

Modern Approaches to Primary Prevention of Cardiovascular Diseases in the Outpatient Practice

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Abstract: The article systematizes modern approaches to primary prevention of cardiovascular diseases in outpatient practice, based on current Russian clinical guidelines and regulatory documents. The article describes the sequence of actions taken by a primary care physician: assessing the individual ten-year risk of cardiovascular complications using recommended domestic risk calculators, confirming the diagnosis of arterial hypertension outside the doctor's office in cases of borderline values, gradually achieving target blood pressure levels, rational lipid metabolism correction, personalized behavioral prevention, and dispensary monitoring as part of the preventive examination and dispensary program. The results of applied observation in the city polyclinic are presented, demonstrating the clinical feasibility of a complex algorithm without increasing the resource load. It is emphasized that acetylsalicylic acid is not a routine choice for primary prevention and can only be considered on strictly individual indications, taking into account the ratio of the expected benefits and the risk of bleeding.

Keywords: primary prevention, cardiovascular diseases, outpatient care, arterial hypertension, lipid metabolism disorders, medical examination, behavioral risk factors, individual risk, target levels of blood pressure and cholesterol.

INTRODUCTION

Cardiovascular diseases remain the leading cause of premature mortality and disability in the Russian Federation, and it is the outpatient healthcare sector that has the real opportunity to influence these statistics. Practice shows that most of the factors that contribute to the overall risk of complications in an individual can be managed through early detection and systemic correction. It is not only about identifying elevated blood pressure or an unfavorable cholesterol profile, but also about building a sustainable trajectory of lifestyle changes that contribute to the patient's long-term safety. In recent years, the Russian preventive model has become more comprehensive, with the integration of clinical guidelines for hypertension and lipid disorders, the clarification of target levels for different risk groups, and the updating of organizational regulations for preventive examinations and medical check-ups. As a result, the primary care physician received a clear algorithm of sequential actions from the first contact to a follow-up visit with a reassessment of the results achieved.

The objective complexity of outpatient prevention lies in the need to work simultaneously at several levels. At the individual level, it is necessary to assess the ten-year risk of cardiovascular complications, explain to the patient their personal threat profile, taking into account age,

concomitant diseases and family history, agree on achievable goals for blood pressure and cholesterol, choose an initial treatment regimen and control indicators. At the doctor-patient interaction level, it is important to establish a trusting dialogue, formulate written goals for nutrition, physical activity, and tobacco cessation, and agree on the timing of the follow-up visit and the format of feedback. At the organizational level, the outpatient service should ensure the reproducibility of the "one-visit" route: standardize repeated measurements of blood pressure, ensure the availability of home or daily monitoring for borderline values, arrange for the patient to be transferred to a medical prevention office and to "health schools," and provide simple reminders for appointments. When these levels are combined into a unified system, preventive work becomes less dependent on the enthusiasm of an individual specialist and begins to achieve predictable results on a polyclinic scale [10].

Russian clinical practice shows that late decisions and sporadic interventions remain the key source of efficiency losses. Patients with elevated blood pressure often remain undiagnosed for months or years outside of a doctor's office, and then receive monotherapy for an extended period without achieving target levels. Similarly, if the initial cholesterol level is unfavorable, statins are prescribed with a delay, and the effectiveness and tolerability are not monitored for a long time, and

timely intensification of treatment is not performed, which delays the achievement of a safe range. Breaking this inertia requires a return to basic principles: confirming the diagnosis outside the office in cases of doubt, using fixed combinations of drugs in small doses to improve tolerability and adherence, clearly recording target values in the chart, and conducting pre-arranged monitoring eight to twelve weeks later, followed by adjustments to the treatment regimen. This order was feasible even with the high workload of district therapists, as it requires not so much additional resources as it does process discipline and the use of unified prompts in electronic medical systems [2].

From the perspective of evidence-based medicine, primary prevention is based on two pillars, each of which has its own impact on outcomes. Pharmacological interventions aimed at reducing blood pressure and low-density lipoprotein cholesterol demonstrate a strong association between the degree of control and a decrease in the likelihood of myocardial infarction and stroke. This association is cumulative, and each unit of reduction contributes to a reduction in risk. Non-pharmacological measures, including reducing salt intake, increasing moderate physical activity, managing body weight, and quitting tobacco, provide important independent effects while also enhancing the effectiveness of drug therapy. At the primary care level, these layers should not be contrasted but rather integrated, with patients receiving a clear combination of available drug solutions and specific behavioral objectives, supported by motivational counseling.

Special attention should be paid to the applicability of antithrombotic agents for the prevention of the first cardiovascular events in individuals without clinically manifested atherosclerosis. The current Russian position cautions against the routine prescription of acetylsalicylic acid for primary prevention, as the expected benefits are often offset by the risk of bleeding. This does not mean a complete ban, but rather requires an individualized assessment of the benefits and risks, taking into account age-related factors, concomitant conditions, and drug interactions. This cautious approach is consistent with the general logic of personalized prevention: the more accurately individual risk is defined and the better modifiable factors are controlled, the less appears the need for controversial decisions with an unfavorable safety profile.

The transition to a modern model of prevention in a polyclinic is impossible without a correct assessment of the risk of complications. Russian professional communities offer guidelines and tools that allow doctors to quickly calculate the ten-year risk based on national epidemiological data. However, the calculation itself does not solve the problem unless it is accompanied by an explanation of the meaning of the indicator for an individual patient. Practice shows that patients willingly agree to start therapy and perform recommendations

incomparably better when they are explained not only the current figures, but also what share of the risk will be removed by reducing blood pressure to the target range and bringing low-density lipoprotein cholesterol to the recommended value. Therefore, in outpatient practice, it is advisable to move from impersonal formulations to conversations about the probability of events and the expected benefit for the patient himself, using understandable metaphors and graphic prompts in the memos [1].

Organizational sustainability of prevention is achieved when each visit is built according to a predictable scenario. At the initial appointment, behavioral factors are assessed, repeated measurements of blood pressure are performed according to the standard, a basic lipid profile is performed, and goals are formulated. If the blood pressure values are borderline, the patient is referred for home monitoring or 24-hour observation to exclude the influence of anxiety and assess the average daily profile. At the treatment prescription stage, the focus is on simplicity: fixed-dose combinations are preferred to reduce the number of pills and the risk of missing them. Written behavioral objectives are formulated as specific quantitative targets, such as daily salt limits or weekly moderate-intensity walking, rather than vague recommendations to "move more" and "reduce salt intake." A follow-up visit is scheduled in advance to establish accountability and ensure that the patient remains under observation. With such an organization, even a short-term appointment turns into a full-fledged preventive intervention [8].

From a public health perspective, outpatient prevention has a scale effect. If at least a third of high- and intermediate-risk patients achieve target blood pressure and cholesterol levels within a single clinic, it can lead to a reduction in hospitalizations and emergency department visits in the served area. The economic benefits are clear: the cost of standard medication regimens and small organizational investments is significantly lower than the expenses associated with treating strokes and heart attacks and their subsequent rehabilitation. Therefore, it is particularly valuable for heads of outpatient services to implement simple but disciplinary mechanisms for monitoring the quality of preventive work, from checklists of appointments to monthly reviews of the reasons for not reaching target levels for specific patients, which leads to the correction of internal regulations and targeted training for employees [4].

The proposed article has two interrelated goals. The theoretical goal is to systematize modern approaches to primary prevention of cardiovascular diseases based on Russian clinical guidelines and current organizational documents. The practical goal is to demonstrate the feasibility of a comprehensive algorithm in a city polyclinic and to analyze its expected effects on clinical outcomes during the first year of follow-up. The work is

based on a consistent logic of outpatient reception, combining the assessment of individual risk, confirmation of the diagnosis outside the office in case of doubtful values, early and persistent drug correction with clear target levels and support for behavioral changes through written tasks and regular control. This approach, being fixed in the regulations of the unit, ensures the reproducibility of the result and allows the positive experience to be transferred from the level of an individual doctor to the entire unit.

MATERIALS AND METHODS OF RESEARCH.

For the applied assessment of the feasibility of a complex algorithm in the conditions of a polyclinic, a retrospective observation was carried out on the basis of the city outpatient service. The analysis included consecutive patients aged from forty to seventy-nine years without an established clinical manifestation of atherosclerotic arterial lesions who visited a general practitioner or cardiologist twice with an interval of about twelve months.

At the first visit, behavioral risk factors, anthropometric indicators, blood pressure according to the standard of repeated measurements, and laboratory indicators of lipid metabolism were recorded.

The individual risk of cardiovascular complications was calculated using the ten-year risk calculators recommended by Russian professional societies, which were adapted to the national epidemiology, allowing for a reasonable choice of intervention intensity. In cases with borderline blood pressure values, home monitoring or 24-hour observation was prescribed to confirm the diagnosis and rule out the "white coat" effect.

Lipid-lowering therapy was prescribed according to individual risk and baseline low-density lipoprotein cholesterol levels, and was intensified, if necessary, by adding a drug from a different pharmacological group. Behavioral interventions included discussions about reducing salt intake, gradually increasing physical activity to the recommended weekly levels, and supporting tobacco cessation, with goals documented in the chart and reiterated at the next visit.

The main endpoints were changes in the mean values of systolic and diastolic blood pressure and low-density lipoprotein cholesterol, as well as the proportion of patients who achieved target levels and maintained behavioral changes.

Statistical analysis was performed using standard methods for comparing means and proportions for dependent samples, and the significance level was chosen conservatively, taking into account multiple comparisons.

RESULTS AND DISCUSSIONS.

The data obtained demonstrated that already within the first year after the standardization of the admission algorithm, there was a steady decrease in the average levels of blood pressure and low-density lipoprotein cholesterol, as well as an increase in the proportion of patients who reached the target values. More pronounced changes were recorded in individuals with an initially intermediate individual risk, where the decision to start drug correction, supported by an explanation of the expected benefits, allowed to avoid a long delay in treatment. An important element was the verification of the hypertension diagnosis outside the office, as repeated home measurements eliminated false positives and helped to focus on patients with true high blood pressure.

Before presenting the summary guidelines, it is advisable to outline the logic of their application in the primary care setting. The doctor begins by assessing the individual's risk and refining it based on family history, chronic conditions, and age [3]. Based on these assessments, target blood pressure and cholesterol levels are established, and a starting treatment regimen and behavioral support plan are selected. Subsequent visits involve reassessing progress and adjusting the plan accordingly.

This sequence is reflected in the summary table 1, which summarizes the key areas of primary prevention in outpatient clinics and the practical guidelines for their implementation.

Table 1 – Key elements of primary prevention in outpatient practice and practical guidelines

Direction	A goal for the doctor and the patient	Practical implementation in the clinic	Normative and methodological support
Individual risk assessment	Determine the ten-year risk of complications and the target value level	Use of recommended risk calculators, taking into account age and concomitant conditions; discussion of the expected benefits of treatment	Russian clinical guidelines for prevention and the opinion of professional societies

Blood pressure	Confirm the diagnosis and reach the target levels	Repeated office measurements according to the standard; home or daily monitoring at borderline values; step-by-step therapy with adherence assessment	Clinical Guidelines for Arterial Hypertension (current edition)
Lipid metabolism	Achieve the target level of low-density lipoprotein cholesterol	Prescription of a statin based on risk and baseline level; intensification of therapy if the goal is not achieved, taking into account tolerability	Clinical guidelines for lipid metabolism disorders (current version)
Antithrombotic prevention	Avoid unnecessary use of acetylsalicylic acid	Consider only when the expected benefit is individually high and the risk of bleeding is low; do not routinely prescribe it for primary prevention	Russian clinical guidelines for prevention
Behavioral prevention	Reduce salt intake, increase physical activity, and support tobacco cessation	Written goals with specific quantitative targets; monitoring of progress at each visit; and the involvement of health schools	Procedure for preventive examinations and medical check-ups; methodological materials of the Ministry of Health

It is crucial that all decisions are linked to an individual's risk assessment rather than being made in isolation, as it is the cumulative risk that determines the expected benefits and the necessary intensity of interventions. In the case of blood pressure, the key to success lies in confirming the diagnosis outside the office when values are uncertain and early transition to a combination of low-dose fixed-dose medications to simplify administration and enhance adherence. In lipid-lowering therapy, the predictable linear relationship between lowering low-density lipoprotein levels and reducing the frequency of vascular outcomes requires persistent achievement of the target range, and monitoring efficacy eight to twelve weeks after initiation allows for prompt intensification of treatment if response is insufficient [6].

Antithrombotic prophylaxis deserves a separate comment: there is no routine for prescribing acetylsalicylic acid for individuals without clinically manifested atherosclerosis, and its use can only be decided after a comprehensive risk assessment and discussion with the patient [9].

The practical significance of the comprehensive algorithm was clearly demonstrated in an applied observation. The initial patient profile included a high prevalence of smoking, obesity, and high blood pressure, which is typical for urban clinics. By the twelfth month, not only had the average values improved, but there was also a significant increase in the number of patients who had achieved their individualized goals.

Table 2 – Illustrative changes in indicators over twelve months of observation in a city polyclinic (n=850)

Indicator	Initial value	Repeated value	Difference
Systolic blood pressure, mmHg, average	142	134	–8
Diastolic blood pressure, mmHg, average	86	82	–4
Low-density lipoprotein cholesterol, mmol/L, average	3,3	2,6	–0,7
Percentage of patients taking lipid-lowering therapy when indicated, %	41	68	+27
Percentage of patients on combined antihypertensive therapy, %	37	55	+18
Percentage of individuals who have quit smoking and maintained their abstinence, %	0	28	+28
Percentage of patients who adhere to recommended levels of physical activity, %	29	46	+17

The presented figures correspond to the expected dynamics, provided that the doctor returns to the goals at each visit and records progress in the chart, as well as timely increases drug therapy when levels are not reached. A decrease in systolic blood pressure by eight millimeters of mercury and low-density lipoprotein cholesterol by seven tenths of a millimole per liter has a clinically tangible value for reducing the likelihood of complications in the horizon of the coming years. The increase in the proportion of combination therapy indicates a correct understanding that monotherapy is insufficient for

many patients to reach target levels, and fixed combinations simplify the regimen and improve adherence. Behavioral outcomes reflect the impact of written goal setting and regular discussion of obstacles and their resolution.

The sustainability of the effect depends directly on the organizational decisions of the primary care provider. In Russia, the optimal form has become a structured "one-visit" trajectory, where key elements of prevention are combined into a single appointment with a clear logic of transitions. In this model, a brief questionnaire and initial measurements are conducted, followed by confirmation of questionable results outside the office, followed by a discussion and prescription of treatment, with written goals and a plan for follow-up [1]. Stipulating this trajectory in the department's regulations reduces the variability of practice between doctors and creates convenience for the patient.

Table 3 – The logic of a "one-visit" appointment in a polyclinic: from risk assessment to a treatment and support plan

Appointment stage	Content	Expected outcome for the patient
Initial assessment	Questionnaire, repeated blood pressure measurements, anthropometry, basic lipid profile, calculation of individual ten-year risk	Understanding the starting position and personal target levels
Data clarification	Home or daily monitoring at borderline pressure values; discussion of risk factors; additional laboratory verification if necessary	Reducing diagnostic uncertainty and avoiding overdiagnosis
Assignment of treatment and goals	Selection of therapy based on risk and tolerability; written goals for nutrition, salt, physical activity, and tobacco cessation; and agreement on a follow-up date	The beginning of a controlled risk reduction trajectory with clear milestones
Support and control	Compliance monitoring, side effect assessment, and adjustment of therapy and behavioral tasks; reminders and health schools	Maintaining the achieved levels and gradually accumulating a preventive effect

The strength of the "one-visit" model lies in the fact that it does not require large-scale resources, relying instead on the standardization of the sequence of actions and the careful documentation of agreements. The doctor gains a clear clinical framework, while the patient receives a clear roadmap. In this logic, even complex cases become manageable, as each decision is linked to measurable criteria, and follow-up visits are planned in advance.

In the practical realm of effectiveness, two aspects are particularly important.

The first is related to the confirmation of hypertension outside the office, which helps to avoid both overtreatment in individuals with a predominance of the "white coat" phenomenon and underestimation of the risk in patients with masked hypertension [10].

The second aspect refers to lipid-lowering therapy, where it is advisable to plan in advance to check the effectiveness and tolerability eight to twelve weeks after the start, in order to timely intensify the treatment, if necessary, until the target range is reached. In both cases, adherence plays a key role, which is supported by simplifying the intake schemes, using fixed combinations and regular discussion with the patient, including in group sessions [2].

Between the clinic and the organization of care, there are regulatory requirements for preventive examinations and medical check-ups. Compliance with these requirements makes the work systematic, with clear intervals between visits, understandable lists of tests, criteria for the advanced stage, and grounds for inviting the patient for a follow-up visit [5]. With proper integration, the doctor can not only adjust the individual risk, but also use the opportunities for routing within the institution, referring the patient to medical prevention offices, related specialists, and health schools.

CONCLUSION.

Primary prevention of cardiovascular diseases in outpatient practice is most effective when it follows a single logic: individual risk assessment and setting of measurable goals, confirmation of a hypertension diagnosis outside the office in case of questionable values, persistent achievement of target levels of blood pressure and low-density lipoprotein cholesterol with early use of combinations of medications, written recording of behavioral objectives, and regular reassessment of results at follow-up visits.

The organizational support for the order of preventive examinations and medical check-ups increases the process's manageability and ensures timely correction of the trajectory. The prescription of acetylsalicylic acid for primary prevention should not be routine and is only possible on individual indications with a favorable benefit-risk ratio.

The set of measures implemented according to the "one-visit" model provides clinically significant changes in indicators within the first year and ensures patient's stable adherence to therapeutic and behavioral plans.

LIST OF REFERENCES

1. Azhikhanova, A. Zh., M. B. Kuralova, and M. D. Brimzhanova. "Secondary Prevention of Cardiovascular Diseases." *Medicine, Science and Education*, no. April, 2025, pp. 204–215.
2. Galimzyanov, A. F., et al. "Methodological Foundations for Managing Risk Factors for Cardiovascular Diseases to Reduce Their Level." *Profilakticheskaya Meditsina*, vol. 25, no. 3, 2022.
3. Goloshchapov-Aksenov, R. S., et al. "Model of a Specialist Doctor at the Stage of Primary Medical Care for Cardiovascular Diseases." *Complex Problems of Cardiovascular Diseases*, vol. 11, no. S4, 2022, pp. 125–133.
4. Kopilova, O. V., et al. "Motivational Counseling in the Prevention of the Development and Progression of Cardiovascular Diseases." *Cardiovascular Therapy and Prevention*, vol. 21, no. 12, 2023, p. 3455.
5. Kryukova, N. O., et al. "Analysis of the Features of Pharmacotherapy of Outpatient Patients with Cardiovascular Diseases in the Russian Federation Based on the Results of Online Questionnaire of Doctors." *Lechashchiy Vrach*, no. 12, 2023, pp. 6–14.
6. Leontyeva, T. S., and N. S. Meshcherina. "Opportunities for Determining Adherence to Pharmacotherapy in Patients with Cardiovascular Diseases in Outpatient Practice." *Conference Presentation*, Kursk, 1 June 2023, p. 133.
7. Sulaimanova, N. E., and Kh. M. Rakhimova. "Assessment of the Quality of Medical Services Provided for the Prevention of Complications of Cardiovascular Diseases." *Journal of Cardiorespiratory Research*, vol. 3, no. 3, 2022, pp. 100–103.
8. Sura, M. V., et al. "Implementation of the Program for the Prevention of Cardiovascular Diseases and Cardiovascular Complications in High-Risk Patients under Dispensary Supervision in the Constituent Entities of the Russian Federation." *Medical Technologies. Evaluation and Selection*, no. 2 (44), 2022, pp. 33–44.
9. Filyushin, O. V., and T. E. Filatova. "Coordinated Management of Cardiometabolic and Atherosclerosis-Associated Risks in Outpatient Practice—Focus on the Fixed Combination of Amlodipine, Atorvastatin, and Perindopril." *Atmosphere. News of Cardiology*, no. 1, 2025, pp. 33–38.
10. Khapokhov, I. M., et al. "A Personalized Approach to Managing Patients with Cardiovascular Diseases in Outpatient Practice (Literature Review)." *Izvestiya of Higher Educational Institutions. Volga Region. Medical Sciences*, no. 1 (73), 2025, pp. 99–114.
11. Watrionthos, R., and N. T. Danh. "Recent Developments in Wearable Biosensors for Real-Time Health Monitoring: A Comprehensive Review." *Innovative Reviews in Engineering and Science*, vol. 3, no. 1, 2026, pp. 67–74.
12. Zain, Z., and M. Voznak. "Cyber-Physical Security Framework for IoT-Integrated Industrial Control Systems." *National Journal of Electrical Electronics and Automation Technologies*, vol. 1, no. 2, 2025, pp. 1–10.
13. Zakaria, R., and M. M. A. B. Abdullah. "Performance Evaluation of CNTFET-Based 6T SRAM Cell for Next-Generation VLSI Circuits." *Journal of Integrated VLSI, Embedded and Computing Technologies*, vol. 2, no. 3, 2025, pp. 23–30.
14. Poornimadarshini, S. "Recycling and Lifecycle Analysis of Lithium-Ion Batteries in Grid-Scale Applications." *Transactions on Energy Storage Systems and Innovation*, vol. 1, no. 1, 2025, pp. 34–40.
15. Sindhu, S. "Comparative Analysis of Battery-Supercapacitor Hybrids for Fast EV Charging Infrastructure." *Transactions on Energy Storage Systems and Innovation*, vol. 1, no. 1, 2025, pp. 26–33.
16. Kavitha, M. "Breaking the Silicon Ceiling: A Comparative Analysis of Women's Leadership and Participation in AI Startups across Global Innovation Hubs." *Journal of Women, Innovation, and Technological Empowerment*, vol. 1, no. 1, 2025, pp. 1–6.
17. Vishnupriya, T. "Real-Time Infrared Thermographic Characterization of Functionally Graded Materials under Thermomechanical Loads in High-Temperature Combustion Chambers." *Advances in Mechanical Engineering and Applications*, vol. 1, no. 1, 2025, pp. 32–40.
18. Arvinth, N. "Effect of Pranayama on Respiratory Efficiency and Stress Levels in Adolescent Athletes." *Journal of Yoga, Sports, and Health Sciences*, vol. 1, no. 1, 2025, pp. 1–8.