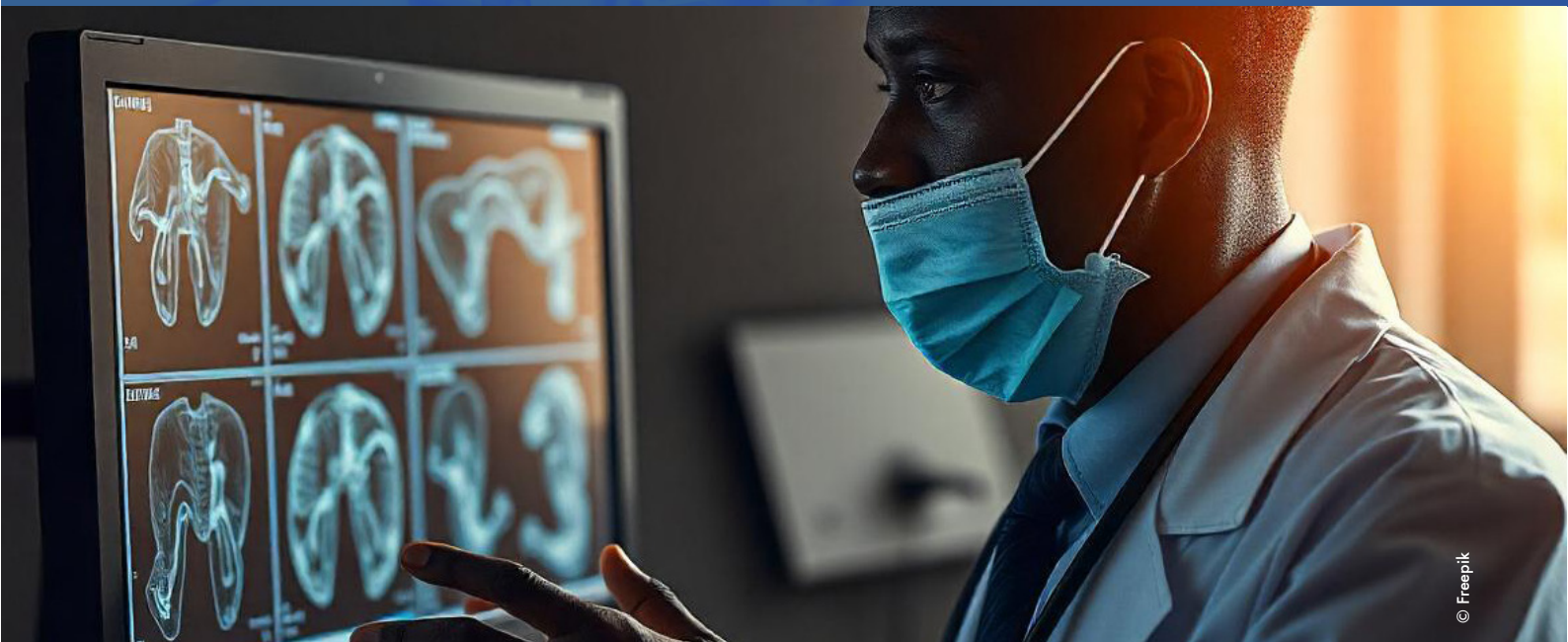


Application of Artificial Intelligence in Healthcare Systems in Africa



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Policy Brief

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Key Messages

- ✓ Artificial intelligence (AI) refers to the simulation of human intelligence processes such as learning, reasoning and self-correction, by computer systems.
- ✓ The adoption of AI in Africa's health sector can optimise healthcare delivery and improve patient outcomes.
- ✓ Current AI application in Africa ranges from diagnosis and personalised care to drug design and development.
- ✓ Lack of good-quality data, limited infrastructure, and skills gaps limit the use of AI on the continent.
- ✓ Strong regulatory frameworks and public-private partnerships can advance AI applications in Africa.

Context

Adoption of Artificial Intelligence (AI) in the healthcare sector in Africa offers opportunities to expand access to services across all levels of care. AI has the potential to transform many aspects of healthcare. It promises a future of more personalised, precise, predictive and portable healthcare. In resource-poor health systems, AI technologies can be applied to support disease diagnosis and screening. It can also enhance telemedicine and remote consultations, and improve health data analysis and personalised medicine and treatment. To leverage this potential, AI solutions must be tailored to the African context and developed through collaborations with African and international partners. Investment should be made in innovations and building the capacity of local actors. African countries should also develop targeted strategies and enact laws and policies that will guide the application of AI to healthcare and also protect the users.

Methodology

The brief draws on data from a review of existing sources, including scholarly and conference papers, books and reports, newspapers and reputable online literature. The authors identified opportunities, benefits, and challenges of using artificial intelligence in the health sector by reviewing the sources. Information gathered during meetings with experts on emerging technologies convened by the African Institute for Development Policy (AFIDEP) and the African Union Development Agency (AUDA-NEPAD) in August, September and October 2024 also enriched the brief. The meetings included the emerging health technologies expert meeting, biannual statutory meeting for the African Union High Level Panel on Emerging Technologies (APET) and a Regional Dialogue on Leveraging Emerging Technologies to Improve Healthcare Delivery Systems in Africa.

Findings

In Africa, healthcare initiatives are leveraging AI technology, ranging from disease diagnosis and personalised medicine to drug discovery, telemedicine, and mental health support. Countries are using AI tools to analyse medical images, genetic data, and health records, enabling tailored treatment plans, remote patient monitoring, and data-driven health interventions.

The literature review shows that some countries such as Ghana, Egypt, and South Africa, are leveraging AI to develop personalised treatment plans for patients, in telemedicine services, and in analysing health data to enhance patient care and public health interventions. Rwanda is using AI for precision medicine initiatives, while South Africa is integrating AI in 3D printing of customised medical devices and in robotic surgery for minimally invasive procedures. The integration of AI in diagnosis of infectious disease, in disease surveillance

and genomics research is assisting healthcare providers to improve patient outcomes throughout the region.

Various complementary technologies are playing pivotal roles to complement AI technologies in healthcare and enhance patient care and healthcare systems. These include the Internet of Medical Things (IoMT), 3D printing, blockchain technology, augmented reality (AR), virtual reality (VR), biomedical imaging, genomics, and data analytics tools. Used in diverse contexts, these technologies monitor patient health, ensure data security, enhance medical training, and derive actionable insights for strategic decision-making.

Significant hurdles stand in the way of widespread adoption of AI technologies in healthcare settings, which must be addressed for African countries to fully harness the potential of AI in improving healthcare outcomes. The challenges include limited infrastructure, data quality and availability, technical skills gaps, lack of or ineffective regulatory frameworks, and financing and cultural considerations. These can be addressed through infrastructure development, capacity building, having supportive policy frameworks, and engaging all stakeholders in the technology development and deployment processes, to help unlock the full benefits of AI in healthcare across Africa.

It is imperative for African countries to prioritise equitable access, cultural sensitivity, patient privacy, and informed consent to address the social and ethical considerations surrounding AI implementation in Africa. If these issues are addressed, AI can be ethically and effectively integrated into healthcare systems, ensuring that benefits are equitably distributed and aligned with the needs and values of local communities.



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Policy Recommendations

To harness the application of AI in the healthcare system in Africa, policymakers in the region should consider the following recommendations:

1.

Develop comprehensive policies and regulatory frameworks that govern the use of AI technologies in healthcare, including guidelines for data privacy, security, transparency, and accountability.

2.

Invest in capacity building to enhance the skills and knowledge of local healthcare professionals, data scientists, and AI developers in the application of AI in healthcare.

3.

Improve data infrastructure and interoperability standards to facilitate the collection, sharing, and analysis of healthcare data for AI applications.

4.

Foster partnerships between the public sector, private industry, and civil society to leverage resources, expertise, and technology in the development and deployment of AI solutions in healthcare.

5.

Provide incentives, grants, and funding opportunities to support the adoption of AI in healthcare, especially in underserved regions or low-resource settings.

6.

Develop and promote ethical guidelines, principles, and standards for the responsible and ethical use of AI in healthcare.

7.

Raise awareness about the importance of ethical considerations and engage stakeholders in discussions on ethical issues related to AI in healthcare.

8.

Establish mechanisms for monitoring and evaluating the impact of AI application in improving population health outcomes, patient care, and health system performance.



Conclusion

Though AI offers opportunities for more personalised and precise healthcare in Africa, the continent needs to put in place the necessary infrastructure and skills to ensure its appropriate deployment. There is need to improve access to quality of data, to ensure that AI applications are suited to Africa's diverse populations. This also requires regulation to protect users of the technology. Public sector engagement with private industry and civil society can help to create context-specific innovation and capacity building to harness this technology to improve healthcare outcomes across the continent.

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