

MEETING MINUTES

Emergency CORC Filovirus Meeting — Diagnostic strategies Following the Bundibugyo Outbreak

Date: 8 July 2026

Purpose of the Meeting

The purpose of the meeting was to discuss diagnostic strategies, preparedness approaches, and research considerations related to filovirus outbreaks, with a particular focus on:

- improving diagnostic tools and strategies;
- aligning approaches with country-specific needs;
- strengthening preparedness and surveillance frameworks;
- exploring coordination mechanisms and research priorities.

The meeting also aimed to gather expert input on future directions for outbreak response and research integration, including One Health considerations.

Presentation of key topics

Discussions were structured around several core themes:

- diagnostic strategies and tool development;
- preparedness and surveillance approaches;
- integration of research and operational response;
- collaboration and access to laboratory capacities.

Main Discussion Points

1. Epidemiological Situation, Operational Challenges and Lessons Learned

At the time of the presentation, more than one month after the beginning of the outbreak, the situation remained highly concerning. **The number of confirmed cases had reached over 1,700 cases, distributed across at least three provinces and affecting approximately 37 health zones.** The continued increase in confirmed cases was interpreted both as a sign of improved surveillance capacity and as an indication of ongoing active transmission in the community.

Clinical observations from the initial cohorts indicated that patients typically presented with fever, vomiting, diarrhea, and headache, while hemorrhagic symptoms were reported in approximately 10% of cases. **A delay of approximately 5 to 13 days** between symptom onset and presentation to a health facility was observed, which was discussed as a proxy reflecting both the incubation period and health-seeking behavior.

In summary, the context was described as particularly challenging. No vaccine or specific treatment is currently validated for Bundibugyo virus disease, which significantly limits available response options. In the early phase of the outbreak, diagnostic capacity was also constrained by the need to rapidly develop and validate a specific assay targeting this strain, although progress has since been made.

The geographical spread of the outbreak further complicates the response, with cases distributed across a large and difficult-to-access area. This is compounded by a complex security context, including the presence of armed conflict, which restricts access to certain locations and hinders the implementation of response activities. In addition, the affected region is densely populated, with significant population movements, making contact tracing particularly challenging.

Despite these constraints, several key lessons have emerged. Participants emphasized that the response must rely heavily on non-medical public health measures, given the absence of vaccines and therapeutics. These include strengthening surveillance, case identification, and infection prevention and control.

The importance of alert management systems was also highlighted, particularly the need to remain ahead of misinformation circulating through social media and local communication channels. More broadly, the discussion identified several priority pillars to improve and contain the outbreak, including strengthening public health measures, improving alert management, enhancing rapid data sharing, mobilizing adequate funding, reinforcing community engagement, and supporting research efforts to better inform the response.

2. Diagnostic Response During the Bundibugyo Outbreak

The diagnostic response was described as a coordinated WHO-led effort across country, regional, and global levels, combining laboratory support with logistics, procurement, and partner coordination.

At the country level, particularly in DRC, rapid scale-up of diagnostic capacity included the deployment of PCR-based testing (e.g. Altona and RADI kits), alongside the provision of laboratory equipment and essential infrastructure such as electricity and water in remote testing sites. Human resource support was also critical, with laboratory coordinators deployed, training provided on safe sample collection (including cadaver swabs), and strengthened systems for sample transport and data management. At the time of the meeting, 13 testing sites were operational in DRC, supported in close collaboration with national institutions, with similar efforts underway in Uganda.

At regional and global levels, WHO activities focused on preparedness and coordination, including readiness assessments, procurement planning, external quality assurance, and the development of updated testing strategies and shared training resources. Coordination platforms and procurement dashboards were also implemented to align partners and streamline supply chains.

Several key gaps remain : In particular, the need for **safer and more standardized sampling approaches**, including work on alternative sample types and inactivation methods. The importance of **developing broad-spectrum diagnostics** (e.g. pan-filovirus assays), as well as **better integrating genomic data into operational decision-making**, was also underlined. Persistent challenges were noted in **data interoperability**, **access to clinical samples**, and the need for **clearer guidance to manufacturers through target product profiles**.

The Bridge Access initiative aimed at ensuring more equitable access to clinical specimens for diagnostic validation. This WHO–Africa CDC-led consortium has already received **66 diagnostic submissions**, including

PCR, near point-of-care, and antigen rapid tests, with a subset currently undergoing accelerated evaluation in DRC and Uganda. These evaluations include both analytical and, where feasible, clinical assessments. The central objective of the initiative is to **move away from a system where access to samples is driven by resources, toward a more coordinated and equitable model**. This includes the development of agreements with manufacturers to ensure affordable access to validated diagnostics, as well as commitments to transparency through the sharing of protocols and early performance data.

3. Current Landscape of Filovirus Diagnostics

Diagnostic technologies were described as spanning several categories, including laboratory-based PCR, cartridge-based PCR, isothermal amplification methods (such as LAMP), antigen rapid diagnostic tests (RDTs), sequencing, serology, and multiplex syndromic panels. Each of these technologies was noted to have specific strengths and limitations, which directly influence their usability across different levels of the health system, from centralized laboratories to near-patient settings. Most of these diagnostics are PCR-based, either as laboratory assays or cartridge systems, although other technologies are also represented.

The analysis also highlighted a **strong geographical imbalance**, with manufacturers primarily located in **North America, Europe, and Asia**, and no identified commercial production in Africa. In addition, while many tests are described as point-of-care or near-patient, this may partly reflect the focus on commercial kits rather than laboratory-developed assays.

Among approved or recognized tests, a limited number have been recommended or deployed during the current outbreak, including molecular assays and some syndromic panels. However, data on field performance—particularly for antigen rapid diagnostic tests—remain limited, making it difficult to fully assess their operational value in real outbreak settings.

Beyond approved tools, a growing number of diagnostic products are currently under development, including pan-filovirus assays and innovative platforms, although their maturity and validation status remain uncertain due to limited publicly available data.

Despite the apparent diversity of available tools, important gaps persist. At the community level, for example, there is a clear need for accessible and reliable antigen-based tests, particularly **to support activities such as safe and dignified burials**, yet such tools are not currently available or sufficiently validated. At higher levels of the health system, while molecular diagnostics are available, their deployment remains constrained by infrastructure requirements, trained personnel, throughput limitations, and biosafety considerations (Across all technologies, biosafety was identified as a cross-cutting challenge, affecting sample collection, processing, and waste management, and raising concerns for healthcare workers, communities, and the environment).

4. Discussion

Diagnostic Samples

A first point of discussion concerned the choice and use of diagnostic samples, particularly in relation to safety considerations. Participants explored whether **alternative sample types**, such as oral specimens, could be used in place of blood samples, especially in field settings where biosafety constraints are significant. In this context, **an important distinction was made between saliva and oral fluid**, the latter being considered more representative of blood-derived components. **Oral swabs were also highlighted as particularly relevant, notably for use in both patients and cadaver sampling.**

The discussion further explored additional non-invasive sample types, including stool, urine, and conjunctival swabs, although their clinical utility and operational relevance remain to be established. Overall, while these approaches offer potential advantages in terms of safety and ease of collection, participants emphasized that further validation is required to assess their diagnostic performance.

No single diagnostic strategy is sufficient to address the diversity of outbreak situations

Diagnostic approaches must rely on a combination of tools, including both broad detection methods, such as pan-filovirus assays, and more specific confirmatory techniques. In this regard, it was also noted that broad-spectrum assays could play a key role in early and decentralized surveillance, particularly in low-resource settings.

But diagnostic strategies must be aligned with the epidemiological profile, infrastructure, and resources of each country. **In this regard, the cost of diagnostic tools was identified as a major constraint, with concerns raised about the sustainability and scalability of certain platforms in low-resource settings.**

Role of genomic sequencing

While sequencing is not intended to replace existing diagnostic methods, it was considered a valuable complementary tool for identifying unknown pathogens and improving outbreak characterization. Field-deployable sequencing approaches were also mentioned as potential tools for more rapid characterization in outbreak settings.

Clinical Relevance and Co-infections

Accurate identification of the virus species remains critical, particularly for informing the use of vaccines and therapeutics. At the same time, participants emphasized the importance of accounting for co-infections, such as malaria, and ensuring that diagnostic strategies support clinical decision-making in a cost-effective manner.

Antigen rapid diagnostic tests (RDTs)

It was noted that RDT performance is closely linked to the stage of disease, with sensitivity decreasing at higher Ct values. While RDTs are unlikely to achieve zero false negatives, **they are capable of detecting the most infectious cases and may therefore be valuable in triage settings.** However, participants stressed that negative RDT results should be interpreted with caution and confirmed by PCR when necessary. In addition, RDTs were seen as a way to reduce reliance on centralized laboratory testing, optimize resource use, and potentially limit healthcare-associated infections.

Multiplex Diagnostic Approaches

These were seen as promising tools to improve the speed and efficiency of outbreak response by enabling the simultaneous detection of multiple pathogens. However, participants also noted that current multiplex tools do not always allow for rapid and precise characterization of filovirus strains, which may limit their usefulness in certain situations.

One Health Integration

There is the need to better integrate human health surveillance with environmental and wildlife monitoring, particularly in order to improve early detection of emerging pathogens. It was noted that, in the current outbreak, identifying the origin of infection remains challenging, partly due to delays and gaps in environmental investigations.

Laboratory Capacity and Regional Collaboration

It's important to strengthen access to regional laboratories capable of performing advanced analyses, including virus isolation. It was suggested that such collaborations should be anticipated and formalized in advance, rather than established reactively during outbreaks

In this context, the question of sample sharing and equitable access emerged as a key concern. It was noted that biological samples are often considered highly sensitive resources by countries, and that reluctance to share them may stem from a lack of perceived benefits. Reference was made to ongoing international discussions,

including the development of the Pathogen Access and Benefit Sharing (PABS) framework, which aims to establish more equitable systems. Participants agreed on the importance of building trust-based partnerships and ensuring that research outcomes benefit all stakeholders, particularly low- and middle-income countries.

Participants acknowledged that virus isolation remains technically challenging, with uncertain outcomes, and that results may take time to obtain. Previous unsuccessful attempts in other settings were also mentioned, illustrating the complexity of this process.

Conclusion

- The current Bundibugyo outbreak underscores a complex and high-risk context, characterized by the absence of validated vaccines or treatments, challenging security conditions, and significant operational constraints
- While diagnostic tools exist, there remains a critical gap between availability and real-world outbreak readiness, particularly in terms of validation, access, deployment, and biosafety
- Strengthening diagnostic strategies will require a portfolio approach, combining multiple technologies adapted to different use cases, contexts, and levels of the health system
- There is a clear need to prioritize safe, decentralized, and field-adapted diagnostics, including improved sampling methods, broader-spectrum assays (e.g. pan-filovirus), and better integration of genomic tools
- Ensuring equitable access to diagnostics and clinical samples remains a central challenge, with initiatives such as Bridge Access representing important steps toward more coordinated and fair systems.
- The discussion emphasized the importance of aligning diagnostics with clinical needs, surveillance systems, and operational realities, including co-infections and patient management considerations.