# Leveraging AI for Healthcare:
## Ethical Challenges and Responsible Adoption

**Umunakwe Onyinye Bruno**
*Brigham Young University - Idaho, USA*

## ABSTRACT

*The recent adoption of artificial intelligence (AI) in the healthcare system has contributed significantly to disease diagnosis and treatment, predicting health risks, and overall offer medical efficiencies. This creates an ethical setting where medical treatments are offered based on accuracies and the physical well-being of patients improved. This article examines the ethical importance in leveraging AI for healthcare practices. Scoping review was adopted to explore concepts of healthcare systems, ethics, and how AI has sustained healthcare practice. The findings show that the introduction of AI in the healthcare system has brought innovations that have fostered and enhanced decision-making. Healthcare givers quickly respond and address any medical issue. It is concluded that leveraging AI for healthcare practices is ethically justified in the sense that AI offers deep strategies in improving human wellbeing.*

## INTRODUCTION

For years, healthcare systems have been at the forefront of embracing cutting-edge technologies ranging from digital medical records to AI-powered diagnostic tools. Today, the emergence of generative AI is driving a revolutionary change. Breakthroughs such as ChatGPT, Gemini, and sophisticated clinical decision-support systems are no longer just experimental but are actively reshaping patient care and clinician workflows. Adegbesan et al (2024) inform that, presently, multiple branches of artificial intelligence including deep learning, natural language processing, computer vision, and neural networks significantly contribute to the expanding and varied applications of AI in healthcare. Instead of being displaced by automation, healthcare professionals are evolving into essential guides in a world where medical expertise is both expansive and increasingly influenced by AI-generated intelligence. Hence, the rise of artificial intelligence (AI) in healthcare has been revolutionary, transforming patient diagnosis, treatment, and monitoring. Moreover, since the adoption of AI, it has significantly advance medical research and improve patient results by enhancing the precision of medical assessments and facilitates tailored therapies, However, this rapid integration surfaces profound ethical dilemmas. Instances of pulse oximeter bias, where inaccurate readings for patients with darker skin tones lead to undetected

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hypoxemia, and diagnostic AI errors stemming from biased training data exemplify the tangible harms that can arise (Norori et al., 2021; Carey et al., 2024). These real-world cases underscore that the ethical challenges of AI are not abstract but directly impact patient safety and equity.

To systematically analyze these challenges, this chapter employs the principlism framework - a cornerstone of biomedical ethics built on autonomy, beneficence, non-maleficence, and justice (Beauchamp & Childress, 1979). Through this lens, how specific AI failures and risks violate these core principles were examined. For instance, biased algorithms breach justice by producing inequitable outcomes and non-maleficence by causing harm to marginalized groups. Similarly, opaque AI decision-making can undermine autonomy by eroding informed consent, while over-reliance on AI may weaken the empathetic patient-clinician relationship, conflicting with beneficence. By grounding the discussion in concrete examples and principlist analysis, this chapter seeks to provide a structured ethical appraisal of AI in healthcare, proposing balanced, actionable pathways for responsible adoption as of 2026.

## BACKGROUND AND LITERATURE REVIEW

Since the U.S. Food and Drug Administration (FDA) approved the first AI-powered medical device in 1995, AI has shown its ability to revolutionize healthcare, with uses ranging from tailored treatments and improved diagnostics to predictive modelling and remote medical services. For example, IDx-DR which was the first FDA-authorized AI system could independently diagnose patients in any medical specialty. The organisation also approved the GI Genius for market use, marking it as the first AI-powered device that leverages machine learning to help doctors identify potential abnormalities like polyps or suspected tumours in the colon during live colonoscopy procedures. With these innovations, AI holds the promise of revolutionizing healthcare by enhancing provider support and improving patient outcomes. For instance, Alowais et al (2023) in their study show that AI has proven more effective than radiologists in detecting early breast cancer, achieving a 91% detection rate compared to 74%. In dermatology, deep learning systems have outperformed dermatologists in diagnosing skin cancer and recommending treatments. Beyond oncology, AI has shown promise in identifying diabetic retinopathy, analysing heart rhythm abnormalities, and assessing cardiovascular risk factors. AI also excels in medical imaging. For example, deep learning algorithms can detect pneumonia in chest X-rays with 96% sensitivity, significantly higher than radiologists' 50% sensitivity. Additionally, machine learning has been used to improve appendicitis diagnosis. A random forest algorithm accurately predicted the need for surgery 83.75% of the time, with high precision and reliability. These advancements enable faster, more accurate clinical decision-making. Beyond these innovations, AI has aids in diagnostic processes by detecting subtle irregularities in imaging scans, helping to pinpoint diagnoses based on symptoms and vital signs. It has also fostered in categorizing patients, managing and monitoring medical records, and processing health insurance claims. Basically, AI is being more widely adopted in healthcare to improve accuracy, efficiency, and patient outcomes though the use of AI also presents several challenges, leading to apprehension among both medical professionals and patients. The risk of mistakes, data privacy issues, biased algorithms, and the possibility of technology overshadowing human expertise affect negatively the ethical use of AI in healthcare system. For instance, patients may become less empathetic, caring, and socially appropriate when interacting with robotic doctors and nurses, as these machines lack human qualities like warmth and understanding. While AI delivers significant advantages, it has closed the gap in healthcare by improving diagnostic speed and accuracy, reducing human error in medical imaging and data analysis. It has also ad-