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# The Impact of Modern Medical Technology on the Transformation of Healthcare Service Contract Structures from Conventional Face-to-Face Contracts to Digital Contracts: An Indonesian Health Law Perspective

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**Abstract:** The rapid integration of digital technologies into healthcare has fundamentally reshaped the legal framework governing healthcare service delivery. Medical consultations, informed consent, health records, prescriptions, and payment systems are increasingly conducted through electronic platforms, altering the manner in which legal relationships between patients and healthcare providers are established and performed. This transformation raises important legal issues concerning the validity of electronic healthcare contracts, the legal status of therapeutic agreements concluded in digital environments, the protection of personal health data, and the allocation of legal responsibility among healthcare professionals, healthcare institutions, and electronic system providers. This research employs normative legal research using statutory, conceptual, and analytical approaches. Primary legal materials include the Indonesian Civil Code, Law Number 17 of 2023 on Health, Law Number 27 of 2022 on Personal Data Protection, and Law Number 11 of 2008 on Electronic Information and Transactions as last amended by Law Number 1 of 2024. The study demonstrates that the digitalisation of healthcare services does not alter the juridical nature of the therapeutic agreement as the legal basis of the physician–patient relationship. Digitalisation instead transforms the structure of healthcare service contracts by introducing electronic consent, electronic medical records, digital evidence, and multiple contractual actors whose rights and obligations extend beyond the traditional relationship between patients and healthcare professionals. Existing legal provisions have yet to provide a comprehensive framework governing these evolving contractual relationships. A reconstruction of healthcare service contracts is therefore required to accommodate digital healthcare practices while preserving legal certainty, safeguarding patients' rights, ensuring personal data protection, and maintaining accountability within Indonesia's healthcare system.

**Keywords:** Healthcare Service Contract, Therapeutic Agreement, Digital Healthcare, Telemedicine, Electronic Contract, Health Law.

## INTRODUCTION

Digital transformation has become one of the defining characteristics of contemporary healthcare systems.[1] Advances in information and communication technologies have reshaped the manner in which healthcare services are delivered, expanding access to medical care beyond the physical boundaries of hospitals and clinics.[2] Telemedicine, electronic medical records, electronic prescribing, artificial intelligence, cloud computing, and integrated health information systems have become essential components of healthcare delivery.[3] These technologies have improved the efficiency and accessibility of healthcare services while simultaneously creating new legal relationships that differ substantially from those established in conventional medical practice.[4]

Healthcare services were traditionally provided through direct interaction between patients and healthcare professionals. Legal relationships arising from medical treatment were therefore understood primarily as therapeutic agreements established through face-to-face communication. Digital healthcare has altered this conventional model. Medical consultations may now be conducted through digital platforms, informed consent may be obtained electronically, medical records are created and stored in digital form, and healthcare providers increasingly rely on electronic systems operated by third-party service providers. Healthcare delivery has consequently evolved into a complex digital ecosystem involving healthcare professionals, hospitals, digital platform providers, electronic system operators, cloud service providers, and data processors.[5]

These developments have generated significant legal implications for healthcare service contracts. The legal validity of electronic agreements, the enforceability of electronic informed consent, the evidentiary status of electronic medical records, the protection of personal health data, and the allocation of legal responsibility among multiple participants have become central issues in contemporary health law. Traditional principles governing therapeutic agreements remain relevant, yet their application has become increasingly complex as contractual relationships extend beyond the conventional physician–patient model. Digital healthcare services create interconnected legal relationships in which several parties contribute to the provision of healthcare, the management of digital infrastructure, and the processing of sensitive personal information.[6]

Indonesia has undertaken substantial legal reform in response to the rapid digitalisation of healthcare services. Law Number 17 of 2023 on Health recognises the integration of digital technology into healthcare delivery and establishes the general legal framework for health system reform. The regulatory framework is complemented by Government Regulation Number 28 of 2024, Law Number 27 of 2022 on Personal Data Protection, and Law Number 11 of 2008 on Electronic Information and Transactions, as last amended by Law Number 1 of 2024. These legislative instruments provide legal recognition of electronic transactions, electronic documents, personal data protection, and digital health services. Their enactment reflects the government's commitment to supporting digital innovation while ensuring legal protection for patients and healthcare providers.

[1] World Health Organization. (2021). Global strategy on digital health 2020–2025. Geneva: World Health Organization.
[2] Organisation for Economic Co-operation and Development. (2023). Health at a Glance 2023: OECD Indicators. Paris: OECD Publishing.
[3] World Health Organization. (2021). Global strategy on digital health 2020–2025.
[4] Topol, E. (2019). Deep Medicine: How Artificial Intelligence Can Make Healthcare Human Again. New York: Basic Books.
[5] Mason, J. K., Laurie, G. T., & Smith, A. M. (2023). Mason and McCall Smith's Law and Medical Ethics (12th ed.). Oxford: Oxford University Press.
[6] Keesara, S., Jonas, A., & Schulman, K. (2020). Covid-19 and health care's digital revolution. The New England Journal of Medicine, 382(23), e82. https://doi.org/10.1056/NEJMp2005835

The existing regulatory framework nevertheless remains fragmented in addressing contractual issues arising from digital healthcare services. Current legislation provides limited guidance on the legal character of healthcare contracts concluded through digital platforms, the contractual status of electronic system providers, the allocation of liability among healthcare institutions and technology providers, and the legal consequences of system failures affecting healthcare delivery.[7] Legal regulation continues to rely predominantly on conventional concepts of therapeutic agreements developed within traditional healthcare settings.[8] The emergence of digital healthcare services has therefore exposed a regulatory gap between technological developments and existing legal doctrines governing healthcare contracts.[9]

Previous studies have primarily examined telemedicine from the perspectives of patient protection, medical liability, electronic medical records, and personal data protection. Considerably less attention has been devoted to the transformation of healthcare service contracts as a consequence of digitalisation. Existing scholarships generally treat digital technology as a supporting instrument in healthcare delivery rather than as a factor that fundamentally reshapes contractual relationships within healthcare systems. The evolving role of digital platforms, electronic system operators, and data processors demonstrates that healthcare contracts have developed into legal arrangements involving multiple actors whose respective rights, obligations, and liabilities require systematic legal analysis.

This study addresses that gap by examining the transformation of healthcare service contracts resulting from the integration of digital technology into healthcare delivery. The analysis argues that digitalisation does not alter the juridical nature of the therapeutic agreement as the legal foundation of the physician patient relationship. Digitalisation instead transforms the contractual structure governing healthcare services by expanding the number of legal actors participating in contractual performance and by introducing new legal obligations relating to electronic consent, digital evidence, cybersecurity, and personal data governance. The study seeks to formulate a legal framework capable of accommodating these developments while preserving legal certainty, patient protection, and accountability within Indonesia's digital healthcare system.

## METHODS

This study adopts a normative legal research design to examine the legal implications of digital transformation for healthcare service contracts in Indonesia. The analysis focuses on the legal framework governing contractual relationships in digital healthcare, particularly the interaction between contract law, health law, electronic transactions, and personal data protection. A normative approach is appropriate because the research addresses legal norms, statutory interpretation, and doctrinal developments rather than empirical observations.

The study applies statutory, conceptual, and analytical approaches. The statutory approach is employed to analyse legislation governing healthcare services, electronic transactions, and personal data protection, including the Indonesian Civil Code, Law Number 17 of 2023 on Health, Law Number 27 of 2022 on Personal Data Protection, Law Number 11 of 2008 on Electronic Information and Transactions, as last amended by Law Number 1 of 2024, Government Regulation Number 28 of 2024, and Minister of Health Regulation Number 24 of 2022 concerning Medical Records. The conceptual approach examines the legal doctrines of therapeutic agreements, electronic contracts, digital healthcare, and health data governance.

[7] Indonesia, Undang-Undang Nomor 17 Tahun 2023 tentang Kesehatan (Lembaran Negara Republik Indonesia Tahun 2023 Nomor 105, Tambahan Lembaran Negara Republik Indonesia Nomor 6887),

[8] Indonesia, Peraturan Pemerintah Nomor 71 Tahun 2019 tentang Penyelenggaraan Sistem dan Transaksi Elektronik (Lembaran Negara Republik Indonesia Tahun 2019 Nomor 185, Tambahan Lembaran Negara Republik Indonesia Nomor 6400), khususnya mengenai tanggung jawab Penyelenggara Sistem Elektronik terhadap keandalan dan keamanan sistem.

[9] World Health Organization, Global Strategy on Digital Health 2020–2025 (Geneva: World Health Organization, 2021), 8–15.

The analytical approach evaluates the adequacy of the existing legal framework in addressing contractual issues arising from the integration of digital technologies into healthcare services.[10]

The research relies on primary, secondary, and tertiary legal materials. Primary legal materials consist of statutes and regulations governing healthcare, contract law, electronic transactions, and personal data protection. Secondary legal materials include scholarly books, peer-reviewed journal articles, legal commentaries, and other academic publications relevant to health law, contract law, digital health, and information technology law. Tertiary materials, including legal dictionaries and encyclopaedias, are used to support the interpretation of legal concepts and terminology.

Legal materials were collected through documentary and library research. The collected materials were systematically classified according to the legal issues addressed in this study and examined using qualitative legal analysis. The analysis involved identifying the applicable legal framework, interpreting statutory provisions, evaluating doctrinal consistency, and assessing regulatory gaps relating to healthcare service contracts in digital healthcare. The findings provide the basis for proposing a legal framework capable of accommodating technological developments while ensuring legal certainty, patient protection, and balanced allocation of rights and responsibilities among parties involved in digital healthcare services.

## RESULTS AND DISCUSSION

### The Transformation of Healthcare Service Contracts in Response to the Development of Modern Medical Technology

The integration of digital technology into healthcare has fundamentally reshaped the legal structure of healthcare service contracts. Conventional healthcare services were historically established through direct interactions between patients and healthcare professionals, where contractual relationships arose immediately upon the patient's request for medical treatment and the physician's acceptance to provide professional care. Within this framework, the therapeutic agreement constituted the legal basis of the physician–patient relationship and imposed reciprocal rights and obligations upon both parties. Physicians were required to exercise professional competence in accordance with applicable medical standards, whereas patients were entitled to receive healthcare services while remaining responsible for providing accurate medical information and complying with agreed treatment plans.[11]

The expansion of digital healthcare has significantly altered the manner in which these contractual relationships are established and performed. Healthcare services are no longer confined to physical healthcare facilities but are increasingly delivered through telemedicine platforms, electronic health information systems, and mobile health applications. Medical consultations, diagnosis, follow-up treatment, prescription services, and patient monitoring may now occur without direct physical interaction. Digital technologies have therefore transformed the contractual process from a single interpersonal relationship into a technology-mediated legal relationship involving multiple participants.[12]

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[10] Indonesia, Peraturan Pemerintah Nomor 71 Tahun 2019 tentang Penyelenggaraan Sistem dan Transaksi Elektronik (Lembaran Negara Republik Indonesia Tahun 2019 Nomor 185, Tambahan Lembaran Negara Republik Indonesia Nomor 6400), khususnya mengenai tanggung jawab Penyelenggara Sistem Elektronik terhadap keandalan dan keamanan sistem.
Indonesia, Peraturan Menteri Kesehatan Nomor 20 Tahun 2019 tentang Penyelenggaraan Pelayanan Telemedicine Antar Fasilitas Pelayanan Kesehatan, yang mengatur hubungan pelayanan telemedicine dalam lingkup fasilitas pelayanan kesehatan.

[11] Sara Gerke, Timo Minssen, and I. Glenn Cohen, "Ethical and Legal Challenges of Artificial Intelligence-Driven Healthcare," dalam Artificial Intelligence in Healthcare, ed. Adam Bohr and Kaveh Memarzadeh (London: Academic Press, 2020), 295–336.

[12] Organisation for Economic Co-operation and Development, Health in the 21st Century: Putting Data to Work for Stronger Health Systems (Paris: OECD Publishing, 2019), 41–76.

The legal transformation extends beyond the replacement of paper-based documentation with electronic records. Digital healthcare introduces new contractual mechanisms through electronic registration, digital identity verification, electronic informed consent, electronic prescriptions, electronic payment systems, and electronic medical records. These technological developments influence every stage of contractual performance, beginning with contract formation and continuing throughout the provision of healthcare services. Contractual consent, traditionally expressed through written or verbal communication during face-to-face consultations, may now be established through electronic interfaces capable of generating legally recognised electronic records.

The legal validity of healthcare service contracts remains governed by the general principles of Indonesian contract law. The essential elements of contractual validity prescribed under Article 1320 of the Indonesian Civil Code continue to apply irrespective of the technological medium through which contractual consent is expressed. Mutual consent, legal capacity, a definite object, and a lawful cause remain indispensable requirements for the formation of healthcare service contracts. Electronic communication therefore constitutes an alternative method of expressing contractual intention rather than a separate category of contractual obligation. Digitalisation consequently modifies the procedural aspects of contractual formation without altering the substantive legal principles governing contractual relationships.

The transformation of healthcare delivery has also expanded the legal actors participating in contractual performance. Conventional therapeutic agreements primarily involve patients, physicians, and healthcare institutions. Digital healthcare services introduce additional entities responsible for maintaining electronic infrastructures essential to healthcare delivery. Telemedicine platform providers facilitate communication between patients and healthcare professionals. Electronic system operators manage digital platforms through which healthcare services are delivered. Cloud service providers store electronic medical records, while payment service providers facilitate financial transactions associated with healthcare services. Personal health data may further be processed by specialised entities responsible for data storage, cybersecurity, and information management. The participation of these entities demonstrates that contemporary healthcare services depend upon a network of contractual relationships extending beyond the traditional physician patient model.

This structural transformation has significant legal consequences regarding the allocation of rights and responsibilities. Conventional healthcare disputes generally concern the professional obligations of healthcare providers. Digital healthcare disputes may additionally involve failures of electronic systems, cybersecurity breaches, unauthorised disclosure of medical information, software malfunction, data processing errors, and interruptions in digital communication. Determining legal responsibility under such circumstances becomes considerably more complex because several participants contribute simultaneously to the provision of healthcare services. Existing legal doctrines governing therapeutic agreements provide only limited guidance in resolving disputes arising from these technologically integrated relationships.

The current Indonesian regulatory framework acknowledges the use of digital technology within healthcare services but has yet to establish a comprehensive contractual model capable of accommodating these developments. Law Number 17 of 2023 on Health recognises digital healthcare as an integral component of national healthcare delivery. Law Number 27 of 2022 on Personal Data Protection strengthens legal safeguards governing the processing of personal health information. Law Number 11 of 2008 on Electronic Information and Transactions, as last amended by Law Number 1 of 2024, recognises the legal validity of electronic documents, electronic signatures, and electronic transactions. Government Regulation Number 28 of 2024 further regulates the implementation of digital healthcare services. These legislative instruments collectively establish the legal basis for digital healthcare but remain fragmented

in regulating contractual relationships involving healthcare providers, digital platforms, and electronic system operators.

The findings indicate that the evolution of healthcare technology has not displaced the therapeutic agreement as the legal foundation of medical services.[13] The principal transformation lies in the contractual structure through which healthcare services are organised and delivered. Healthcare service contracts have evolved from bilateral agreements into interconnected legal relationships involving multiple contractual participants whose respective rights, obligations, and liabilities require clearer legal regulation. This transformation necessitates a reinterpretation of healthcare service contracts that reflects the realities of digital healthcare while preserving the fundamental principles of contract law, patient autonomy, professional responsibility, and legal certainty.

**Legal Implications of Digital Healthcare Service Contracts under Indonesian Law**

The digitalisation of healthcare services has generated legal consequences that extend beyond the application of conventional contract principles. While technological innovation has enhanced accessibility and efficiency in healthcare delivery, it has simultaneously introduced legal issues that are insufficiently addressed by the existing regulatory framework. Healthcare service contracts are no longer confined to the legal relationship between patients and healthcare professionals. Digital platforms, electronic system operators, cloud service providers, and entities responsible for processing personal health data have become integral participants in the delivery of healthcare services. Their involvement has fundamentally altered the legal landscape governing contractual rights, obligations, and liability.[14]

Indonesian contract law continues to recognise party autonomy and consensual agreement as the primary foundation of contractual relationships. Healthcare service contracts concluded through electronic systems remain legally valid provided that they satisfy the requirements prescribed by Article 1320 of the Indonesian Civil Code. Electronic communication does not diminish the legal force of contractual consent, nor does the use of digital platforms invalidate the therapeutic agreement established between patients and healthcare professionals. Indonesian legislation has further acknowledged the legal validity of electronic documents, electronic signatures, and electronic transactions through the Electronic Information and Transactions Law, thereby extending legal recognition to contracts formed within digital environments.[15]

Despite these legislative developments, digital healthcare services present legal issues that cannot be fully resolved through the traditional doctrine of therapeutic agreements. Conventional therapeutic agreements were developed within a healthcare system characterised by direct interaction between physicians and patients. Digital healthcare introduces multiple intermediaries whose activities directly affect the provision of healthcare services without establishing a therapeutic relationship with patients. Platform providers facilitate communication, electronic system operators maintain digital infrastructure, and cloud service providers manage the storage of electronic medical records. The legal status and contractual responsibility of these participants remain only partially regulated within the current legislative framework.

The protection of personal health data constitutes another significant legal concern arising from digital healthcare services. Health information represents one of the most sensitive categories of personal data because it concerns an individual's physical and mental condition, medical history, diagnosis, and treatment. The collection, storage, processing, and transfer of

[13] Margaret Brazier and Emma Cave, Medicine, Patients and the Law, 7th ed. (Manchester: Manchester University Press, 2023), 69–110.
[14] United Nations Commission on International Trade Law, UNCITRAL Model Law on Electronic Commerce with Guide to Enactment (New York: United Nations, 1996).
[15] Indonesia, Kitab Undang-Undang Hukum Perdata, Pasal 1320 mengenai syarat sahnya perjanjian.

such information through electronic systems expose patients to risks associated with unauthorised access, cybersecurity incidents, identity theft, and unlawful disclosure of confidential medical information. Law Number 27 of 2022 on Personal Data Protection establishes general obligations concerning the processing of personal data; however, specific standards governing the management of electronic health information remain dispersed across several sectoral regulations. This fragmented regulatory structure creates uncertainty regarding the allocation of legal responsibility where data breaches occur within digital healthcare platforms.[16]

Electronically informed consent similarly presents important legal implications. Patient consent has traditionally been obtained through direct communication between physicians and patients before medical treatment is provided. Digital healthcare services increasingly rely upon electronic interfaces that enable patients to provide consent remotely through websites or mobile applications. Although Indonesian law recognises electronic documents as legally valid evidence, questions remain regarding the adequacy of electronic consent in ensuring that patients receive sufficient information concerning diagnosis, treatment alternatives, potential risks, expected benefits, and possible complications. The legal effectiveness of informed consent depends not only upon the existence of an electronic record but also upon the quality of information communicated to the patient before consent is obtained.[17]

The allocation of legal liability within digital healthcare services has likewise become more complex than under conventional healthcare arrangements. Medical negligence may arise from professional misconduct committed by healthcare providers, whereas technological failures may result from software malfunction, system interruptions, cybersecurity incidents, or failures attributable to electronic system providers. Determining liability therefore requires careful examination of the source of the harm, the contractual obligations assumed by each participant, and the applicable statutory provisions governing healthcare services, electronic systems, and personal data protection. Existing legislation does not yet provide a comprehensive framework capable of distinguishing professional liability from liability arising from technological failures within integrated digital healthcare systems.

The analysis further demonstrates that Indonesian health law has progressively adapted to technological innovation through the enactment of Law Number 17 of 2023 on Health and its implementing regulations. These legislative reforms recognise digital healthcare as an essential component of national healthcare services and establish a legal basis for the utilisation of information technology in healthcare delivery. Nevertheless, the regulatory framework continues to address healthcare, electronic transactions, and personal data protection through separate legislative instruments.[18] Greater regulatory coherence is required to ensure that contractual relationships established within digital healthcare services are governed by clear legal standards capable of protecting patients while providing legal certainty for healthcare professionals, healthcare institutions, and electronic system providers.

The transformation of healthcare service contracts ultimately reflects the broader evolution of healthcare governance in the digital era.[19] Legal regulation must respond not only to technological innovation but also to the changing structure of legal relationships created by

[16] World Medical Association, Declaration of Taipei on Ethical Considerations Regarding Health Databases and Biobanks (2016, revised 2024), mengenai pengelolaan data kesehatan, persetujuan pasien, dan perlindungan privasi.
[17] Organisation for Economic Co-operation and Development, Health in the 21st Century: Putting Data to Work for Stronger Health Systems (Paris: OECD Publishing, 2019), 55–90.
[18] World Health Organization, Global Strategy on Digital Health 2020–2025 (Geneva: World Health Organization, 2021), 22–30.
[19] Luc Rocher, Julien M. Hendrickx, and Yves-Alexandre de Montjoye, "Estimating the Success of Re-identifications in Incomplete Datasets Using Generative Models," Nature Communications 10 (2019): 3069.

digital healthcare services.[20] The effectiveness of healthcare contracts can no longer be assessed solely by reference to conventional contract doctrine. Consideration must also be given to data governance, electronic evidence, cybersecurity obligations, and the distribution of legal responsibilities among all participants involved in the provision of digital healthcare services. A coherent legal framework capable of integrating these elements will provide greater legal certainty and strengthen public confidence in Indonesia's digital healthcare system.

## CONCLUSIONS

The development of modern medical technology has transformed not only the delivery of healthcare services but also the legal framework governing healthcare service contracts in Indonesia. The integration of telemedicine, electronic medical records, electronic informed consent, electronic prescriptions, and digital health information systems has shifted healthcare services from conventional face-to-face interactions to technology-enabled contractual relationships. This transformation does not alter the juridical nature of the therapeutic agreement as the legal foundation of the physician patient relationship. Rather, it changes the manner in which contractual consent is established, contractual obligations are performed, and legal evidence is created and preserved within digital healthcare services. The fundamental principles of Indonesian contract law, including consensualism, legal capacity, lawful cause, good faith, and legal certainty, remain applicable irrespective of the technological medium through which healthcare services are provided. The study further demonstrates that digital healthcare services have expanded the contractual structure beyond the traditional relationship between patients and healthcare professionals. Healthcare institutions, electronic system providers, digital platform operators, cloud service providers, and personal data processors have become essential participants in healthcare service delivery, giving rise to more complex legal relationships and responsibilities. Although Indonesian legislation has recognised digital healthcare through the Health Law, the Electronic Information and Transactions Law, the Personal Data Protection Law, and their implementing regulations, the existing legal framework has yet to provide a comprehensive and coherent regulation governing contractual relationships within the digital healthcare ecosystem. Regulatory fragmentation continues to create legal uncertainty regarding contractual liability, electronic informed consent, personal health data governance, and the allocation of legal responsibilities among the parties involved. Strengthening the legal framework governing digital healthcare service contracts is therefore essential to ensure that technological innovation develops consistently with the principles of contract law and health law. A coherent regulatory approach should provide greater legal certainty, reinforce patient protection, clarify the rights and obligations of all parties participating in digital healthcare services, and promote accountable, secure, and sustainable digital healthcare governance in Indonesia.

## REFERENCES

Beauchamp, T. L., & Childress, J. F. (2019). Principles of biomedical ethics (8th ed.). Oxford University Press.

Brazier, M., & Cave, E. (2023). Medicine, patients and the law (7th ed.). Manchester University Press.

Hall, M. A., Bobinski, M. A., & Orentlicher, D. (2022). Health care law and ethics (10th ed.). Wolters Kluwer.

Herring, J. (2023). Medical law and ethics (9th ed.). Oxford University Press.

Indonesia. (1847). Kitab Undang-Undang Hukum Perdata (Burgerlijk Wetboek).

[20] Sara Gerke, Timo Minssen, and I. Glenn Cohen, "Ethical and Legal Challenges of Artificial Intelligence-Driven Healthcare," dalam Artificial Intelligence in Healthcare, ed. Adam Bohr and Kaveh Memarzadeh (London: Academic Press, 2020), 295–336.

Indonesia. (2008). Undang-Undang Nomor 11 Tahun 2008 tentang Informasi dan Transaksi Elektronik (Lembaran Negara Republik Indonesia Tahun 2008 Nomor 58, Tambahan Lembaran Negara Republik Indonesia Nomor 4843).

Indonesia. (2019). Peraturan Pemerintah Nomor 71 Tahun 2019 tentang Penyelenggaraan Sistem dan Transaksi Elektronik (Lembaran Negara Republik Indonesia Tahun 2019 Nomor 185, Tambahan Lembaran Negara Republik Indonesia Nomor 6400). Indonesia. (2019).

Indonesia. (2022). Peraturan Menteri Kesehatan Nomor 24 Tahun 2022 tentang Rekam Medis.

Indonesia. (2022). Undang-Undang Nomor 27 Tahun 2022 tentang Pelindungan Data Pribadi (Lembaran Negara Republik Indonesia Tahun 2022 Nomor 196, Tambahan Lembaran Negara Republik Indonesia Nomor 6820).

Indonesia. (2023). Undang-Undang Nomor 17 Tahun 2023 tentang Kesehatan (Lembaran Negara Republik Indonesia Tahun 2023 Nomor 105, Tambahan Lembaran Negara Republik Indonesia Nomor 6887).

Indonesia. (2024). Undang-Undang Nomor 1 Tahun 2024 tentang Perubahan Kedua atas Undang-Undang Nomor 11 Tahun 2008 tentang Informasi dan Transaksi Elektronik (Lembaran Negara Republik Indonesia Tahun 2024 Nomor 1).

Organisation for Economic Co-operation and Development. (2019). Health in the 21st century: Putting data to work for stronger health systems. OECD Publishing.

Rocher, L., Hendrickx, J. M., & de Montjoye, Y.-A. (2019). Estimating the success of re-identifications in incomplete datasets using generative models. Nature Communications, 10, 3069.

Terry, N. P. (2013). Protecting patient privacy in the age of big data. UMKC Law Review, 81(2), 385–415.

Terry, N. P. (2019). Regulating health information technology. Indiana Health Law Review, 16(1), 1–34.

United Nations Commission on International Trade Law. (1996). UNCITRAL model law on electronic commerce with guide to enactment. United Nations.

United Nations Commission on International Trade Law. (2005). United Nations convention on the use of electronic communications in international contracts. United Nations.

World Health Organization. (2019). WHO guideline: Recommendations on digital interventions for health system strengthening. World Health Organization.

World Health Organization. (2021). Ethics and governance of artificial intelligence for health. World Health Organization.

World Health Organization. (2021). Global strategy on digital health 2020–2025. World Health Organization.

World Medical Association. (2022). Declaration of Lisbon on the Rights of the Patient. World Medical Association.

World Medical Association. (2024). Declaration of Taipei on Ethical Considerations Regarding Health Databases and Biobanks. World Medical Association.