

The Algorithmic Divide: How AI Affects Healthcare Justice

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Abstract

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Artificial Intelligence (AI) is rapidly transforming healthcare, promising unprecedented efficiencies in diagnosis, treatment, and resource allocation. From sophisticated image analysis to predictive modeling for patient risk, AI's potential to revolutionize medicine is undeniable. However, as these powerful algorithms are integrated into the clinical workflow, a critical question emerges: **How does AI affect healthcare justice?** The answer is complex, revealing a double-edged sword where AI can both bridge and widen the existing chasms of health inequity.

The Promise of Equitable Care

In theory, AI should be a great equalizer. By automating complex tasks and standardizing diagnostic processes, AI can reduce human error and variability, leading to more consistent and potentially higher-quality care across different settings. For underserved communities, AI-powered tools could offer access to specialist-level expertise in remote or resource-poor areas, effectively democratizing medical knowledge. For instance, an AI system for diabetic retinopathy screening could be deployed in a rural clinic, providing a level of diagnostic accuracy previously only available in a major metropolitan hospital. This potential for **distributive justice**—the fair allocation of resources—is a powerful argument for AI's adoption.

Furthermore, AI can analyze vast datasets to uncover patterns in disease progression and treatment efficacy that are invisible to the human eye. This capability could lead to personalized medicine that is truly tailored to an individual's unique biological and social context, moving beyond one-size-fits-all approaches that often fail marginalized groups.

The Peril of Embedded Bias

The most significant threat AI poses to healthcare justice lies in the perpetuation and amplification of existing systemic biases. AI models are only as good as the data they are trained on. If the training data reflects historical inequalities—such as underrepresentation of certain racial, ethnic, or socioeconomic groups, or a history of differential treatment—the resulting algorithm will inevitably learn and encode these biases.

A well-documented example is the use of predictive algorithms for managing patient health. Studies have shown that some algorithms, designed to predict which patients would benefit from high-risk care management programs, systematically underestimated the health needs of Black patients compared to white patients with the same level of illness. This was because the algorithm used healthcare spending as a proxy for health need, and due to systemic barriers, less money was historically spent on Black patients, leading to a biased prediction and unequal access to critical care programs [1].

This issue of **procedural justice**—the fairness of the decision-making process—is paramount. When an opaque algorithm, often referred to as a "black box," makes a biased recommendation, it can solidify and automate discrimination, making it harder to detect and correct than human bias. The lack of transparency in how these models arrive at their conclusions erodes patient trust and makes accountability difficult.

Strategies for a Just AI Future

Achieving a just AI future in healthcare requires a multi-pronged approach that moves beyond simply identifying bias to actively mitigating it.

1. **Data Equity and Representation:** Developers must prioritize collecting and curating diverse, representative datasets that accurately reflect the entire patient population. This includes incorporating **Social Determinants of Health (SDOH)**—such as socioeconomic status, education, and environment—into the data to provide a more holistic and equitable view of patient needs.
2. **Algorithmic Fairness and Auditing:** Algorithms must be rigorously audited for fairness metrics *before* deployment. This involves testing the model's performance across different demographic subgroups to ensure equitable outcomes. Furthermore, developing more interpretable, "white-box" AI models can enhance transparency and allow clinicians to understand and challenge biased recommendations.
3. **Policy and Regulation:** Robust regulatory frameworks are essential to mandate fairness, transparency, and accountability. These policies must establish clear lines of responsibility for adverse outcomes and ensure that patients have a right to an explanation for AI-driven decisions.

The integration of AI into healthcare is not merely a technical challenge; it is a profound ethical and social one. The pursuit of technological advancement must be inextricably linked to the pursuit of justice. For more in-depth analysis on this topic, the resources at [www.rasitdinc.com] (<https://www.rasitdinc.com>) provide expert commentary on the intersection of digital health, ethics, and policy, offering valuable insights for professionals

navigating this new landscape.

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