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Legal Protection for Doctors in the Use of Telepharmacy for Health Services

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Abstract

Digital transformation in the health sector has encouraged the development of information technology-based health services, including telepharmacy as a component of the digital health service system. Telepharmacy improves access to health services, service efficiency, and the reach of pharmaceutical care in remote areas that face shortages of health workers. However, the implementation of telepharmacy raises legal issues concerning the distribution of responsibility among doctors, pharmacists, health care facilities, and electronic system providers when service errors or patient harm occur. This study analyzes the legal regulation that should apply to doctors in the use of telepharmacy and identifies legal protection mechanisms that can be provided to doctors in the delivery of digital health services. This study uses normative juridical research with statutory, conceptual, and legal theory approaches. The findings show that digital health regulations in Indonesia, particularly Law Number 17 of 2023 on Health and Government Regulation Number 28 of 2024, have not comprehensively regulated telepharmacy and the distribution of legal responsibility among the relevant parties. This normative gap creates legal uncertainty for doctors as attending physicians and opens the risk of disproportionate criminalization of the profession. This study proposes the Tiered and Distributed Causal Liability Model as a legal construction that allocates responsibility based on each party's level of control, authority, and causal contribution. The model provides proportional legal protection for doctors while ensuring the protection of patient rights in the digital health service system.

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Introduction

The development of information and communication technology in the 21st century has brought fundamental and comprehensive changes to many sectors of human life, including the health sector. Digitalization of the health system is no longer an optional phenomenon. It has become an urgent need driven by demands for efficiency, equal access, and improved service quality at the same time. This process takes place in the context of the Fourth Industrial Revolution, which is marked by the convergence of digital technology, artificial intelligence, the Internet of Things, and big data in a closely connected and continuously developing ecosystem. Keesara et al. (2020) noted that the COVID-19 pandemic dramatically and irreversibly accelerated the adoption of digital health services, transforming technology-based services from a supplementary instrument into a core component of the global health care system. This acceleration did not occur only in remote consultation. It also entered the entire health care chain, from electronic medical records and system-based pharmaceutical management to real-time population health data management and drug distribution integrated with patient information systems. This comprehensive change has deep legal, ethical, and social implications that have not been fully mapped in the existing regulatory framework.

In Indonesia, digital health transformation takes place in a unique and complex context. It is marked by extreme geographic disparities between western and eastern regions, sharp disparities in the distribution of health workers between urban and rural areas, and rapidly increasing technological penetration across society. Most pharmaceutical personnel in Indonesia are concentrated in Java and Bali, while remote areas in Kalimantan, Papua, Maluku, Southeast Sulawesi, and Nusa Tenggara face significant shortages of pharmaceutical personnel. This condition has a direct impact on the quality and availability of pharmaceutical services for local communities. It creates a real need for technology-based pharmaceutical services capable of reaching areas that have not been adequately served by conventional health care systems. At the same time, smartphone penetration exceeding 160 million active users, combined with the expansion of nationwide 4G networks and the initial operation of 5G networks in major cities, has created a communication infrastructure that is technically more capable of supporting digital health services on a national scale. The combination of urgent need and increasingly adequate technological infrastructure makes Indonesia one of the most promising markets for telepharmacy development and one of the most challenging jurisdictions in terms of the need for an appropriate and comprehensive regulatory framework.

Telepharmacy is an integral part of the digital revolution in pharmacy because it enables pharmaceutical services to be delivered remotely through communication technology platforms. Poudel and Nissen (2016) define telepharmacy as the use of information and telecommunication technology to provide pharmaceutical services and care to patients who are not in the same location as pharmacists. This definition covers a broad range of services, including remote pharmaceutical consultation through high-quality video platforms, real-time electronic prescription verification by pharmacists located away from patients, medication use education through structured digital communication channels, continuous monitoring of patient therapy adherence through sensor technology and digital reporting, and the identification and prevention of harmful drug interactions through artificial intelligence-based clinical decision support systems. In its latest development, telepharmacy also includes guided remote dispensing, where pharmacy technicians at the patient location provide services under the supervision of pharmacists working from different locations through reliable telecommunication systems.

The global development of telepharmacy has passed through several significant and continuous stages of evolution. In the initial phase that began around the 1990s, telepharmacy was implemented primarily as a solution for geographically isolated communities, such as rural areas in the western United States and remote areas in Australia that were located far from the nearest pharmacy. Baldoni et al. (2019) documented that telepharmacy services then developed rapidly as communication technology advanced, particularly with the expansion of broadband internet access and the proliferation of smart devices that enabled high-quality video communication at increasingly affordable costs. In the second phase, the scope of telepharmacy expanded to include chronic disease management programs for patients with diabetes, hypertension, and cardiovascular disease, remote mental health and psychiatric services, and post-hospital rehabilitation programs that required intensive monitoring. The third phase of telepharmacy development, which has taken place since 2015 and was dramatically accelerated by the COVID-19 pandemic, is marked by the integration of telepharmacy with artificial intelligence, big data analytics, and integrated health information systems. This makes telepharmacy a component of a comprehensive digital health service ecosystem.

Each phase of telepharmacy development brings different and increasingly complex legal implications. In the first phase, telepharmacy regulation was relatively simple because services only involved limited remote supervision and a small number of actors. In the second phase, when telepharmacy began to integrate with complex chronic disease management systems, the need for regulations governing minimum clinical standards and clear liability mechanisms became serious. In the current third phase, the integration of telepharmacy with artificial intelligence adds a new layer of legal complexity. It raises questions about algorithmic accountability in clinical decision-making, large-scale health data protection, and the distribution of responsibility when artificial intelligence systems provide recommendations that are later adopted by doctors or pharmacists. Poudel and Nissen (2016) warned that increasing complexity requires a dynamic and adaptive regulatory framework, not a static regulation capable only of responding to previous stages of development. Indonesia faces additional challenges, including disparities in regulatory capacity among regions and limited supervisory resources. Therefore, Indonesia needs to build a strong and prospective regulatory framework before the adoption of telepharmacy technology reaches a massive scale that makes reactive regulation ineffective.

The benefits of telepharmacy for improving access to and the quality of health services have been empirically documented in various scientific studies conducted in different contexts and countries. Scott and Strand (2016) conducted a comprehensive study on the impact of telepharmacy services in rural and underserved communities and found that telepharmacy implementation significantly improved patient adherence to therapy regimens, strengthened early detection of harmful drug interactions, and increased patient satisfaction with the quality of pharmaceutical services received. The study also showed that telepharmacy reduced medication dispensing errors and improved overall service efficiency. Baldoni et al. (2019), through a systematic review of the global scientific literature on telepharmacy, concluded that telepharmacy effectively expanded evidence-based pharmaceutical services to populations that previously had no access to conventional pharmacies. Chuo et al. (2020) added that telehealth services, including telepharmacy, contribute significantly to improving service accessibility for vulnerable populations, including older persons, persons with disabilities, and patients with chronic conditions. From the perspective of health economics, telepharmacy reduces overall service costs by reducing preventable emergency visits through better therapy monitoring, reducing the need for costly physical visits, especially for patients in remote areas, and saving health system resources through partially automated service processes. In Indonesia, where health financing through the National Health Insurance system faces significant fiscal pressure, the potential cost savings from well-

managed telepharmacy provide an additional argument for developing a regulatory infrastructure that supports broad, safe, and responsible adoption of this service.

Although the benefits have been empirically proven, the implementation of telepharmacy raises legal and ethical issues that must be resolved normatively and comprehensively. Chaet et al. (2017) identified that telemedicine practices, including telepharmacy, require a specific ethical and legal framework because doctor-patient interactions in digital environments differ fundamentally from face-to-face interactions. These basic differences include the limitations of digital patient identity verification, which cannot be carried out with the same level of certainty as direct face-to-face verification; challenges in ensuring privacy and confidentiality of patient medical information transmitted through electronic systems that may be vulnerable to leakage and breaches; the need for informed consent standards adapted specifically to explain the limitations and specific risks of digital services to patients; and the limitation of physical examination that cannot be performed remotely, which inherently increases the risk of clinical judgment errors. Each of these fundamental differences has significant legal implications and requires specific normative regulation. Reliance only on analogical interpretation from conventional service regulations designed for different situations is not sufficient.

Nittari et al. (2020), in a comprehensive review of ethical and legal challenges in global telemedicine practice, emphasized several urgent legal challenges. First, the unclear legal jurisdiction in digital health services, which are inherently cross-border across cities, provinces, and countries, creates ambiguity about which law applies and which institution has authority to resolve disputes. Second, differences in licensing standards and professional qualifications among regions create grey areas concerning the legality of remote practice when doctors or pharmacists in one region provide services to patients in another region. Third, the absence of liability regulation that specifically governs the distribution of responsibility in telemedicine services involving multiple actors with different levels of control creates legal uncertainty. Fourth, patient data security and privacy issues are particularly sensitive because digital transmission and storage are vulnerable to leakage. Keesara et al. (2020) emphasized that the acceleration of digital health adoption during the pandemic created a situation in which technological innovation moved much faster than the capacity of regulatory frameworks to adapt. This condition created zones of legal uncertainty that create risks for all parties involved in digital health services, including doctors, other health workers, patients, and system providers.

Legal issues in telepharmacy become more complex when examined from the perspective of evidence. In conventional medical disputes, proof of whether a doctor has committed an error usually relies on medical records, witness statements, and medical expert opinions based on professional standards. In digital medical disputes, proof becomes far more complex because patient harm may result from a combination of clinical error by a doctor, electronic system failure, and procedural error by a pharmacist, all at once and in proportions that are difficult to identify. Electronic system logs, digital transaction audit trails, and communication metadata become key evidence that is often unavailable, poorly maintained, or difficult to interpret accurately without specific technical expertise. Chaet et al. (2017) noted that the unavailability or incompleteness of digital evidence often causes telemedicine disputes to be resolved based on presumptions that disadvantage service providers because courts tend to apply approaches that oversimplify causal complexity. This condition creates additional pressure on doctors to prove that they are not at fault, shifting the burden of proof that should rest on the party claiming professional error.

One aspect that distinguishes telepharmacy from conventional health services in the most fundamental way is the complexity of legal relationships in its service ecosystem. In a comprehensive telepharmacy system, at least six categories of actors are actively involved: doctors as clinical decision-

makers and prescription writers; pharmacists as prescription verifiers and providers of pharmaceutical services; patients as recipients of services; health care facilities as organizers and quality assurance actors; electronic system providers as providers of digital platform infrastructure; and technology vendors as developers and maintainers of software. Eysenbach (2001) noted that one fundamental characteristic of e-health is its distributed nature, where information and service processes are spread among different actors and systems. No single party has full control over the whole service process from upstream to downstream. This distribution of control creates liability complexity that does not exist in conventional health service models and requires a special legal framework for fair resolution.

The multi-actor complexity in telepharmacy creates various legally ambiguous liability scenarios. In the first scenario, if a data transmission system is disrupted so that the prescription received by the pharmacist differs from the prescription written by the doctor, patient harm arising from the difference cannot easily be attributed to the doctor who wrote the prescription correctly in accordance with professional standards. In the second scenario, if a digital platform fails and prevents the doctor from accessing a patient's drug allergy history stored in the system, and the doctor then prescribes a drug that triggers a severe allergic reaction, should the entire responsibility fall on the doctor, or should part of the responsibility be borne by the electronic system provider that failed to provide access to the information needed for safe clinical decision-making? In the third scenario, if patient medical data leakage occurs due to a security gap in a storage system managed by a technology vendor, should a doctor who uses the system also be responsible for the privacy violation even though the doctor has no access to manage or secure the system? These questions do not have clear answers under the current Indonesian health law regulatory framework. This condition creates legal uncertainty that is very detrimental to doctors, who are the easiest targets for liability claims.

In Indonesia, digital health regulation has not kept pace with technological development and service innovation. Law Number 17 of 2023 on Health and Government Regulation Number 28 of 2024 provide normative legitimacy for technology-based health services, but these regulations remain very general and do not address critical operational aspects of telepharmacy service safety and legal certainty. Harijanti (2024) notes that there is a significant normative gap between general recognition of digital health services and specific, operational, and enforceable regulation of telepharmacy. This gap is concrete. There is no regulation that legally defines telepharmacy, no national operational standard governing its implementation, no special licensing mechanism for telepharmacy service providers, and no provision that explicitly regulates the distribution of legal responsibility among the parties involved. Compared with the United States, which has specific telepharmacy regulation at the federal and state levels, including provisions on licensing requirements, platform technology standards, and detailed liability mechanisms, or Australia, where the Pharmacy Board has developed comprehensive guidance on telepharmacy practice standards covering clinical standards, informed consent requirements, and remote supervision mechanisms, Indonesia's normative gap in telepharmacy regulation is evident and requires immediate attention.

Kolib and Ramadhani (2021) emphasized that doctor professionalism from a human rights perspective includes the right to obtain proportional legal protection for professional actions carried out according to applicable competency standards. This right becomes very vulnerable in telepharmacy services, where doctors must make clinical decisions based on information mediated by technological systems that are not fully under their professional control. Doctors as attending physicians in telepharmacy systems face multiple layers of legal risk unknown in conventional practice. These include the risk of liability for data transmission system failures that cause the medical information received to be inaccurate or incomplete; risk arising from disruption in patient identity verification processes that

enables unauthorized use of the system; risk arising from leakage of sensitive patient health information due to security gaps in electronic systems not managed by doctors; and risk of liability for errors at the prescription verification or drug dispensing stage by pharmacists within a digital system that cannot be directly controlled by doctors. These layered risks, without a predictable and adequate legal protection framework, create legal uncertainty that is detrimental to the medical profession.

The threat of disproportionate criminalization of doctors in telepharmacy services is not only a matter of legal certainty. It also touches on fundamental human rights. The right to work and to practice a profession protected by law forms part of the economic, social, and cultural rights guaranteed by the Indonesian Constitution. When doctors face the risk of criminal punishment for failures that cannot causally be attributed to their clinical decisions or professional negligence, these fundamental rights are seriously threatened. Furthermore, such threats create what health law literature recognizes as defensive medicine in the digital context, namely a condition in which doctors make clinical decisions more to avoid legal risk than to achieve the best clinical outcome for patients. Nittari et al. (2020) noted that defensive medicine in telemedicine has broader and more difficult-to-detect consequences because defensive behavior by doctors in digital systems can affect the quality of services for thousands of patients at the same time without being identified and corrected promptly. This condition strengthens the argument that legal protection for doctors in telepharmacy is a public interest that directly affects the quality and availability of the national digital health service system.

The systemic impact of legal uncertainty is serious and requires the attention of policymakers. Without adequate and predictable legal protection, Indonesian doctors face a difficult dilemma: using telepharmacy systems to serve patients in need while bearing disproportionate legal risks, or avoiding digital technology in care and losing the real benefits for patients who depend on such services. Poudel and Nissen (2016) warned that prolonged legal uncertainty in telepharmacy regulation can hinder the adoption of technology that is actually beneficial to society, because health professionals rationally tend to avoid innovations that create unpredictable legal risks even when their clinical benefits have been proven. This situation is not only an individual problem for doctors. It directly affects the quality and coverage of Indonesia's digital health service system as a whole and ultimately harms communities that most need technological solutions to overcome limited access to conventional health services in remote areas.

Prior studies have examined certain aspects of legal problems in digital health services, but a significant research gap remains. Poudel and Nissen (2016) and Baldoni et al. (2019) have contributed to understanding practical telepharmacy challenges from clinical and pharmaceutical perspectives, but they did not develop a legal liability model applicable to the Indonesian legal system. Chaet et al. (2017) and Nittari et al. (2020) examined ethical and legal aspects of telemedicine from a global perspective that does not specifically accommodate the characteristics of the Indonesian legal system. At the domestic level, Kolib and Ramadhani (2021) provided an important foundation concerning the legal protection of doctors from a human rights perspective, while Harijanti (2024) identified normative gaps in Indonesia's digital health regulation. However, these studies have not developed a comprehensive liability model that can serve as the basis for national telepharmacy regulation. This study seeks to fill that gap specifically by developing the Tiered and Distributed Causal Liability Model as a legal construction that is adaptive to the complexity of multi-actor telepharmacy systems in the context of Indonesian positive law.

Based on the discussion above, two urgent normative gaps must be addressed. First, there is no comprehensive legal regulation of telepharmacy and the distribution of legal responsibility among the parties. Second, there is no adequate and proportional legal protection mechanism for doctors in digital

health services. These two gaps not only affect legal certainty for individual doctors, but also have the potential to hinder the development of the national digital health service system as a whole. This study examines two main problems: first, the legal regulation that should be applied to doctors in the use of telepharmacy; and second, the form of legal protection that can be provided to doctors in digital health services. This study aims to make a normative contribution by proposing a legal liability model that responds to technological development, allocates responsibility proportionally based on causal contribution, level of control, and authority of each party, and provides fair, certain, and predictable legal protection for doctors as key actors in the national digital health service chain.

Methods

This study uses normative juridical legal research with three main approaches: the statutory approach, the conceptual approach, and the legal theory approach. The statutory approach analyzes the prevailing regulations relevant to digital health services in a systematic and hierarchical manner. The conceptual approach examines the basic legal concepts that support the analysis, including legal protection, legal liability, legal certainty, and legal causation. The legal theory approach applies theoretical constructions from Kelsen's theory of legal certainty, Rawls' theory of distributive justice, and Rahardjo's progressive legal theory to build a new normative model that responds to technological development.

The primary legal materials consist of the 1945 Constitution of the Republic of Indonesia, Law Number 17 of 2023 on Health, Government Regulation Number 28 of 2024, Law Number 11 of 2008 on Electronic Information and Transactions, Minister of Health Regulation Number 3 of 2025 on the Enforcement of Professional Discipline, Law Number 1 of 2023 on the Criminal Code, Law Number 1 of 2026 on Criminal Adjustment, and Law Number 20 of 2025 on the Criminal Procedure Code. Secondary legal materials are obtained from legal textbooks, accredited health law journals, and relevant prior studies. Tertiary legal materials include legal dictionaries and legal encyclopedias. The analysis is conducted qualitatively through a prescriptive method to produce recommendations for legal development that can provide proportional protection for doctors in the use of telepharmacy.

Results and Discussions

1. Legal Regulation of Telepharmacy in the Indonesian Health Service System

Digital transformation in the health sector is a global phenomenon that fundamentally changes the structure of legal relationships, risk distribution, and liability mechanisms in the health care ecosystem. Eysenbach (2001) defines e-health as the use of information and communication technology in health, covering the delivery of information, products, and services through the internet and related technologies. More than a technical definition, e-health represents a new paradigm in health service delivery that requires comprehensive adaptation of the existing legal framework in both substantive and procedural dimensions. Nittari et al. (2020) identified that all effective telemedicine regulatory frameworks share the same key elements: a clear definition of the regulated services, measurable and verifiable quality standards, a transparent and fair mechanism for distributing responsibility, and an evidence system that adapts to the distinctive nature of electronic evidence, which differs fundamentally from conventional evidence.

Indonesia is at a critical point in its digital health transformation. Law Number 17 of 2023 on Health is the most significant normative milestone in the recognition of digital health services because it explicitly recognizes the use of information technology as a legitimate means of health service delivery. Government Regulation Number 28 of 2024, as an implementing regulation, further elaborates the

procedures for technology-based services, including minimum standards for electronic systems used in health services. Law Number 11 of 2008 on Electronic Information and Transactions provides a general framework for the recognition and validity of electronic documents and transactions, including electronic prescriptions in the telepharmacy context, and lays the foundation for privacy and data security law in electronic information systems. Although these three regulations provide an important normative foundation, a deeper analysis shows that none of them specifically regulates telepharmacy as a service modality with distinctive legal characteristics that require rules different from conventional health services.

A comparison with regulatory frameworks in countries with more mature digital health systems provides an important perspective on what Indonesian telepharmacy regulation should achieve. In the United States, the National Association of Boards of Pharmacy has developed a model act for telepharmacy that has been adopted with various modifications by many states. It regulates in detail platform technology requirements, remote supervision standards, and liability mechanisms between telepharmacists and pharmacy technicians working at patient locations. In Australia, the Pharmacy Board of Australia has issued comprehensive guidance on telepharmacy covering ethical standards, required clinical competencies, adequate documentation mechanisms, and informed consent procedures adapted to the digital context. In the European Union, the Directive on Cross-Border Healthcare provides a general framework for cross-border health services that includes key aspects of liability and consumer protection in digital health services. The sharp contrast between regulatory development in these jurisdictions and Indonesia's still limited telepharmacy regulation shows the magnitude of normative work that must be undertaken immediately. Chuo et al. (2020) stressed that learning from international regulatory experience is an important step in building an effective and efficient telehealth regulatory framework because many countries have gone through trial and error that can be avoided by countries now developing their regulations.

A detailed analysis of the applicable regulations reveals four significant structural weaknesses in telepharmacy regulation in Indonesia. The first weakness is the absence of a legal definition of telepharmacy in any prevailing regulation. This absence is not merely a technical imperfection. It creates fundamental uncertainty concerning the scope of services being regulated and the standards that must be met by each party involved. Without a clear definition, neither service providers nor regulators have a definite reference point for determining what constitutes telepharmacy and when an activity can be categorized as telepharmacy subject to specific regulation. Chuo et al. (2020) emphasized that definitional clarity is a basic prerequisite for effective telehealth regulation because, without it, regulatory implementation will always be inconsistent and will generate uncertainty that harms all parties.

The second weakness is the absence of nationally established standard operating procedures for telepharmacy. In conventional health services, standard operating procedures serve as technical guidance that operationalizes normative provisions into concrete steps that practitioners can apply in the field. In telepharmacy, comprehensive operational standards must cover the procedure for verifying patient identity digitally with adequate certainty, the secure issuance and verification of electronic prescriptions, digital documentation standards throughout the telepharmacy service process, mechanisms for handling technical disruptions that may affect service quality and safety, and standardized procedures for reporting system security incidents that can be followed up. Baldoni et al. (2019) identified the absence of clear operational standards as one of the largest factors inhibiting the development of safe and clinically standardized telepharmacy in many countries.

The third weakness is the absence of regulation that explicitly governs the distribution of legal responsibility among parties in the telepharmacy ecosystem. In Indonesian civil and criminal law,

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provisions on liability in health services generally use a conceptual framework designed for conventional practice, where the relationship between doctors and patients is direct and personal. Applying this framework to a multi-actor and technology-mediated telepharmacy system creates serious ambiguity about who should be responsible when patient harm occurs and in what proportion the responsibility should be shared. Poudel and Nissen (2016) noted that uncertainty about the boundaries of responsibility in telepharmacy systems is a main barrier to broad adoption because health professionals lack certainty regarding the limits of their legal duties. The fourth weakness is the absence of regulation that specifically governs the responsibility of health electronic system providers. The Electronic Information and Transactions Law regulates electronic system provider responsibility in general, but it does not accommodate the specific characteristics of health electronic systems, which manage highly sensitive information and where system failure can directly and immediately affect human life and safety.

These structural weaknesses can be further analyzed through Hans Kelsen's theory of legal certainty. Kelsen (1989) argued that an effective legal system must form a clear, consistent, and coherent hierarchy of norms, where each lower norm derives from and is consistent with a higher norm. Analysis of Indonesian telepharmacy regulation shows a systemic gap in this normative hierarchy. Although the 1945 Constitution guarantees legal protection for every citizen, including medical personnel, and the Health Law recognizes the legitimacy of digital health services, there is no operational norm at a lower level that concretely and specifically regulates how such legal protection is realized in the context of actual telepharmacy. This hierarchical gap produces a rechtsvacuum, a condition in which no norm definitively governs a particular legal situation. As a result, dispute resolution must refer to analogy or general principles that were not designed for the digital context and often fail to capture the complexity of causal relationships in multi-actor systems. Such analogical interpretation may produce different decisions from one case to another, creating persistent legal uncertainty that harms all parties.

From the perspective of Hart and Honore's theory of causation (1985), legal responsibility must be based on a concrete and proportional causal relationship between an act or omission of a legal subject and the harm that occurs. Applying this theory to telepharmacy requires a deep and multidimensional analysis of the causes of harm. It includes identifying the source of technical failure, analyzing the causal contribution of each actor in the sequence of events that resulted in harm, and assessing each actor's level of control over the factor that caused the harm. Without a regulatory framework that specifically operationalizes these causation principles in the context of digital health information systems, the process of determining legal responsibility will always contain significant uncertainty and may lead to unfair decisions against doctors, who are often the most easily identified party in a dispute even when their causal contribution to harm is minimal or even nonexistent.

The appropriate legal regulation for doctors in the use of telepharmacy should be built through the Tiered and Distributed Causal Liability Model. This model places legal responsibility based on the source of failure and the level of control of each legal subject in the digital health service system. Unlike conventional liability models that often impose responsibility based on position in the service hierarchy, this model starts from the principle that legal responsibility follows actual control and causal contribution proportionally. Nittari et al. (2020) emphasized that establishing liability standards proportional to the causal contribution of each actor is the greatest challenge and the most urgent need in global telemedicine regulation. Table 1 describes the distribution of responsibility in digital health service systems based on this model.

Table 1. Distribution of Responsibility in the Digital Health Service System

Profession/Actor	Scope of Responsibility
Doctor	Diagnosis, therapy, clinical decisions, and medical actions based on applicable medical professional standards.
Pharmacist	Prescription verification, dispensing, pharmaceutical counseling, and evidence-based therapy monitoring.
Hospital/Health Care Facility	Service system governance, service quality assurance, and provision of adequate infrastructure.
Electronic System Provider	Security, integrity, availability, and reliability of the digital health system infrastructure.
Technology Vendor	Software reliability, periodic system updates, and responsive technical support.

Source: Processed from the research findings (2026)

Through this model, legal responsibility is determined based on the technically proven source of failure and the causal contribution of each party to patient harm. If harm is caused by an error in the doctor's clinical decision, the doctor is responsible according to medical professional standards. If harm is caused by an electronic system failure in transmitting prescriptions accurately, the electronic system provider bears legal responsibility for the failure. If harm is caused by an error in prescription verification or drug dispensing by a pharmacist, the pharmacist is responsible according to pharmaceutical professional standards. This proportional causation principle directly applies Hart and Honore's theory (1985), which states that legal responsibility must follow substantive causal contribution, not merely position in a service hierarchy or positional closeness to the victim.

Five main normative constructions are needed to implement this liability model. The first construction is the formation of explicit norms on the distribution of legal responsibility based on the source of technological failure. This norm must clearly state that legal responsibility in digital health service systems follows technically proven causal contribution, not merely position in the service chain. Electronic system providers must explicitly bear legal responsibility for harm caused by system failures under their control, and doctors must be explicitly protected from liability for harm whose causal source lies in digital infrastructure failure outside their control. The second construction is the limitation of doctors' responsibility to clinical judgment and medical acts that are within their professional control based on applicable medical professional standards. This limitation does not reduce doctors' accountability for genuine clinical errors. Rather, it provides clear boundaries regarding the professional responsibility domain of doctors in a multi-actor system.

The third construction is the strengthening of the legal responsibility of health electronic system providers for the security, integrity, availability, and reliability of digital systems under their management, with sanctions proportional to the harm caused by system failure. Keesara et al. (2020) emphasized that technological infrastructure reliability is a non-negotiable prerequisite for patient safety in digital health service systems. Health electronic system providers control the most critical component in the telepharmacy service chain. Therefore, they must bear legal responsibility that corresponds to their level of control and power over that component. The fourth construction is the regulation of digital audit mechanisms and technological forensic evidence in resolving digital medical disputes. This

mechanism must include chain of custody standards for electronic evidence, adequate system log retention requirements, digital forensic examination procedures that can be accepted as valid evidence before courts, and minimum data retention duration standards needed for proof in legal disputes. The fifth construction is comprehensive harmonization among health law, criminal law, civil law, and information technology law in one coherent national regulatory system for digital health services, so that no gap among different legal regimes may harm doctors because of normative inconsistency.

These five normative constructions form a coherent and mutually supportive normative system. The first and second constructions serve as the basic principles of liability distribution by determining who is responsible for what. The third and fourth constructions serve as operational mechanisms to ensure that the principles of liability distribution can be implemented and enforced effectively in practice. The fifth construction serves as an integration framework to ensure consistency among various legal regimes that may apply simultaneously in one digital medical dispute. Without implementing these five constructions together, the Tiered and Distributed Causal Liability Model will not be effective because a gap in one construction can be used to impose responsibility on a party who should not bear it. Scott and Strand (2016) emphasized that the effectiveness of an accountability framework in telepharmacy services depends on the completeness and consistency of the regulations governing it. A partial or inconsistent regulatory framework will generate legal uncertainty that is counterproductive to the protective goals intended for both doctors and patients.

2. Legal Protection for Doctors in the Use of Telepharmacy

Legal protection for doctors is one of the clearest manifestations of the rule of law principle guaranteed by the Indonesian Constitution. Hadjon (1987), in his fundamental study, argued that the rule of law requires the state to provide effective legal protection mechanisms for all citizens, including when they act as professionals who perform public service duties. In Hadjon's conception, legal protection may be preventive, namely preventing disputes through clear and comprehensive normative regulation, and repressive, namely resolving disputes that have occurred through fair adjudicative mechanisms that consider the specific characteristics of the dispute. Both forms of protection are relevant and urgent in telepharmacy services that involve complex technology, multiple actors, and layered legal risks not yet fully accommodated in the existing regulatory framework.

Constitutionally, the basis for legal protection for doctors in the use of telepharmacy is rooted in Article 1 paragraph (3) of the 1945 Constitution, which affirms Indonesia as a state based on law. The rule of law principle means that every imposition of responsibility on citizens, including medical personnel, must have a clear, measurable, and predictable legal basis. Doctors who provide telepharmacy services in accordance with professional standards and applicable authority cannot be legally responsible for harm caused by factors beyond their professional control without violating the basic principle of the rule of law. Article 28D paragraph (1) of the 1945 Constitution guarantees every person's right to recognition, guarantee, protection, and fair legal certainty, as well as equal treatment before the law. This provision is the constitutional basis for doctors' demand for a proportional and fair liability system.

At the legislative level, Law Number 17 of 2023 on Health grants medical personnel the right to legal protection as long as they perform their duties in accordance with professional standards, professional service standards, standard operating procedures, and applicable professional codes of ethics. The effectiveness of this provision depends heavily on the existence of operational regulations that clearly define what it means to perform duties according to professional standards in telepharmacy and how proof of compliance with those standards is conducted within the existing legal evidence

system. Kolib and Ramadhani (2021) emphasized that without adequate legal protection mechanisms, doctor professionalism as a value protected by human rights will face serious threats from disproportionate criminalization of the profession. This creates systemic effects that inhibit innovation and active participation of the medical profession in the development of the national digital health service system. Harijanti (2024) identified that the absence of specific legal protection mechanisms capable of accommodating the complexity of liability in multi-actor systems is a basic weakness that must be addressed immediately through comprehensive and evidence-based regulatory reform.

3. Preventive Legal Protection

Preventive protection functions to prevent violations of doctors' rights before harm occurs. In digital health services, effective preventive protection not only protects doctors individually, but also contributes to creating a digital health service ecosystem that is safe, reliable, and trusted by all parties involved. Chaet et al. (2017) emphasized that incident prevention in telemedicine requires a systemic approach that includes process standardization, technological strengthening, and regulatory clarity simultaneously and in coordination, because failure in one dimension can weaken the entire protection system.

The first preventive protection mechanism is the establishment of clear, comprehensive, and operational legal regulation on telepharmacy. Comprehensive regulation must include a legal definition of telepharmacy that provides certainty regarding the scope of regulated services, classification of services based on clinical risk level that determines the required supervision standards, technical and clinical requirements for the provision of services that must be met by every provider, and a clear and predictable distribution of legal responsibility among all parties. Scott and Strand (2016) noted that regulatory uncertainty is the most significant factor inhibiting the development of high-quality and safe telepharmacy services.

The second preventive protection mechanism is standardization and certification of electronic systems used in telepharmacy. Every electronic system must meet strict information security standards verified independently. These standards include end-to-end data encryption to protect the confidentiality of patient medical information from interception and leakage, multilayer authentication systems to verify the identity of all parties involved with adequate certainty, reliable and distributed data backup mechanisms to prevent the loss of critical medical data, real-time reliability monitoring systems capable of detecting and responding quickly and automatically to technical disruptions, and standardized and effective security incident response procedures. Baldoni et al. (2019) emphasized that system reliability and security are non-negotiable prerequisites for the delivery of telepharmacy services that are safe for patients and legally protected for service providers.

The third preventive protection mechanism is the mandatory use of certified electronic signatures in every digital medical transaction that has legal implications. Certified electronic signatures provide two critical and complementary legal functions: proving the signer's identity legally so that it cannot be denied, and proving the integrity of the signed document so that any unauthorized change can be detected cryptographically with a high level of certainty. The fourth preventive mechanism is the development and implementation of digital informed consent specifically adapted for telepharmacy services. Chaet et al. (2017) emphasized that informed consent in telemedicine must explicitly include information about technological limitations and potential risks associated with the digital service modality because patients have the right to fully understand the nature and limitations of the services they receive before providing truly informed consent.

The fifth preventive protection mechanism is periodic health technology audits conducted by independent institutions with adequate technical and legal competence. Chuo et al. (2020) emphasized that continuous monitoring and evaluation are critical components of a responsible and accountable telehealth system. The sixth preventive mechanism is the establishment of firm and operational boundaries of authority between doctors and pharmacists in the digital service system. Clarity regarding who is authorized to do what, at which stage, and under which standards in telepharmacy services is a prerequisite for fair and accountable distribution of responsibility among all parties.

4. Repressive Legal Protection

Repressive protection functions to restore rights that have been violated through legal processes that are fair, transparent, and responsive to the special characteristics of digital medical disputes. In telepharmacy, the specific nature of potential legal disputes requires repressive mechanisms specifically designed to address electronic evidence, multidimensional technical causation analysis, and the distribution of responsibility in complex multi-actor systems. Nittari et al. (2020) identified that the main weakness in global telemedicine dispute resolution is the inability of traditional adjudicative processes to accurately assess technical aspects that are often the main causes of patient harm. Therefore, traditional adjudicative processes must be significantly adapted.

The first repressive mechanism is the development of a digital medical dispute resolution mechanism that is fair, transparent, and multidisciplinary. This mechanism must include the establishment of an expert panel consisting of health law experts, medical experts, pharmaceutical experts, and information technology experts. Together, these experts have comprehensive competence to assess all relevant aspects of a digital medical dispute. The second repressive mechanism is the standardization of professional disciplinary examination procedures that accommodate the special characteristics of digital health disputes. An objective examination must clearly distinguish between clinical errors that could actually be prevented under applicable professional standards and adverse events caused by technological system failures beyond the doctor's control. Scott and Strand (2016) emphasized that accountability evaluation in telepharmacy services must always consider the limitations and potential failure of technological systems as factors that may affect service quality independently from the quality of doctors' clinical decisions.

Adequate disciplinary examination standards for digital disputes must clearly establish that the burden of proving clinical error by a doctor cannot be satisfied merely by the fact that harm occurred within a service sequence involving the doctor. The examination process must first conduct a comprehensive technical analysis to identify and exclude the possibility that harm was caused by technological system failure or negligence by another party in the service chain before any assessment of the doctor's clinical action can be carried out fairly and accurately. Harijanti (2024) emphasized that without adequate examination standards for the digital context, the risk that doctors will be sanctioned for harm that is not actually their professional fault will remain high and cannot be reduced only by the good faith of examiners. These standards must be contained in binding regulation and used as a reference by examining panels in every examination involving digital health services, including telepharmacy.

The third repressive mechanism is standardization of the collection, preservation, analysis, and presentation of electronic evidence in digital medical disputes. Harijanti (2024) emphasized that the ability to identify, secure, analyze, and present electronic evidence credibly before courts or disciplinary panels is a critical component of a fair evidence system in digital medical disputes. Electronic system logs, digital transaction audit trails, electronic medical records, digital communication metadata, and

system performance data are key evidence that can objectively determine the source of failure in telepharmacy systems. The fourth repressive mechanism is the application of a proportional standard of proving causal relationship based on technically identified sources of failure. Hart and Honore (1985) emphasized that proof of causation must identify the most direct and significant causal factor in the occurrence of harm, not merely impose responsibility on the party who is easiest to identify or who is positionally closest to the victim. In telepharmacy, this standard means that doctors cannot be held responsible unless it is first proven that harm was causally caused by the doctor's clinical decision or professional negligence, not by technological system failure outside the doctor's control.

This comprehensive approach rests on three mutually reinforcing theoretical foundations. Gustav Radbruch's theory of legal certainty emphasizes three basic values of law that must be balanced: justice, utility, and legal certainty. In telepharmacy, legal certainty requires clear and predictable norms concerning the boundaries of doctors' responsibility, so that doctors can know which actions create legal responsibility and which actions are normatively protected (Kelsen, 1989). Without this legal certainty, doctors remain in a state of permanent uncertainty that inhibits innovation and the quality of digital health services.

John Rawls' theory of justice, particularly the difference principle, requires that a fair legal system must not impose risks disproportionately on parties who have no control over the source of the risk (Rawls, 1999). Imposing legal responsibility on doctors for technological system failures beyond their control constitutes distributive injustice contrary to Rawlsian principles. A fair liability system must distribute the burden of risk according to each actor's control capacity and causal contribution. Satjipto Rahardjo's progressive legal theory emphasizes that law must constantly move and adapt to serve substantive justice in a changing social context. In the context of rapidly developing digital health technology, progressive legal thought requires health regulation to adapt immediately to new realities without sacrificing fundamental principles of justice. Legal reform adopting the Tiered and Distributed Causal Liability Model is a concrete manifestation of a progressive legal approach that places substantive justice above procedural formalism that is no longer adequate to address legal challenges in the digital era.

Thus, legal protection for doctors in the use of telepharmacy requires comprehensive, systemic, and theoretically grounded normative intervention. The Tiered and Distributed Causal Liability Model, which distributes responsibility proportionally based on technically proven sources of error, actual level of control, and causal contribution of each party, is the legal construction most consistent with the principles of justice, legal certainty, and progressive law that form the normative foundation of this study. Implementing this model through comprehensive regulation will provide fair protection for doctors from disproportionate criminalization, strengthen accountability in the national digital health service ecosystem, and ultimately improve the safety and quality of services for patients in a comprehensive and sustainable manner.

The success of legal protection for doctors in telepharmacy depends heavily on the political will of policymakers to recognize that the existing regulatory framework is no longer adequate to answer the legal challenges created by digital health service systems. Without this recognition, partial and unsystematic normative reform will not bring meaningful change to the legal position of doctors. Conversely, with honest recognition of the inadequacy of current regulation and a strong commitment to build a new comprehensive regulatory framework, Indonesia can create a legal system capable of providing certainty and justice for all parties in the digital health service ecosystem. It can also become a useful example for other developing countries facing similar challenges in integrating health technology innovation into the existing legal system. Baldoni et al. (2019) emphasized that sustainable

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and responsible telepharmacy development can only be achieved within a regulatory ecosystem that provides certainty and justice for all actors involved, from professional service providers to patients as the final beneficiaries of technology-based health service innovation.

Conclusion

Indonesian digital health regulations, particularly Law Number 17 of 2023 on Health and Government Regulation Number 28 of 2024, have not comprehensively regulated telepharmacy. This normative gap creates significant legal uncertainty for doctors as attending physicians and opens the risk of disproportionate criminalization of the profession. The appropriate legal regulation for doctors in the use of telepharmacy should be built through five normative constructions: the formation of norms on liability distribution based on the source of technological failure; the limitation of doctors' responsibility to clinical judgment; the strengthening of the legal responsibility of electronic system providers; the regulation of digital audit and forensic evidence mechanisms; and the harmonization of health law, criminal law, civil law, and information technology law in one coherent national digital health service regulatory framework.

Legal protection for doctors in the use of telepharmacy has not operated proportionally. Preventive protection mechanisms are needed in the form of comprehensive regulation, standardization and certification of electronic systems, certified electronic signatures, digital informed consent, periodic technology audits, and clear determination of authority boundaries. Repressive protection requires multidisciplinary dispute resolution mechanisms, objective disciplinary examination standards, standardized forensic electronic evidence, and proportional proof of causation based on the source of technical failure. The Tiered and Distributed Causal Liability Model is an appropriate legal construction as the basis for the formation of national telepharmacy regulation that is comprehensive, fair to doctors, and protective of patient safety.

The government should immediately establish specific regulation on telepharmacy that governs legal definitions, service standards, electronic system security, the division of authority among health professions, and legal liability mechanisms in digital health services. Health electronic system providers should be required to obtain standardized system security certification that can also serve as evidence in digital medical disputes. An independent health technology audit system and a forensic-based digital evidence mechanism should be developed to ensure balanced legal protection for doctors and patients. Regulatory development should be carried out participatorily by involving medical professional organizations, pharmacists, electronic system providers, and patient representative groups.

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References

Abbott, R. (2020). The reasonable robot: Artificial intelligence and the law. Cambridge University Press.

Baldoni, S., Amenta, F., & Ricci, G. (2019). Telepharmacy services: Present status and future perspectives: A review. Medicina, *55*(7), 327. https://doi.org/10.3390/medicina55070327

Chaet, D., Clearfield, R., Sabin, J. E., & Skimming, K. (2017). Ethical practice in telehealth and telemedicine. Journal of General Internal Medicine, 32(10), 1136-1140. https://doi.org/10.1007/s11606-017-4082-2

Chuo, J., Macy, M. L., & Lorch, S. A. (2020). Strategies for evaluating telehealth. Pediatrics, 146(5), e20201781. https://doi.org/10.1542/peds.2020-1781

Eysenbach, G. (2001). What is e-health? Journal of Medical Internet Research, 3(2), e20. https://doi.org/10.2196/jmir.3.2.e20

Government Regulation Number 28 of 2024 on the Implementing Regulation of Law Number 17 of 2023 on Health. State Gazette of the Republic of Indonesia Year 2024.

Hadjon, P. M. (1987). Perlindungan hukum bagi rakyat di Indonesia. Bina Ilmu.

Harijanti, S. D. (2024). Digital health and legal protection in Indonesia. Jurnal Hukum Kesehatan Indonesia, 5(2), 112-128.

Hart, H. L. A., & Honore, T. (1985). Causation in the law (2nd ed.). Oxford University Press.

Keesara, S., Jonas, A., & Schulman, K. (2020). Covid-19 and health care's digital revolution. New England Journal of Medicine, 382(23), e82. https://doi.org/10.1056/NEJMp2005835

Kelsen, H. (1989). Pure theory of law (M. Knight, Trans.). University of California Press.

Kolib, A., & Ramadhani, I. (2021). Profesionalitas dokter dalam perspektif hak asasi manusia. Selisik: Jurnal Hukum dan Bisnis, 7(1), 1-15.

Law of the Republic of Indonesia Number 1 of 2023 on the Criminal Code. State Gazette of the Republic of Indonesia Year 2023 Number 1.

Law of the Republic of Indonesia Number 1 of 2026 on Criminal Adjustment.

Law of the Republic of Indonesia Number 11 of 2008 on Electronic Information and Transactions. State Gazette of the Republic of Indonesia Year 2008 Number 58.

Law of the Republic of Indonesia Number 17 of 2023 on Health. State Gazette of the Republic of Indonesia Year 2023 Number 105.

Law of the Republic of Indonesia Number 20 of 2025 on the Criminal Procedure Code.

Marzuki, P. M. (2005). Penelitian hukum. Kencana Prenada Media Group.

Mertokusumo, S. (2009). Penemuan hukum: Sebuah pengantar. Liberty.

Minister of Health Regulation of the Republic of Indonesia Number 3 of 2025 on the Enforcement of Professional Discipline. State Bulletin of the Republic of Indonesia Year 2025.

Nittari, G., Khuman, R., Baldoni, S., Pallotta, G., Battineni, G., Sirignano, A., Amenta, F., & Ricci, G. (2020). Telemedicine practice: Review of the current ethical and legal challenges. Telemedicine and e-Health, 26(12), 1427-1437. https://doi.org/10.1089/tmj.2019.0158

Poudel, A., & Nissen, L. M. (2016). Telepharmacy: A pharmacist's perspective on the clinical benefits and challenges. Integrated Pharmacy Research and Practice, 5, 75-82. https://doi.org/10.2147/IPRP.S101500

Rawls, J. (1999). A theory of justice (Rev. ed.). Harvard University Press.

Scott, D. M., & Strand, M. (2016). The impact of telepharmacy services on patient health outcomes in rural and underserved communities. Pharmacy Practice, 14(3), 822. https://doi.org/10.18549/PharmPract.2016.03.822

Soekanto, S. (1989). Aspek hukum kesehatan: Suatu kumpulan catatan. Ind-Hill-Co.

The 1945 Constitution of the Republic of Indonesia.

Weinrib, E. J. (2012). The idea of private law (Rev. ed.). Oxford University Press.