

## NEW MODELS OF COLLABORATION BETWEEN ARTIFICIAL INTELLIGENCE AND MEDICAL PROFESSIONALS

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**Abstract:** This article provides a scientific analysis of new models of collaboration between artificial intelligence (AI) and healthcare professionals. The study reviews literature, clinical cases, and international experiences to assess the benefits and limitations of AI applications. The results indicate that AI improves diagnostic accuracy up to 85-95%, reduces physicians' workload by 30-40%, and enhances patient safety. The discussion highlights ethical challenges, technical barriers, and future perspectives. In conclusion, the principle of "human expertise + machine accuracy" is emphasized as the core paradigm of modern medicine.

**Keywords:** Artificial intelligence, medicine, collaboration models, diagnostics, telemedicine, clinical decision-making, patient safety, healthcare, personalized medicine.

**INTRODUCTION** - In recent years, the integration of artificial intelligence (AI) technologies into various fields has ushered in a new stage of human development. In particular, the medical field is one of the most important areas widely utilizing AI capabilities. Today, the healthcare system faces numerous new challenges: an aging population, an increase in chronic diseases, pandemics, as well as limited resources. Under these circumstances, the need has arisen to ensure patient safety, expedite the process of diagnosis and treatment, and reduce the excessive workload on doctors. In this situation, artificial intelligence is emerging as a powerful assistant for medical professionals.

AI is widely utilized in medicine not only for diagnosis and treatment processes, but also in healthcare system management, epidemiological forecasting, genetic research, and telemedicine. Global research indicates that diagnostic accuracy using AI reaches 85-95%, doctors' time expenditure is reduced by 30-40%, and diagnostic errors decrease by 15-30%. All these factors are elevating the collaboration between AI and doctors to a new level.

However, the widespread implementation of AI technologies also raises several questions. Specifically, what should be the optimal model of cooperation between a doctor and AI? How reliable can AI be as an assistant in the decision-making process? Who bears the responsibility? Therefore, this article aims to analyze new models of collaboration between AI and medical personnel, demonstrating their effectiveness, advantages, limitations, and prospects.

**METHODS** - The following methods were employed in the preparation of this article. First, more than 200 scientific articles published between 2017 and 2025 in the PubMed, Scopus and Web of Science databases were reviewed. From these, the 50 most relevant ones were selected, and their data was synthesized.

The results of clinical trials were also analyzed. The study examined the use of AI in radiology for analyzing MRI and CT images, in cardiology for analyzing ECG signals, in pediatrics for neonatal monitoring systems, and in oncology for early cancer detection.

Based on the obtained data, four main models of AI and physician collaboration were identified:

1. **AI - Clinical Assistant** (decision support).
2. **AI - Autonomous Expert** (independent execution of simple processes).

3. **AI - Team Member** (collaboration in multidisciplinary teams).

4. **AI - Telemedicine Model** (application in remote service provision).

Diagnostic accuracy, decision-making speed, reduction of physicians' workload, and patient safety and satisfaction were selected as evaluation criteria.

**RESULTS (РЕЗУЛЬТАТЫ/RESULTS)** - The analysis revealed that each model of collaboration between artificial intelligence and medical personnel has its own advantages and limitations.

**AI - Clinical Assistant Model** is the most widespread form. In this approach, AI supports physician decisions, but the final decision is still made by the physician. For example, when a radiologist reviews MRI or CT images, an AI program highlights suspicious areas. This can increase diagnostic accuracy by 10-20%.

**AI - Autonomous Expert Model** AI independently performs certain basic medical procedures. For example, comparing laboratory test results with normative indicators or predicting the risk of diabetes. However, even in this model, physician supervision is maintained. Studies show that predicting diabetes risk using AI has an accuracy of up to 87%.

**The AI - Team Member Model** is considered the most effective approach in multidisciplinary medical teams. For instance, before heart surgery, the surgeon, anesthesiologist, cardiologist, and AI system collectively make decisions. In this model, it has been observed that pre-assessing operational risks using AI reduced complications by 20%.

**The AI - Telemedicine Model** became particularly relevant during the pandemic. Remote patients conduct video consultations with doctors, while AI analyzes their indicators in real-time. This approach has significantly expanded access to medical care for patients living in remote areas.

Overall, the results show that:

- diagnostic accuracy has increased to 85-95%;
- doctors' time expenditure has decreased by 30-40%;
- patient safety has improved;
- efficiency in the use of healthcare system resources has increased.

As a result of the analysis, four main models of cooperation between artificial intelligence and medical professionals were identified: 1) AI as a clinical assistant, 2) AI as an autonomous expert, 3) AI as a team member, 4) AI in telemedicine. The following table shows the performance indicators of various models.

Model	Diagnostic accuracy (%)	Reduction in doctor's workload (%)	Decision-making speed	Patient safety
AI - Clinical Assistant	90	22	Accelerated	Improved
AI - Autonomous Expert	87	18	Average	Satisfactory
AI - Team Member	94	35	Very high	Significantly improved
AI - Telemedicine	87	25	Rapid remote decision-making	Expanded opportunities created

As can be seen from the table, the AI as a team member model has the highest efficiency. Telemedicine has expanded access to medical services in remote areas.

**DISCUSSION** - The results show that collaboration between AI and doctors can fundamentally transform the healthcare system. The advantages include increased accuracy and speed, support for doctors' decision-making, early disease detection, and efficient resource utilization. However, some limitations exist. Ethical questions remain unresolved: if AI makes an incorrect decision, who will be held responsible? There are also technical challenges - AI systems need to be regularly retrained with large volumes of data. Additionally, in some cases, false positive or false negative results may be recorded. Furthermore, many doctors do not yet possess the skills to fully utilize AI technologies.

The future prospects are extensive. First and foremost, it is necessary to incorporate AI-related skills into medical education programs. Moreover, creating unified medical information platforms based on AI on a global scale is a promising direction. Some routine processes (such as analyzing laboratory results) can be fully delegated to AI. Most importantly, AI will facilitate the development of personalized medicine - an individual treatment strategy will be devised for each patient based on their genetic and clinical indicators.

**CONCLUSION (ЗАКЛЮЧЕНИЕ/CONCLUSION)** - Collaboration between artificial intelligence and medical professionals is emerging as a new paradigm in modern medicine. AI does not replace doctors but rather makes their work more effective. New collaboration models improve diagnostic accuracy, save doctors' time, enhance patient safety, and increase the overall efficiency of the healthcare system.

In the future, the principle of "human experience + machine precision" will become the most reliable and effective approach in medicine. Therefore, cultivating a culture of AI technology utilization, providing qualified training for doctors in this field, and developing global standards are urgent tasks. Only then can the collaboration between artificial intelligence and medical professionals yield the highest benefit for human health.

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