complications when choosing treatment regimens and the duration of its use, as well as the importance of interaction between inpatient and outpatient treatment stages to ensure continuity of antithrombotic protection [7].

In parallel, measures to control modifiable risk factors play a significant role: normalization of the lipid profile, correction of glycemia in patients with diabetes mellitus, smoking cessation, weight management and increased physical activity. In their recommendations, Russian specialists generally follow international targets, while taking into account the prevalence of risk factors and the structure of comorbidity in the domestic population.

The practical implementation of these approaches in the Russian Federation faces a number of difficulties. At the level of real practice, insufficient intensity of lipid-lowering therapy and inconsistent use of anticoagulants in patients with a high risk of thromboembolism are revealed. This is due to both organizational constraints and concerns of doctors and patients about the risk of adverse reactions, as well as lack of awareness about modern safety monitoring capabilities.

Organizational aspects and Russian practices of implementing recommendations

The systematic implementation of modern approaches to the treatment of cardiovascular diseases is impossible without taking into account the organizational structure of healthcare. In recent years, a multi-level system of cardiological care has been formed in Russia, including primary care, inter-district and regional vascular centers, specialized cardiology clinics and federal centers [8].

The most pronounced successes have been achieved in the organization of care for acute conditions, primarily acute coronary syndrome. The development of a network of vascular centers has significantly reduced the time to reperfusion intervention for a significant number of patients. At the same time, chronic forms of cardiovascular diseases continue to require long-term outpatient follow-up, coordination of the actions of various specialists, and constant work to maintain patient adherence to therapy.

Preferential drug provision for patients with cardiovascular diseases plays an important role in the availability of therapy, especially for chronically ill patients requiring multicomponent treatment regimens. In regions with a well-organized drug supply system, there is a higher degree of compliance of prescriptions with clinical recommendations, including the use of combined drugs and modern means for secondary prevention. Where the delivery mechanisms are less stable, doctors are forced to adapt therapy based on the actual availability of drugs, which can lead to compromises and deviations from optimal regimens.

A significant factor is also the level of continuing medical education and the availability of up-to-date information about new recommendations and updates for practitioners. The Russian Society of Cardiology is actively developing educational programs, but the degree of participation of doctors in them varies from region to region.

The combination of these factors makes it possible to identify key problem areas and possible development directions, which are presented in the following summary table.

Table 3. Main problems and directions of improvement of therapy of cardiovascular diseases in the Russian Federation

Problematic aspect	Manifestation in real clinical practice	Potential areas of improvement within the framework of current recommendations
Incomplete implementation of clinical recommendations	Non-compliance of prescriptions with recommended algorithms, underuse of drugs with proven effect on prognosis	Strengthening quality control of care, implementation of clinical and statistical audit tools, development of mentoring
Limited patient commitment to therapy	Unauthorized withdrawal of drugs, irregular intake, distrust of long-term treatment	Developing patient schools, improving the effectiveness of doctor-patient communication, using fixed combinations
Unequal availability of modern medicines and technologies	Regional differences in the availability of drugs and high-tech care	Optimization of preferential drug provision programs, development of interregional cooperation
Personnel and organizational constraints of the primary level	High workload on doctors, limited time for consultation and patient education	Implementation of team models of patient management, expansion of the role of nursing staff and telemedicine
Uneven implementation of updated recommendations	Delay between publication of recommendations and change of practice	Expansion of continuing medical education programs, use of distance learning

A systematic comparison of the content of Russian clinical recommendations and data on actual practice shows that the methodological base of therapeutic approaches to cardiovascular diseases in the Russian Federation corresponds to modern principles of evidence-based medicine. The recommendations on arterial hypertension, coronary heart disease, and chronic heart failure identify key strategic directions that coincide with international trends: early appointment of combination therapy, priority of drugs with proven effects on prognosis, strict control of risk factors, and active use of interventional and non-drug treatment methods [9].

The main discrepancies are revealed at the level of practical implementation of these strategies. Data from studies of actual prescriptions and analysis of pharmacotherapy demonstrate that a significant proportion of patients still have insufficient treatment intensity, especially in terms of lipid-lowering therapy and modern antithrombotic and neurohumoral blockade regimens, as well as underestimation of the need for long-term and continuous medication.

The problem of patient adherence deserves special attention. Long-term therapy, multicomponent regimens, and the need for constant medication in the absence of pronounced symptoms require high internal motivation and trust in the medical system from the patient [13]. With limited consultation time, insufficient explanatory work and lack of psychological support, adherence naturally decreases, which leads to a deterioration in treatment outcomes.

CONCLUSION

The conducted systematic review of modern approaches to the treatment of cardiovascular diseases, based on the analysis of clinical recommendations and data on the actual practice of the Russian Federation, allows us to make several fundamental generalizations.

First of all, it can be stated that Russian clinical guidelines on arterial hypertension, coronary heart disease, chronic heart failure and a key nosology are fully integrated into the global space of evidence-based cardiology and reflect modern ideas about the pathogenesis, pharmacotherapy and organization of care for patients with cardiovascular diseases. In addition, the therapeutic strategies outlined in the recommendations are focused not only on controlling symptoms, but also on reducing the risk of complications and improving survival. Priority is given to combined treatment regimens, the use of drugs with proven effects on prognosis, aggressive secondary prevention, and integrated risk factor management.

At the same time, data on actual practice show that the actual implementation of these strategies remains incomplete. Cases of insufficient intensive care, underuse of modern drugs, and incomplete implementation of dose titration recommendations persist at the outpatient and primary care levels. The impact of organizational constraints, regional differences in the availability of medicines and high-tech interventions, as well as the problem of low patient adherence to long-term treatment are affecting.

The prospects for improving therapeutic practice in the Russian Federation are related to several complementary areas. One of them is to strengthen the system of continuing medical education and accelerate the

implementation of updated recommendations at the level of practicing physicians, including through the development of distance learning platforms and clinical mentoring. Equally important is the development of preferential drug provision programs and the optimization of procurement policies aimed at increasing the availability of drugs with proven efficacy, including fixed combinations.

Strengthening the patient-oriented approach will also play a significant role: the creation of patient schools, the use of simple and understandable tools to explain the goals of therapy, the introduction of modern monitoring and communication technologies that allow timely identification of problems with adherence and correction of treatment. A significant task also remains to further strengthen the inter-level interaction between the primary care unit and the specialized cardiology service, which will ensure continuity of therapy at all stages of care.

Thus, modern approaches to the treatment of cardiovascular diseases in the Russian Federation are based on powerful evidence base and a well-developed system of clinical recommendations. The main challenges are shifting from the development of new treatment regimens to their practical implementation, organizational and social support. Solving these problems requires a synthesis of clinical, managerial, and educational efforts, which in the future can further reduce the burden of cardiovascular diseases and improve the quality of life of patients.

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