



APPLICATION OF EVIDENCE-BASED MEDICINE IN THE DIAGNOSIS AND TREATMENT OF CARDIOVASCULAR DISEASES

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<https://doi.org/10.5281/zenodo.18348361>

ARTICLE INFO

Received: 16th January 2026

Accepted: 22nd January 2026

Online: 23rd January 2026

KEYWORDS

Evidence-based medicine;
cardiovascular diseases;
diagnostics; treatment;
clinical guidelines;
cardiology.

ABSTRACT

Cardiovascular diseases remain the leading cause of morbidity and mortality worldwide, necessitating the use of the most effective and scientifically sound approaches to their diagnosis and treatment. Evidence-based medicine plays a key role in the development and implementation of clinical decisions based on the results of high-quality scientific research and international guidelines. This article examines the current principles of using evidence-based medicine in the diagnosis and treatment of cardiovascular diseases. It analyzes the potential for using clinical guidelines, instrumental and laboratory diagnostic methods, and evidence-based therapeutic strategies. It is demonstrated that the implementation of evidence-based approaches contributes to increased diagnostic accuracy, treatment effectiveness, and improved prognosis for patients with cardiovascular diseases.

ПРИМЕНЕНИЕ ДОКАЗАТЕЛЬНОЙ МЕДИЦИНЫ ПРИ ДИАГНОСТИКЕ И ЛЕЧЕНИИ ЗАБОЛЕВАНИЙ СЕРДЕЧНО-СОСУДИСТОЙ СИСТЕМЫ

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<https://doi.org/10.5281/zenodo.18348361>

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ABSTRACT

Заболевания сердечно-сосудистой системы остаются ведущей причиной заболеваемости и смертности во всём мире, что обуславливает необходимость применения наиболее эффективных и научно обоснованных подходов к их диагностике и лечению. Доказательная медицина играет ключевую роль в разработке и внедрении клинических решений, основанных на результатах качественных научных исследований и международных рекомендаций. В статье рассматриваются современные принципы



KEYWORDS

*Доказательная медицина;
сердечно-сосудистые
заболевания;
диагностика; лечение;
клинические
рекомендации;
кардиология.*

*использования доказательной медицины при
диагностике и лечении сердечно-сосудистых
заболеваний. Анализируются возможности
применения клинических рекомендаций,
инструментальных и лабораторных методов
диагностики, а также доказательно обоснованных
терапевтических стратегий. Показано, что
внедрение доказательных подходов способствует
повышению точности диагностики,
эффективности лечения и улучшению прогноза
пациентов с сердечно-сосудистыми заболеваниями.*

Introduction. Cardiovascular diseases are a leading cause of overall mortality and disability worldwide, posing a serious medical and social challenge to healthcare systems. Arterial hypertension, coronary heart disease, heart failure, and cardiac arrhythmias remain the primary causes of premature disability and decreased quality of life. Given the high prevalence of these diseases, the implementation of evidence-based approaches to their diagnosis and treatment is particularly important.

Evidence-based medicine is the foundation of modern cardiology and involves making clinical decisions based on the best available scientific evidence, physician clinical experience, and individual patient characteristics. The use of randomized controlled trials, meta-analyses, and international clinical guidelines allows for the standardization of diagnostic and therapeutic approaches, improving their effectiveness and safety. Modern cardiovascular diagnostics rely on the integrated use of instrumental and laboratory methods, including electrocardiography, echocardiography, stress testing, imaging, and biochemical markers. An evidence-based approach ensures the informed selection of diagnostic methods, their timely use, and the interpretation of results in accordance with clinical guidelines.

Equally important is the application of evidence-based medicine principles in the treatment of cardiovascular diseases. Pharmacotherapy, interventional, and surgical treatments are increasingly selected based on evidence of their clinical efficacy and impact on disease prognosis. The implementation of evidence-based therapeutic strategies reduces the risk of complications, improves disease control, and increases patient survival. Therefore, a pressing scientific challenge is analyzing the current potential of evidence-based medicine in the diagnosis and treatment of cardiovascular diseases, as well as assessing its role in improving the quality of cardiac care and clinical outcomes.

Materials and Methods

This study was conducted using a systematic analysis of current scientific literature on the application of evidence-based medicine principles in the diagnosis and treatment of cardiovascular diseases. The primary method was an analytical review of publications, including randomized controlled trials, meta-analyses, systematic reviews, and international clinical guidelines in cardiology.



The study included data reflecting the efficacy and safety of key diagnostic and therapeutic approaches for cardiovascular diseases, such as arterial hypertension, coronary heart disease, heart failure, and cardiac arrhythmias. Particular attention was paid to recommendations from international and national cardiology societies, developed taking into account levels of evidence and clinical recommendation classes.

To analyze diagnostic approaches, a comparative evaluation of instrumental and laboratory testing methods was used, including electrocardiography, echocardiography, functional diagnostic methods, and biochemical markers. The effectiveness of treatment strategies was assessed based on an analysis of data on the impact of pharmacotherapy, interventional, and surgical methods on clinical outcomes, mortality rates, and the incidence of cardiovascular complications.

The data were processed and interpreted using logical-analytical and generalizing methods, which allowed for systematization of the evidence and the formulation of substantiated conclusions about the role of evidence-based medicine in modern cardiology practice.

Results. An analysis of current scientific data has shown that the application of evidence-based medicine principles in the diagnosis of cardiovascular diseases improves the accuracy and timeliness of pathology detection. The use of clinical guidelines based on the results of large randomized trials and meta-analyses ensures a rational choice of diagnostic methods depending on the clinical situation and individual patient characteristics.

It has been established that a comprehensive diagnostic approach, including electrocardiography, echocardiography, functional stress testing, and the determination of biochemical markers, enables a reliable assessment of structural and functional changes in the cardiovascular system. The use of evidence-based diagnostic algorithms helps reduce the number of unnecessary tests and improves the efficiency of medical resources.

The results of the analysis of treatment strategies demonstrate the high effectiveness of evidence-based pharmacotherapy for cardiovascular diseases. The use of antihypertensive agents, antiplatelet agents, statins, and other drugs with a proven effect on disease prognosis helps reduce the incidence of cardiovascular complications and mortality. The use of standardized treatment regimens recommended by international cardiology societies improves disease control and increases patient adherence to therapy.

It has also been established that interventional and surgical treatments, the effectiveness of which has been confirmed by clinical trials, significantly improve clinical outcomes in patients with severe cardiovascular disease. The use of evidence-based approaches when choosing treatment strategies helps minimize risks and improve the safety of medical interventions.

Thus, these results confirm that the implementation of evidence-based medicine in the diagnosis and treatment of cardiovascular diseases ensures a comprehensive and scientifically sound approach to cardiac care and contributes to improved clinical outcomes.



Discussion. These results confirm the importance of evidence-based medicine as the foundation of modern diagnosis and treatment of cardiovascular diseases. The use of clinical guidelines developed based on high-quality scientific research helps standardize medical care, improve its effectiveness and safety, and ensure the rational use of healthcare resources.

Data analysis demonstrates that evidence-based diagnostic algorithms facilitate the early detection of cardiovascular pathology and reduce the risk of severe complications. The integrated use of instrumental and laboratory diagnostic methods in accordance with clinical guidelines allows for a more accurate assessment of the functional state of the cardiovascular system and the determination of optimal patient management strategies.

An important aspect of the discussion is the role of evidence-based medicine in the selection of treatment strategies. The use of pharmacological agents with a proven effect on disease prognosis reduces mortality and the incidence of cardiovascular complications. Furthermore, an evidence-based approach allows for the rational use of interventional and surgical treatments, minimizing risks and increasing the clinical effectiveness of interventions. At the same time, the implementation of evidence-based medicine principles in cardiology practice is accompanied by a number of limitations. These include the need for constant updating of clinical guidelines, variability in individual patient responses to therapy, and the limited availability of high-tech treatments in certain regions. This emphasizes the importance of continuous professional education for healthcare professionals and the development of evidence-based clinical decision-making systems. Thus, a discussion of the obtained results allows us to conclude that the further development and implementation of evidence-based medicine in cardiology is essential for improving the quality of medical care and long-term clinical outcomes in patients with cardiovascular diseases.

Conclusion. Evidence-based medicine is a key element of modern cardiology practice and provides a scientifically sound approach to the diagnosis and treatment of cardiovascular diseases. The analysis showed that the use of clinical guidelines based on the results of randomized controlled trials and meta-analyses helps improve diagnostic accuracy, treatment effectiveness, and patient prognosis. The use of evidence-based diagnostic algorithms enables the timely detection of cardiovascular diseases, the rational use of instrumental and laboratory testing methods, and the reduction of diagnostic errors. In turn, the use of pharmacotherapy and interventional treatments with proven clinical efficacy helps reduce the incidence of cardiovascular complications and mortality, as well as improve patients' quality of life. The implementation of evidence-based medicine principles in clinical practice requires a systematic approach, including the ongoing updating of clinical guidelines, enhanced professional training of medical specialists, and the development of interdisciplinary collaboration. Despite existing limitations, an evidence-based approach remains the most effective tool for improving the quality of cardiac care. Thus, the use of evidence-based medicine in the diagnosis and treatment of cardiovascular diseases is an important condition for optimizing medical care, improving clinical outcomes and reducing the burden of cardiovascular diseases in society.



References:

1. World Health Organization. (2023). *Cardiovascular diseases (CVDs): Fact sheet*. World Health Organization.
2. European Society of Cardiology. (2021). *ESC guidelines for the diagnosis and treatment of acute and chronic heart failure*. *European Heart Journal*, 42(36), 3599–3726. <https://doi.org/10.1093/eurheartj/ehab368>
3. American Heart Association. (2022). *Heart disease and stroke statistics—2022 update*. *Circulation*, 145(8), e153–e639. <https://doi.org/10.1161/CIR.0000000000001052>
4. American College of Cardiology. (2021). *ACC/AHA guideline for the management of cardiovascular disease*. *Journal of the American College of Cardiology*, 77(4), e25–e197. <https://doi.org/10.1016/j.jacc.2020.11.002>
5. Sackett, D. L., Rosenberg, W. M. C., Gray, J. A. M., Haynes, R. B., & Richardson, W. S. (1996). Evidence based medicine: What it is and what it isn't. *BMJ*, 312(7023), 71–72. <https://doi.org/10.1136/bmj.312.7023.71>
6. Ibanez, B., James, S., Agewall, S., Antunes, M. J., Bucciarelli-Ducci, C., Bueno, H., Caforio, A. L. P., Crea, F., Goudevenos, J. A., Halvorsen, S., Hindricks, G., Kastrati, A., Lenzen, M. J., Prescott, E., Roffi, M., Valgimigli, M., Varenhorst, C., Vranckx, P., & Widimský, P. (2018). 2017 ESC guidelines for the management of acute myocardial infarction in patients presenting with ST-segment elevation. *European Heart Journal*, 39(2), 119–177. <https://doi.org/10.1093/eurheartj/ehx393>
7. Williams, B., Mancia, G., Spiering, W., Agabiti Rosei, E., Azizi, M., Burnier, M., Clement, D. L., Coca, A., de Simone, G., Dominiczak, A., Kahan, T., Mahfoud, F., Redon, J., Ruilope, L., Zanchetti, A., & Kerins, M. (2018). 2018 ESC/ESH guidelines for the management of arterial hypertension. *European Heart Journal*, 39(33), 3021–3104. <https://doi.org/10.1093/eurheartj/ehy339>
8. Yusuf, S., Joseph, P., Rangarajan, S., Islam, S., Mente, A., Hystad, P., Brauer, M., Kutty, V. R., Gupta, R., Wielgosz, A., AlHabib, K. F., Dans, A., Lopez-Jaramillo, P., Avezum, A., Lanus, F., Oguz, A., Kruger, I. M., Diaz, R., & Teo, K. (2020). Modifiable risk factors, cardiovascular disease, and mortality in 155 722 individuals from 21 high-income, middle-income, and low-income countries (PURE study). *The Lancet*, 395(10226), 795–808. [https://doi.org/10.1016/S0140-6736\(19\)32008-2](https://doi.org/10.1016/S0140-6736(19)32008-2)
9. Braunwald, E. (2019). The war against heart failure: The Lancet lecture. *The Lancet*, 393(10175), 812–824. [https://doi.org/10.1016/S0140-6736\(18\)32893-0](https://doi.org/10.1016/S0140-6736(18)32893-0)