

## Legal Analysis of the Role of Quarantine Veterinarians in the Enforcement of Criminal Sanctions for Animal Quarantine Violations in Indonesia

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### ABSTRACT

The increase in global trade traffic has heightened the risk of spreading Quarantine Animal Pests and Diseases (HPHK), thereby demanding the effectiveness of the quarantine system not only administratively but also in the enforcement of criminal law. The main issue of this study is the lack of optimal understanding regarding the legal status of quarantine veterinarians and their role in the evidentiary process for animal quarantine crimes, which are of a technical-scientific nature. This study aims to analyze the legal status of quarantine veterinarians and examine their role as expert witnesses in the criminal evidentiary system. This study aims to analyze the legal status of quarantine veterinarians and their role in the process of proving animal quarantine crimes. The method used is normative legal research with a legislative and conceptual approach, supported by qualitative analysis of primary, secondary, and tertiary legal materials. The results of the study indicate that quarantine veterinarians possess attributive authority as quarantine officials under Law No. 21 of 2019, while simultaneously serving as expert witnesses whose testimony is determinative in proving the elements of quarantine offenses. The novelty of this study lies in the finding that the proof of animal quarantine offenses is *expert-dependent*; without the testimony of a quarantine veterinarian, the element of disease transmission risk as the core of the offense cannot be legally and convincingly proven in court. The effectiveness of quarantine law enforcement depends not only on legal norms but also on the integration of legal and *veterinary* scientific aspects. This study affirms that quarantine veterinarians are key actors in ensuring the success of evidence presentation and the imposition of criminal sanctions in animal quarantine cases.

### KEYWORDS

Biosecurity, Quarantine Offenses, Quarantine Veterinarians

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### INTRODUCTION

The rapid growth of international trade has accelerated the cross-border movement of animals and animal products. While this trend brings significant economic benefits, it poses a serious threat in the form of the spread of Quarantine Pests and Animal Diseases that have the potential to damage the national livestock ecosystem, food security, and even human health through the transmission of zoonoses diseases transmitted from wild animals, livestock, or pets to humans. As an archipelagic nation with thousands of entry and exit



points spread across its territory, Indonesia faces biosecurity challenges that are structurally more complex than those of landlocked countries (Esposito, M., Turku, S., Lehrfield, L., & Shoman, 2023). A tangible threat to the system's vulnerabilities includes the Foot-and-Mouth Disease outbreak that spread in May (Firman, A., Trisman & Puradireja, 2022), which not only shook the domestic livestock sector but also forced Australia to respond by tightening its border protocols and suspending import permits from Indonesia (Graham, J., Hayes, L., Manyweathers, J., Fountain, J., & Hernandez-Jover, 2025). This incident demonstrates that violations of animal quarantine are not merely administrative issues, but transnational threats with legal, economic, and public health dimensions (Fiegler-Rudol, J., Lau, M., & Kasperczyk, 2024). However, within the context of law enforcement, fundamental issues remain regarding how the element of disease threat can be legally proven, as well as the status and role of quarantine veterinarians as parties possessing scientific authority in determining the fulfillment of the elements of a criminal offense.

This study aims to address two fundamental legal issues *the legal standing of* quarantine veterinarians as quarantine officials under Law No. 21 of 2019 on Animal, Fish, and Plant Quarantine, and regarding the role of quarantine veterinarians in the process of proving animal quarantine criminal offenses, particularly in their capacity as expert witnesses whose testimony is key to establishing the elements of the offense.

The objective of this study is to conduct a legal analysis of the status and role of quarantine veterinarians as key actors in the enforcement of criminal sanctions against animal quarantine violations in Indonesia.

Animal quarantine serves as the first line of defense for national biosecurity (Zebua, E., Dahlan, D., Fadhil, S., Respationo, S., & Erniyanti, 2024). This function is normatively reinforced by the enactment of Law No. 21 of 2019 on Animal, Fish, and Plant Quarantine, which replaces the old legal regime under Law No. 16 of 1992, deemed no longer adequate to address the developments in global trade and the challenges of new diseases. Law No. 21 of 2019 (Marianus G. P. Narut, Nursalam, Delila A. Nahak Seran, 2025) expands the scope of animal quarantine to include the monitoring of invasive alien species and wildlife, and mandates the establishment of a single integrated agency, which ultimately materialized in the Indonesian Animal Quarantine Agency (BARANTIN), officially established in 2023 (Bulu, P., Pasau, P., Lenda, V., Wera, E., Rohyati, E., Welkis, E., Bili, F., Muchlis, M., & Lasakar, 2025). The World Organisation for Animal Health (WOAH) emphasizes that the cross-border movement of live animals and animal products is a primary factor in the spread of *transboundary animal diseases*, therefore, countries are obligated to regulate such traffic through quarantine systems and border surveillance (WOAH, 2024). This legal framework not only strengthens the national biosecurity system but also explicitly designates quarantine veterinarians as quarantine officers with dual authority, performing both technical veterinary oversight and law enforcement functions (Setyawan Pramularsi, Nam Rumkel, 2020).

This research is important because the elements of an offense in animal quarantine crimes differ fundamentally from those of other conventional crimes. The object of the offense is not damage that has already occurred, but rather the potential threat of the spread of animal diseases a condition that is inherently scientific in nature and can only be assessed through *veterinary* expertise (Majiwa, H., Bukachi, S., Omia, D., & Fèvre, 2024). Without a statement from a quarantine veterinarian, the legal requirement to prove the existence of a threat from Quarantine Animal Pests and Diseases as a core element of the offense cannot be met. On the other hand, research by Erniyanti et al. in Batam City revealed ongoing uncertainty among quarantine investigators in enforcing quarantine regulations, stemming from differing interpretations of Law

No. 21 of 2019 and a shortage of human resources (Erniyanti, E., Putri, 2023) . This situation indicates that the weak effectiveness of quarantine law enforcement is not merely a regulatory issue, but also a matter of understanding the roles of officials, including the quarantine veterinarians themselves.

Relevant prior studies provide several key insights that expert testimony serves as key evidence rather than merely supplementary, particularly in cases with few direct witnesses, and *decisively* influences the judge's conviction in rendering a verdict (Erniyanti, E., Putri, 2023) (Prananto, I., Sunardi, S., & Muhibbin, 2023). Furthermore, in the realm of criminal offenses involving animals, the veterinary *examination* report issued by a veterinarian has been recognized as valid documentary evidence under Article 184 of the Criminal Procedure Code and must be considered by the judge (Debi Amalia, Anis Rifai, 2025). On the regulatory front, Law No. 21 of 2019 expands the scope of animal quarantine to include the monitoring of exotic species and wildlife, and mandates the establishment of an integrated quarantine agency, which was ultimately realized as the Indonesian Quarantine Agency (BARANTIN) in 2023 (Priyadi, P., Suhaidi, S., & Isnaini, 2022). Meanwhile, Law No. 21 of 2019 imposes fairly severe criminal penalties (Bernadetha Aurelia Oktavira, 2023).

Although various studies have discussed aspects of quarantine law enforcement, the existing research focus remains partial. Some studies emphasize the investigative authority of Civil Servant Officials (PPNS) in quarantine matters, as well as the application of administrative and criminal sanctions within the normative framework of Law No. 21 of 2019 (Ichsan, M., Asis, A., & Mirzana, 2022). Meanwhile, another study focuses more on wildlife trade governance and the prevention of zoonoses from an ecological perspective (Priyadi, P., Suhaidi, S., & Isnaini, 2022). This study has not specifically addressed the evidentiary dimension in quarantine criminal law, particularly regarding the technical and scientific nature of the offenses. In fact, the primary elements of quarantine criminal offenses are not only related to procedural violations but also concern the risk of spreading Quarantine Animal Pests and Diseases, which requires specialized assessment by Expert Testimony.

Based on this gap, this study proposes the hypothesis that quarantine veterinarians occupy an irreplaceable position in the enforcement of criminal sanctions for animal quarantine; without their role as expert witnesses, the element of disease risk as an essential component of quarantine criminal offenses cannot be legally proven, thereby rendering the enforcement of criminal sanctions ineffective. The variables studied include the legal status of quarantine veterinarians under Law No. 21 of 2019 and the role of quarantine veterinarians in the process of proving animal quarantine offenses (Borbon, 2024).

Several key terms need to be defined for the sake of clarity in this analysis. Quarantine Animal Pests and Diseases (HPHK) refer to pests and animal diseases that can harm the health of animals, humans, and ecosystems, and whose introduction into or spread within Indonesian territory must be prevented (Firman, A., Trisman & Puradireja, 2022). A quarantine veterinarian is a veterinarian appointed as a quarantine official and authorized to carry out quarantine measures as stipulated in Law No. 21 of 2019, whereas biosecurity is a series of policies, procedures, and preventive measures designed to prevent the entry, exit, and spread of pathogenic organisms, including Quarantine Animal Disease Pests, which have the potential to threaten animal health, public health, and environmental sustainability (Narut, M. G. P., Nursalam, N., 2022).

## RESEARCH METHODOLOGY

This study employs a normative legal research method using *a statutory approach* and *a conceptual approach*. The statutory approach was conducted by systematically examining Law No. 21 of 2019 on Animal, Fish, and Plant Quarantine as well as the Criminal Procedure Code (KUHAP) Law of the Republic of Indonesia No. 1 of 2023, to identify the normative framework regarding the authority of quarantine veterinarians and the mechanisms of proof in quarantine-related criminal offenses (Alamri, F, 2025). Meanwhile, the conceptual approach is used to analyze theories of authority such as attribution, delegation, and mandate, as well as theories of proof in criminal law. The collection of legal materials was conducted through the stages of identification, classification, interpretation, and drawing conclusions, in order to systematically explain the relationship between quarantine legal norms and the criminal evidentiary system in determining the position and role of quarantine veterinarians in law enforcement (Yatsenko, I., Tkachuk, S., Savchuk, L., Mushynskiy, A., & Tokarchuk, 2025).

Sampling was conducted using *purposive sampling*; the research instruments involved a review of legal materials and scientific literature, which were then analyzed using *content analysis* to identify and interpret relevant norms and concepts (Surbakti, 2025).

The research procedure was carried out systematically through the stages of legal issue identification, legal material collection, classification and systematization, as well as analysis and interpretation. Data analysis was conducted qualitatively by interpreting legal norms and relating them to the concepts of law enforcement and criminal evidence (Dr. Muhaimin, SH., 2020).

## RESULTS AND DISCUSSION

### Legal Status of Quarantine Veterinarians as Quarantine Officials Under Law No. 21 Of 2019

The legal standing of quarantine veterinarians under Law No. 21 of 2019 on Animal, Fish, and Plant Quarantine is dual in nature both attributive and functional meaning they are Civil Servants (ASN) who hold direct statutory authority to carry out quarantine actions, while simultaneously possessing technical *veterinary* functions that cannot be substituted by any other functional position within the national quarantine system (Priyadi, P., Suhaidi, S., & Isnaini, 2022). This finding is supported by three interrelated legal norms: Article 14 of Law No. 21 of 2019, which defines quarantine officials, Government Regulation No. 29 of 2023, which regulates the competency requirements for quarantine functional positions; as well as Presidential Regulation No. 45 of 2023 on the establishment of the Indonesian Quarantine Agency (BARANTIN), which integrates all quarantine authorities into a single unified institution under the President (Narut, M. G. P., Nursalam, N., 2022).

The significance of these findings lies in the strengthening of the role of quarantine veterinarians as key actors in the national animal health protection system (Erniyanti, E., Putri, 2023). This legal standing is crucial because it defines the scope of authority and responsibility in the implementation of quarantine measures, including in the context of law enforcement. Without clarity regarding *legal standing*, the exercise of authority could potentially lead to legal conflicts or even undermine the effectiveness of the quarantine system itself (Debi Amalia, Anis Rifai, 2025).

Legally, the authority of quarantine veterinarians is an attributive authority derived directly from the law, not the result of delegation or a mandate from a superior. Consistent with the theory of attributive authority developed by Philipus M. Hadjon and widely adopted in the Indonesian administrative law literature, attribution is the grant of governmental authority in the form of original power by the legislature to an organ or official (Suparmin, E., & Miharja, 2022), and thus is directly inherent and does not depend on the authority of another party. This differs from

delegation, which merely transfers a portion of authority from an official who already possesses attributive authority to another official, without removing the ultimate responsibility from the grantor of authority (Hartati, Erna Dwi, 2025). Thus, every quarantine action carried out by a quarantine veterinarian ranging from examination, isolation, observation, treatment, detention, rejection, to the destruction of media possesses legally valid and binding force on its own (Putri, Y., Respationo, S., Erniyanti, E., & Parameshwara, 2023), authority must not be exercised beyond the scope intended by the legislature. Therefore, quarantine veterinarians cannot be positioned merely as technical implementers, but rather as holders of public authority who bear full responsibility for the validity of quarantine actions taken (Nurjannah, Z., Amrullah, R., Susanti, E., Husin, B. R., Farid, 2025). The implication of this study is that when a quarantine veterinarian acts as an expert witness in criminal proceedings, it means that the quarantine veterinarian is not merely a technical implementer; they are a holder of public authority who bears full responsibility for the legality of quarantine actions.

**Table 1.** Elements of Animal Quarantine Offenses and the Role of Quarantine Veterinarians

Elements of the Offense	Legal Basis (Law No. 21 of 2019)	Explanation	Role of the Quarantine Veterinarian
Importing/exporting carriers of animal diseases without health documents from the origin quarantine	Article 86 of Law No. 21 of 2019	Quarantine documents are mandatory administrative requirements that must be fulfilled as proof of the legal status of animal health/products	Issuing and verifying animal health certificates as official quarantine documents
Failure to use designated entry and exit points	Article 87 of Law No. 21 of 2019	Official entry/exit points are designated to facilitate systematic quarantine supervision and inspection	Conducting physical and clinical examinations at quarantine posts designated by the government
Failing to report and submit carrier media to quarantine officers	Article 86 in conjunction with Article 87 of Law No. 21 of 2019	The reporting obligation is intended to enable quarantine authorities to detect potential HPHK threats at an early stage	Receive, examine, and follow up on reports of carrier media entry in accordance with standard operating procedures
Failure to submit a transit certificate if the carrier medium does not pass through a designated transit point	Article 88 of Law No. 21 of 2019	The transit certificate serves to ensure continuity of supervision during inter-regional transit	Issue and validate transit certificates as a form of continuous oversight within the distribution chain

*Source: Author's analysis based on Law No. 21 of 2019*

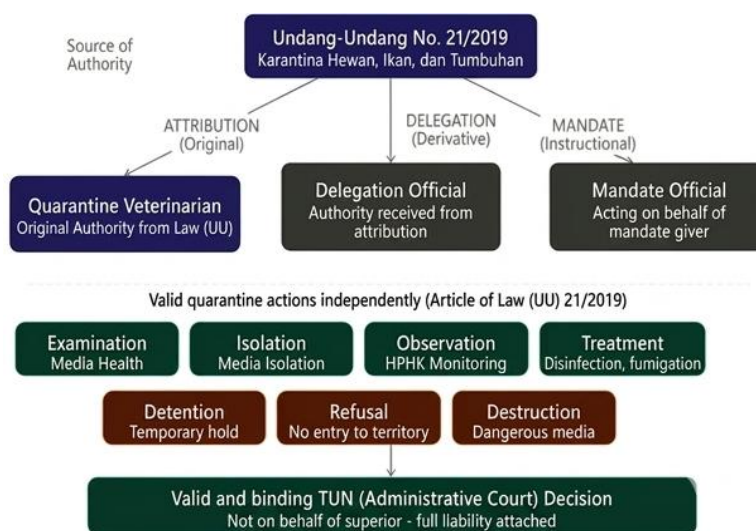
HPHK (Quarantine Animal Pests and Diseases) is the primary technical element in quarantine-related criminal offenses; therefore, proving the elements of the offense requires specialized knowledge and must be supported by expert testimony from an authorized Quarantine Veterinarian, as stipulated in Articles 86–88 of Law No. 21 of 2019 on Animal, Fish, and Plant Quarantine (Simanjuntak, T. G., Harahap, L. R., & Sembiring, 2024). The significance of this finding becomes even more apparent when considered in light of the institutional framework

established following Law No. 21 of 2019 through Presidential Regulation No. 45 of 2023, all quarantine authorities previously dispersed across several ministries have been integrated into BARANTIN as a single agency functioning as the implementer of technical policies, supervisor, coordinator, and direct reporting entity to the President in safeguarding national health, sustainability, and biosecurity (Marianus G. P. Narut, Nursalam, Delila A. Nahak Seran, 2025), clearly strengthens the normative position of quarantine veterinarians, as they are now within a structure with a single chain of command and direct accountability to the head of state, rather than being fragmented across inter-ministerial coordination as under the old regime of Law No. 16 of 1992 (Setyawan Pramularsi, Nam Rumkel, 2020). The Embassy of Indonesia emphasizes the dual role of quarantine veterinarians as functional officials carrying out administrative quarantine actions and simultaneously as PPNS investigators authorized to conduct investigations into quarantine-related criminal offenses (Putri, Y., Respationo, S., Erniyanti, E., & Parameshwara, 2023).

This finding is also consistent with the normative framework in Government Regulation No. 29 of 2023, which stipulates that human resources for quarantine operations consist of quarantine officials within the system for preventing the entry, exit, and spread of quarantine animal pests and diseases, as well as quarantine fish pests and diseases (Admin, 2023).

A study (Nurjannah, Z., Amrullah, R., Susanti, E., Husin, B. R., Farid, 2025) on wildlife trade and zoonotic risks also provides relevant context: the increasing number of alien species and wildlife now falling under Barantin's oversight pursuant to Law No. 21 of 2019 significantly expands the scope of duties for quarantine veterinarians (Suyanto., 2025). This expansion of authority, without being accompanied by legal clarity regarding *the legal standing* of quarantine veterinarians in specific situations, has the potential to create legal uncertainty (Bulu, P., Pasau, P., Lenda, V., Wera, E., Rohyati, E., Welkis, E., Bili, F., Muchlis, M., & Lasakar, 2025). Thus, quarantine veterinarians do not merely serve as technical staff but as public officials possessing legal legitimacy in carrying out state functions in the field of biosecurity.

It should be noted that interpretations of the legal status of quarantine veterinarians as holders of attributive authority are not uniform (Zebua, E., Dahlan, D., Fadhil, S., Respationo, S., & Erniyanti, 2024). There is an alternative perspective that views the authority of quarantine veterinarians as essentially closer to the concept of a mandate rather than pure attribution namely, that quarantine veterinarians exercise authority on behalf of the state or Barantin as the parent institution, and the ultimate legal responsibility remains with the mandating institution. In a mandate, the mandatary acts solely for and on behalf of the mandator, and the ultimate responsibility for decisions made by the mandatary remains with the mandator (Suparmin, E., & Miharja, 2022). This perspective is not entirely incorrect, given that quarantine veterinarians are part of the Barantin bureaucracy, which operates under a command hierarchy. However, this study argues that the attribution framework is more legally appropriate because Law No. 21 of 2019 directly and explicitly grants the authority to carry out quarantine actions to quarantine officials, not to Barantin furthermore, quarantine actions are of a personal and technical nature, which cannot be taken over by *non-veterinary* officials without compromising their scientific validity (Nurjannah, Z., Amrullah, R., Susanti, E., Husin, B. R., Farid, 2025) .



**Figure 1.** Authority of Quarantine Veterinarians

This study has limitations because it uses only a normative approach without empirical field data, so it cannot directly describe how these legal provisions are implemented in practice. Therefore, the results of this study must be understood within the context of normative analysis and cannot be directly generalized to actual field conditions without further empirical research. This alternative interpretation is acknowledged as a limitation of the analysis that warrants further examination in subsequent research.

**Quarantine Veterinarians in the Process of Proving Animal Quarantine Crimes as Expert Witnesses**

An understanding of the role of quarantine veterinarians as expert witnesses must begin with the normative framework of the quarantine offense itself. Law No. 21 of 2019 imposes graduated criminal penalties, while these severe penalties indicate that the legislature views quarantine violations as criminal offenses posing a real risk to the public interest, not merely minor administrative infractions (Simanjuntak, T. G., Harahap, L. R., & Sembiring, 2024) .

However, what fundamentally distinguishes quarantine offenses from conventional criminal offenses is that the object of the offense is not damage or loss that has already occurred and can be observed with the naked eye, but rather the potential threat of the spread of HPHK, which is of a scientific nature. Law No. 21 of 2019 itself emphasizes the scientific principle as one of the foundational principles of quarantine operations, meaning that every quarantine measure must be based on scientific knowledge and employ scientific methods (Firman, A., Trisman & Puradireja, 2022). Consequently, proving the fulfillment of the elements of the offense in quarantine-related criminal acts namely, that the carrier medium introduced without quarantine procedures does indeed have the potential to carry or spread HPHK cannot be done by investigators or judges alone. This assessment *inherently* requires specific veterinary expertise regarding whether the animal exhibits clinical symptoms of HPHK, whether its region of origin is an endemic area for a specific disease, and the extent of the transmission risk (Nurjannah, Z., Amrullah, R., Susanti, E., Husin, B. R., Farid, 2025). Without testimony from a quarantine veterinarian, these scientific questions cannot be answered in the courtroom, making the quarantine veterinarian’s role as an expert witness crucial in bridging the technical and legal aspects of the evidentiary process (Prananto, I., Sunardi, S., & Muhibbin, 2023). Without such expert testimony, the legal elements of certain offenses may potentially not be met.

This finding is consistent with the concept of *the Wettelijk Bewijsstelsel* in criminal law (Mores, C., Castro, M., & De Melo, 2025), which positions expert testimony as a valid form of evidence and assigns it the function of explaining matters beyond the general knowledge of law enforcement officials *Burden of Proof*. Within this framework (Smolin, 2023), quarantine veterinarians serve not only as witnesses but also as scientific interpreters of the conditions at the heart of the case. This aligns with legal literature emphasizing that in cases involving technical or scientific aspects, expert testimony plays a decisive role in assisting judges in forming a conviction regarding a legal event. One of the key findings of this study is that in animal quarantine criminal cases, quarantine veterinarians have the potential to produce two types of evidence simultaneously, both of which are recognized as valid under Article 184 of the Criminal Procedure Code (KUHAP) expert testimony presented orally in court or in writing to investigators, and documentary evidence in the form of official reports on quarantine examination results, which is known as *a visum et repertum* and contains a scientific assessment of the status of the HPHK (Leth-Espensen, 2024).

**Table 2.** Implications Without Expert Testimony and With Expert Testimony (Quarantine Veterinarian)

Aspect	Description	Legal Basis	Implications Without Expert Opinion (Quarantine Veterinarian)	Implications With Expert Testimony (Quarantine Veterinarian)
Basis for Imposing Sanctions	The judge imposes a penalty if the elements of the offense are proven legally and convincingly	Criminal Procedure Code Article 183	If the judge lacks a scientific basis for conviction, the elements of the offense are deemed unproven, and the defendant may be acquitted	If the judge reaches a conviction based on scientific facts, the elements of the offense are met, and a criminal sentence may be imposed
Key Elements of Quarantine Offenses	The risk of spreading HPHK is the primary substance of the violation	Law No. 21 of 2019	The risk of disease cannot be objectively proven, which ultimately renders the material elements of the offense void	The risk of HPHK can be scientifically explained and measured
Evidence: Expert Testimony	Testimony of a quarantine veterinarian as an expert	Criminal Procedure Code Article 1(28) in conjunction with Article 184(1) in conjunction with Article 186	There is no evidence to explain the aspects, and the proof is weak	Expert testimony constitutes valid evidence and can explain technical and scientific aspects
Stages of Using Expert Testimony	Used from the investigation through the trial	Criminal Procedure Code Article 1(28)	The legal process lacks a technical foundation from the outset, and the case file is potentially weak	The evidence has been strengthened from the outset of the legal process due to expert testimony
Consequences	The elements	Criminal	There is a gap in the	The elements of the

Without Expert Testimony	of the offense cannot be fully proven	Procedure Code Article 183	evidence regarding technical elements, and the defendant may be acquitted ( <i>vrijspraak</i> )	offense can be proven completely and convincingly
The Role of the Quarantine Veterinarian	As an expert who assesses health status and disease risk	Law No. 21 of 2019	Technical role not accommodated in the evidence, law enforcement ineffective	Determines the direction of evidence and the success of prosecution

**Source: Author’s Analysis**

However, it is important to note a significant normative limitation here: if a doctor issues a medical certificate and also appears as an expert witness, there are formally two pieces of evidence under Article 184 of the Criminal Procedure Code; however, if these two pieces of evidence originate from the same source, their value may be considered insufficiently strong, as evidence is not evaluated solely by quantity but also by the diversity and quality of evidence sources (Indriati, E., Ana, S., & Nugroho, 2022). This normative implication is important for the enforcement of criminal quarantine law: although a veterinarian’s quarantine statement holds high value and is irreplaceable, it must still be supported by other evidence from different sources, such as testimony from customs officers who witnessed the importation of carrier media without quarantine procedures, or physical evidence in the form of incomplete quarantine documents (Kapiso, P., Tahir, A., Aneta, Y., & Abdussamad, 2025).

**CONCLUSION**

The legal standing of quarantine veterinarians under Law No. 21 of 2019 affirms that this profession holds legitimacy as quarantine officials exercising delegated authority within the national biosecurity system. This role is not limited to administrative functions but also reflects a strategic role in ensuring compliance with animal quarantine regulations. Clarity regarding *legal standing* is undoubtedly crucial as it provides a strong legal foundation for the exercise of authority and ensures certainty and accountability in quarantine actions.

Furthermore, in the context of criminal law enforcement, quarantine veterinarians play a decisive role in the evidentiary process, particularly through their capacity as expert witnesses. The testimony provided is key to explaining the technical and scientific elements of offenses, particularly regarding the risk of animal disease transmission. These findings indicate that the effectiveness of quarantine law enforcement depends not only on applicable legal norms but also on the contribution of scientific expertise capable of bridging technical and legal aspects in the judicial process.

In an academic context, this study reinforces the understanding that animal quarantine law cannot be separated from the scientific dimension of veterinary medicine, and positions quarantine veterinarians as key actors within the system. Thus, these findings are relevant for enriching legal literature that has traditionally focused on institutional aspects, by adding a perspective on the role of individual officials in law enforcement. The implications of this study highlight the need to strengthen the professional capacity and clarify the role of quarantine veterinarians in judicial practice, although it is acknowledged that these findings are limited to normative analysis and do not directly reflect the empirical dynamics in the field.

## DECLARATION OF AI AND AI-ASSISTED TECHNOLOGIES IN THE WRITING PROCESS

The authors express their gratitude to artificial intelligence-based technology for its role in the writing process of this work. During the drafting process, the authors used Claude as a tool to assist with language formulation and the structuring of the text. All results obtained have been critically reviewed and edited by the authors.

## AUTHORS' CONTRIBUTIONS

Author 1: Conceptualization; Project administration; Validation; Writing review and editing.

Author 2: Conceptualization; Data curation; Investigation.

Author 3: Data curation; Investigation.

## DECLARATION OF COMPETING INTERESTS

The authors declare that they have no known financial conflicts of interest or personal relationships that could be considered to influence the work reported in this paper.

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