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Artificial intelligence for public health in Africa: moving beyond pilots to public value

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Artificial Intelligence (AI) is increasingly being positioned as a transformative tool for African public health, with new initiatives already seeking to embed AI-enabled systems into primary care, surveillance, and decision support.[1] However, Africa's public health "AI problem" differs from that in many high-income settings. Across much of the continent, the binding constraints are fragmented data ecosystems, uneven connectivity and unreliable power supply, and limited interoperability. Institutional capacity to evaluate, procure, and govern complex digital technologies remains thin. The central question is not whether AI can be introduced into African health systems, but whether it can be governed to generate durable public value without widening inequities, reinforcing external dependence, or reproducing extractive data practices.

In such contexts, success is shaped less by algorithmic sophistication than by governance, ethics, integration, sustainability, and equity.[2] A useful framing is public value: the contribution of technology to population health outcomes, system efficiency, equity, and institutional capacity, including the ability to govern, adapt, and hold actors accountable. Africa Centres for Disease Control and Prevention (Africa CDC) has framed digital transformation as a continental priority, emphasising harmonised data governance and legal foundations.[3] These foundations become more, not less, important in the AI era. Against this backdrop, two divergent trajectories are possible: a high-risk pathway of fragmented, pilot-driven adoption, or a governance-anchored pathway that produces equitable and durable public health value (See Fig. 1).

AI's public health value is clearest in near-term, tractable applications operating within current constraints, although longer-term uses in diagnostics, treatment optimisation, and health-systems modelling remain promising as foundational infrastructure strengthens. One key application is strengthening outbreak intelligence through anomaly detection that triages unusual surveillance, laboratory, or climate-linked signals to support field epidemiology. Another is improving mortality intelligence where civil registration coverage remains limited, by applying natural language processing to verbal autopsy narratives and clinical free text to generate earlier signals on infectious, maternal, or injury-related deaths. Frugal prediction models can also optimise scarcity management by anticipating stock-outs of essential health commodities and identifying under-supplied facilities. These models can further support workforce deployment and outreach microplanning, even under intermittent connectivity. In multilingual settings, AI can support public health communication through translation and reading-level adaptation of risk messaging, provided strong human oversight prevents misinformation, cultural misalignment, or exclusion.

However, these opportunities face recurring, high-impact barriers. Training data may over-represent urban populations with regular facility access while excluding rural, displaced, and marginalised groups. Without continuous monitoring using disaggregated data, this bias can become embedded in AI systems and widen existing health inequities. Vendor lock-in can occur when procurement fails to secure transparent pricing, independent audits, or clear exit strategies. This leaves health systems dependent on proprietary tools they cannot afford to sustain or replace. Data sovereignty and benefit-sharing risks arise where African datasets are used to develop systems later commercialised with limited local value capture. Cybersecurity and privacy vulnerabilities intensify as AI links multiple datasets, increasing the stakes of breaches, re-identification, and stigma in sensitive public health domains.[4–6]

Addressing these risks requires governance approaches that align AI deployment with clearly defined population health objectives. Adoption should be guided by explicit problem definition, measurable pathways to benefit, assessment of distributional effects, and mechanisms to detect unintended harms

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Two Divergent Paths for AI in African Public Health		
Dimension	**Path A: Fragmented, Pilot-Driven**	**Path B: Governance-Anchored**
Governance	• Ad hoc, project-level oversight • No harmonised standards • Accountability gaps when failures occur	• Continental frameworks (e.g. Africa CDC) • Clear accountability structures • Independent audit mechanisms
Data & Ethics	• Extractive data practices • Limited local value capture • Privacy and re-identification risks	• Data sovereignty safeguards • Verifiable data provenance • Benefit-sharing agreements
Integration	• Standalone tools, limited interoperability • Parallel systems that fragment care • Minimal health-system alignment	• Interoperability standards • Embedded within existing workflows • Problem-driven use-case selection
Sustainability	• Donor-dependent funding cycles • Vendor lock-in, opaque pricing • No exit strategies	• Shared procurement templates • Transparent pricing and exit clauses • Public sector capacity building
Equity	• Urban-biased training data • Embedded biases widen disparities • Marginalised groups excluded	• Disaggregated performance monitoring • Predefined equity thresholds • Inclusive, representative datasets
Outcome	**Repeated cycles of external dependence and widening inequity**	**Resilient, equitable, and locally owned health systems**

Fig. 1: **Fragmented versus governance-anchored AI adoption in African public health**.

during real-world use. Regulatory approaches must reflect institutional realities and prioritise enforceable safeguards. These include transparent documentation of system purpose and limitations, verifiable data provenance, independent performance scrutiny where feasible, and clearly assigned accountability when failures occur. Investment in public sector technical, legal, and procurement capacity is essential to enable independent evaluation rather than reliance on vendor claims. Institutionalised incident reporting can further help detect model drift and emerging inequities before they escalate.

Regional coordination can expand what is operationally feasible. Africa CDC led the development of a Continental Health Data Governance Framework for endorsement at the African Union Summit in February 2026.[7,8] This framework could support shared procurement templates and interoperability standards that reduce vendor lock-in across member states. At the institutional level, disciplined use-case selection remains critical, often requiring investment in data quality and governance infrastructure before deploying AI tools. This includes establishing governance structures linking epidemiology, health informatics, procurement, and legal oversight. Equity monitoring must be operational, with routine disaggregated performance assessment and predefined responses where disparities emerge. Institutions should also track public value in practice, assessing whether AI tools reduce reporting burden, improve timeliness of action, and strengthen system capability.

AI can strengthen public health in Africa, but only as a governed health-systems intervention anchored in equity and institutional capacity. Done well, AI can support resilient and equitable health systems. Done poorly, it risks repeating familiar cycles of external dependence.

Contributors

YAA conceptualised and drafted the initial manuscript with input from OB, DEP, BBN, and OSI. YAA contributed to subsequent revisions and all authors critically reviewed the manuscript and approved the final version.

Declaration of interests

We declare no competing interests.

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