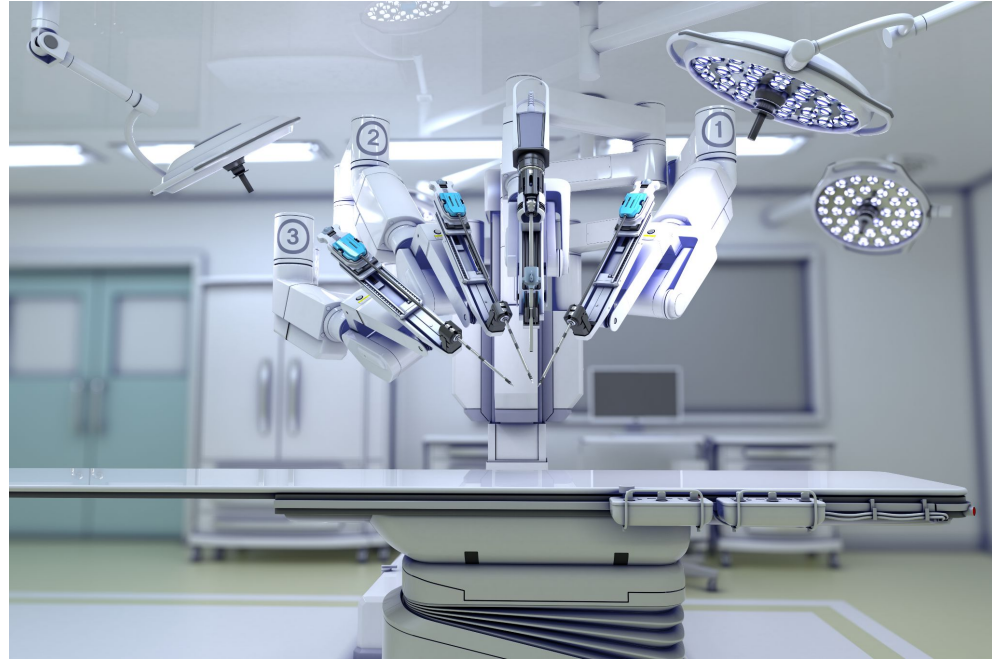# Determining Liability in AI-related Medical Errors

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DTSC - 690

AI's Role in Healthcare

- Diagnosis
- Medical Imaging
- Robotic Assisted surgeries
- Forecast models

"Da Vinci Surgery: Robot-Assisted Laparoscopic System in Action."
Image source: Urology Austin (cited in the references slide)

(Jiang, F. et al., 2017), (Killock, D., 2020), (Hampson, M., 2022, July)

Legal Framework for Medical Liability

- Traditional legal framework
    - Medical malpractice
    - Product liability
- AI - inclusive legal framework

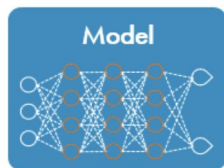(Price, W. N., 2021), (Froomkin, A. M. et al., 2019), (Burrell, J. 2016)

AI-Related Medical Errors and Liability Challenges

- IBM Watson Case
- Epic Sepsis Model
- Babylon Health AI Chatbot Controversy
- Algorithmic Bias in Healthcare

(Ross, C., & Swetlitz, I. 2018, July 25), (Wong, A. et al., 2021), (Daneshjou et al., 2022), (Hsu, J. , 2019)

SAMPLING BIAS
A selection bias example

1 ALGORITHM TRAINING

Training data

Model

The training set contains a representative selection of the population with skin cancer, however, it contains very little examples of people with dark skin

Algorithm training

Trained algorithm

Algorithm application

2 ALGORITHM APPLICATION

The algorithm will have a lower accuracy rate for classification of a person with dark skin as it has seen mainly examples of people with white skin

Skin cancer

No skin cancer

Quantib

- Lack of diverse training data
- Reduced algorithm performance
- Higher risk of missed skin cancer diagnoses

Image source: Quantib. (2019.). Sampling bias: A selection bias example. Retrieved from https://www.quantib.com

Ethical challenges in AI Medical Decisions

- Privacy and data protection
- Informed consent and patient autonomy
- Human centered care
- Social Inequality

(Farhud, D. D., & Zokaei, S., 2021), (Dankwa-Mullan I., 2024)

Policy Recommendations and Future Directions

- Improved Physician training on AI tools
- Standardize AI testing protocols
- Transparency mandates
- Continued support for ongoing legislative efforts

(Kiseleva, A., Kotzinos, D., & De Hert, P. 2022), (OMC Medical. 2025), (European Union. 2024), Matheny, M. E et al. (2025)

Conclusion

Major Takeaway

- Clear accountability structures and robust safeguards

Works Cited

- Jiang, F., et al. (2017). *Artificial intelligence in healthcare: Past, present, and future*. *Stroke and Vascular Neurology*, *2*(4), 230–243. https://doi.org/10.1136/svn-2017-000101
- Killock, D. (2020). *AI outperforms radiologists in mammographic screening*. *Nature Reviews Clinical Oncology*, *17*(2), 134. https://doi.org/10.1038/s41571-020-0329-7
- Hampson, M. (2022, July). *Robot outperforms a surgeon in a precision training task*. *IEEE Spectrum*. Retrieved from https://spectrum.ieee.org/robot-outperforms-a-surgeon-in-a-precision-training-task
- Price, W. N. (2021). *Artificial intelligence in healthcare: Applications and legal implications*. *The Journal of Law, Medicine & Ethics*, *49*(3), 326–339.
- Froomkin, A. M., Kerr, I. R., & Pineau, J. (2019). *When AIs outperform doctors: Confronting the challenges of a tort-induced over-reliance on machine learning. Arizona Law Review*, *61*(1), 33–72. *University of Miami Legal Studies Research Paper No. 18-3.*
- Burrell, J. (2016). *How the machine 'thinks': Understanding opacity in machine learning algorithms*. *Big Data & Society*, *3*(1), 1–12. https://doi.org/10.1177/2053951715622512
- Ross, C., & Swetlitz, I. (2018, July 25). *IBM's Watson supercomputer recommended 'unsafe and incorrect' cancer treatments, internal documents show. STAT News*. Retrieved from https://www.statnews.com/2018/07/25/ibm-watson-recommended-unsafe-incorrect-treatments/
- Wong, A., Otles, E., Donnelly, J. P., Krumm, A., Matsushita, K., & Kadri, S. S. (2021). *External validation of a widely implemented proprietary sepsis prediction model in hospitalized patients*. *JAMA Internal Medicine*, *181*(8), 1065–1070. https://doi.org/10.1001/jamainternmed.2021.2626

Works Cited (Continued)

- Daneshjou, R., Smith, M. P., Sun, M., Rotemberg, V., & Zou, J. (2022). *Disparities in dermatology AI performance on a diverse, curated clinical image set. Science Advances*, *8*(24), eabq6147. https://doi.org/10.1126/sciadv.abq6147
- Hsu, J. (2019, December 9). *Medical advice from a bot: The unproven promise of Babylon Health*. *Undark*. Retrieved from https://undark.org
- Farhud, D. D., & Zokaei, S. (2021). *Ethical issues of artificial intelligence in medicine and healthcare. Iranian Journal of Public Health*, *50*(11), i–v. https://doi.org/10.18502/ijph.v50i11.7600
- Dankwa-Mullan, I. (2024). *Health equity and ethical considerations in using artificial intelligence in public health and medicine. Preventing Chronic Disease*, *21*, 240245. https://doi.org/10.5888/pcd21.240245
- Kiseleva, A., Kotzinos, D., & De Hert, P. (2022). *Transparency of AI in healthcare as a multilayered system of accountabilities: Between legal requirements and technical limitations. Frontiers in Artificial Intelligence*, *5*, 879603. https://doi.org/10.3389/frai.2022.879603
- OMC Medical. (2025). *US FDA draft guidelines for AI-enabled medical devices*. Retrieved from https://omcmedical.com
- European Union. (2024). *The EU Artificial Intelligence Act: Legal framework for AI development and use*. *Official Journal of the EU*. Published July 12, 2024. Retrieved from https://euaiact.com
- Matheny, M. E., Goldsack, J. C., Saria, S., Shah, N. H., Gerhart, J., Cohen, I. G., Price, W. N. II, Patel, B., Payne, P. R. O., Embí, P. J., Anderson, B., & Horvitz, E. (2025). *Artificial intelligence in health and health care: Priorities for action. Health Affairs*, *44*(2), 163–170.
- Urology Austin. (n.d.). Da Vinci surgery: *Robot-assisted laparoscopic surgery*. Retrieved February 18, 2025, from https://www.urologyaustin.com
- Quantib. (2019.). Sampling bias: A selection bias example. Retrieved from https://www.quantib.com