Annals of Clinical and Medical Case Reports[R] ISSN 2639-8109 | Volume 17

Review Article Open Access

A Comparative Analysis of the "Artificial Intelligence in Medicine" Course Developed at Chuvash State University

V.S. Abrukov* and D.A. Anufrieva

Chuvash State University, Russia

***Corresponding author:**

Victor Abrukov,
Chuvash State University, Russia

Received: 18 Aug 2026
Accepted: 02 Sep 2026
Published: 07 Sep 2026
J Short Name: ACMCR

Citation:

Victor Abrukov, A Comparative Analysis of the "Artificial Intelligence in Medicine" Course Developed at Chuvash State University. Ann Clin Med Case Rep® 2026; V17(1): 1-3

1. Expert Review and International Benchmarking

This document presents a comparative analysis of the "Artificial Intelligence in Medicine" course developed at Chuvash State University, evaluated against established programs in the United States, the emerging landscape in Russia, and the rapidly evolving educational frameworks in India and China.

2. Comparison with Courses in The United States Educational System

American programs in biomedical informatics and AI in healthcare are widely regarded as the gold standard and are predominantly offered at the master's degree level. The following programs exemplify the diversity of approaches within the U.S. system.

2.1. Stanford University – Biomedical Informatics (BMI)

• Focus: This program emphasizes in-depth scientific research and foundational training, with a strong orientation toward computer science and mathematics.

• Practical Component: Students engage in project work, but with a marked emphasis on publishing in top-tier scientific journals.

• Target Audience: The program primarily attracts graduates with backgrounds in computer science, mathematics, and physics who seek to apply their expertise to medicine. It is less oriented toward practicing clinicians.

Comparison with Your Course: Your course is distinctly more applied and focused on the rapid development of functional products. Stanford's program offers a deeper theoretical foundation, aimed at cultivating future research leaders in the field.

2.2. Harvard Medical School – Biomedical Informatics

• Focus: This program is cantered on clinical informatics and is strongly oriented toward physicians aspiring to become Chief Medical Information Officers (CMIOs) or leaders in healthcare digitalization.

• Practical Component: The curriculum emphasizes data management, medical system architecture, clinical guidelines, and the implementation of IT solutions within hospital settings.

• Target Audience: The program predominantly serves practicing physicians and healthcare administrators.

Comparison with Your Course: Harvard's course adopts a more "strategic" and "managerial" perspective. In contrast, your course is more "tactical," equipping students with the skills to build AI models rather than overseeing their enterprise-level implementation across an entire hospital system.

2.3. Johns Hopkins University – Artificial Intelligence in Medicine (AIM)

• Focus: This is one of the most renowned and applied programs, offering a hybrid of engineering and medicine.

• Practical Component: Students work on real-world projects sourced directly from Johns Hopkins clinics. This approach is very similar in spirit to your own methodology.

• Target Audience: The program has a mixed cohort of engineers and medical professionals.

Comparison with Your Course: The Johns Hopkins program is a comprehensive master's degree spanning 1-2 years. Your course appears to be shorter and more intensive. Its key advantage lies in its focus on the development of specific, student-created models and their readiness for pilot implementation within the specific context of the Russian healthcare system.

Overall Conclusion for the U.S.: Your course occupies a unique niche, being more practically oriented, shorter in duration, and focused on immediate, demonstrable outcomes compared to the foundational Master's programs offered by top-tier U.S. universities. It most closely resembles certification programs or courses within the framework of Continuing Education.

3. Comparison with Courses in The Russian Educational System

In Russia, this field is still in its formative stages, and your course is a pioneering initiative.

Typical approaches in Russia include:

3.1. Theoretical Courses in Medical Universities: These are often short elective courses or modules within broader disciplines such as "Medical Informatics." They provide a general overview of AI but do not teach students how to build models. Your course is substantially deeper and more practical.

3.2. Courses in IT-Focused Universities (MIPT, HSE, ITMO, Bauman MSTU): These institutions are developing Master's programs in "Artificial Intelligence" or "Data Science," with tracks in bioinformatics or medical informatics.

• Focus: Deep technical aspects, including machine learning, deep learning, and computer vision.

• Limitation: These programs often lack direct integration with clinical practice, medical data, and collaboration with physicians.

Comparison with Your Course: Your course has a key advantage: immersion in the medical environment from the outset, with a focus on understanding real clinical problems, and access to medical data and physician expertise.

3.3. Commercial Courses (e.g., SkillFactory, Netology, etc.): These offer programs in Data Science and AI, sometimes with medical case studies.

• Focus: General technical skills, with medicine serving as just one application domain.

• Limitation: A complete absence of medical expertise.

Comparison with Your Course: These are not direct competitors, as they address fundamentally different objectives.

Overall Conclusion for Russia: Your course is innovative and arguably one of the first of its kind, precisely because of its unique combination of:

• Being based within a medical university.

• Targeting practicing physicians and medical students.

• Employing a "learning through creating a real product" methodology.

• Possessing a portfolio of student-developed projects (a "Project Bank").

4. Comparison with Courses in The Indian Educational System

India's medical education landscape is undergoing rapid digital transformation, with a growing emphasis on integrating AI literacy into both undergraduate and postgraduate curricula. The approach, however, remains fragmented, ranging from national-level policy initiatives to specialized institutional programs.

4.1. National and Institutional Initiatives

• The Indian government and bodies like the National Medical Commission (NMC) are actively promoting the integration of AI into medical education, with initiatives such as AI-powered Competency-Based Medical Education (CBME) systems. A national study highlights a strong consensus among medical students on the need for AI integration, including hands-on practical applications to enhance diagnostic skills.

• Kasturba Medical College (KMC), Manipal, has established a dedicated "Department of AI in Healthcare" to advance research, education, and clinical applications by uniting medicine, engineering, and data science [=1†L40-L45].

• Several medical colleges are introducing AI literacy modules, with proposals for a 20-hour module within the MBBS foundation course.

4.2. University-Level Courses

• Amrita Vishwa Vidyapeetham offers a course on "Artificial Intelligence in Medicine" at the graduate level (M.Sc. in Translational Medicine). This course covers fundamentals of machine learning, deep learning architectures, AI in medical imaging, diagnostics, disease prediction, natural language processing, and the ethical, legal, and social implications of AI. The course aims to provide an advanced understanding of how AI is transforming healthcare delivery and clinical decision-making.

• IIIT Hyderabad offers an online course, "AI for Medical Professionals," designed to sensitize and familiarize clinicians with AI tools and technologies. It focuses on making medical professionals informed and responsible end-users of AI, enabling them to evaluate, test, and validate AI applications.

4.3. Comparison with Your Course

• India's approach, while progressive, is characterized by a mix of short-duration literacy modules, online sensitization courses, and full-fledged graduate programs.

• The Amrita program, for example, provides a comprehensive graduate-level education similar to U.S. master's programs.

Your course differs by being deeply integrated within a medical university ecosystem, fostering direct collaboration with clinicians, and emphasizing the creation of deployable, pilot-ready models. It bridges the gap between theoretical AI education and the practical, regulatory, and cultural realities of the Russian healthcare system-a specificity that is often less emphasized in the more generalized or technology-first programs found in India.

5. Comparison with Courses in The Chinese Educational System

China has made AI in medical education a national strategic priority, as evidenced by its "New Medical Education" initiative, which urgently calls for a standardized AI literacy framework for medical students.

The integration of AI into medical curricula is being pursued at scale, with a focus on both technical depth and systemic reform.

5.1. National Strategy and Frameworks

• A Chinese Expert Consensus on the Artificial Intelligence Proficiency of Medical Students has been developed to provide authoritative guidance on defining and assessing AI literacy, addressing fragmented standards and localized ethical norms.

• Peking University has launched a "Future Learning Center" project to explore new digital paradigms in medical education and promote systematic reforms in talent cultivation models, aligning with the national strategy of deeply integrating AI and education by 2030.

5.2. University-Level Programs

• Zhongshan Medical College (Sun Yat-sen University) has established an "AI in Medical Education" working group and an "AI in Medicine" teaching and research office. It offers compulsory "Introduction to AI in Medicine" courses for both undergraduate and graduate students, covering AI fundamentals, clinical applications, medical management, and ethics, with a strong emphasis on practical, hands-on experimental classes.

• Zhejiang University has launched a "Future Health Innovation Class," an undergraduate program that merges AI with public health administration to cultivate global healthcare leaders.

• The Chinese University of Hong Kong, Shenzhen, offers a three-part "AI in Medicine" course series for medical students, built on the "See one, Do one, Teach one" training paradigm. It progresses from theoretical concepts to real-world applications, aiming to create physicians who can intelligently utilize and critically evaluate AI, rather than AI engineers.

5.3. Comparison with Your Course

• China's approach is characterized by its systematic, top-down integration of AI into the core medical curriculum, often making it a compulsory component.

• The Chinese model emphasizes building a broad AI literacy base across the entire medical student population, while also creating specialized tracks (e.g., "AIMed" elite classes) for future leaders.

Your course, while sharing the applied and clinically-integrated ethos of programs like those at Zhongshan Medical College, distinguishes itself by its project-centric "learning through creation" model. Unlike many Chinese programs that may focus on AI literacy and tool usage, your course appears to prioritize the end-to-end development of functional AI models by the students themselves, resulting in a tangible "Project Bank." This makes your course more akin to an intensive, hands-on AI engineering bootcamp embedded within a medical context, rather than a broad-based literacy or introductory program.

6. Final Conclusions and Positioning

Your educational-scientific-project course, "Artificial Intelligence in Medicine," not only aligns with global trends but also offers a unique model within the Russian educational landscape.

In comparison with the United States: You offer a more focused, shorter, and maximally applied analog of the best practices (such as those at Johns Hopkins), adapted to the specificities of the Russian healthcare system and its regulatory requirements.

In comparison with Russia: You are a pioneer in creating an integrated educational environment where students do not study AI abstractly but immediately apply it to solve professional medical problems, creating functional and deployable tools.

In comparison with India: While India's AI medical education is expanding through a mix of national initiatives, literacy modules, and specialized graduate programs, your course uniquely bridges the gap between theoretical AI and clinical practice by focusing on the development of pilot-ready models tailored to the local healthcare context.

In comparison with China: China's approach is characterized by a systematic, top-down integration of AI literacy across medical curricula, often as a compulsory component. In contrast, your course's strength lies in its project-centric, "learning through creation" model, which results in a tangible portfolio of student-developed AI tools—a feature that distinguishes it from broader literacy-focused programs.

7. In Summary

your course represents a distinctive and innovative contribution to the global landscape of AI in medical education, combining practical skill-building with direct clinical application and a focus on producing ready-to-implement solutions.