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From Crisis to Coordination: The Imperative for Locally Tailored One Health Investments in Africa's Fight Against Emerging Zoonoses

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Abstract

Introduction: Emerging zoonoses such as Ebola, Lassa fever, and COVID-19 have exposed critical vulnerabilities in Africa's public health systems, especially at the interface of human, animal, and environmental interactions. Although the One Health approach provides a collaborative framework to tackle these complex challenges, its effectiveness in Africa requires adaptation to local contexts.

Methods: This short communication synthesizes recent literature and case examples from Kenya, Uganda, Rwanda, and other African nations to examine the practical implementation of One Health strategies across the continent.

Results: Findings highlight persistent barriers, including inadequate funding, fragmented cross-sectoral coordination, and limited engagement of communities. However, successful initiatives demonstrate that integrating traditional knowledge such as local beliefs, practices, and healing systems, and grassroots structures like community-based organizations and informal governance systems, can enhance the reach and relevance of One Health interventions.

Conclusion: Building Africa's resilience to future zoonotic threats requires more than the adoption of global One Health frameworks. It demands a shift toward culturally grounded, community-led strategies that leverage local expertise and social systems. Renewed investment in these context-specific approaches is crucial for sustainable public health outcomes.

Keywords: One Health, Zoonoses, Public Health, Traditional Medicine, Community Health Services, Africa

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Introduction

Emerging zoonotic diseases such as Ebola, Lassa fever, and Monkeypox continue to expose Africa's vulnerability to cross-species disease transmission[1,2]. These risks are intensified by the continent's rich biodiversity, rapid urbanization, expanding human-animal-environment interfaces, and under-resourced public health systems[3,4]. Over 75% of emerging infectious diseases in the region are zoonotic in origin, and drivers such as deforestation, agricultural encroachment, wildlife trade, and unplanned urbanization demand a response that cuts across traditional health system silos[5-6].

The One Health framework, which promotes collaboration across the human, animal, and environmental health sectors, offers a holistic and timely approach to managing these threats[4,7]. However, for this framework to be effective in Africa, it must go beyond technical integration; one health strategies must be context-specific and culturally adaptable, rooted in local realities, traditional knowledge systems, and community structures, because standardized models transplanted from high-income countries often fail to address the complex social, ecological, and cultural dynamics that shape health behaviors in African contexts[7-10].

Although, some African nations have made notable progress in implementing context specific One Health strategies; In Kenya, the creation of the Zoonotic Disease Unit (ZDU) in 2012 institutionalized One Health collaboration between the Ministries of Health and Agriculture, improved surveillance, outbreak response, and resource sharing for diseases such as Rift Valley fever and anthrax11. Uganda's National One Health Strategic Plan (2018) proactively prioritized anthrax, brucellosis,

and rabies through coordinated surveillance and response12. Ethiopia's adoption of the One Health Zoonotic Disease Prioritization Process has enhanced cross-sectoral interventions for its most pressing zoonotic threats13. In Rwanda, One Health principles have been integrated into national policies and university curricula, leading to the establishment of multidisciplinary rapid response teams and decentralized laboratories, which have strengthened national preparedness[1].

Despite these successes, persistent challenges remain; many countries still face resource limitations, poor intersectoral coordination, and insufficient community engagement. Even where One Health initiatives exist, a failure to meaningfully integrate traditional knowledge, such as indigenous healing practices and environmental stewardship, and grassroots structures, such as local networks and informal governance, has undermined their effectiveness. These issues highlight the urgent need for culturally grounded; community driven One Health strategies tailored to Africa's diverse sociocultural and ecological landscapes.

Challenges and Opportunities

While One Health initiatives in Africa have demonstrated promises, their long-term impact is often constrained by interconnected social, structural, and systemic challenges. Framing these issues through the Social Ecological Model (SEM) provides a multi-level lens, spanning individual, interpersonal, organizational, community, and policy dimensions, to understand and respond to these barriers more holistically[14]. At the policy and organizational levels, a persistent challenge is the limited and inconsistent funding, which compromises scalability and long-term sustainability[15]. In Sierra Leone, for example, post-Ebola One Health efforts weakened as external funding waned, revealing the fragility of donor-dependent systems and the absence of institutionalized national support[16]. Similarly, fragmented governance and weak intersectoral coordination, notably between ministries of health, agriculture, and the environment, have led to delayed or ineffective responses. Nigeria's disjointed handling of Lassa fever and Tanzania's anthrax outbreaks in pastoralist communities exemplify the consequences of sectoral silos[10,17].

At the community level, challenges include insufficient community engagement and cultural tailoring, as most One Health interventions are top-down and fail to reflect local sociocultural contexts, resulting in mistrust, non-compliance, or low uptake. Participatory models have shown promise; in Cameroon, engaging local communities in rabies surveillance and response enhanced both the effectiveness of interventions and the sense of community ownership[18]. Thus, aligning with recent implementation science insights, that emphasize the importance of stakeholder engagement, adaptability, and contextual fit in promoting effective interventions[19,20]. These participatory models formalize the relationship between social structures, power dynamics, and health outcomes, because cultural beliefs, local norms, and traditional health practices influence risk perception, care-seeking behavior, and acceptance of scientific interventions[21]. Failure to incorporate all these factors risk undermining even technically sound programs.

Future One Health efforts must therefore be informed by structured, theory-based approaches that draw on frameworks like SEM and principles from implementation science, which include co-developing interventions with communities, embedding programs into existing systems, and ensuring interventions are responsive to the unique ecological, social, and cultural realities of African populations. Only through such integrated and context-aware strategies can One Health realizes its full potential on the continent.

Recommendations and Strategic Priorities

To address the persistent challenges undermining One Health implementation in Africa, future strategies must transcend technocratic designs and become deeply embedded within local cultural, ecological, and social realities. Legislative reforms alone are insufficient; interventions must be co-developed, reflect local priorities, and foster trust within communities.

For example, community resistance to public health interventions during monkeypox outbreaks in parts of West and Central Africa often stems from deep-rooted cultural practices such as bushmeat consumption[22,23]. Simply banning these practices without viable alternatives or culturally resonant messaging proves counterproductive. Instead, public health agencies should collaborate with trusted community figures, including religious leaders, traditional healers, and elders, to promote behavioral change. In Nigeria, for instance, imams and pastors were successfully mobilized to increase vaccine uptake during the polio eradication campaign [24]. This model can be adapted for zoonotic disease prevention through grassroots sensitization campaigns that highlight disease risks while offering livelihood support and affordable protein alternatives.

Efforts to build long-term capacity must also prioritize integrating One Health into formal and informal education systems. In school curricula, this could include age-appropriate lessons on hygiene, livestock care, waste disposal, and environmental conservation, drawing connections between human and animal health. Targeted competencies should include systems thinking, risk communication, intersectoral coordination, and outbreak

response. Training programs for veterinary, medical, and environmental health workers should adopt joint delivery models such as interdisciplinary simulation exercises, case-based learning, and cross-sectoral field placements to cultivate collaborative mindsets early in professional development.

Furthermore, community engagement must be reimagined as co-creation rather than passive consultation. The field of participatory epidemiology (PE) widely practiced in East Africa, offers compelling models. In Kenya and Tanzania, for example, PE has been used effectively to detect early warning signs of Rift Valley Fever and Brucellosis outbreaks in pastoralist communities[25,26]. Through participatory disease mapping, seasonal calendars, and focus group discussions, community members help identify risk patterns and shape surveillance strategies. Institutionalizing such methods enhances both the cultural legitimacy and scientific rigor of interventions and should be recognized not as development buzzwords but as essential tools of context-sensitive implementation science.

Addressing the issue of financial fragility requires moving from donor dependency toward domestic resource mobilization and regional pooling mechanisms. National governments should earmark dedicated budget lines for One Health programs within public health, agriculture, and environmental ministries. Financing pathways could include integrating One Health into national health insurance schemes (e.g., by covering zoonotic disease testing or animal health services), establishing public–private partnerships (e.g., with agribusinesses or pharmaceutical firms), or creating One Health trust funds managed jointly by multiple sectors. At the regional level, platforms like the Africa CDC, ECOWAS, and AU-IBAR can coordinate pooled procurement, surveillance infrastructure, and knowledge-sharing to reduce duplication and enhance collective bargaining power.

Africa must also invest in context-specific research to generate relevant local evidence that can inform interventions. Ethnographic studies, behavioral mapping, and community-based trials are vital for understanding what works, for whom, and under what conditions. This 'homegrown' data can inform transboundary disease control policies, improve diagnostics and early warning systems, and support equitable outbreak responses.

Ultimately, the future of One Health in Africa depends on embedding its principles into the everyday lives of communities, through education, faith institutions, agriculture, and local governance. Strategic investments in culturally grounded and financially sustainable approaches will improve outbreak preparedness, foster public trust, and enable African countries to shift from reactive crisis management to proactive, coordinated prevention.

Conclusion

To effectively combat emerging zoonoses, Africa must move beyond imported, one-size-fits-all approaches and adopt locally tailored, culturally grounded, and community-owned One Health strategies. By integrating these approaches into daily life, through schools, religious institutions, and traditional practices, public health can shift from reactive crisis response to proactive, coordinated prevention.

Highlights

What Is Already Known?

The One Health approach provides a collaborative framework for addressing emerging zoonoses at the human–animal–environment interface, which continue to challenge public health systems across Africa.

What Does This Study Add?

Effective One Health implementation in Africa requires locally adapted approaches. Integrating traditional knowledge, local practices, community-based organizations, and informal governance structures can improve the relevance, acceptance, and reach of One Health interventions.

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Consent For Publication

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