Needs for Establishment and Adoption of Regional One Health Approach for Preparedness and Response to Public Health Threats in the East African Community

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Abstract
Introduction: One Health approach integrates human, animal, and environmental health, recognizing their intricate relationship. It is an important approach to address complex public health challenges such as zoonoses, anti-microbial resistance (AMR), food safety and security, the impact of climate change, biodiversity degradation and many other health challenges that require collaborative efforts. East African Community (EAC) is among the regions that face such challenges. Hence, there is a dire need to adopt the One Health approach to prevent and control many of the public health threats.
Aim and objectives: To develop and implement a comprehensive regional One Health approach for the East African Community (EAC) that enhances collaborative efforts in addressing public health threats through an integrated approach to human, animal, and environmental health. The objectives of the work were to assess and strengthen current One Health initiatives, to assess the status of One Health implementation in the region and to recommend the best approach to develop a Regional One Health Strategy that would enhance the sustainable One Health approach in the EAC.
Data Collection: Data was collected through consultations with sector representatives from the EAC Partner States, the EAC Secretariat, and the EAC Expert Working Group (EWG). Between October 2020 and May 2022, documents and reports from the EAC secretariat and Partner States were also extensively reviewed.
Findings: The EAC has been facing numerous public health threats due to several factors, including its geographical location, high population density and movements, limited access to healthcare, limited disease surveillance and control, etc. Although a formal regional One Health strategy was lacking during the time of the data collection exercise, key initiatives like contingency plans development, risk analysis and communication, development of Standard Operating Procedures (SOPs) as well as capacity-building efforts for various health risks had been carried out, all under the umbrella of One Health. Some EAC Partner States have developed national One Health strategies and created multi-sectoral platforms to address public health challenges. Including the Democratic Republic of Congo (DRC) in the EAC region in April 2023 emphasized the need for a more comprehensive regional approach due to the DRC's vast tropical forests and history of infectious disease outbreaks.
Conclusion: Most public health threats do not recognize borders. Hence, there is a need to unify EAC Partner States' efforts to effectively and efficiently address regionally evolving public health threats. This requires implementing a One Health approach, thereby emphasizing the significance of a regional One Health strategy. The unified approach will safeguard the well-being of human and animal health, the ecosystems in the region, and the socio-economy. Challenges may include securing adequate, sustainable resources, harmonizing efforts among Partner States, and aligning regulatory frameworks and resource capacities.

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Introduction
The East Africa Community
The East African Community (EAC) consists today of seven Partner States: the Republic of Burundi, the Democratic Republic of the Congo (Kinshasa) (DRC), the Republic of Kenya, the Republic of Rwanda, the Republic of South Sudan, the United Republic of Tanzania (URT), and the Republic of Uganda. The DRC became the latest addition to the EAC partnership (Fig. 1).

Figure 1: A map showing EAC Partner States

One Health approach
One Health approach is an integrated strategy to achieve a sustainable balance to optimize human, animal, and ecosystem health. It recognizes the intricate interdependence between humans, domestic animals, wildlife, plants, and the broader environment with the ecosystem. The approach engages local, regional, national, and global stakeholders to attain optimal health and well-being outcomes, contributing to sustainable development (Andrew A. et al 2020, AVMA, 2020).

The recent COVID-19 pandemic and other outbreaks experiences have produced compelling evidence to adopt the One Health approach as a multisectoral and multidisciplinary approach to address complex challenges and a 'whole of societal' strategy to address health hazards. It underscores the importance of involving all stakeholders who could be affected by an infectious disease outbreak or public health event and their role in both preparedness and response efforts. One Health approach provides a comprehensive framework for the long-term prevention of pandemics and facilitates the transformative change needed to minimize complex risks (AVMA, 2020; Bechir et al., 2004; Bett et al., 2020).

Public health threats requiring One Health approach
Zoonotic diseases are diseases that can be transmitted between humans and animals. Animals include wildlife and domestic animals kept by humans for various purposes, including food and companionship. Research indicates that over 60% of human infectious diseases originate from animals, and over 70% of emerging and re-emerging infectious diseases affecting humans are zoonotic (Bechir et al., 2004; Bett et al., 2020). Zoonoses affect the well-being of both animals and humans, impacting their health and socioeconomic aspects. Zoonoses can also negatively impact other sectors beyond

health, including trade, tourism, education, and the overall economy (AVMA, 2020; Bechir et al., 2004; Bett et al., 2020).

Population growth, deforestation, human encroachment into habitats previously occupied by wildlife, international travel, and trade are key factors in the spillover and spread of zoonotic pathogens. Despite increased awareness of the risks associated with spillover and pathogen spread, the situation remains a significant threat to humans, animals, plants, and ecosystems (CDC, 2022).

Three months after the onset of COVID-19, local and international trade, agriculture, international travel, and tourism were severely impacted. Lockdowns, restrictions on social gatherings, the closure of schools and colleges, and limitations on air, water, and road travel exacerbated the economic downturn and made life more challenging. In the EAC region, the pandemic resulted in a high number of fatalities and overwhelmed the health sector, leading to an increase in domestic violence, teenage pregnancies, and mental health challenges, resulting in substantial economic losses (CDC; 2022, Cisse, G et al 2022).

Antimicrobial resistance (AMR) has emerged as a significant public health threat in the EAC and globally. AMR poses a substantial challenge to the prevention and control of disease-causing agents. The effectiveness of treatment regimens against infectious diseases caused by bacteria, viruses, parasites, and fungi largely depends on the collective ability to combat AMR (AVMA, 2020; FAO, 2018; Gumi B et al., 2012; Grace D et al., 2012). AMR calls for a cohesive and comprehensive global response across all sectors and disciplines. Globally, the key areas of focus in addressing AMR involve detection, surveillance, stewardship, and infection prevention and control.

Other public health emergencies of concern include food safety and security, such as dealing with locust swarms, addressing contaminated food and water sources (e.g., aflatoxins and cholera, respectively), addressing biodiversity degradation, and mitigating the impacts of climate change (AVMA, 2020; Gumi B et al., 2012; Grace D et al., 2012; Greter, H et al., 2014; Jones, K., et al 2008).

To better address these challenges in the future, the EAC secretariat established the One Health concept as a guiding principle in addressing risks of public health concerns. Here, we describe the consultative process of stocktaking One Health initiatives and consensus building on needed One Health action points at the regional level, which feeds into a regional One Health strategy.

Aim: To develop and implement a comprehensive regional One Health approach for the EAC that enhances collaborative efforts in addressing public health threats through an integrated human, animal, and environmental health approach.

Objectives: The work's objectives were to assess and strengthen the current One Health initiatives, assess the status of One Health implementation in the region, and recommend the best way to develop a regional strategy that enhances a sustainable One Health approach in the EAC.

Materials and Methods:

Data collection

Qualitative data was collected primarily through consultations with representatives from the EAC Partner States' sectors, representatives from the EAC secretariat (also regional sector representatives), and the EAC EWG. Meetings and consultative workshops were conducted to obtain information on One Health activities at Partner States and regional levels, including Strengths, Weaknesses, Opportunities, and Threats (SWOT) analysis, One Health platforms and multi-sectoral coordination, One Health networks, policies supporting One Health, etc.

Data was also collected from an extensive review of documents and reports from the EAC and its Partner States. The combined data collection and compilation efforts spanned from October 2020

to May 2022. The DRC joined the EAC in April 2022, just a month after the data collection and compilation phase concluded. As a result, experts and stakeholders from the DRC were not actively involved in the process. The data did not include information regarding implementing the One Health approach in the DRC.

Findings

Global One Health efforts

In 2008, the Food and Agriculture Organization of the World (FAO), The World Organization for Animal Health (WOAH), The World Health Organization (WHO), the United Nations International Children Education Fund (UNICEF), the World Bank (WB), and the United Nations System Influenza Coordination (UNSIC) jointly developed a consensus document entitled 'Contributing to One World, One Health'. It issued a shared strategic framework for 'Reducing Risks of Infectious Diseases at the Animal-Human-Ecosystems Interface' (Kelly T. R et al, 2020). The framework has been one of the benchmarks for countries to prevent and control health risks globally using a One Health approach; such risks include AMR and emerging and re-emerging pathogens.

In early 2022, the United Nations Environment Programme (UNEP) officially joined the Tripartite Alliance of the WHO, FAO and WOAH (formerly OIE) to form a 'Quadripartite.' The partnership is advised by the One Health High-Level Expert Panel (Andrew et al. et al., 2020; Bechir M. et al., 2004; Gumi B. et al., 2012). The panel's primary focus has been to provide policy-relevant scientific assessments on the emergence of health crises at the human-animal-ecosystem interface and offer guidance on developing a long-term strategic approach to reduce the risk of zoonotic pandemics. The panel also underscores the importance of a monitoring and early-warning framework and the synergies necessary to institutionalize and implement the One Health approach.

Factors contributing to pandemic risks have been addressed in the Global Health Security Agenda, launched in 2014 and endorsed by 70 countries to bolster their core capacities for preventing, detecting, and responding to disease threats. Governmental bodies, intergovernmental organizations, universities, non-governmental organizations, and others have, in principle, endorsed the agenda. Through the Agenda, countries, including those in the EAC region, conducted voluntary Joint External Evaluation (JEE) in which areas for strengthening core capacities under IHR-2005 were identified, and strategies to address them were developed (Andrew et al., et al 2020, Bechir, M. et al 2004; Gumi, B.,2012; Nabarro, D; 2012)

One Health Implementation in Africa

Challenges in One Health implementation in Africa are mainly caused by a lack of policy frameworks to guide a multi-sectoral approach, limited resources, and the increasing burden of threats at the human-animal-environment interface (Nyatanyi, T. et al 2017; OIE 2009). However, a collaborative project in Chad where livestock and child vaccination in pastoralist communities yielded economic savings for the Chadian Ministries of Public Health and Animal Health, resulting in improved vaccination coverage for children and women (Nyatanyi, T., et al 2017; OIE 2009, Schelling, E., et al 2008; Taylor et al., et al 2001). Such collaborative programs allow African professionals to enhance the spirit of working together (OIE 2009, Schelling, E., et al. 2008); The Global AMR R&D Hub;).

Africa CDC has worked with the African Union (AU) on the One Health Framework. The framework is aligned with the Sustainable Development Goals of the African Union (AU) Agenda 2063, 'The Africa We Want' (WHO; 2005). The framework guides National Public Health Institutes and provides valuable insights for all involved in the One Health approach in the continent. It covers zoonotic disease prevention and control and offers guidance to National Public Health Institutes and Ministries of Health in addressing priority zoonotic diseases using a One Health approach. Other areas

include One Health coordination, coordinated surveillance, diagnostic capacity, laboratory networks, coordinated response, and multisectoral workforce (WHO; 2005). The Southern Africa Development Community (SADC) Joint Technical Committee approved a Regional AMR Strategy aligned with the Global Action Plan for Anti-microbial Resistance (GAP) during a meeting in Johannesburg, South Africa, in 2019. SADC member countries will collectively implement the AMR Strategy to address key areas in the region's prevention and control of AMR. This marks a significant step toward adopting a One Health approach to combat the spread of AMR in the region (WHO; 2020)

One Health implementation in the EAC region
The EAC sector council of ministers is an important decision-making body overseeing various regional sectors, including health. Its roles include policy formulation, coordinating the response to public health threats, mobilizing resources, establishing disease surveillance systems, facilitating capacity-building programs, advocating for harmonized health policies, and ensuring coordinated regional responses. **The EAC Secretariat, along with Partner States' ministries and their**

Expert and Technical Working Groups provide the political framework for One Health activities in the region. Various sectors, including health, animal health, environmental health, trade, tourism, and more, contribute to the region's resilience in the face of public health threats. This collaborative effort is critical to maintaining essential services, such as water supply, sewage systems, and waste collection, which are key to disease prevention.

Points of entry,, including airports, seaports, and land border posts, play roles in monitoring, detecting, and responding to public health threats. Their responsibilities involve surveillance and monitoring, travellers' screening, quarantine, isolation, notification/reporting, contact tracing, coordination, resource provision, public awareness, and international collaboration.

The private sector, including various businesses and industries, plays an important role in preparedness and response to threats by producing medical supplies, providing healthcare services, and contributing to research and development. **Civil society organizations** advocate for equitable health, engage with communities, monitor authorities' actions, mobilize resources, offer humanitarian assistance, and provide psychosocial support.

Research and development institutions contribute to vaccine and drug development, epidemiological studies, surveillance, innovative technologies, and risk assessment, vital for preparedness and response to risks. **International, continental, and regional institutions and organizations, including UN institutions and One Health networks,** collaborate with EAC member states to enhance their preparedness and response to public health emergencies, offering technical expertise, resources, coordination, and capacity-building to strengthen the region's ability to prevent, detect, and respond to health threats effectively.

Even though there was no formal regional plan to implement One Health in East Africa during the data collection exercise, several EAC One Health documents had been developed, and a few One Health activities had been conducted under the guidance of the EAC Secretariat. These included creating a regional contingency plan for pandemic preparedness and response, developing a regional risk and crisis communication strategy and establishing One Health SOPs for effective implementation. Additionally, simulation exercises, joint meetings, and workshops were important in promoting the One Health approach in the region.

One Health Implementation in EAC Partner States
The republics of Kenya, Rwanda, Tanzania, and Uganda had developed national strategies to guide the One Health approach in their respective countries when visited for data collection. The Republic of South Sudan and Burundi were yet to develop their national One Health strategies. The Republics of Kenya, Rwanda, Tanzania, and Uganda had established One Health National Committees/Platforms with multi-sectoral coordination mechanisms (MCM). In Kenya, the One Health Platform was found to be affiliated with the Ministry of Health (MoH), while in Tanzania, the platform was found operating under the Prime Minister's Office (PMO). The Directors of Health Services and Veterinary Services in Rwanda agreed on a Memorandum of Understanding (MOU) to coordinate One Health activities in the country (WHO; 2020).

Republic of Burundi
Besides the fact that there was no formal One Health coordination mechanism, the Republic of Burundi had established One Health committees, commissions, and platforms that occasionally convened to exchange updates on issues of mutual interest. Burundi ratified the International Health Regulations (IHR) in 2005, and implementation commenced in 2007. Since the outbreak of the Avian Flu in 2010, the public health and animal health sectors in Burundi have been collaborating to prepare and prevent further Avian Flu outbreaks. The effort involved resource mobilization, including human and financial resources, to support joint initiatives. JEE was conducted in Burundi in March 2018, and efforts to prepare the National Action Plan for Health Security were ongoing during the data collection exercise.

Republic of Kenya
In Kenya, the National Influenza Task Force, formed in 2005, evolved into the Zoonotic Technical Working Group (TWG) in 2006 and began planning meetings in 2008. This multi-sectoral TWG comprised members from various ministries, research institutions, agencies, and regional and international organizations. In 2011, the Zoonotic Disease Unit (ZDU), also known as the One Health Office, was established following the signing of a Memorandum of Understanding between the Ministry of Public Health Services and the Ministry of Livestock Development.

One Health Office became operational in 2012 with the launch of the One Health Strategic Plan (2012-2017). Among other successes, the plan has promoted One Health and applied research. The establishment of a molecular diagnostic laboratory at the Kenya Wildlife Service and Avian Influenza surveillance was implemented in wild birds, RVF surveillance, and vector-borne disease surveillance. However, key challenges persist, including the absence of specific legal frameworks and policies, limited resources for essential activities, weak zoonotic disease surveillance, insufficient cross-sectoral collaboration, and evolving global priorities influenced by political interests.

Republic of Rwanda
The Republic of Rwanda embraced the One Health approach in 2011 and has undertaken many activities. The national One Health platform was established in the same year under the Prime Minister's Office. The platform comprises the One Health Secretariat, the One Health MCM, TWGs, representatives from various government institutions, bilateral and multilateral partners, civil society organizations, private sectors, and communities involved in One Health implementation. The platform oversees the overall governance of One Health activities, including developing strategies, prioritizing funding allocations, and resource mobilization.

Through the platform, the first Rwanda One Health Strategic Plan (ROHSP 2014-2018) was developed, leading to several joint activities, such as zoonotic disease prioritization and the creation of preparedness and response plans for priority zoonotic diseases, including Rift Valley Fever, Avian Influenza, and Rabies. Now, the country is in the second ROHSP (2021-2026). In March 2021, the One Health Policy was signed to guide planning, monitoring, and evaluating activities under the One Health Approach. Additionally, Rwanda has developed its National AMR Action Plan and disaster management plan.

Republic of South Sudan

The Republic of South Sudan has faced outbreaks of Ebola Virus Disease, Yellow Fever, Anthrax, Brucellosis, bovine Tuberculosis, highly pathogenic Avian Influenza, Rabies, and Rift Valley Fever. AMR also poses an emerging problem due to the unregulated use of antimicrobials in humans and animals. The lack of surveillance systems to track antimicrobial susceptibility trends has further exacerbated the problem. At the time of data collection, the Republic of South Sudan had not developed a One Health Strategy. The National Action Plan for Health Security (NAPHS) 2020-2024 launching and Joint Risk Assessment were done in 2021.

Health Emergency Risk Profiling/Strategic Tool for Assessing Risks (STAR), Rapid Response Teams (RRT) and the national laboratory capacity to confirm priority zoonotic diseases in animals and humans have been developed, and the country was developing a One Health platform. South Sudan has also adopted and implemented the 3rd edition of the Integrated Disease Surveillance and Response (IDSR) at the national and county levels, incorporating the One Health approach into all these measures.

United Republic of Tanzania

The URT initiated its One Health agenda in 2013 by developing the National One Health Strategic Plan (NOHSP) for 2015-2020. Establishing the One Health Coordination Desk within the Prime Minister's Office's Disaster Management Department and four multi-sectoral Technical Working Groups covering surveillance, research and development, training and advocacy and preparedness, and response were the hallmarks of implementing the NOHSP. 2018, the National One Health Strategic Plan and the One Health Coordination Desk were officially launched. The Desk served as the Secretariat of the National One Health Platform, coordinating One Health activities across the country.

Tanzania prioritized zoonotic diseases in 2017, resulting in the development of strategic disease control plans, guidelines, and SOPs. The country also created the National Antimicrobial Resistance Action Plan (2017-2022), specific plans for Zanzibar, and the National Action Plan for Health Security (2017-2021). The latter addresses gaps identified during the JEE conducted in 2016. Through the platform, several activities have been conducted under the coordination of the coordination PMO OH desk (later changed to the OH section).

Republic of Uganda

In 2016, The technical heads of four ministries in the Republic of Uganda met and endorsed a One Health framework prepared by One Health stakeholders. The ministries included the Ministry of Health, the Ministry of Agriculture, the Ministry of Animal Industry and Fisheries, the Ministry of Water and Environment, and the Ministry of Tourism, Wildlife, and Antiquities. The framework led to the formation of the National One Health Platform following the signing of a Memorandum of Understanding (MoU) by the four-line ministries. Through the MoU, the first National One Health

Strategy (2018-2022) was prepared with a focus on three priority public health threats: zoonotic diseases, AMR, and biosafety and biosecurity (BSS).

Applying the One Health approach, the AMR National Action Plan (2018-2023) was also created and integrated into the One Health Strategic Plan. Other activities include the adoption of the 3rd edition of the Integrated Disease Surveillance and Response (IDSR) framework incorporating the One Health approach, JEE in June 2017, and the launching of the NAPHS in 2019.

Table 1: Summary of One Health implementation status in EAC Partner States as of Dec 2022

LEVEL (REGIONAL/ PARTNER STATE)	PARAMETER	OBSERVATION(S)
EAC	Policy	No policy exists
	Strategic Plan	Regional Contingency Plan and Emergency Structure reflect the One Health approach Regional Risk and Crisis Communication Strategy reflects the One Health approach
	Legal Framework	None
	Action Plans	None exist
	Institutional arrangement	Decision to place One Health under Health
Burundi	Policy	None One Health policy in place
	Strategic Plan	None in place
	Legal Framework	None
	Action Plans	COVID-19 Response Plan , EBOLA Contingency Plan, National Laboratory Risk Management Plan, AMR Plan, Multi-sectoral Cholera Elimination Strategic Plan, Malaria Control Strategic Plan, Outbreak Response Plan, Integrated disease surveillance and Response plan
	Institutional Arrangement	Ministry of Health is currently implementing One Health activities
Kenya	Policy	No One Health Policy in place,
	Strategic Plan	OHSP in place
	Legal Framework	Operates on an MoU, supported by the Health Act, Animal Health Act, Veterinary Practitioners and Para-professionals Act, Public Health Act
	Action Plans	RVF contingency plan, Avian influenza contingency plan, Rabies elimination plan, Anthrax prevention and control plan, Brucellosis prevention and control plan, Public health events of initially unknown etiology preparedness plan, Contingency Plan for COVID-19
	Institutional Arrangement	A zoonotic Diseases Unit exists housed in the MOH, AMR steering committee, Food safety coordinating, Technical Working Groups, No overarching One Health body, role currently taken up by Zoonotic disease Unit (ZDU)
Rwanda	Policy	Policy in place
	Strategic Plan	In place (Rwanda One Health Strategic Plan II (2019-2023))
	Legal Framework	Not sure
	Action Plans	National Action Plan for Health Security, AMR plan with One Health approach, RVF plan
	Institutional Arrangement	One Health multi-sectoral Coordination Mechanism the inter-ministerial leadership and coordination level exists, Technical

		Working Groups are envisaged to provide expert forums, One Health Secretariat and Ministry of Health and line ministries (with clear responsibilities)
South Sudan	Policy	No policy, no legal framework but have a coordination unit
	Strategic Plan	There is no strategic plan in place, however two consultative meetings were conducted with support from WHO.
	Legal Framework	No legal framework
	Action Plans	COVID-19 preparedness and response plan, EVD preparedness plan, Cholera response plan
		The PHEOC is ready to staff One Health approach and there is a coordination mechanism in place between key ministries.
Tanzania	Policy	No specific One health policy exists
	Strategic Plan	OH SP exists but expired in 2020
	Legal Framework	In place using existing Acts
	Action Plans	Prepared annually
	Institutional Arrangement	Coordination through existing government coordination mechanisms and Coordination Office in place (One Health CD at PMO's Office)
Uganda	Policy	No policy exists. Just concluded a Regulatory Impact Assessment as a step towards formulation of a National One Health Policy
	Strategic Plan	One Health Strategic Plan (2018 – 2022) exists.
	Action Plans	Prepared annually in sectoral work plans A national Action Plan on AMR also exist
	Institutional Arrangement	A national One Health Coordination Office exists but with no permanent staff. Currently housed at MOH with 8 FPs/ members (2 institutional representatives from MOH, MAAIF, MWE and UWA)

Regional One Health networks and initiatives

Global health initiatives have led to the establishment of many One Health networks and consortia. These include the FAO/WOAH/WHO/UNEP Tripartite Plus collaboration, the One Health Workforce next generation, the One Health Alliance of South Asia, etc. In Africa, some regional economic communities have made One Health a focus area in their agendas. The " East and South African Livestock Common Market" policy framework is one example of such efforts (WHO 2022).

In 2000, the EAC Partner States, with support from the Rockefeller Foundation, launched the East African Integrated Disease Surveillance Network (EAIDSNet). The EAIDSNet represents a collaborative effort between EAC national human and animal health ministries, national health research, and academic institutions to facilitate communication among EAC Partner States for integrated cross-border animal and human disease surveillance and control. In 2008, the Southern Africa Centre for Infectious Disease (SACIDS) was launched with support from Google.org. Initially, SACIDS operated as a consortium of academic and research institutions focusing on infectious diseases in humans and animals in the Democratic Republic of Congo, Mozambique, South Africa, Tanzania, and Zambia. In 2018, SACIDS transformed into a regional One Health Institute.

The One Health Central and Eastern Africa (OHCEA), which later in 2019 changed to Africa One Health University Network (AFROHUN), supported by the USAID's Emerging Pandemic Threats (EPT) Programme, was established in six countries, URT, Uganda, Kenya, Ethiopia, DRC, and Rwanda. OHCEA expanded to include Cameroon, Senegal, Côte d'Ivoire, and Liberia. Now, AFROHUN is in 16 universities

across eight countries in the East, Central, and West Africa. AFROHUN, in collaboration with its partners, is actively supporting the implementation of One Health, particularly One Health workforce capacity building. In 2012, the Connecting Organizations for Regional Disease Surveillance (CORDS) was established across Africa, Asia, the Middle East, and Europe. CORDS focuses on strengthening the detection and control of infectious diseases through information exchange and collaboration among member states, employing a One Health approach. The Comprehensive Africa Agriculture Development Programme, under the African Union (AU), plays a crucial role in transforming agriculture for food security and nutrition and promoting economic growth and prosperity across the continent. On the other hand, the Livestock Development Strategy for Africa (LiDeSA), supports African countries in implementing the Strategic Framework for One Health developed in 2015 (WHO, 2022).

One Health Regional Network for the Horn of Africa (HORN) was initiated in 2018 with support from the UK Research Council Global Challenges Research Fund. HORN involves the University of Liverpool, the University of Nairobi, and Addis Ababa University, focusing on various aspects of health sciences, veterinary medicine, and public health in the Horn of Africa. The One Health Research, Education, and Outreach Centre for Africa (OHRECA), supported by the German Federal Ministry of Economic Cooperation and Development, leverages the expertise, resources, and research facilities of several centres of excellence within ILRI, including the Mazingira Centre in Kenya. It addresses issues at the intersection of livestock, the environment, and climate change. Other networks include the African Science Partnership for Intervention Research Excellence (Afrique One - ASPIRE), a pan-African research consortium established in 2009 for One Health capacity building.

The above networks and initiatives have spearheaded One Health capacity building and research to facilitate decision-making and policy change. AFROHUN, for instance, has supported universities in the EAC to foster collaboration across various disciplines, facilitating a more holistic approach and championing One Health with openness and flexibility. Their role has been instrumental in tackling infectious diseases before, during and after outbreaks. SACIDS, in collaboration with the Tanzania National Institute for Medical Research (NIMR) and OHCEA (now AFROHUN), hosted the first One Health conference in Arusha, Tanzania, in 2013. The conference provided a platform to share research conducted in various fields and raised awareness about the importance of One Health in research preparedness and response in the region.

Discussion on the rationale for adopting the One Health approach in the EAC
In 2017, the 35th Ordinary meeting of the EAC Council of Ministers emphasized adopting the One Health approach in the region. The emphasis was based on lessons from the West African Ebola Virus Disease (EVD) outbreak, the frequent occurrences of disease outbreaks in the EAC region, the recommendations of the EAC Regional Contingency Plan for Epidemics and other public health concerns. In November 2019, the 19th EAC Sectoral Council of Ministers of Health directed the EAC Secretariat to strengthen multi-sectoral collaboration and coordination by developing a regional One Health Strategy by June 2021. Partner States were further directed to promote and strengthen interdisciplinary collaboration to embrace One Health in preparedness and response to public health threats. The directives underpinned political will and the need to build outbreak response capacity in the region following the WHO IHR-2005 and the WOAH Terrestrial Animal Health Code.

According to the experts interviewed, regional One Health implementation will support national strategies and provide guidance and direction for integrated efforts to mitigate health risks in the EAC. Such efforts must harmonize and consolidate national efforts, offering guidance for multi-disciplinary and multi-sectoral preparedness, prevention, detection, and response to public health

threats across EAC borders. Ultimately, it will foster and promote the development of a regional One Health community of practice.

Including the DRC in the EAC in April 2022 is a significant step toward ensuring the active participation of more countries in the region in collaborative efforts to prevent, detect, and rapidly respond to emerging and re-emerging public health threats. However, it also underscores the need for a more comprehensive regional, multi-sectoral, and multidisciplinary approach.

The DRC hosts 500 million acres of wilderness around the Congo basin, characterized by tropical rainforests. The tropical ecosystem serves as a habitat for diverse animal species, some known as reservoirs for infectious diseases and pathogens. EVD outbreaks have occurred in the DRC more than ten times in the past decade, spreading to Uganda in 2018-2020. RVF occurred in Kenya between 2006 and 2007, in Tanzania in 2006-2007, and in Sudan in 2007-2008. Marburg outbreaks occurred in Kenya in 1980-1987 and Uganda in 2007, 2008, 2012, 2014, and 2017. Crimean-Congo Hemorrhagic Fever (CCHF) was reported in Uganda in 2013 and 2018. Yellow Fever occurred in Isiolo, central Kenya, in March 2022 but has been endemic in Uganda, the DRC, Burundi, and South Sudan. The Highly Pathogenic Avian Influenza (HPAI) outbreak occurred in the Lake Victoria region of Uganda in late 2016 and early 2017.

As mentioned earlier, AMR also poses a major threat to preventing and controlling bacteria, viruses, parasites, and fungi infection. Partner States have monitored the trends with support from development partners. AMR action plans have been developed to address gaps in key areas of AMR, particularly in detection, surveillance, stewardship, and infection prevention and control. Regional One Health efforts will undoubtedly complement the Partner States' plans, building capacity in the areas and promoting regional collaboration to address gaps from the community to the global level (Greater, H. et al. 2014).

There is increased travel for trade and tourism across EAC porous borders, the existence of extensive tropical rainforests in the Congo basin, savannah grasslands accompanied by weak surveillance systems, population growth, deforestation, and human habitation in or near animal habitats posing risks for spillover of pathogens (Andrew et al., et al 2016; Gumi, B., et al 2012; Grace, D et al, 2012). Environmental pollution, caused by harmful gases and chemicals, has substantially impacted climate and ecosystems. Consequences include floods, degradation of biodiversity, contaminated food and water, and food product contamination, leading to morbidity, fatalities, and economic losses at both the household and national levels. South Sudan, for example, experienced heavy rains and flooding, combined with the historical overflow of the River Nile and its tributaries, affecting many states. The flooding also led to an increased occurrence of cholera, affecting the health of local communities (Gumi, B. et al., 2012; Grace, D. et al., 2012).

Available opportunities

Several key opportunities can be harnessed to effectively implement the One Health approach in EAC. Global frameworks and partnerships, such as the Quadripartite Collaboration and the Global Health Security Agenda, offer comprehensive guidelines and support, providing a strong foundation for regional strategies. Additionally, regional networks like EAIDSNet and AFROHUN facilitate cross-border disease surveillance and capacity building, which is crucial for a unified approach. The EAC's political will and recent expansion, including countries like the DRC, enhance the potential for a coordinated regional response. Collaborative projects and international support from UNEP, WHO, and FAO present valuable resources and expertise. Moreover, leveraging existing national strategies and multi-sectoral platforms in Partner States can help harmonize and scale One Health efforts across

the region. These opportunities collectively offer a robust framework for advancing One Health in the EAC, improving regional health outcomes, and enhancing preparedness for health threats.

Conclusion

To effectively implement the One Health approach in the EAC region, it's important to tap into several key opportunities. Collaborative regional efforts, supported by global frameworks like the Quadripartite partnership and the Global Health Security Agenda, provide a strong foundation for a unified strategy. Regional networks such as EAIDSNet and AFROHUN enhance cross-border disease surveillance and capacity building, which is crucial for a coordinated response. The EAC's political will and the inclusion of countries like the DRC bolster the potential for a comprehensive regional approach. Furthermore, establishing a dedicated regional coordination body under the EAC, engaging stakeholders, and harmonizing national strategies can facilitate effective implementation. Capacity building, infrastructure development, and political advocacy are critical to promoting One Health and addressing disparities among Partner States. By utilizing these opportunities and implementing a strategic, well-coordinated plan with robust monitoring and evaluation, the EAC can enhance its regional health outcomes and preparedness for complex health threats.

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