

# A Legal Perspective on The Transformation of Health Services with Artificial Intelligence

Perspektif Hukum tentang Transformasi Pelayanan Kesehatan dengan Kecerdasan Buatan

Rospita Adelina Siregar

email: rospita.siregar@uki.ac.id

Faculty of Law, Indonesian Christian University, Indonesia.

**Abstract:** Artificial Intelligence (AI) in medical services is expected to have a significant impact on the world of medicine. The research, which is a literature review, data collection, observation, analysis, is finally presented descriptively as a normative juridical study. The potential for AI to contribute the diagnostic process and even replacing the role of doctors is growing. Currently the use of AI has been utilized in medicine (registration, medical records, images, treatment, telemedicine, outbreak) and health resources. AI as an electronic agent operator is recognized as having a legal position, seen from Law number 19 of 2016 concerning electronic information and transactions (ITE Law) and PP 71/2019 concerning the implementation of electronic systems and transactions, regulating the limits of obligations and responsibilities of Electronic Agent organizers. In a trade context, hospitals are "intermediary traders" here a "last moving" agreement or "instruction agreement" applies. Then providing services automatically refers to article 1 of the ITE Law, if a dispute occurs then legal responsibility is borne by the electronic system operator providing AI services. Settlement refers to Article 38 and Article 39 of the ITE Law through court (Class action and Civil Lawsuit) or non-litigation settlement.

**Keywords:** Health service transformation, Artificial Intelligence, Law

**Abstrak:** Kecerdasan Buatan (AI) dalam pelayanan medis diharapkan dapat memberikan dampak yang signifikan terhadap dunia kedokteran. Penelitian yang berupa tinjauan pustaka, pengumpulan data, observasi, analisis, akhirnya disajikan secara deskriptif sebagai penelitian yuridis normatif. Potensi AI untuk berkontribusi dalam proses diagnostik dan bahkan menggantikan peran dokter semakin besar. Saat ini pemanfaatan AI telah dimanfaatkan dalam bidang kedokteran (registrasi, rekam medis, pencitraan, pengobatan, telemedicine, wabah) dan sumber daya kesehatan. AI sebagai penyelenggara agen elektronik diakui mempunyai kedudukan hukum, dilihat dari Undang-undang nomor 19 tahun 2016 tentang informasi dan transaksi elektronik (UU ITE) dan PP 71/2019 tentang penyelenggaraan sistem dan transaksi elektronik, mengatur batasan kewajiban dan tanggung jawab penyelenggara Agen Elektronik. Dalam konteks perdagangan, rumah sakit adalah "pedagang perantara" di sini berlaku perjanjian "perjanjian perpindahan terakhir" atau "perjanjian instruksi". Kemudian pemberian layanan secara otomatis mengacu pada pasal 1 UU ITE, apabila terjadi perselisihan maka tanggung jawab hukum ditanggung oleh penyelenggara sistem elektronik penyedia layanan AI. Penyelesaiannya mengacu pada Pasal 38 dan Pasal 39 UU ITE melalui pengadilan (gugatan kelompok dan Gugatan Perdata) atau penyelesaian non-litigasi.

**Kata Kunci:** Transformasi Pelayanan Kesehatan, Kecerdasan Buatan, Hukum

## INTRODUCTION

Artificial intelligence is a computer system designed to imitate human cognitive abilities, starting to learn from data, reasoning and making decisions. This technology allows computers to evaluate medical data accurately. Apart from that, AI also helps in the disease diagnosis process and provides a more personalized treatment approach.

Along with the times the emergence of Artificial Intelligence (AI) has increased in the Transformation of Health Services since the time of COVID-19. This technology aims to make computers intelligent so that they can imitate daily human work. (Wirawan, 2017). This ranges from using chatbots to identify positive Covid-19 cases, contact tracing and self-isolation monitoring to social mental health monitoring which can be carried out using this technology, making it easier for medical workers to treat patients.

The presence in the healthcare field of Artificial Intelligence (AI) provides an excellent opportunity to increase the success rate of treatment. The concept of AI was first introduced in 1956 by John McCarthy. The application of Artificial Intelligence (AI) in medicine is expected to have a significant impact on clinical practice.

The potential of AI technology to improve the healthcare field, and many research teams are now racing to produce AI systems to further augment, or even replace doctors. For example, in the health sector, there has been a surge in investment and interest in the application of AI in analyzing medical photos, namely \$152 million in 2017, an increase from \$80 million in 2016. The limited number of clinicians who are skilled and experienced in AI creates doubts and risks, on the final results of each product made for medical purposes (Ranschaert, Morozov, & Algra, 2019).

AI also has the opportunity to provide easy access experiences such as electronic medical records, providing drug recommendations, as a safety warning for patient falls, and so on. Applying AI technology in hospitals and other health care settings still requires a lot of assessment and consideration. Even though it is known that AI can have an impact on improving the effectiveness and efficiency of hospital operations, the existing technology still needs to be developed further to make it better and minimize technical errors.<sup>1</sup>

AI (Artificial Intelligence) is a rapidly developing technology that has applications in many areas of life and business. One of them is in the field of Health which is related to data processing and interpretation, as a result this computational intelligence includes various aspects of statistics and Medicine Learning, pattern recognition, grouping, similarity-based methods, logic and, probability theory, as well as physiologically motivated approaches such as neural networks and fuzzy modeling. (Rahman. 2023).

However, basically AI is not always perfect, returning to the essence of AI, namely that human artificial intelligence can only carry out programmed tasks. Coordinating Minister for Human Development and Culture Muhadjir Effendy (2022) believes that "No matter how smart artificial intelligence is, it will not be able to beat human intelligence. Humans are God's creation who inherit the nature of their creator, while artificial intelligence is very dependent on programmers."

Research conducted by Richardson J, et al explains that patients still have many concerns, including concerns regarding AI safety, threats to patient choice, potential increases in healthcare costs, data source bias, and data security. This seems normal because this technology is still relatively new and its application is not yet comprehensive, while the decisions made by doctors must have various factors. It is critical for the development of ethical innovation and ensuring the long-term success of AI applications in Health care (Richardson et al., 2021).

---

<sup>1</sup> Haryo Trenggono, P., & Bachtiar, A. (2023). Peran Artificial Intelligence Dalam Pelayanan Kesehatan: A Systematic Review. *Jurnal Ners*, 7(1), 444–451. <https://doi.org/10.31004/jn.v7i1.13612>

## FORMULATION OF THE PROBLEM

What is the legal perspective of transforming health services with artificial intelligence?

## RESEARCH METHODOLOGY

The type of research used in this research is normative juridical, namely examining law which is conceptualized as a norm or rule that applies in society and becomes a guide for everyone's behavior. The approach in this research is a statutory approach which is carried out by examining all laws and regulations related to research and a conceptual approach by studying the views and doctrines that have developed in legal science.

## DISCUSSION

Because AI-powered production efficiency is becoming increasingly popular throughout the world. It is estimated that the production of companies implementing AI will increase by at least 40% by 2023 (Taarini Kaur Dang, 2019). In fact (Kirana R. Ririh et al, 2020.) up to 56% of industrial sectors in several countries have implemented AI, significantly this intelligence is increasingly popular and has a good impact in the health sector, but there are still things that need to be considered in its implementation.

AI implementation in the health sector can be divided into two subtypes, namely virtual and physical. Virtual examples include applications such as electronic medical records to neural network-based technology as a guide in determining the type of treatment. The physical type relates to robots that assist in performing operations, intelligent prostheses for disabled people, and elderly care (Nurtanti & Azam, 2022).

The potential for artificial intelligence to support the diagnostic process and replace the role of doctors is growing. Even though it is impossible for AI to replace the role of a doctor, AI is considered capable of carrying out the roles and tasks in medical care. The application of AI in the health sector is expected to have an impact on increasing the efficiency and effectiveness of hospital operations. However, the application of AI in hospitals and other health care settings requires a lot of evaluation before it can be implemented on a massive scale. The application of AI in the health sector is not only programs that deal directly with patients, AI can also be used to help data practitioners' work in processing health data, both patient medical record data and other health data. Apart from that, AI also plays an important role in visualizing data, including data in the health sector.<sup>2</sup>

The characteristics of AI in automating information processing make it comparable to an "Electronic Agent" in Indonesian regulations. In Article 1 of Law (UU) Number 19 of 2016 concerning Amendments to Law Number 11 of 2008 concerning Electronic Information and Transactions, "Electronic Agent" is defined as "a device from an electronic system created to carry out an action."<sup>3</sup>

Artificial Intelligence is actually included in the definition of an Electronic Agent, which means that all legal obligations and legal responsibilities are attached to the Artificial Intelligence device provider. AI is an electronic system device for processing electronic information

---

<sup>2</sup> Meri Agustina, Peran Artificial Intelligence (AI) di Sektor Kesehatan, <https://rm.id/baca-berita/education/170914/peran-artificial-intelligence-ai-di-sektor-kesehatan>

<sup>3</sup> Zahrashafa PM & Angga Priancha" Pengaturan Hukum Artificial Intelligence Indonesia Saat Ini: Lembaga Kajian Hukum Teknologi, FH UI. <https://www.hukumonline.com/berita/baca/lt608b740fb22b7/pengaturan-hukum-artificial-intelligence-indonesia-saat-ini-oleh-zahrashafa-pm-angga-priancha?page=4>

automatically that is run by an entity (legal subject). Which means, the entity that maintains this electronic device has responsibility as an electronic agent and electronic system operator.

The word "automatic" in the definition of "Electronic Agent" was then used as a bridge to construct AI as an "Electronic Agent." If we use this construction, actually the regulations governing "Electronic Agents" also apply to AI namely the ITE Law (Pratidina, 2017).<sup>4</sup>

The advantages and disadvantages of Artificial Intelligence are as follows:

a. Excess

The benefits of using AI in healthcare include improved diagnosis through rapid data analysis, efficient management of patient information, prediction of disease spread, and development of prescribed treatments. AI can also improve hospital management and support medical research.

b. Lack

Some of the drawbacks or disadvantages of using AI in healthcare include concerns about patient privacy, interpretation of data in the system, and security risks. When making decisions, moral and ethical aspects are not considered, because users are dealing with systems/applications that are not equipped with these aspects.

Ethics and law in AI-based health services according to (Sara gerke, 2020), (Timo Minssen 2020), (Glen Cohen, 2020) namely 1) approval of use, (2) security and transparency, (3) fairness and algorithmic bias, and (4) data privacy.

The data privacy section then analyzes five legal challenges in the US and Europe: (1) safety and effectiveness, (2) liability, (3) data protection and privacy, (4) cybersecurity, and (5) intellectual property law.

Ethics and Law AI-based health services, as explained:

a. Consent to Use

AI health applications are increasingly being used in modern times, from diet guidance to health assessments. These applications raise questions for bioethicists about use agreements and informed consent. The application of Ethics and law to AI-based health services is very important, in that personal data protection, information security, transparency and compliance with health requirements are the most important aspects of user consent. Ensure AI service providers comply with applicable ethical and regulatory standards to maintain the integrity and security of health information. User agreements are contracts that individuals agree to without meeting face to face.

b. Security and transparency

The ethics of AI-based healthcare includes considerations of patient privacy, data security, and clarity of use of the technology. Applicable laws should regulate the protection of personal data and clarify the obligations of AI developers. Transparency of AI algorithms and decisions is also important to ensure the trust of patients and healthcare professionals.

Based on 2023 research published in the National Library of Medicine, the level of AI accuracy in detecting disease varies quite a lot. For example, AI can diagnose tuberculosis with 98.4% accuracy, while digestive diseases reach 97%, and cardiovascular disease only achieves 88.7% accuracy.

---

<sup>4</sup> Pratidina 2017

c. Fairness and algorithmic bias

Ethics and law in AI-based healthcare are important to ensure fairness and address potential algorithmic bias. It is important to develop policies that protect patient privacy, ensure data security, and prevent algorithm-based discrimination in diagnosis and healthcare. Applying the principles of openness and responsibility in the development and use of artificial intelligence technology in the health sector is also important for solving ethical and legal problems.

AI has the ability to improve health services not only to high-income countries, but also to remote areas. ML systems or algorithms trained by humans that are trustworthy, effective and fair. But AI also has the potential for bias and discrimination. So it's important for AI creators to be aware of these risks.

They must consider the risk of bias when deciding (1) which ML technology/procedure to use to train the algorithm and (2) which data sets they want to use for programming. In health, which involves information related to phenotype and genotype, for example causing wrong diagnosis and making treatment ineffective thereby endangering their safety.

d. Data privacy

AI-based healthcare and regulations are important to maintain data protection. It is important to implement policies that protect individual health information and ensure that AI algorithms comply with applicable medical ethical standards and privacy laws. This helps maintain patient trust and prevents potential misuse of health information.

In July 2017, the UK Information Commissioner's Office (ICO) ruled that the Royal Free NHS Foundation Trust breached the UK data protection Act 1998 when it provided the personal data of around 1.6 million patients to Google DeepMind. This data sharing is carried out for clinical safety testing, the application is Streams, where this application aims to help diagnose and detect acute kidney injury. But patients were not informed about the processing of their data as part of the test. From this example, although the Streams application does not use AI, the harm caused to privacy rights when developing technological solutions.<sup>5</sup>

The use of Artificial Intelligence Data in the health sector certainly raises the risk of data leakage. Data leak refers to a situation where confidential or sensitive information that should not be available to unauthorized persons becomes available or is leaked to unauthorized persons. This can happen through a variety of means, including security breaches, hacker attacks, or internal anomalies. Even though personal data protection is regulated in law. Furthermore, as stated by the President of the Republic of Indonesia Joko Widodo at the opening of the Indonesia Science Expo (ISE) which was held on 1-4 November 2018, the development of artificial intelligence faces challenges because of its diverse impacts.<sup>6</sup>

The current urgency is that there is no specific law governing the use of AI in healthcare. What if the use of AI causes losses in the health sector, what steps will be a guide in overcoming these losses? So, legal reviews and regulations are needed that regulate the rights and obligations of AI users and providers. Who is responsible when AI users experience losses? AI users have guidelines based on law, a concrete example of which is on the

---

<sup>5</sup> Sara gerke dkk, 2020 "Ethical and legal challenges of artificial intelligence-driven healthcare", pg 301-305.

<sup>6</sup> <https://www.brin.go.id/presiden-jokowi-membuka-ise-2018>

continent of the European Union, the first country to create a law on the use of AI.<sup>7</sup> This country is a reference for other countries.

#### Advantages of AI

AI is part of the results of the industrial revolution. The industrial revolution first began in 1784 which enriched water and steam power for production systems. The second revolution began in 1870 which used electrical power to carry out mass production. The third industrial revolution began in 1969 which was marked by the use of electronic power and information technology. And now the world has entered the fourth revolution where with the unification of several technologies we can see a new area consisting of three independent scientific fields, namely physics, digital and biology.<sup>8</sup>

Research by Rajkomar et al. (2019) stated the use of AI to improve medical diagnosis and health care. AI has the ability to analyze large and complex medical data, and helps doctors make more accurate and timely decisions. An example is in diagnosis in the interpretation of medical images. AI is trained to analyze radiological images such as CT scans, MRI, and mammography and identify abnormalities and diseases. AI can provide accurate data or even exceed human doctors and differentiate and classify lesions or tumors. This accuracy can help to detect existing diseases early, and allow for faster and more precise treatment, to reduce the possibility of errors in interpretation.

AI can also be used to analyze patient clinical data such as medical history, laboratory records, and genomic data. AI can also be used to improve management optimization and resource allocation, such as surgery schedules, patient visit scheduling, and drug stock management.<sup>9</sup>

Developed AI-based surgical robot. This robotic machine is able to develop surgical methods that are more accurate and carry minimal risk. This robotic machine is widely used to assist in surgical operations that require high precision and accuracy on vital organs, for example heart surgery.

Apart from surgical robots there are also virtual nursing assistants who can perform all kinds of tasks from talking to helping patients to the treatment unit. These nurses can work 24 hours to respond to questions and provide instant health solutions for patients.<sup>10</sup>

The definition of AI can be explicitly analogous to a part of health technology. Article 1 number 18 of Law number 17 of 2023 concerning Health defines health technology as a tool to support providing diagnosis, prevention and handling of patient health problems. In Article 1 number 20 of Law number 17 of 2023 concerning Health defines a health information system as a system that combines various health-related information. The parties implementing the health information system include the Central Government, Regional Government, health service facilities and the community.

Furthermore, Article 334 paragraph (1) of the Health Law emphasizes that the use of health technology is carried out in order to increase health resources and health efforts. Meeting current needs, following the 5.0 revolution. Want super fast and affordable service. In the UK, AI is objectively used by hospitals to detect potential cancer through mammogram

---

<sup>7</sup> Liputan 6

<sup>8</sup> Raymond R. Tjandrawinata, 2016 "Industri 4.0: revolusi industri abad ini dan pengaruhnya pada bidang kesehatan dan bioteknologi, hlm 1

<sup>9</sup> Siti Masrichah, 2023 "Ancaman Dan Peluang Artificial Intelligence (AI), pg 94-95.

<sup>10</sup> Gerson Feoh, dkk, 2020, "Information Technology: Konsep dan Implementasinya", CV. Media Sains Indonesia, Bandung, pg 44.

screening methods with a high level of accuracy. The screening error rate is relatively small, namely 2.7%.

The existence of the Health Law could be an initial milestone for the world of health to apply AI as part of health technology. In this case, Article 334 paragraph (3) of the Health Law shows that there is a synergy between the Central Government and Regional Governments where the Government actually encourages the use of health technology for domestic use. However, of course the producer must still meet the standards in accordance with the provisions of the applicable laws and regulations.

Article 347 of the Health Law requires health information system administrators to ensure the reliability of the information system. This is done in several ways, including:

- a. Testing system feasibility
- b. Maintain data confidentiality
- c. Define data access rights policies
- d. Has a system reliability certificate
- e. Conduct regular audits

In this regard, an important point that must be maintained by health system administrators is maintaining the confidentiality of patient data. In this case, the protection of data and health information for each patient must be carried out in accordance with the provisions of applicable laws and regulations. This includes Law Number 27 of 2022 concerning Protection of Personal Data.

Article 351 paragraph (1) of the Health Law guarantees the protection of patient health data and information. In managing patient data, health information system administrators are also required to obtain consent from patients when they want to process or manage their data in the health information system.

## CONCLUSION

Artificial Intelligence (AI) is a branch of computer science that focuses on developing systems, information and technology that can carry out tasks that require human intelligence. The aim of AI is to create machines that can learn, think and adapt independently. In the last few decades, technological advances, especially in the field of artificial intelligence (AI), have brought significant changes to the world of life, including the world of health.

AI-powered production efficiencies are becoming increasingly popular worldwide. It is estimated that the production of companies implementing AI will increase by at least 40% by 2023. In fact, up to 56% of industrial sectors in some countries have implemented AI. So with the development of the use of AI there should be significant steps taken by the government in reviewing the law in parallel with existing technological developments.

## SUGGESTION

Health information system operators are required to pay attention to the Health Law when they want to use AI in health information systems. Article 347 of the Health Law requires health information system operators to ensure the reliability of the information system. Research and development of AI technology in the health sector is still needed to increase knowledge and understanding. Different levels of AI accuracy mean that we should not self-diagnose. Continue to contact medical personnel so that disease diagnosis can be carried out directly with medical equipment for a more accurate check. Applicable laws should regulate the protection of personal data and clarify the obligations of AI developers.

## REFERENCES

- Gerson Feoh, dkk, 2020, "Information Technology: Konsep dan Implementasinya", CV. Media Sains Indonesia, Bandung, hlm 44
- Gunawan Widjaja dkk, 2018, Penyelesaian sengketa transaksi elektronik, Cross-border, Vol. 1 No. 1 Januari-Juni 2018, page 229-251
- Hartati, S. (2021). Kecerdasan Buatan Berbasis Pengetahuan. UGM PRESS.
- Haryo Trenggono, P., & Bachtiar, A. (2023). Peran Artificial Intelligence Dalam Pelayanan Kesehatan: A Systematic Review. *Jurnal Ners*, 7(1), 444-451. <https://doi.org/10.31004/jn.v7i1.13612>
- <https://www.brin.go.id/presiden-jokowi-membuka-ise-2018>
- <https://www.liputan6.com/tekno/read/5477361/eropa-jadi-benua-pertama-yang-rumuskan-uu-penggunaan-ai>
- I Made Agus wirawan, Teknologi ini bertujuan untuk membuat komputer menjadi cerdas sehingga dapat menirukan manusia sehari hari
- Kirana R. Ririh dkk, 2020." Studi komparasi dan analisis swot pada implementasi kecerdasan buatan (Artificial Intellegence) di Indonesia
- Meri Agustina, Peran Artificial Intelligence (AI) di Sektor Kesehatan, <https://rm.id/baca-berita/education/170914/peran-artificial-intelligence-ai-di-sektor-kesehatan>, diakses 23 desember 2023
- Mutiara, P. (2021). Hadapi Era Kecerdasan Buatan(AI), Menko PMK: Pembangunan SDM Tetap Paling Utama. Kemenko PMK.<https://www.kemenkopmk.go.id/hadapi-era-kecerdasan-buatan-ai-menko-pmk-pembangunan-sdm-tetap-paling-utama>
- Peraturan pemerintah Republik Indonesia. nomor 71 tahun 2019. tentang. penyelenggaraan sistem dan transaksi elektronik
- Pratidina 2017 Pengaturan Hukum Artificial Intelligence Indonesia Saat Ini Oleh: Zahrashafa PM & Angga Priancha
- Rahman, "AI (Artificial Intellegence) merupakan teknologi yang berkembang pesat yang memiliki aplikasi di banyak bidang kehidupan dan bisnis"
- Ranschaert, Erik R., Morozov, Sergey, & Algra, Paul R. (2019). *Artificial Intelligence In Medical Imaging: Opportunities, Applications And Risks*. Springer.
- Raymond R. Tjandrawinata, 2016 "Industri 4.0: revolusi industri abad ini dan pengaruhnya pada bidang kesehatan dan bioteknologi
- Richardson, Jordan P., Smith, Cambray, Curtis, Susan, Watson, Sara, Zhu, Xuan, Barry, Barbara, & Sharp, Richard R. (2021). Patient Apprehensions About The Use Of Artificial Intelligence In Healthcare. *Npj Digital Medicine*, 4(1). <https://doi.org/10.1038/S41746-021-00509-1>
- Sara gerke dkk, 2020 "Ethical and legal challenges of artificial intelligence-driven healthcare
- Siti Masrichah, 2023 "Ancaman Dan Peluang Artificial Intelligence (AI), hlm 94-95.
- Taarini Kaur Dang, 2019"AI Transforming The World"
- Undang-undang nomer 19 Tahun 2016 Tentang Informasi Dan Transaksi Elektronik



Undang-undang nomer 17 tahun 2023 tentang Kesehatan

Undang-Undang Nomor 27 Tahun 2022 tentang Pelindungan Data Pribadi

Zahrashafa PM & Angga Priancha, Pengaturan Hukum Artificial Intelligence Indonesia Saat ini, Lembaga Kajian Hukum Teknologi, FH UI.  
<https://www.hukumonline.com/berita/baca/lt608b740fb22b7/pengaturan-hukum-artificial-intelligence-indonesia-saat-ini-oleh-zahrashafa-pm-angga-priancha?page=4>