Ebola outbreak caused by Bundibugyo virus: challenges and priorities for epidemic preparedness and response

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Since WHO declared the ongoing outbreak of Ebola virus disease caused by Bundibugyo virus (species *Orthoebolavirus bundibugyoense*; BDBV) in DR Congo and Uganda a public health emergency of international concern and the Africa Centres for Disease Control and Prevention (Africa CDC) declared a public health emergency of continental security, the outbreak has continued to evolve rapidly. As of June 3, 2026, 344 laboratory-confirmed cases and 60 deaths had been reported in DR Congo, while Uganda had reported 15 confirmed cases and one death; cross-border transmission has prompted heightened preparedness and response measures across the region.[1–3] The outbreak poses a substantial public health threat because diagnosis is often delayed by limited access to suitable point-of-care assays, and no licensed vaccine or approved virus-specific therapeutic currently exists for BDBV. Barriers to controlling the BDBV outbreak and priority response actions are summarised in the table.

Armed conflict linked to decades of insecurity and competition over mineral resources, together with population displacement, fragile health systems, and intense cross-border mobility between eastern DR Congo and neighbouring countries, continues to complicate outbreak control efforts. DR Congo is experiencing one of the world's largest displacement crises, with approximately 6·9 million internally displaced people, most residing in eastern provinces affected by recurrent conflict and epidemic threats.[4] Informal trade, mining activities, agricultural work, displacement, and health-care seeking frequently occur across administrative and national borders, while insecurity can interrupt field operations, delay laboratory confirmation, and restrict humanitarian access to affected communities. In the short term, strengthening cross-border coordination through harmonised surveillance definitions, shared line lists, interoperable laboratory reporting, joint contact tracing, coordinated points-of-entry screening, and regular information exchange between DR Congo, Uganda, Rwanda, South Sudan, WHO, and Africa CDC will be essential. It is also crucial to protect front-line health-care workers through adequate supplies of personal protective equipment, refresher training in infection prevention and control, triage protocols, safe specimen handling, psychosocial support, and rapid investigation of health-care-associated infections. Decentralising diagnostics, maintaining humanitarian access, and expanding sustained community-based engagement will also be essential. Over the longer term, more resilient regional surveillance and response systems are needed in areas repeatedly affected by

	Immediate priorities	Longer-term priorities
Community mistrust, misinformation, and resistance to isolation and safe burial practices	Strengthen trusted community engagement, family communication, survivor involvement, community-led risk communication, and safe and dignified burial approaches	Build community-centred preparedness systems that prioritise trust, dignity, cultural legitimacy, and co-created public health solutions
Armed conflict, insecurity, population displacement, and cross-border mobility	Protect health-care workers and facilities, maintain humanitarian access, strengthen cross-border coordination, surveillance, and real-time data sharing	Develop resilient regional surveillance and response systems for conflict-affected and mobile populations
Delayed diagnosis and limited decentralised testing capacity	Expand near-patient molecular diagnostics, strengthen specimen transport systems, support regional laboratory networks, and invest in new assays for all orthoebolaviruses	Invest in resilient laboratory infrastructure, validated pan-filovirus assays, biosafety capacity, and integrated surveillance systems
Fragile health systems and infection prevention and control gaps	Strengthen triage, isolation capacity, personal protective equipment supply chains, health-care worker protection, and supportive clinical care	Embed infection prevention and control, workforce protection, and outbreak readiness within broader health-system strengthening strategies
Absence of licensed Bundibugyo virus vaccines or therapeutics and limited outbreak research capacity	Accelerate genomic surveillance, operational research, prospective cohort studies, and preparedness for adaptive clinical trials	Strengthen Africa-led vaccine, therapeutic, manufacturing, clinical trial, and regulatory capacity for filoviruses other than Ebola virus (*Orthoebolavirus zairense*)
Episodic financing and reactive preparedness	Sustain financing for surveillance, laboratories, infection prevention and control, case management, and community engagement during the current outbreak	Establish durable preparedness financing mechanisms and strengthen Africa Centres for Disease Control and Prevention, national public health institutes, and One Health preparedness systems

Table: **Key barriers to controlling the Bundibugyo virus outbreak and priority response actions**

conflict, displacement, and recurrent epidemic threats. Key humanitarian, security, health-system, and operational determinants influencing outbreak control are summarised in the appendix.

Operational challenges to outbreak control are compounded by long-standing mistrust of public institutions and previous experiences of delayed or inadequate outbreak responses in eastern DR Congo and west Africa.[5,6] Fear, stigma, misinformation, conspiracy narratives, insecurity, and perceptions of exclusion can undermine surveillance, testing, isolation, contact tracing, vaccination, and treatment, particularly when communities perceive infection control measures as imposed rather than developed collaboratively.[7–9]

Risk communication and community engagement activities led by ministries of health, WHO, Africa CDC, local civil society organisations, religious leaders, survivor networks, and community health workers are ongoing in affected areas in DR Congo and Uganda;[3] however, implementation remains uneven because of the challenging context. Reports of attacks on health-care facilities, patients fleeing treatment centres, reluctance to disclose contacts, and disputes over burial practices during previous and current outbreaks of Ebola virus disease illustrate how rapidly public trust can erode when dignity, communication, and transparency are insufficiently prioritised.[9–11] Trust, dignity, and community legitimacy must therefore remain central to epidemic preparedness and response. Culturally sensitive risk communication, engagement with trusted community leaders and survivor networks, family liaison systems, and community-led approaches to safe and dignified burials are essential for successful implementation of infection prevention and control measures and sustained acceptance of surveillance and clinical care.[6–8] Informal and community-based health-care systems remain central to outbreak dynamics in affected settings. Individuals with early symptoms of Ebola virus disease often seek care from traditional healers, pharmacies, faith-based providers, private clinics, or under-resourced public facilities before reaching Ebola treatment services. Although these pathways can delay diagnosis and referral, they also represent important opportunities for early case detection, trusted communication, stigma reduction, and safe referral. Public health responses that fail to engage these networks risk missing crucial points of community contact.[6–8]

A more realistic approach to community engagement should therefore involve affected communities in mapping local care-seeking pathways and strengthening partnerships with community health workers, traditional healers, survivor groups, women's organisations, youth leaders, and local media as active participants in early detection, referral, and risk communication. Experience from previous Ebola virus disease outbreaks has shown that approaches perceived as top-down or externally imposed can undermine acceptance of public health interventions, particularly in settings affected by conflict, insecurity, and long-standing distrust of authorities.[8–9] Effective community engagement requires the co-creation of culturally acceptable, locally relevant solutions that acknowledge community beliefs, priorities, and lived experiences. Isolation, restricted visitation, and safe burial protocols are essential to reduce transmission of orthoebolaviruses, but they can also generate fear, grief, mistrust, and resistance when implemented without adequate communication, psychosocial support, and community participation. Trust-building should therefore be viewed not as a secondary communication activity but as a core operational component of outbreak control and a prerequisite for sustained confidence in health systems and public health authorities.[7–10]

Challenges related to early diagnosis of BDBV infection due to lack of a reliable rapid diagnostic test also delay isolation, supportive care, contact tracing, and infection prevention and control measures, thereby increasing opportunities for onward transmission.[12–14] Early Ebola virus disease, including that caused by BDBV infection, can resemble malaria, typhoid fever, cholera, Lassa fever, and other endemic febrile illnesses, making early clinical recognition and triage challenging. Most near-patient molecular assays are designed to detect Ebola virus (species *Orthoebolavirus zairense*; EBOV), which has caused most previous outbreaks of Ebola virus disease, but might not reliably detect Sudan virus (*Orthoebolavirus sudanense*) or BDBV. Ideally, field-deployable assays should detect any member of the genus *Orthoebolavirus* without necessarily distinguishing between species. Broad-range molecular assays and sequencing-based approaches capable of detecting multiple orthoebolaviruses and other filoviruses are increasingly available, and next-generation pan-filovirus diagnostic platforms are under active development; however, field validation, regulatory

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approval, and implementation remain limited.[15] In the immediate term, decentralised near-patient molecular diagnostics for Ebola virus disease, rapid and safe specimen transport, and strengthened regional laboratory networks are urgently needed to accelerate detection, confirmation, referral, and isolation. These measures should be supported by trained laboratory and clinical staff, reliable supply chains for reagents and personal protective equipment, biosafety and biosecurity systems, external quality assurance, digital reporting platforms linked to surveillance teams, and clear protocols for referral and clinical triage. However, implementation remains challenging in remote or conflict-affected areas, where insecurity, weak transport infrastructure, unreliable electricity, limited cold-chain capacity, shortages of skilled personnel, delayed procurement, and community mistrust can delay testing and undermine confidence in results. Future investments should include validated pan-orthoebolavirus or even pan-filovirus assays, strengthened biosafety systems, and resilient laboratory infrastructure integrated into routine public health surveillance rather than activated only during emergencies.

Over the longer term, candidate BDBV vaccines, pan-orthoebolavirus monoclonal antibodies, antivirals, and adaptive clinical trial platforms should be strengthened through existing and expanded Africa-led research partnerships, including national public health institutes, regional clinical trial networks, WHO, Africa CDC, and national regulatory authorities, supported by regional regulatory harmonisation through mechanisms such as the African Medicines Agency and African Vaccine Regulatory Forum. These efforts should be matched by One Health surveillance that links human, animal, environmental, and ecological data in areas where mining, deforestation, displacement, wildlife contact, and livelihood disruption might increase opportunities for zoonotic spillover.

Preliminary genomic analyses suggest that the current outbreak is associated with a new zoonotic spillover event rather than sustained human-to-human transmission linked to previously recognised BDBV outbreaks.[16] The rapid generation and sharing of genomic sequences by scientific teams in DR Congo and Uganda within 48 h of laboratory confirmation show the growing importance of Africa-led genomic surveillance capacity and real-time data sharing during infectious disease emergencies. Genomic surveillance linked with epidemiological and clinical data can immediately support transmission mapping and assessment of implications for diagnostics and countermeasures.[17]

This outbreak also highlights persistent inequities in access to research and medical countermeasures for non-EBOV filoviruses. Although licensed vaccines and monoclonal antibody therapies are available for Ebola virus disease caused by EBOV, no approved vaccine or virus-specific therapeutic currently exists for BDBV.[11,12] Important knowledge gaps also persist regarding the clinical spectrum and long-term consequences of BDBV infection, particularly among pregnant women, children, and people living with HIV or other co-infections common in affected regions. Long-term survivor sequelae, including ocular, neurocognitive, and mental health complications and viral persistence in immune-privileged sites, remain incompletely characterised.[10] Strengthening prospective cohort studies and harmonised clinical data collection during the current outbreak will be important for improving patient management and informing future countermeasure development. Clinical research should therefore be embedded within the response from the outset, with ethical, regulatory, community, and logistical preparedness for adaptive trials of candidate vaccines, monoclonal antibodies, antivirals, and post-exposure prophylaxis strategies relevant to BDBV and other non-EBOV orthoebolaviruses.

The immediate priorities for the current outbreak are clear: protecting health-care workers and the most vulnerable populations, restoring community trust, strengthening cross-border coordination, decentralising diagnostics, ensuring safe and dignified burials, and sustaining surveillance and case management in affected settings. However, many of the structural vulnerabilities shaping the current epidemic cannot be resolved through short-term emergency mobilisation alone. Repeated Ebola virus disease outbreaks in DR Congo, alongside mpox, cholera, and COVID-19 amid persistent conflict, have exposed the limits of reactive outbreak response models that surge during emergencies but weaken once international attention declines.[7,8]

The current BDBV outbreak should be treated not as another emergency to contain, but as a warning that epidemic preparedness remains uneven, episodic, and insufficiently aligned with the realities of affected

communities. Rapid diagnostics, genomic surveillance, infection prevention and control, supportive care, and accelerated countermeasure development remain essential, but these biomedical tools will succeed only if embedded within trusted community partnerships, resilient health systems, protection of front-line workers, sustained financing, and coordinated regional surveillance systems. Beyond the current outbreak, preparedness strategies should address the full spectrum of pathogenic orthoebolaviruses and other epidemic-prone pathogens, strengthen Africa-led research and manufacturing capacity, integrate One Health surveillance, and support the equitable development and evaluation of vaccines, monoclonal antibodies, and antivirals through adaptive trial platforms and regional regulatory collaboration.

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