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Editorial

Africa at the crossroads of antimicrobial resistance and climate change

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The convergence of antimicrobial resistance (AMR) and climate change represents one of the most consequential yet insufficiently integrated challenges facing public health in Africa. AMR is already a major cause of preventable mortality on the continent, while climate change is rapidly altering ecological, social, and health-system conditions that shape infectious disease risk and response. Addressing these threats in isolation risks undermining progress on both fronts.

In 2019, the WHO African Region accounted for an estimated 1·05 million deaths (95% UI 829 000–1 316 000) associated with bacterial AMR, including 250 000 deaths (192 000–325 000) attributable to resistant infections [1]. Western sub-Saharan Africa recorded the highest all-age AMR-attributable mortality rate globally (27·3 deaths per 100 000 [20·9–35·3]) [2]. In Africa, the largest fatal AMR burden was attributed to lower respiratory and thorax infections (119 000 deaths [92 000–151 000]; 48% of bacterial pathogen AMR deaths), bloodstream infections (56 000 [37 000–82 000]; 22%), intra-abdominal infections (26 000 [17 000–39 000]; 10%), and tuberculosis (18 000 [3850–39 000]; 7%) [1]. These syndromes are highly sensitive to environmental disruption, delayed access to care, and health-system strain.

Climate change is intensifying extreme heat, flooding, and drought across Africa, interacting with poverty and limited adaptive capacity [3]. Such stressors can increase infection risk, disrupt water, sanitation, and hygiene services, displace populations, and interrupt diagnostics, treatment continuity, and medicine supply chains. These disruptions can drive empiric antibiotic use in the absence of microbiological confirmation, increasing selection pressure for resistance. Ecological evidence also suggests that higher ambient temperatures and population density are associated with higher prevalence of antibiotic resistance, reinforcing concerns that global warming could accelerate resistance emergence and spread [4].

Despite these intersecting risks, AMR and climate policies remain largely siloed in Africa. National AMR action plans rarely incorporate climate risk assessment, while climate adaptation strategies seldom treat antimicrobial effectiveness as a resilience outcome. This fragmentation overlooks interventions with clear co-benefits. Modelling suggests that strengthening infection prevention and control could prevent at least 337,000 AMR-associated deaths annually in low and middle-income countries, while improved water, sanitation, and hygiene and vaccination could prevent 247,800 and 181,500 deaths, respectively [5]. These prevention investments are central to climate resilience and should be protected and scaled through domestic financing and climate-aligned funding.

Africa stands at a critical juncture in recognising the intersection of AMR and climate change. Integrating AMR into climate adaptation planning, leveraging climate finance for prevention-focused health investments, and aligning One Health surveillance across human, animal, and environmental systems are essential to protect lives and preserve antibiotic effectiveness under accelerating climate risk. Other regions are already beginning to move in this direction; for example, Europe has incorporated AMR within broader environmental and climate policy frameworks through the One Health approach and the European Green Deal [6, 7], while

countries in Asia are increasingly embedding AMR within national climate resilience and health security agendas [8]. Africa has an opportunity not only to align with these emerging global approaches but to lead in developing context-specific, integrated strategies that address both AMR and climate vulnerability. **Author Contributions:** Conceptualisation, OB. and YAA.; O.B.; writing—original draft preparation, O.B.; writing—review and editing, O.B., Y.A.A., O.A. and A.L.

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