Law and Technology in Veterinary Medicine: Law, Regulation and Ethics in the Age of Artificial Intelligence

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ABSTRACT

The rapid advancement of digital technologies and artificial intelligence (AI) is profoundly transforming veterinary medicine, affecting clinical practice, management, research, and regulation alike. Algorithm based diagnostic systems, real-time animal monitoring, predictive epidemiology, big data analytics, and AI driven decision support tools are becoming integral components of contemporary veterinary care. At the same time, the integration of these technologies raises complex legal and ethical challenges, including questions of professional and tort liability, data protection and privacy, intellectual property rights, smart contracts, information security, and the preservation of professional judgment. This article examines the existing Israeli legal framework applicable to AI use in veterinary medicine, including copyright law, contract law, tort law, privacy and data protection regulation, and commercial law, and identifies regulatory gaps emerging from the growing reliance on algorithmic systems. The article further explores the implications of international regulatory regimes, particularly the EU General Data Protection Regulation (GDPR), for Israeli veterinary entities engaged in cross-border data processing, as well as the potential role of blockchain technologies in ensuring data integrity and transparency in veterinary medical records. Ethical considerations surrounding autonomous decision making, algorithmic bias, and moral responsibility are analyzed, emphasizing the limits of automation in medical practice. The central conclusion is that the responsible integration of artificial intelligence into veterinary medicine requires updated legislation and a dedicated regulatory framework that balances technological innovation with the protection of animal welfare, data subjects, and the veterinary profession. A multidisciplinary approach combining law, ethics, technology, and veterinary science is essential to ensure safe, ethical, and equitable use of AI in veterinary medicine in the digital age.

Keywords: Veterinary medicine; Artificial intelligence; Health data regulation; Professional liability; Privacy protection; Intellectual property; Smart contracts; Blockchain; Veterinary ethics; Digital health.

INTRODUCTION

Veterinary medicine, like other fields of science and medicine, is increasingly influenced by the rapid development of digital technologies and artificial intelligence (AI). These technologies enable computerized diagnostic systems, real-time monitoring of animals, predictive epidemiology, management of medical databases, and the use of AI-based learning algorithms which have become an integral part of modern veterinary practice.

However, these developments raise complex questions regarding liability, privacy, intellectual property, and professional ethics. The integration of AI, data protection, and digital tools in veterinary medicine requires updated legal and regulatory frameworks to ensure the safe, ethical, and equitable use of information and technological systems.

AUTHORSHIP AND INTELLECTUAL PROPERTY PROTECTION

One of the key questions in the age of AI concerns authorship: who is considered the "creator" of an algorithm, article, or medical output produced by or with the assistance of artificial intelligence?

Under the Copyright Law, 2007, copyright protection is granted to a "creator" – a term not explicitly defined. The prevailing interpretation recognizes only a natural person as a creator; therefore, a work generated autonomously by AI is not necessarily eligible for protection.

However, when a veterinarian or institution actively contributes through data input, training, or processing, it can be argued that they are the creator or, at the very least, the rights holder.

In cases where an AI system develops diagnostic modules, interprets findings, or produces treatment recommendations based on medical data and accumulated knowledge, ownership of the resulting work may belong to the operator or the veterinary institution that collected and managed the dataset. This scenario suggests the need to update the legal definitions of "creator" and "original work" to include algorithm-based outputs. Moreover, liability questions must be addressed – whether responsibility lies with the operator or the AI itself, and what the implications of such distinctions are.

CONTRACTS AND SMART AGREEMENTS IN VETERINARY MEDICINE

In the digital era, contracts and agreements in the fields of veterinary practice, medical research, and innovation may be concluded automatically through computerized systems.

According to the Contracts (General Part) Law, 1973, an agreement requires intent and consent between parties. But who are the "parties" when technology mediates the transaction?

Smart contracts, based on blockchain technology, automate the fulfillment of contractual obligations – for example, an agreement between a veterinarian and an animal owner, or between a pharmaceutical supplier and a veterinary hospital.

As with traditional contracts, these raise questions about good faith, professional liability, and legal validity. Since AI lacks legal personality, liability ultimately rests with the human or corporation operating the system. Courts will therefore need to interpret the parties' intent and the contract's enforceability even when executed autonomously by AI.

PRIVACY, MEDICAL DATA, AND ETHICS

The scope of data collected in veterinary systems – including GPS tracking, treatment records, genetic information, and informed-consent databases – necessitates strict adherence to privacy and data protection obligations.

Under the Privacy Protection Law, 1981, a "database" is defined as a collection of information about individuals or entities, including health or economic data. Every database in Israel must be registered with the Registrar of Databases, and its owner bears responsibility for its security.

In veterinary medicine, this obligation is broader because animal health databases often include data about their owners – sometimes sensitive or commercial in nature. Thus, animal-related privacy and human privacy are closely linked, whether dealing with livestock or companion animals.

This reality calls for legislative updates establishing clear standards for informed consent and medical confidentiality concerning animals, ensuring responsible use of veterinary health data for research and national interests while safeguarding the rights of animal owners.

LEGAL AND TORT LIABILITY

If a veterinary AI system provides an incorrect diagnosis or treatment recommendation that results in negligence, the legislature must define liability among the software developer, manufacturer, operator, or the veterinarian using the system.

Tort and contract law principles apply here as well: as long as AI is considered an assistive tool rather than a substitute for professional judgment, primary liability rests with the veterinarian. However, if a built-in system failure is proven, responsibility may extend to the algorithm developer or software provider.

Additionally, violations of trade secrets, intentional data theft, or industrial espionage constitute civil wrongs and may also be criminal offenses under the Commercial Torts Law, 1999, and the Unjust Enrichment Law, 1979.

REGULATION AND BLOCKCHAIN IN VETERINARY MEDICAL DATA

The field of Big Data in veterinary medicine is rapidly expanding, integrating private and commercial health data, genetic information, and research databases. This growth necessitates new regulatory frameworks to define boundaries for data use.

Importantly, the EU General Data Protection Regulation (GDPR) affects Israeli entities that process data on EU citizens, requiring compliance with European privacy standards. This is especially relevant for the analysis of disease data, animal imports, zoonotic diseases, and vaccine development using computerized systems.

Blockchain technologies, when supported by appropriate regulation, can enhance transparency and data integrity in tracking animal diseases, medical innovations, treatments, and follow-ups. At the same time, they raise concerns about legal authority, confidentiality, and recognition of digital signatures under the Electronic Signature Law, 2001.

ETHICAL AND SOCIAL CONSIDERATIONS

Artificial intelligence can detect pathologies, suggest treatments, and make decisions in real time. However, it is essential to evaluate veterinary data libraries and algorithmic decision-making through an ethical lens – particularly regarding the balance between automation and professional judgment.

Allowing AI to make medical decisions independently raises questions of ethical boundaries, data bias, and moral responsibility. Therefore, continuous ethical dialogue and collaboration between jurists, engineers, and veterinarians are required to establish policy that protects the public, animals, and innovators while encouraging responsible technological progress.

FUTURE OUTLOOK

As artificial intelligence becomes central to veterinary medicine, the Israeli legislature will need to update existing laws and redefine the relationship between humans, machines, and animals.

In the near future, specific legislation will likely be required to regulate AI-based veterinary systems, clarifying levels of liability, negligence, and recognizing veterinary data as a legally protected economic asset. Establishing technological ethics committees within veterinary authorities will be essential to set operational and ethical standards for data use and AI system management.

CONCLUSIONS

The digital revolution in veterinary medicine is not merely technological – it is also moral, social, and legal. Questions of liability, privacy, intellectual property, and the boundaries of AI use demand modern legal frameworks balancing innovation with protection of the public and animal welfare.

Without updated legislation, scientific progress risks creating ethical and legal gaps. Conversely, with a balanced integration of law, technology, and ethics, veterinary medicine can remain an advanced, safe, and vital to the profession – even in the age of artificial intelligence.