Cross-Border Surveillance in Pandemic Preparedness: The East African Case

Francis Kakooza describes how integrating surveillance systems, facilitating information sharing, building capacity, and engaging communities, in the East African region can enhance the regions ability to detect and respond to health threats.

Introduction

Throughout history, the pattern of infectious diseases outbreaks has been shaped by regional and international migration inspired by trade and commerce . This has been escalated by economic and social-cultural practices such as pastoralism, tourism to mention but a few. Due to the emergence and resurgence of infectious diseases in an interconnected world, the threat of pandemics has gained prominence and thus a global drive for all countries to strengthen mechanisms for effective cross-border surveillance and response .

Historical examples like the 1918 influenza pandemic, the H1N1 pandemic in 2009, and the COVID-19 pandemic underscore the need for robust cross border preparedness and response plans . These pandemics have shown that early detection and rapid response are critical in controlling disease spread and minimizing societal disruption. As a result, a global health security framework was formalized in the 2005 as the International Health Regulations, focused on rapid detection and response . Cross-border surveillance involves collaboration between neighboring countries to share data, harmonize reporting standards, and coordinate response activities of health-related data across national borders . The surveillance system monitors the spread of infectious diseases and identify potential public health threats that may arise due to the movement of people, animals, and goods between countries. Points of entry (PoE) airports, ports and ground crossings play a key role in the international spread of diseases through persons, conveyances and goods. East Africa, with its porous borders and diverse ecosystems, faces unique challenges and opportunities in this regard.

Since the creation of the East African Community bloc, there has been increased traffic due to free movement of people and goods across the borders of Partner States in the region. This has led to the development of local urban centers at border points and population influx. The increased traffic, combined with inadequate cross-border outbreak coordination mechanisms and climate change have consequently resulted into easy spread of diseases. This situation is exacerbated by the ecological distribution of communicable diseases and the porous nature of the borders.

With the accelerated process of regional integration reflected by the new member states, establishment of the East African Customs Union and the EAC Monetary Union its logical that measures are put in place to ensure that cross-border transmission of diseases does not interfere with the current process of establishing a sustainable East African economic bloc.

This article describes the east African cross-border surveillance efforts, challenges and recommendations for strengthening cross-border surveillance delves into the role of cross-border surveillance in enhancing pandemic preparedness in East Africa, highlighting its impact

The East African Context;

The East African Community (EAC) is a regional economic community comprising six partner states: the Republics of Burundi, Kenya, Rwanda, South Sudan, the United Republic of Tanzania, and the Republic of Uganda . Its headquarters are in Arusha, Tanzania. 150 million citizens live in the EAC. The region is characterized by high mobility due to trade, tourism, and migration, increasing the risk of cross-border disease transmission. Moreover, the presence of numerous refugee camps and internally displaced persons adds complexity to disease surveillance efforts. Climate change, fragile heath care system among other vulnerabilities lie in the geographic belt prone to epidemic prone diseases hemorrhagic diseases.

East Africa has faced significant infectious disease outbreaks, impacting public health and stability. Uganda reported 3 major Ebola cases in 2000-Gulu, Budibugyo-2019 and 2022 in Mubende . Cholera outbreaks were severe in Kenya (4,835 cases, 37 deaths in 2019) and Tanzania (33,000 cases, 550 deaths from 2015-2018). Kenya's RVF outbreak in 2006-2007 caused 684 cases and 155 deaths ; Tanzania's 2007 outbreak had 309 cases and 144 deaths. Measles cases surged in Kenya (3,460 cases, 27 deaths in 2019). COVID-19 significantly impacted Kenya (200,000 cases, 3,900 deaths) and Uganda (75,000 cases, 1,300 deaths) by mid-2021. These statistics underscore the need for effective public health measures .

Current Cross-Border Surveillance Efforts

East African Community Border health initiatives;

The East African Community (EAC) has recognized these challenges and taken steps to enhance regional health security . The EAC's Health Department works closely with member states to implement joint surveillance and response activities. The East African

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Community Treaty, Articles 108 and 118 mandates the Community to coordinate the control of human and animal trans-boundary diseases. Partner states have States developed the regional plan of action for the control of human and animal trans-boundary diseases in East Africa (2007-2012).

The community has intensified regional efforts to enhance cross-border disease prevention and control. Some of the notable initiatives include the East African Integrated Disease Surveillance Network (EAIDSNet) , established in 2000 with support from the Rockefeller Foundation, aimed at generating quality epidemiological information for early warning and response to outbreaks. In 2005, the African Field Epidemiology Network (AFENET) was launched with support from the CDC and various ministries to develop a pool of field epidemiologists. Additionally, the East Africa Public Health Laboratory Networking Project (EAPHLNP) is coordinated by the East, Central, and Southern Africa Health Community (ECSA-HC) in collaboration with the CDC, WHO, and EAC Partner States. Earlier initiatives, such as the WHO inter-country surveillance project (2004-2007), focused on collaboration among countries in the Great Lakes bloc. These efforts highlight the crucial role of national and international agencies in establishing a robust cross-border surveillance system.

Creation of cross border surveillance zones;

The Health Desk at the EAC secretariat in collaboration with line ministries, formed the Regional Surveillance Technical Working Group (RSTWG) and the respective Country Surveillance Technical Working Group (CSTWG) of EAPHLNP . Working with the Ministries of Health, established cross-border zones through mapping high-risk districts based on traffic patterns and historical occurrences of disease outbreaks. This proactive approach aims to enhance surveillance and response capabilities in border regions, where movement of people and goods can facilitate the spread of infectious diseases. By identifying and prioritizing these zones, the ministry can target resources more effectively, implement tailored health interventions, and strengthen collaboration with neighboring countries to mitigate public health risks. This initiative underscores east Africa's commitment to proactive health management at its borders, ensuring readiness to address potential health threats before they escalate.

The 2023-2028 EAC roadmap for cross-border health

The EAC led the formulation of the 2023-2028 roadmap for cross-border health, aimed at improving public health emergency readiness and response throughout the region. This effort prioritizes the implementation of an EAC Minimum Package of Essential Health Services at Points of Entry (PoEs), the introduction of Health Border Mobility Management (HBMM) training, and the establishment of Standard Operating Procedures (SOPs) for Community Event-Based Surveillance (CEBS) and Risk Communication and Community Engagement (RCCE) in border communities. Stakeholder consultations will focus on strategies for disseminating communication materials to enhance project visibility and ensure the sustainability of its outcomes.

Regional Electronic Cargo Tracking System (RECTS)

The Uganda Revenue Authority employs the Regional Electronic Cargo Tracking System (RECTS) with GPS to monitor truck movements from entry to exit points, preventing cargo dumping and trade route risks. During COVID-19, the National COVID-19 Taskforce collaborated with the Ministry of Trade and URA to leverage RECTS for monitoring compliance with health guidelines at borders. The system tracked adherence to social distancing and hygiene measures, detected unauthorized entries, and facilitated real-time feedback to truck drivers crossing borders. The Central Command Targeting Center ensured continuous monitoring of border activities, enhancing surveillance and response capabilities during the pandemic.

Uganda's Experience in setting up Border Health;

Conduct the baseline assessment for point of entries and activation of the points of entry;

In August 2019, Uganda established a multi-sectoral committee with representatives from the Ministry of Agriculture, Animal Industry and Fisheries (MAAIF), Ministry of Health (MOH), Infectious Diseases Institute (IDI), World Health Organization (WHO), Ministry of Water and Environment (MWE), and District Health Officers. This collaboration aimed to enhance public health emergency management at points of entry (PoEs). The assessment revealed that Uganda has 77 PoEs, 54 of which are gazetted, and only three are major PoEs. Key gaps identified included porous border management, insufficient human resources, lack of SOPs, inadequate PoE capacity, and the absence of a National Border Health Unit in the Ministry of Health. These provided a baseline for improvement of point entry IHR capacities.

Identification of staff and capacity building of the Points of entry;

Staffs were identified from the nearest health facilities and reassigned additional roles to support the respective points of entry as screeners and in-charges. These individuals were trained in cross-border surveillance, basic laboratory diagnostics, and field investigation. Subsequently, they were given the opportunity to participate in the Field Epidemiology and Laboratory Training Program (FELTP), which is instrumental in equipping the region's health workforce with the necessary skills. The training was completed successfully, with ongoing mentorship to improve the capacity of the staff to manage the points of entry effectively.

Point of entry Partner mapping;

To address identified gaps, the Ministry of Health's technical group mapped partners using the 4W matrix, including both governmental and non-governmental entities. These partners provide crucial technical, logistical, and financial support to strengthen points of entry (PoEs). Their collaboration ensures a coordinated response and enhances PoEs' capacity to manage public

health threats effectively.

Develop site-specific multisectoral, public health emergency response plans (PHERPs) and associated standard operating procedures (SOP) for 2 PoEs (Elegu and Arua Airport).

To enhance preparedness and response capabilities, site-specific multisectoral Public Health Emergency Response Plans (PHERPs) and Standard Operating Procedures (SOPs) have been developed for Points of Entry (PoEs). These plans are aimed at establishing a coordinated strategy across various sectors including health, transportation, immigration, and security. The PHERPs outline clear roles and responsibilities during public health emergencies, detailing procedures for detection, isolation, and management of cases and standardized communication protocols, data sharing, and resource allocation to ensure effective collaboration among stakeholders. Tabletop exercise was conducted to familiarize PoE staff with these plans, emphasizing the importance of rapid response and adherence to protocols. By implementing these tailored PHERPs and SOPs, PoEs capacities have been improved to mitigate health risks and respond promptly to emerging threats.

Strengthening Cross-Border Collaboration;

The national border health team conducted meetings to set up agreements, such as memoranda of understanding, to formalize cross-border public health information sharing and collaboration between Uganda, South Sudan, and the Democratic Republic of the Congo (DRC). These agreements establish a cooperative framework, ensuring all parties align in managing public health threats. Representatives from each country develop standard operating procedures (SOPs) for coordinated responses to public health emergencies, facilitating timely and accurate information exchange.

The team also built the capacity of points of entry to conduct local-level meetings, such as point of entry staff border health meetings. These meetings adapt national guidance to border regions, providing a platform for local health officials to share updates, discuss challenges, and ensure current contact information. By maintaining communication and collaboration at both national and local levels, the involved countries enhance their collective ability to detect, respond to, and manage cross-border public health threats efficiently.

Results for Point of entry capacity built over time following the IHR assessment.

Challenges in Cross-Border Surveillance

Despite the progress made, several challenges persist in implementing effective cross-border surveillance in East Africa.

1. Resource Limitations;

Limited financial and human resources pose significant challenges. The established points entry countries in the region struggle with underfunded health systems, which can impede surveillance activities. Sustainable funding mechanisms and international support are needed to address these resource constraints.

2. Data Sharing and Privacy Concerns.;

Sharing sensitive health data across borders raises privacy and security concerns and doesn't meet Establishing clear protocols and agreements for data sharing, while ensuring data protection, is crucial. Trust between countries and adherence to international guidelines.

Recommendations for Strengthening Cross-Border Surveillance:

1. Digital Health Technologies;

Digital health technologies, such as mobile health applications and electronic health records, can revolutionize cross-border surveillance. These technologies enable real-time data collection, analysis, and sharing, enhancing the speed and accuracy of surveillance activities. Investing in digital health infrastructure and training is key to leveraging these technologies.

2. One Health Approach;

The One Health approach, which recognizes the interconnectedness of human, animal, and environmental health, is critical for effective surveillance. Integrating One Health principles into surveillance systems ensures a holistic approach to health security. Collaborative efforts between the health, veterinary, and environmental sectors are essential for addressing zoonotic disease threats.

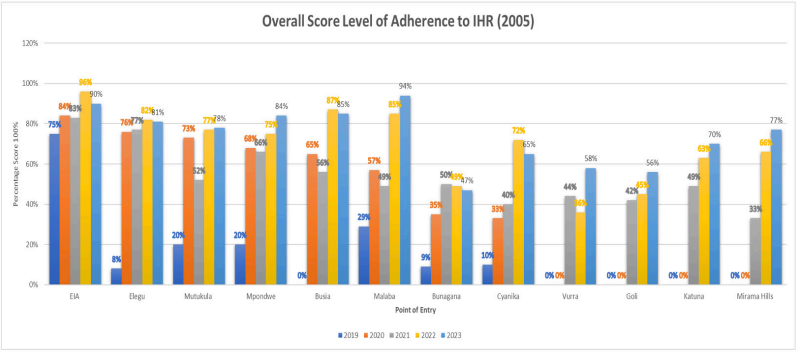


Figure 1: A bar graph showing a comparison of the levels of adherence to IHR (2005) performance of all the Twelve PoEs for 2019, 2020, 2021, 2022 and 2023 respectively.

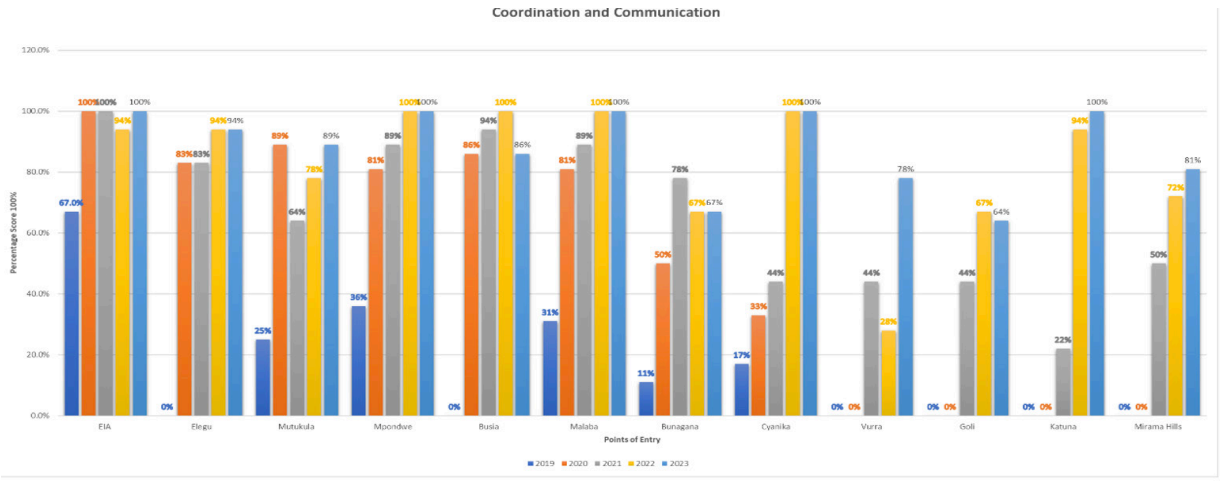


Figure 2: A bar graph showing a comparison of the levels of adherence to IHR (2005) in the capacity of communication and coordination in all the twelve PoEs for 2019, 2020, 2021, 2022 and 2023 respectively.

3. Public-Private Partnerships

Public-private partnerships can provide additional resources and expertise for cross-border surveillance. Collaborating with private sector entities, such as technology companies and pharmaceutical firms, can enhance surveillance capacity and innovation. Establishing mutually beneficial partnerships is crucial for sustainable surveillance efforts.

Conclusion

Cross-border surveillance is a cornerstone of pandemic preparedness in East Africa. By integrating surveillance systems, facilitating information sharing, building capacity, and engaging communities, the region can enhance its ability to detect and respond to health threats. Policymakers, educators, and the health fraternity must work together to address challenges and leverage innovative approaches. Strengthening cross-border surveillance is not only vital for regional health security but also for global health resilience.

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