



Artificial Intelligence Is Transforming Global Health, But Will Africa Benefit or Be Left Behind?

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Abstract

Artificial intelligence is rapidly changing the way health systems deliver care, generate knowledge, and support decision making. Across the world, AI is being used to strengthen disease surveillance, improve diagnostic accuracy, accelerate drug discovery, and expand access to healthcare through digital platforms. These developments present important opportunities for Africa, where persistent shortages of healthcare workers, growing disease burdens, and unequal access to specialist services continue to challenge health systems.

At the same time, the benefits of AI will not be realised automatically. Without deliberate investment in digital infrastructure, local research capacity, data governance, ethical regulation, and workforce development, there is a real risk that Africa will remain primarily a consumer of technologies designed elsewhere. Such an outcome could deepen existing inequalities and limit the continent's ability to shape technologies that reflect its own health priorities and cultural contexts.

This commentary argues that the future of AI in African healthcare should be guided by local leadership, interdisciplinary collaboration, and equitable partnerships. It calls for governments, universities, researchers, healthcare institutions, and the private sector to work together to build an innovation ecosystem in which artificial intelligence strengthens health systems while advancing scientific independence. Africa's role in the AI era should extend beyond technology adoption to active leadership in developing solutions that contribute to both regional and global health.

Keywords: Artificial intelligence, digital health, global health, Africa, health systems, health innovation, digital transformation.

Commentary/Perspective

Artificial intelligence is changing healthcare faster than any technological development since the introduction of the internet. Around the world, hospitals are using algorithms to assist diagnosis, researchers are accelerating drug discovery through machine learning, and public health agencies are beginning to predict disease outbreaks using real time data. What was once viewed as an emerging technology is now becoming part of everyday healthcare. For Africa, however, the question is not simply whether artificial intelligence will transform health systems. That transformation is already underway. The real question is whether Africa will help shape it or whether it will remain largely dependent on technologies developed elsewhere.

The answer matters because the decisions made today will influence healthcare for decades to come. Artificial intelligence has the potential to strengthen health systems, improve equity, and

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expand access to quality care. It also has the potential to widen existing inequalities if African countries do not actively participate in its development, regulation, and implementation.

Artificial intelligence is already demonstrating remarkable value across healthcare. Deep learning models can assist clinicians in detecting diseases such as tuberculosis, diabetic retinopathy, breast cancer, and pneumonia with impressive accuracy when used alongside trained professionals. Machine learning is helping researchers identify promising drug candidates more quickly than traditional laboratory methods. Natural language processing is improving the analysis of medical records, while predictive analytics is supporting governments in monitoring disease outbreaks and allocating limited health resources more efficiently.

For many African countries, these advances are particularly relevant. Health systems continue to face shortages of healthcare workers, unequal access to specialist services, limited diagnostic capacity, and fragmented health information systems. Artificial intelligence will not solve these challenges on its own, but it can become an important tool for supporting frontline health workers, improving decision making, and extending the reach of healthcare services into underserved communities.

There are already encouraging examples across the continent. In South Africa, researchers have explored artificial intelligence to improve tuberculosis detection using chest radiographs. Rwanda has invested in digital health systems that increasingly integrate data driven approaches to healthcare delivery. Across several countries, local innovators are developing artificial intelligence applications for maternal health, disease surveillance, telemedicine, and mobile health services. These initiatives demonstrate that Africa is not merely observing the digital health revolution. It is beginning to contribute to it.

Yet these examples remain the exception rather than the norm.

Africa possesses significant advantages that position it well for the future of artificial intelligence. The continent has one of the youngest populations in the world, a rapidly expanding digital economy, increasing internet connectivity, and a growing community of software developers, engineers, clinicians, and health researchers. African universities are producing graduates with expertise in data science, computer engineering, medicine, pharmacy, public health, and biomedical research. Technology start-ups continue to emerge across many countries, creating innovative solutions that respond to local challenges.

The greatest obstacle has never been a shortage of talent.

The greater challenge is creating an environment where that talent can thrive.

Investment in research remains limited in many countries. Digital infrastructure varies considerably between urban and rural communities. Many healthcare facilities still rely on paper records, unstable internet connectivity, and limited computing capacity. Without sustained investment in digital infrastructure, artificial intelligence will remain accessible only to a small proportion of health systems, leaving many communities behind.

Perhaps the most important issue receiving insufficient attention is data sovereignty.

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Artificial intelligence depends on data. Every algorithm learns from information that has been collected, organised, and analysed. African populations generate enormous amounts of health data every day through hospitals, laboratories, mobile health platforms, and public health programmes. Yet much of the technology built from these data is developed, owned, or commercialised outside the continent. If Africa continues to provide the raw material while others create the products, the continent risks repeating patterns that have characterised many other sectors of development.

Health data should therefore be recognised as a strategic national resource. Countries need policies that protect privacy while encouraging responsible data sharing for research and innovation. African institutions should play a central role in developing datasets that accurately reflect local populations, disease patterns, languages, and healthcare environments. Artificial intelligence trained predominantly on data from high income countries may perform poorly when applied to different clinical settings, increasing the risk of diagnostic errors and unequal outcomes.

Ethical governance deserves equal attention. Artificial intelligence should strengthen healthcare without replacing professional judgement or compromising patient rights. Questions surrounding privacy, informed consent, transparency, accountability, and algorithmic bias cannot be treated as secondary concerns. They should be considered from the earliest stages of technology development. International organisations have already emphasised that artificial intelligence in health must remain people centred, trustworthy, and equitable. African countries have an opportunity to develop governance frameworks that reflect their own legal systems, cultural values, and public health priorities while remaining consistent with global ethical standards.

Education will also determine whether Africa becomes a leader or a follower in this technological transition. Tomorrow's health professionals will require more than clinical knowledge. They will need an understanding of digital health, artificial intelligence, ethics, and data science. Likewise, engineers and computer scientists designing health technologies must understand healthcare delivery, patient safety, and public health. This reinforces the growing importance of interdisciplinary education and research.

Universities therefore have a critical responsibility. They should encourage collaboration between medicine, pharmacy, nursing, public health, computer science, engineering, behavioural science, economics, and policy. Artificial intelligence is not simply a technological challenge. It is a social, ethical, clinical, and policy challenge that demands expertise from multiple disciplines.

Innovation alone, however, is not enough. Many promising technologies fail because they cannot be successfully integrated into routine healthcare. Implementation science has an important role in ensuring that artificial intelligence tools move beyond successful pilot projects to become practical solutions that improve patient care. Evaluation should focus not only on technical performance but also on clinical effectiveness, cost effectiveness, user acceptance, and long term sustainability.

Governments also need to recognise artificial intelligence as a strategic investment rather than a future aspiration. Supporting research, strengthening digital infrastructure, funding local innovation, and developing clear regulatory pathways will determine whether African innovations remain isolated projects or evolve into solutions that benefit entire populations. Partnerships with

international institutions should continue, but they must increasingly promote shared leadership, equitable collaboration, and local capacity building.

The private sector has an equally important role. African technology companies and health innovators have repeatedly demonstrated that locally developed solutions can respond effectively to local needs. Stronger collaboration between governments, universities, healthcare institutions, industry, and civil society can accelerate innovation while ensuring that new technologies address real public health priorities.

Artificial intelligence will undoubtedly reshape global health during the coming decades. The question is not whether this transformation will occur. It is already happening. The more important question is who will guide it and who will benefit from it.

Africa has the scientific talent, the youthful population, the growing innovation ecosystem, and the determination to become a recognised leader in digital health. Achieving that future will require sustained investment, thoughtful regulation, interdisciplinary collaboration, and confidence in African expertise. Artificial intelligence should become a tool that strengthens health sovereignty rather than another source of technological dependence.

Africa has entered many previous technological revolutions after they were already well underway. Artificial intelligence presents an opportunity to change that story. Whether this becomes another missed opportunity or the beginning of African leadership will depend on the choices that governments, universities, researchers, industry, and communities make today.

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