ARCHIVES OF THE TURKISH SOCIETY OF CARDIOLOGY

Official journal of the TURKISH SOCIETY OF CARDIOLOGY

Legal Artificial Intelligence in Interventional Cardiology: Ethical Boundaries and Decision Support Opportunities in the Turkish Legal Context

Girişimsel Kardiyolojide Yasal Yapay Zeka: Türk Hukuk Sistemi Bağlamında Etik Sınırlar ve Karar Destek Olanakları

PERSPECTIVE
GÖRÜŞ

Artificial intelligence (AI) is increasingly applied to legal reasoning across various fields. Physicians in Türkiye and worldwide are beginning to consult AI tools for matters such as malpractice evaluation, labor disputes, compensation claims, and criminal liability.[1,2] Although these systems offer efficiency and accessibility, their use in clinical decision-making—especially in high-risk specialties like interventional cardiology—poses significant ethical and legal challenges.[3,4] In this context, we believe that this manuscript not only highlights theoretical concerns but also attempts to link AI-assisted legal reasoning with practical cardiology settings, aiming to provide more clinically grounded insights.

For instance, in a complex percutaneous coronary intervention (PCI), an AI system could theoretically provide real-time alerts regarding informed consent deficiencies, previous litigation patterns, or guideline deviations.[5]. In practice, such alerts could directly influence operator behavior during high-risk PCI by prompting immediate consent review or recommending documentation updates, thereby connecting abstract legal oversight with actual procedural workflow. If properly implemented, such tools may help mitigate risk, streamline documentation, and enhance patient safety. This conceptual analysis argues that while legal AI can serve as a valuable decision-support tool in interventional cardiology by improving medico-legal awareness, its integration into the Turkish healthcare system must be strictly circumscribed by ethical guidelines and regulatory frameworks to prevent unauthorized practice of law and protect physicians from increased liability.

The Rise of Legal AI: A Global Overview

Globally, legal AI systems such as IBM Watson Legal, ROSS Intelligence, DoNotPay, and CaseMine have been developed to analyze case law, statutory text, and regulatory codes.[1] In the United States, the United Kingdom (UK), and Singapore, these tools assist in contract review, litigation risk assessment, and legal precedent extraction.[2] China's XiaoFa system goes further by assisting courts with sentencing and drafting basic legal documents.[3]

In healthcare, particularly in malpractice risk assessment, some U.S. hospitals and insurers have adopted AI to predict indemnity ranges and guide pre-litigation settlement discussions.[4] However, these platforms are generally used by legal professionals, not by physicians acting independently.

Legal Competence and Interpretive Limitations in Türkiye

Türkiye's legal system is jurisprudential and evolves through constitutional court rulings and legislative updates. AI lacks the interpretive flexibility to navigate this legal environment effectively. Medical liability, under Article 36 of the Turkish Penal Code and Law No. 6098, often hinges on contextual evidence and expert testimony—factors beyond the current capabilities of AI systems.[6,7]

Moreover, the Attorneyship Law (Article 35) prohibits non-lawyers, including AI, from offering legal counsel.[7] Labor law miscalculations can lead to financial penalties, further emphasizing the need for authorized legal interpretation.

Most Turkish physicians—especially in invasive specialties—receive minimal training on legal liability during their education.[8] Legal AI could play a supplementary role by flagging incomplete documentation before procedures such as device implantation or off-label interventions,[1,4] helping bridge knowledge gaps without supplanting legal counsel.

Saadet Deniz Göçer[1]
Hakan Göçer[2]
Ahmet Barış Durukan[3]

[1]*Yaşar University, Faculty of Law, İzmir, Türkiye*
[2]*Department of Cardiology, Private Edremit Korfez Hospital, Kütahya Park Hayat Hospital, Balıkesir, Türkiye*
[3]*Department of Cardiovascular Surgery, Ankara Liv Hospital, İstinye University Faculty of Medicine, Ankara, Türkiye*

Corresponding author:
Ahmet Barış Durukan
✉ barisdurukan@yahoo.com

Received: August 08, 2025
Accepted: September 27, 2025

Cite this article as: Göçer SD, Göçer H, Durukan AB. Legal Artificial Intelligence in Interventional Cardiology: Ethical Boundaries and Decision Support Opportunities in the Turkish Legal Context. *Turk Kardiyol Dern Ars.* 2026;54(1):1–3.

DOI: 10.5543/tkda.2025.06634

Materials and Methods

This study adopted a qualitative conceptual analysis approach, involving a systematic review and synthesis of relevant national and international legal documents, ethical guidelines, and AI system functionalities. The analysis focused on identifying core tensions, opportunities, and limitations at the intersection of legal AI and clinical practice in interventional cardiology.

Key legal documents, including the Turkish Penal Code, Personal Data Protection Law (PDPL), and Turkish Medical Association (TMA) guidelines, were reviewed, along with international documentation from legal AI systems such as ROSS, XiaoFa, and DoNotPay.[1,3,7,8]

Three simulated scenarios were constructed to test legal AI applications in cardiology:

1. PCI in an elderly multimorbid patient;
2. Pacemaker implantation with incomplete consent;
3. Transcatheter aortic valve implantation (TAVI) in a patient with limited decision-making capacity.[5]

Each scenario was analyzed in terms of how AI might offer real-time legal alerts regarding documentation, consent, or procedural compliance. Scenarios were assessed through the lens of Turkish constitutional law and medical ethics.[6,9,10]

Results

The analysis revealed five key limitations:

1. Legal inadmissibility: AI cannot offer binding legal advice under Turkish law.[7]
2. Judicial non-delegability: Courts retain sole authority over legal interpretation.[9]
3. Professional liability: Medical responsibility is non-transferable.[8]
4. Data privacy risks: Inputting sensitive data into AI systems without consent may breach the PDPL.[10]
5. Educational deficits: Cardiologists often lack legal training, leaving them vulnerable to liability exposure.[5,11]

While AI systems can highlight red flags in documentation, they are not capable of rendering context-sensitive legal interpretations under Turkish law.[7]

Discussion

Interventional cardiology involves high-stakes, time-sensitive procedures, often performed with limited legal oversight. Legal AI could function analogously to clinical decision support systems (CDSS), providing alerts about documentation gaps or evolving regulations.[11] For example, before scheduling a rotational atherectomy, the system might advise revising consent documents due to recent complications in similar cases. Similarly, during transcatheter aortic valve implantation, AI could flag incomplete risk disclosure in patients with frailty, thereby directly linking legal oversight with procedural ethics.

However, reliance on AI must be tempered. A critical issue beyond regulation is the "black box" problem of some AI systems, where the rationale for a legal alert may not be transparent. This lack of explainability could undermine a physician's ability to trust and appropriately act upon the AI's suggestions, potentially creating a false sense of security or unnecessary alarm.

Unregulated use could violate constitutional boundaries and increase malpractice exposure.[7,12] These systems should function as supportive informational tools, not legal arbiters.[12] By incorporating such concrete cardiology examples, the conceptual framework gains greater clinical applicability and avoids repetitive theoretical assertions.

Integration with hospital information systems (HIS) and catheterization laboratory workflows could allow AI to assist with real-time documentation and consent processes,[5] provided there are ethical and legal safeguards in place.[8,10]

Recommendations

1. Restrict AI to supportive roles: AI should assist only with regulatory indexing, not final legal interpretation.[7,12]
2. Create ethical guidelines: The TMA and the Bar Association should define the ethical limits of legal AI in healthcare.[8,12]
3. Mandate disclaimers: All AI tools must clearly state that outputs are not legally binding.[12]
4. Regulatory action: Dedicated national legislation is needed to govern legal AI in clinical settings.[11]

Conclusion

Legal AI holds promise for enhancing medico-legal awareness in interventional cardiology.[5] However, without ethical constraints, regulatory oversight, and proper training, such tools could become liabilities rather than safeguards.[7,12] This paper emphasizes that the integration of legal AI must be contextualized through clinical scenarios (e.g., PCI, pacemaker implantation, TAVI) to remain relevant for practitioners. Thus, the recommendations bridge conceptual analysis with daily interventional cardiology practice. Structured integration through legislation, education, and interdisciplinary collaboration is essential to ensure AI functions as an aid, not an authority.[8,11]

Future research should focus on empirical validation of the conceptual framework presented in this paper. Real-world studies integrating AI-assisted legal alerts into interventional cardiology procedures such as PCI, pacemaker implantation, and TAVI are essential to assess feasibility, physician acceptance, and medico-legal outcomes. Such validation would provide stronger evidence for policy development and safe implementation in the Turkish healthcare context.

Conflict of Interest: The authors have no conflicts of interest to declare.

Funding: The authors declared that this study received no financial support.

Use of AI for Writing Assistance: AI-assissted technologies were not used in this article.

Author Contributions: Concept – S.D.G., H.G., A.B.D.; Design – S.D.G., H.G., A.B.D.; Supervision – S.D.G., H.G., A.B.D.; Resource – S.D.G., H.G., A.B.D.; Materials – S.D.G., H.G., A.B.D.; Data Collection and/or Processing – S.D.G., H.G., A.B.D.; Analysis and/or Interpretation – S.D.G., H.G., A.B.D.; Literature Review – S.D.G., H.G., A.B.D.; Writing – S.D.G., H.G., A.B.D.; Critical Review – S.D.G., H.G., A.B.D.

Peer-review: Externally peer-reviewed.

References

1. Ashley KD. Artificial intelligence and legal analytics: new tools for law practice in the digital age. *Cambridge University Press*; 2017. [CrossRef]
2. Surden H. Artificial intelligence and law: an overview. *Ga St Univ Law Rev*. 2019;35(4):1305–1333.
3. Wang N, Tian MY. 'Intelligent Justice': AI Implementationsin China's Legal Systems. Artificial Intelligence and Its Discontents. In: Ariane Hanemaayer, ed. Artificial Intelligence and Its Discontents. *Palgrave Macmillain*; 2022;197–222. [CrossRef]
4. Obermeyer Z, Emanuel EJ. Predicting the Future - Big Data, Machine Learning, and Clinical Medicine. *N Engl J Med*. 2016;375(13):1216–1219. [CrossRef]
5. Alsharqi M, Edelman ER. Artificial Intelligence in Cardiovascular Imaging and Interventional Cardiology: Emerging Trends and Clinical Implications. *J Soc Cardiovasc Angiogr Interv*. 2025;4(3Part B):102558. [CrossRef]
6. Turkish Penal Code (Law No. 5237), Article 36. Accessed October 2, 2025. https://mevzuat.gov.tr/mevzuat?MevzuatNo=5237&MevzuatTur=1&MevzuatTertip=5
7. Attorneyship Law (Law No. 1136), Article 35; Labor Law (Law No. 4857), Articles 17–21. Accessed October 2, 2025. https://d.barobirlik.org.tr/mevzuat/avukata_ozel/avukatlik_kanunu/1136sayiliavukatlikkanunu.pdf
8. Turkish Medical Association (TTB). Medical ethics guidelines. Ankara: TTB; 2020. Accessed October 2, 2025. https://www.ttb.org.tr/kutuphane/etikbildirgeler2020.pdf
9. Constitution of the Republic of Turkey, Article 138. Accessed October 2, 2025. https://www.anayasa.gov.tr/tr/mevzuat/anayasa/
10. Law on the Protection of Personal Data (PDPL), Law No. 6698; Constitution of the Republic of Turkey, Article 20. Accessed October 2, 2025. https://www.mevzuat.gov.tr/mevzuat?MevzuatNo=6698&MevzuatTur=1&MevzuatTertip=5
11. World Health Organization. Ethics and governance of artificial intelligence for health. Accessed October 10, 2025. https://www.who.int/publications/i/item/9789240084759
12. Mittelstadt BD, Allo P, Taddeo M, Wachter S, Floridi L. The ethics of algorithms: mapping the debate. *Big Data Soc*. 2016;3(2):1–21. [CrossRef]