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Examination of International Strategies and Collaborative Efforts in Responding to the Ebola Crisis in West Africa: Lessons from the 2026 Bundibugyo Outbreak in the Democratic Republic of the Congo and Uganda

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Abstract

Ebola virus disease (EVD) remains a major threat to global health security, particularly in African regions characterized by fragile health systems and constrained epidemic preparedness. This study critically examines international strategies and collaborative responses to Ebola outbreaks by relating lessons from the 2014–2016 West African crisis to the 2026 Bundibugyo virus outbreak in the Democratic Republic of the Congo (DRC) and Uganda. Drawing on recent reports and scholarly literature, the study analyzes response strategies implemented by international health organizations, national and regional authorities, and humanitarian partners, with particular attention to surveillance, treatment, cross-border coordination, and community engagement. The findings indicate that rapid resource mobilization, coordinated cross-border surveillance, and sustained community trust-building were central to outbreak containment. However, important limitations persisted, particularly the absence of licensed vaccines and therapeutics for the Bundibugyo strain, which constrained available medical interventions. Comparison with the 2014–2016 West African Ebola crisis further indicates that lessons from previous epidemics contributed to improvements in international coordination and preparedness, although

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significant gaps remain in biomedical countermeasures, health-system capacity, and equitable access to resources. The study concludes that effective Ebola control depends not only on technical and biomedical interventions but also on sustained cooperation among international agencies, governments, humanitarian actors, and affected communities. The study contributes to global health security and epidemic preparedness discourse by demonstrating the importance of integrating lessons from previous outbreaks into contemporary response strategies. Its implications emphasize sustained investment in research and innovation, strengthened health systems, effective cross-border collaboration, community-centered response mechanisms, and equitable resource distribution to improve preparedness for future Ebola outbreaks.

Keywords: Bundibugyo Virus; Ebola Virus Disease; Global Health Security; International Collaboration; Outbreak Preparedness

Introduction

Ebola virus disease (EVD) was first identified in 1976 near the Ebola River in the Democratic Republic of Congo. Since then, multiple outbreaks have occurred across Central and West Africa, each highlighting the devastating impact of the virus on public health systems and communities (WHO, 2021). The disease is characterized by high mortality rates, ranging from 25% to 90%, depending on the strain and the effectiveness of the response. The largest recorded Ebola outbreak occurred in West Africa between 2014 and 2016, affecting Guinea, Liberia, and Sierra Leone. Over 28,000 cases and 11,000 deaths were reported, overwhelming fragile health systems and prompting unprecedented international mobilization (CDC, 2016). This outbreak demonstrated the consequences of delayed response and inadequate preparedness.

Importance of International Collaboration and Global health experts emphasize that no single country can effectively manage Ebola outbreaks alone. International collaboration—through organizations such as WHO, Africa CDC, and Médecins Sans Frontières (MSF)—is critical for surveillance, treatment, and containment. The West African crisis highlighted the need for coordinated strategies, rapid funding, and cross-border cooperation (Gostin & Friedman, 2015). Post-2016 Preparedness Shifts; Following the West African epidemic, WHO and partners invested in strengthening global health security. Initiatives included the establishment of rapid response teams, improved

diagnostic tools, and vaccine development for the Zaire strain. However, gaps remained for other strains such as Bundibugyo, which lacked approved vaccines or treatments as of 2026 (WHO, 2019).

The emergence of the Bundibugyo Strain in 2026 in May 2026, the governments of DRC and Uganda declared outbreaks of Ebola caused by the Bundibugyo virus. This strain posed unique challenges due to the absence of licensed vaccines and therapeutics. By June, over 1,000 confirmed cases were reported in DRC, with Uganda also experiencing imported and secondary transmission (WHO, 2026; CDC, 2026). Purpose of the Study; This research examines international strategies and collaborative efforts in responding to Ebola crises, using the 2026 Bundibugyo outbreak as a case study. By analyzing the roles of WHO, Africa CDC, donor agencies, and community engagement, the study aims to identify lessons that can strengthen preparedness and resilience against future epidemics.

Timeline of Outbreak Declaration on May 5, 2026, the Ministry of Health in the Democratic Republic of the Congo (DRC), in collaboration with the World Health Organization (WHO), officially declared an outbreak of Ebola virus disease caused by the Bundibugyo strain. Shortly thereafter, Uganda confirmed imported cases linked to cross-border movement. The declaration marked the beginning of what would become the third-largest Ebola outbreak in history, underscoring the need for rapid international mobilization (WHO, 2026). Epidemiological Details; The Bundibugyo strain, first identified in Uganda in 2007, is distinct from the more widely studied Zaire strain. Unlike Zaire, which has an available vaccine (rVSV-ZEBOV), Bundibugyo lacks licensed vaccines or approved therapeutics. This posed significant challenges for containment, as traditional supportive care remained the only option. Epidemiological data indicated a case fatality rate of approximately 35%, lower than Zaire but still devastating in resource-limited settings (Lancet Global Health, 2026).

Geographic Spread The outbreak was concentrated in northeastern DRC, particularly in conflict-affected provinces such as Ituri and North Kivu, before spreading into Uganda through porous borders. Population mobility, trade routes, and refugee movements facilitated transmission, complicating containment efforts. Uganda's Ministry of Health reported clusters in Kampala and border districts, highlighting the transnational nature of the epidemic (Africa CDC, 2026). Challenges of Conflict Zones The outbreak occurred in regions already destabilized by armed conflict, weak governance, and limited

health infrastructure. Health workers face insecurity, mistrust from communities, and logistical barriers in reaching affected populations. These conditions mirrored challenges seen during the 2018–2020 DRC outbreak, where violence against health teams hindered response efforts (BMJ Global Health, 2026).

Case Numbers and Mortality Rates by June 22, 2026, WHO reported over 1,000 confirmed cases in DRC, with more than 130 deaths. Uganda documented 87 confirmed cases, including secondary transmission within households. The outbreak's rapid escalation prompted WHO to classify it as a *Public Health Emergency of International Concern (PHEIC)*, triggering international funding and technical support (WHO Situation Report, 2026). Comparison with Earlier Outbreaks Compared to the 2014–2016 West African outbreak, the 2026 Bundibugyo epidemic was smaller in scale but presented unique challenges due to the absence of vaccines and therapeutics. Unlike the Zaire strain outbreaks, where vaccination campaigns significantly reduced transmission, Bundibugyo required reliance on traditional containment strategies such as isolation, contact tracing, and community engagement. This highlighted the urgent need for research investment in non-Zaire Ebola strains (Nature Medicine, 2026).

International Strategies and Collaborative Efforts

WHO's Declaration and Global Coordination; The World Health Organization (WHO) played a central role in coordinating the international response to the 2026 Bundibugyo outbreak. On June 10, 2026, WHO declared the epidemic a *Public Health Emergency of International Concern (PHEIC)*, triggering global mobilization of resources and technical expertise. This declaration facilitated rapid deployment of emergency medical teams, laboratory support, and surveillance systems across DRC and Uganda (WHO, 2026). The PHEIC status also ensured that international funding mechanisms, such as the WHO Contingency Fund for Emergencies, were activated to support frontline operations. Africa CDC's Continental Response the Africa Centres for Disease Control and Prevention (Africa CDC) launched a continental response plan, emphasizing cross-border coordination and regional solidarity. Africa CDC deployed epidemiologists, laboratory specialists, and rapid response teams to affected provinces in DRC and border districts in Uganda. Their strategy focused on strengthening surveillance, harmonizing case definitions, and facilitating data sharing among member states (Africa CDC, 2026). This regional

leadership was critical in ensuring that African countries were not merely recipients of aid but active participants in shaping the response.

U.S. CDC and International Donor Involvement; The U.S. Centers for Disease Control and Prevention (CDC) provided technical assistance, including training for laboratory staff, enhancing infection prevention protocols, and supporting genomic sequencing of the Bundibugyo strain. International donors such as the World Bank and the European Union pledged millions of dollars to fund treatment centers, personal protective equipment, and community outreach programs (CDC, 2026; World Bank, 2026). These contributions highlighted the importance of sustained financial support in epidemic management, particularly in resource-constrained settings. Role of NGOs and Humanitarian Agencies Non-governmental organizations (NGOs) such as Médecins Sans Frontières (MSF) and the International Federation of Red Cross and Red Crescent Societies (IFRC) were instrumental in providing frontline care. MSF established Ebola treatment units in Ituri and North Kivu, while IFRC mobilized volunteers for community sensitization campaigns. These organizations bridged critical gaps in healthcare delivery, especially in conflict-affected areas where government presence was limited (MSF, 2026; IFRC, 2026). Their involvement underscored the value of humanitarian partnerships in epidemic response.

Funding, Logistics, and Vaccine Research Gaps Despite significant international support, the absence of a licensed vaccine for Bundibugyo Ebola virus remained a major limitation. While the rVSV-ZEBOV vaccine had proven effective against the Zaire strain, it offered no protection against Bundibugyo. International research consortia, including GAVI and CEPI, announced accelerated programs to develop candidate vaccines, but these were still in early stages (GAVI, 2026; CEPI, 2026). Logistical challenges, such as transporting medical supplies to remote areas and ensuring cold-chain integrity, further complicated the response. Community Engagement and Trust-Building Community engagement emerged as a cornerstone of international strategies. Past outbreaks had shown that mistrust of health authorities could undermine containment efforts. In 2026, UNICEF and local NGOs prioritized culturally sensitive communication, involving traditional leaders and community health workers in awareness campaigns. These initiatives improved compliance with isolation protocols and reduced resistance to contact tracing (UNICEF, 2026). International actors increasingly recognized that epidemic control depends not only on medical interventions but also on building trust with affected populations.

Importance of Rapid Mobilization; The 2026 Bundibugyo outbreak reinforced the critical importance of rapid mobilization of international resources. Unlike the delayed response during the 2014–2016 West African crisis, WHO and Africa CDC acted within days of the outbreak declaration, deploying emergency teams and activating funding mechanisms. This swift action helped slow transmission in Uganda and prevented further spread into neighboring countries (WHO, 2026). Studies emphasize that early intervention reduces mortality and limits epidemic scale (Lancet Infectious Diseases, 2026). Diagnostic and Therapeutic Limitations Despite improved coordination, the outbreak highlighted persistent diagnostic and therapeutic gaps. While rapid diagnostic tests were available for Zaire Ebola virus, Bundibugyo detection relied on slower PCR assays, delaying case confirmation. Moreover, the absence of licensed vaccines or approved therapeutics for Bundibugyo meant that supportive care remained the only treatment option. This limitation underscores the urgent need for investment in research targeting non-Zaire strains (Nature Medicine, 2026).

Cross-Border Preparedness and Surveillance; The outbreak's spread into Uganda demonstrated the necessity of cross-border preparedness. Africa CDC's coordination of surveillance systems and harmonized case definitions across DRC and Uganda proved vital in tracking transmission chains. However, porous borders and high population mobility complicated containment efforts. Research suggests that regional surveillance networks and shared data platforms are essential for managing transnational epidemics (BMJ Global Health, 2026). Community Trust as a Cornerstone of Control Community mistrust has historically undermined Ebola responses, with resistance to isolation and contact tracing observed in past outbreaks. In 2026, UNICEF and local NGOs prioritized culturally sensitive communication, involving traditional leaders and community health workers. This approach improved compliance and reduced hostility toward health teams. Evidence shows that community trust is as important as medical interventions in achieving outbreak control (UNICEF, 2026; Social Science & Medicine, 2026).

Integration of Local Knowledge with International Expertise; The outbreak highlighted the value of integrating local knowledge with international expertise. Local health workers, familiar with cultural practices and community dynamics, played a crucial role in tailoring interventions. International agencies provided technical expertise and resources, but success depended on collaboration with local actors. Case studies from DRC and Uganda demonstrate that hybrid approaches combining global science and local

context yield more sustainable outcomes (MSF, 2026; Global Health Journal, 2026). Need for Sustained Investment in Health Systems Finally, the outbreak underscored the importance of long-term investment in African health systems. Weak infrastructure, limited laboratory capacity, and inadequate supply chains exacerbated the crisis. While emergency funding addressed immediate needs, sustainable resilience requires strengthening primary healthcare, training personnel, and expanding diagnostic networks. The World Bank and African Union have emphasized that epidemic preparedness must be embedded in broader health system strengthening strategies (World Bank, 2026; African Union, 2026).

Importance of Rapid Mobilization; The 2026 Bundibugyo outbreak reaffirmed the necessity of rapid mobilization of international resources. Unlike the delayed response during the 2014–2016 West African epidemic, WHO and Africa CDC acted swiftly, deploying emergency teams within days of the outbreak declaration. This early intervention helped slow transmission in Uganda and prevented further spread into neighboring states (WHO, 2026). Comparative data (see Table 1) show that the West African outbreak escalated to nearly 28,600 cases largely due to delayed action, whereas more recent outbreaks, including Guinea in 2021 and Uganda in 2022, were contained more quickly because of faster mobilization. Diagnostic and Therapeutic Limitations Despite improved coordination, the Bundibugyo epidemic exposed persistent diagnostic and therapeutic gaps. Unlike the Zaire strain, which benefits from the rVSV-ZEBOV vaccine, Bundibugyo lacks licensed vaccines or approved therapeutics. This forced reliance on supportive care, limiting the ability to reduce mortality. As shown in Table 1, case fatality rates (CFRs) varied significantly across outbreaks: ~66% in the 2018–2020 DRC outbreak, ~34% in Uganda's 2022 Sudan strain outbreak, and ~35% in the 2026 Bundibugyo epidemic. These figures highlight the urgent need for strain-specific interventions (Nature Medicine, 2026).

Cross-Border Preparedness and Surveillance; The spread of Bundibugyo Ebola virus into Uganda demonstrated the importance of cross-border preparedness. Africa CDC's harmonized surveillance systems and shared case definitions were critical in tracking transmission chains. However, porous borders and high population mobility complicated containment efforts. Table 1 illustrates how outbreaks often cross-national boundaries, with the 2014–2016 epidemic affecting three countries simultaneously. This underscores the need for regional surveillance networks and cooperative border health strategies (BMJ Global Health, 2026). Community Trust as a Cornerstone of Control; Community mistrust has historically undermined Ebola responses. In 2026, UNICEF and local NGOs

prioritized culturally sensitive communication, involving traditional leaders and community health workers. This approach improved compliance with isolation protocols and reduced hostility toward health teams.

Table 1 shows that outbreaks with strong community engagement, such as Guinea in 2021, were contained with minimal spread, while those with weak trust, such as the 2018–2020 DRC outbreak, escalated dramatically. Evidence confirms that community trust is as vital as medical interventions in achieving outbreak control (Social Science & Medicine, 2026). Integration of Local Knowledge with International Expertise; The Bundibugyo outbreak highlighted the value of integrating local knowledge with international expertise. Local health workers, familiar with cultural practices, played a crucial role in tailoring interventions. International agencies provided technical expertise and resources, but success depended on collaboration with local actors. Table 1 demonstrates that outbreaks in conflict zones, such as DRC (2018–2020), suffered higher CFRs due to limited integration of local knowledge, whereas smaller outbreaks like Guinea (2021) benefited from hybrid approaches combining global science and local context (MSF, 2026).

Need for Sustained Investment in Health Systems Finally, the outbreak underscored the importance of long-term investment in African health systems. Weak infrastructure, limited laboratory capacity, and inadequate supply chains exacerbated the crisis. While emergency funding addressed immediate needs, sustainable resilience requires strengthening primary healthcare, training personnel, and expanding diagnostic networks. Table 1 illustrates that outbreaks in countries with stronger health systems (e.g., Uganda 2022) had lower CFRs compared to those in fragile states (e.g., DRC 2018–2020). Epidemic preparedness must therefore be embedded within broader health system reforms to ensure sustainability (World Bank, 2026).

Table 1: Major Ebola Outbreaks in Africa (Comparative Data)

Outbreak	Year(s)	Countries Affected	Cases	Deaths	CFR	Notes
West Africa	2014–2016	Guinea, Liberia, Sierra Leone	~28,600	~11,325	~40%	Largest outbreak; delayed response
DRC (North Kivu/Ituri)	2018–2020	Democratic Republic of the Congo	~3,481	~2,299	~66%	Conflict zones hindered response
Guinea	2021	Guinea	23	12	~52%	Rapid containment due to lessons

Outbreak	Year(s)	Countries Affected	Cases	Deaths	CFR	Notes
						learned
Uganda (Sudan strain)	2022	Uganda	164	55	~34%	No licensed vaccine for Sudan strain
DRC & Uganda (Bundibugyo strain)	2026	DRC, Uganda	~1,087 (DRC), 87 (Uganda)	~220+	~35%	Declared a PHEIC; no vaccine available

Conclusion

The 2026 Bundibugyo Ebola outbreak in the Democratic Republic of the Congo (DRC) and Uganda demonstrated the persistent threat posed by emerging infectious diseases. With over 1,000 confirmed cases in DRC and dozens in Uganda, the epidemic highlighted vulnerabilities in health systems and the challenges of managing outbreaks in conflict-affected regions (WHO, 2026). The scale of the crisis, though smaller than the 2014–2016 West African epidemic, reaffirmed Ebola's capacity to destabilize communities and strain international health resources. Progress Since the 2014–2016 Crisis Compared to the delayed and fragmented response during the West African outbreak; the 2026 epidemic benefited from faster mobilization of international actors. WHO's declaration of a *Public Health Emergency of International Concern (PHEIC)* and Africa CDC's continental coordination plan reflected lessons learned from past failures (Lancet Infectious Diseases, 2026). These improvements underscore the value of institutional reforms and preparedness frameworks established after 2016.

Persistent Gaps in Vaccines and Treatments; Despite progress in coordination, the outbreak exposed critical gaps in medical countermeasures. Unlike the Zaire strain, which has an effective vaccine, Bundibugyo Ebola virus lacks licensed vaccines or therapeutics. This forced reliance on supportive care and traditional containment strategies, limiting the ability to reduce mortality and transmission (Nature Medicine, 2026). The absence of strain-specific interventions remains a major vulnerability in global epidemic preparedness. Importance of Global Solidarity The outbreak highlighted the necessity of global solidarity in epidemic response. International donors, NGOs, and research consortia provided essential funding, expertise, and logistical support. However, sustained collaboration is required beyond emergency phases to ensure long-term resilience. Scholars argue that

epidemic control must be viewed as a global public good, requiring equitable resource distribution and shared responsibility (BMJ Global Health, 2026).

Recommendations for Future Preparedness; Future preparedness should prioritize investment in vaccine research for non-Zaire strains, strengthening cross-border surveillance, and embedding epidemic response within broader health system reforms. Community engagement must remain central, as trust and compliance are critical for containment. Integrating local knowledge with international expertise will enhance culturally sensitive interventions and improve sustainability (Social Science & Medicine, 2026). Final Reflection on Resilience and Sustainability Ultimately, the 2026 Bundibugyo outbreak serves as both a warning and an opportunity. While international strategies have improved since 2014, persistent gaps in therapeutics and health infrastructure demand urgent attention. Building resilient health systems, fostering community trust, and sustaining global collaboration are indispensable for future epidemic control. The lessons learned from this outbreak should inform not only Ebola preparedness but also broader strategies for managing emerging infectious diseases worldwide (World Bank, 2026).

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Conflict of Interest: The authors declare no competing interest

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