Latest WHO guidance on existing and pipeline Ebola vaccines

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10 June 2026

Webinar for NITAGs, National Immunization Programmes, and other relevant stakeholders

World Health Organization

GNN
GLOBAL - NITAG - NETWORK

Agenda

10 June 2026, 1.30 pm Geneva time (60 min)

13.30h – 13.40h	**Welcome.** Alba Vilajeliu, IVB/WHO HQ (5 min) **Opening remarks and moderation.** Helen Rees, AFRO RITAG Chair (5 min)
13.40h – 14.05h	**Epidemiological update on the Bundibugyo virus disease outbreak and lessons from previous Ebola vaccination efforts.** Alejandro Costa, WHE/WHO HQ & Reena Doshi EPR/WHO AFRO (15 min) **Q&A** Helen Rees (10 min)
14.05h – 14.30h	**WHO emergency guidance on the use of licensed Ebola virus vaccine during Bundibugyo virus disease outbreak and vaccine landscape.** Melanie Marti, Pierre Gsell, & Stephanie Shendale, IVB/WHO HQ (15 min) **Q&A** Helen Rees (10 min)

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BUNDIBUGYO VIRUS DISEASE OUTBREAK

June 2026

Reena Doshi & Alejandro Costa

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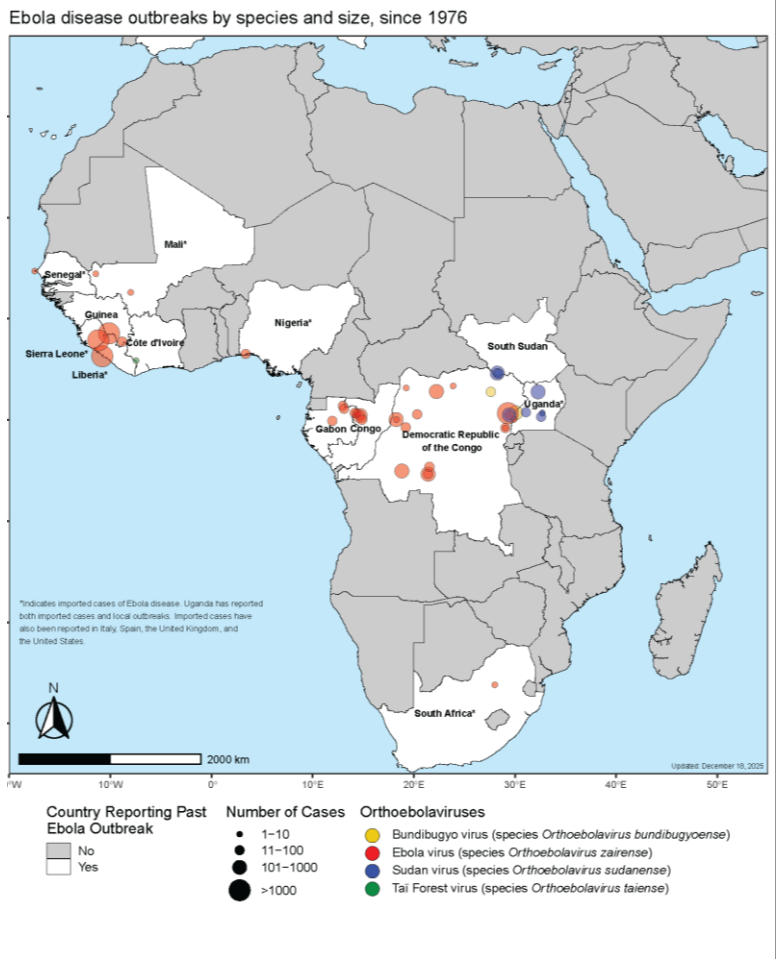
Ebola disease

There are four orthoebolaviruses that cause illness in people:

- Sudan virus (species *orthoebolavirus sudanense*) causes Sudan virus disease
- Taï Forest virus (species *orthoebolavirus taiense*) causes Taï Forest virus disease
- Bundibugyo virus (species o*rthoebolavirus bundibugyoense*) causes Bundibugyo virus disease
- Ebola virus (species *orthoebolavirus zairense*) causes Ebola virus disease (EVD)

Genetic distance of Bundibugyo virus and Ebola virus differ by 30-32%



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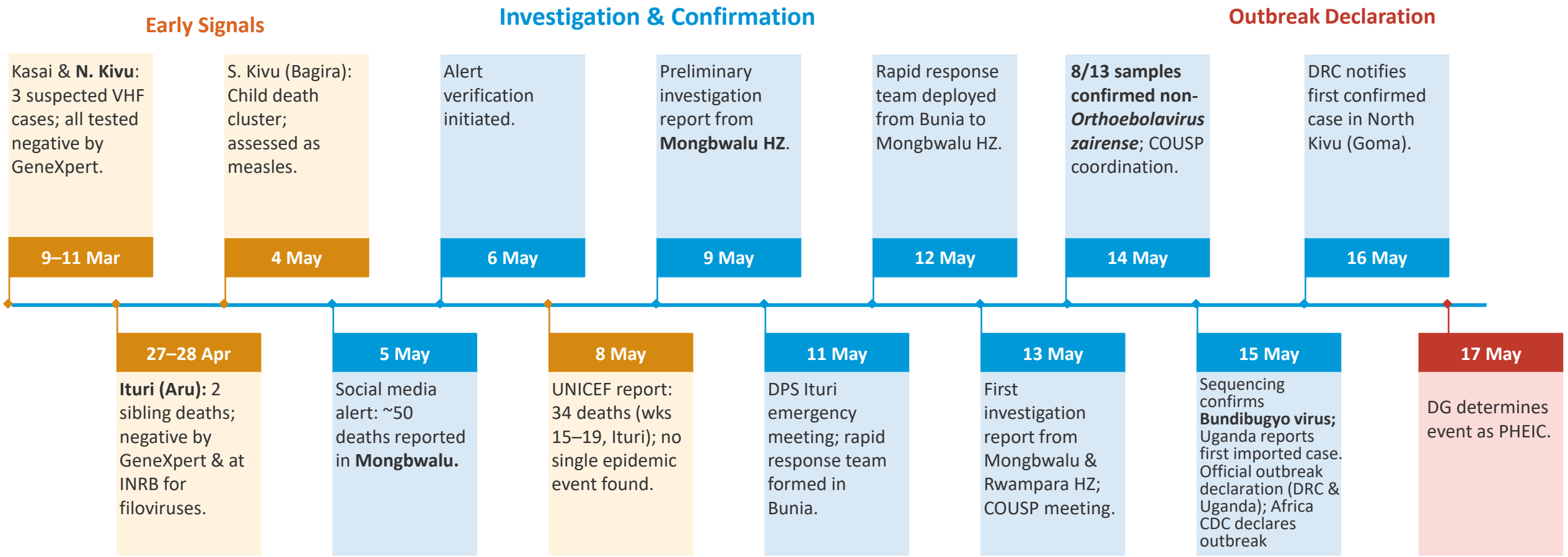
Bundibugyo virus disease (BVD) outbreak timeline



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Determination of a Public Health Emergency of International Concern

1. The event is extraordinary for the following reasons:

Current scale

- **Geographical extent** at declaration, **Ituri and North Kivu**. Cases in **Kampala, Uganda**.
- Unusual **clusters of community deaths** with symptoms compatible with BVD
- Deaths reported among **healthcare workers**
- **Limited understanding of the epidemiological links** with known or suspected cases
- **High positivity rate** in samples collected, and low number of samples being tested currently

Transmission risk

- Ongoing insecurity, population mobility, the urban or semi-urban nature of the current hotspot and the large network of informal healthcare
- There are currently **no approved Bundibugyo virus-specific therapeutics or vaccines**

2. The event constitutes a public health risk to other States Parties through the international spread of disease.

3. The event requires international coordination and cooperation

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Epidemiological overview - cumulative

In the **Democratic Republic of the Congo (DRC) – Data as of 08 June 2026**

-	-	598 (+48)	22 (+3)	-	115 (+14)	25	16***
Suspected cases	Probable cases	Confirmed cases	Recovered cases	Suspected deaths**	Confirmed deaths	Health zones with confirmed cases	HCW infections

In **Uganda – Data as of 09 June 2026**

-	01	19	05	01	02	02	05
Suspected cases**	Probable case	Confirmed cases	Recovered cases	Probable death	Confirmed death	Districts with confirmed cases	HCW infections

Data Source MOH DRC and MOH Uganda – link 1, link 2

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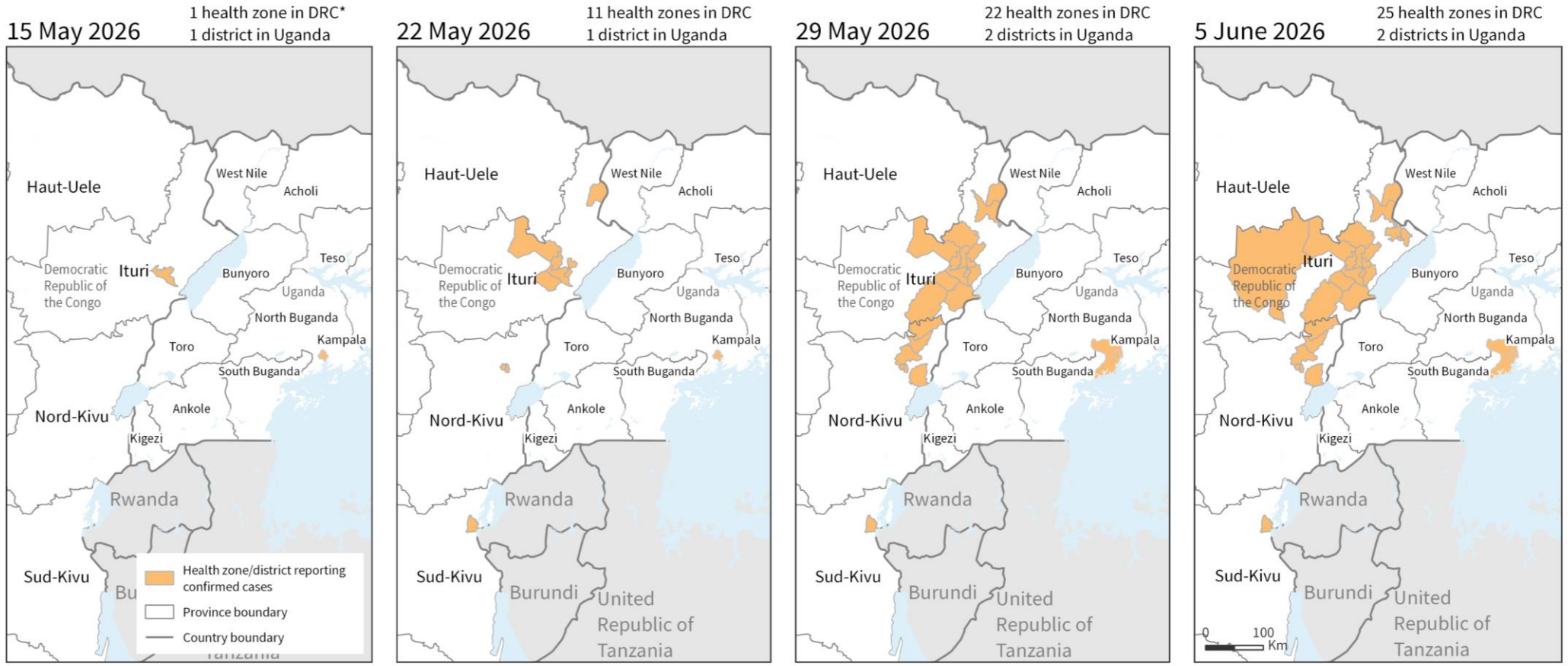
* The number of suspected cases has been revised downward, following investigations and sample testing, which confirmed some cases and discarded others.
** Suspected cases and deaths have been temporarily excluded from the count pending the results of ongoing investigations. These investigations will determine whether they can be confirmed and classified as probable cases or definitively discarded.
*** Data as of 27 May 2026

Districts or health zones reporting confirmed cases confirmed cases



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WHO Risk Assessment

Overall risk and confidence (based on information available at the time of assessment

15 May – V1

Overall risk		
National	Regional	Global
High	High	Low

Confidence in available information		
National	Regional	Global
Moderate	Moderate	Moderate

20 May – V2

Overall risk		
National	Regional	Global
Very High	High	Low

Confidence in available information		
National	Regional	Global
Moderate	Moderate	Moderate

5 June – V3

Overall risk				
Democratic Republic of the Congo	Uganda	Countries with land borders adjoining countries with documented BDBV detection	Rest of the African Region	Global
Very High	High	High	Low	Low

Confidence in available information				
Democratic Republic of the Congo	Uganda	Countries with land borders adjoining countries with documented BDBV detection	Rest of the African Region	Global
Moderate	Moderate	Moderate	Moderate	High

Link to [WHO Rapid Risk Assessment- Ebola disease caused by Bundibugyo virus, Democratic Republic of the Congo and Uganda V2]

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Estimated outbreak size in Ituri & North Kivu provinces

Both approaches estimate outbreak size in Ituri and North Kivu as **400-900 cases** as of 20 May 2026

Approach 1: Using exported cases to Uganda and population movement data

Source population	Daily outbound travellers from source population	Source population size	Estimated number of cases: Mean (95%CI)		
			Detection window* = 10 days	Detection window* = 15 days	Detection window* = 20 days
Main scenario: Ituri	1,871	4,392,200	**470 (58 – 1,306)**	**313 (39–870)**	**235 (29–652)**
Sensitivity analysis: Ituri + Nord Kivu	4,339	13,392,200	**617 (76–1,718)**	**412 (51–1,145)**	**309 (38–858)**

Approach 2: Reconstructing outbreak size from reported deaths

Scenario	Doubling time (days)	Growth rate (per day)	Number of cases		
			CFR = 26%	CFR = 33%	CFR = 40%
Main scenario: Moderate growth, intermediate emergence	14	0.050	**860 (721-1,015)**	**678 (568-800)**	**559 (469-660)**
Sensitivity analysis 1: Fast growth, recent emergence	7	0.100	**1,386 (1,160-1,636)**	**1,092 (914-1,289)**	**901 (754-1,062)**
Sensitivity analysis 2: Slow growth, older emergence	21	0.034	**730 (612-862)**	**575 (482-679)**	**474 (398-560)**

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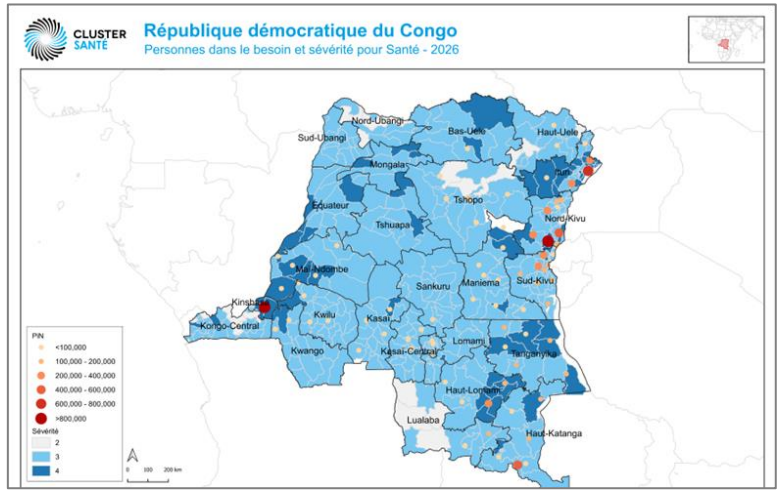
Source: Imperial College London and WHO
https://www.imperial.ac.uk/mrc-global-infectious-disease-analysis/research-themes/preparedness-and-response-to-emerging-threats/report-ebola-18-05-2026/

A difficult response in a humanitarian context

- **Malaria remains the leading cause of illness**
- **In DRC, 14.9 M people** in need of humanitarian assistance in 2026, **7.5 M people** in need of health assistance.
  - **Ituri:** No. of IDPs 926K; No. Refugees 36K;
  - **North Kivu:** No. of IDPS 1.2M; no. Refugees 154K
- 9.9 million people in NK, SK, Ituri and Tanganyika will experience high levels of **acute food insecurity** Jan to June 2026
- NK, SK, Ituri and Tanganyika accounted for 8**1%** of 138K **sexual violence (GBV)** cases reported in 2025
- Number of **attacks on humanitarian workers** since Jan 2026: 11



	Total population	People in Need of humanitarian health assistance	People targeted for health assistance	Funding received For health assistance	Total number HC partners	Total no. health facilities supported by partners
DRC	102.3M	7.5M	2.5M	30%	**101** 35 reporting to 5W	**412**
Ituri	**4.8M**	**1.2M**	**642K**	=	**17**	**113**
N. Kivu	**9.1M**	**2.5M**	**1.1M**	=	**23**	**172**

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Current context, challenges and gaps in the response

Rapidly evolving situation, with challenges of insecurity, movement of population, urban and rural areas, diversity of languages and culture
Presence of armed groups and criminality in the affected areas
Significant community anger at slow response from authorities, misperceptions about the disease and response – lack of licensed vaccines and treatment options complicate communication of response actions – **communities believe vaccines being withheld**
Community resistance to response, **reports of community denial of BVD as the source of the outbreak**
Communities accusing health workers of creating **"Ebola business"** around a disease they believe does not exist locally
Continuity of care outside of BVD care and **maintaining essential health services** and other priorities (RI< displacement, violence, conflicts etc.)
Reports of attacks on burial teams and WHO vehicles
Reports of stigma and discrimination towards those from affected HZs

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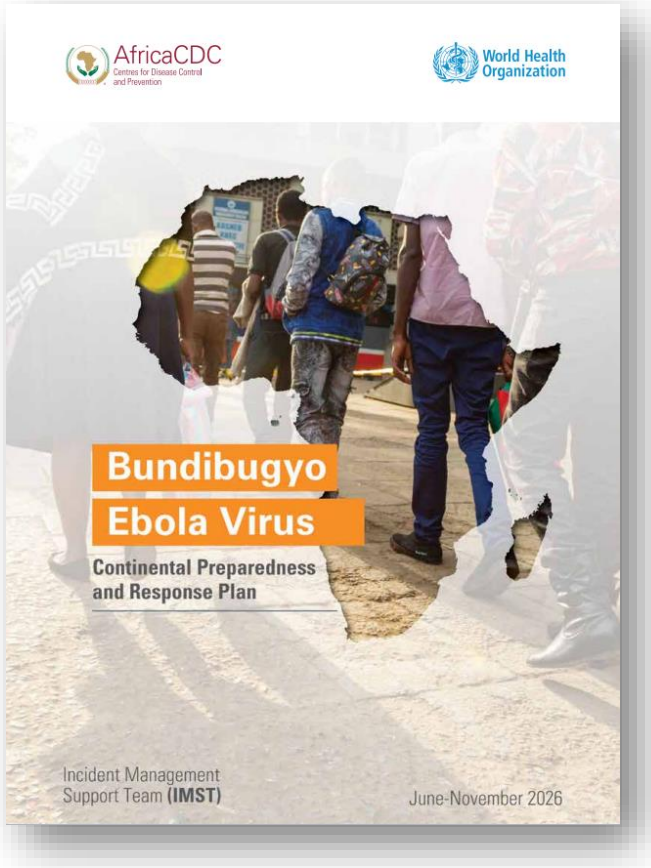
WHO and Africa CDC are co-leading the continental IMST



Stop the BVD outbreak and protect communities

One plan, one budget, one team with a community-centered, multisectoral approach emphasizing rapid detection and response, protection of frontline workers, prevention of international spread

Pillar 7: Research and Knowledge Management and Access to Medical Countermeasures

Coordinate and strengthen research to promote innovation, development, evaluation and accelerate equitable access to vaccines, therapeutics, and diagnostics; and establish robust knowledge management systems to generate, synthesize, disseminate, and translate evidence into policy and operational action

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Coordinated research efforts

- WHO R&D Blueprint, Africa CDC, ANRS/CORC, CEPI, Gavi and partners, national authorities, are coordinating an accelerated research agenda for BVD vaccines and therapeutics

- WHO R&D Therapeutics and Vaccine TAGs met in May 2026 to prioritize candidate medical countermeasures and research activities, prioritizes candidates based on preclinical efficacy, safety data, and prior filovirus experience

Key Considerations

⚠️ There is currently no vaccine or therapeutic proven safe and effective against BVD

🔬Research is needed to evaluate candidate vaccines and therapeutics for BVD

🤝 Community engagement and clear communication will be essential to support participation in clinical studies and maintain trust in public health interventions

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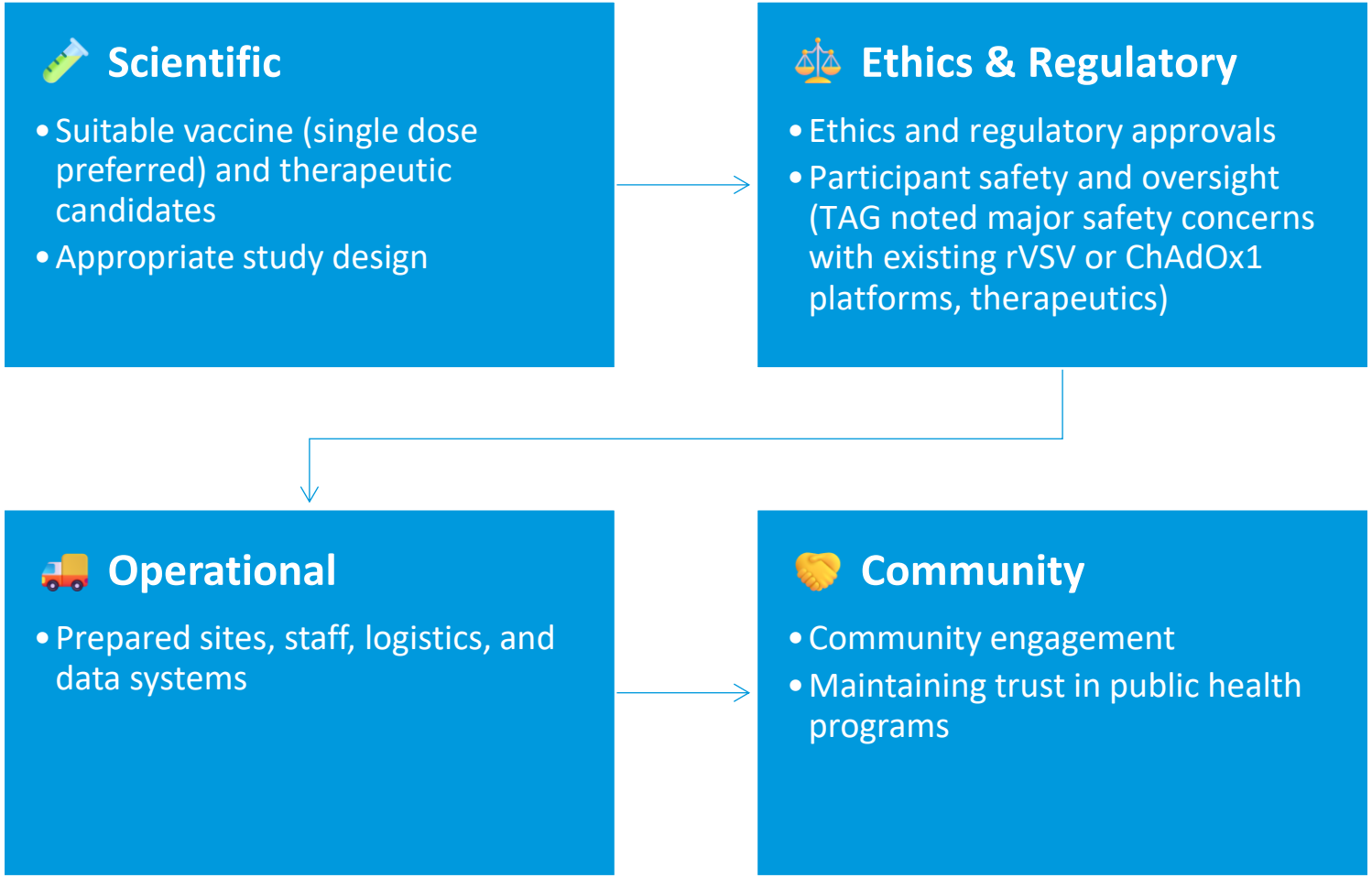
Key considerations for potential clinical trials



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BVD vaccine landscape and evaluation timelines

Candidate	Platform	Current Status	Estimated Timeline
💉 **Moderna mRNA-BDBV**	mRNA platform	Pre-clinical development	Mid July for Phase 1 safety trial start in Europe/North America, then Africa? September for efficacy trial in Bunia and surrounding areas?
🧬 **Oxford/Serum Institute ChAdOx1 BDBV**	ChAdOx viral vector platform	Accelerated development with CEPI support	
🧪 **IAVI rVSVΔG/BDBV-GP**	Same platform as Ervebo (EVD vaccine)	Most advanced candidate; manufacturing and trial preparation underway	~7–9 months to clinical evaluation

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SAGE Recommendations

Extraordinary SAGE meeting on Ebola vaccines — May 2024

OUTBREAK RESPONSE VACCINATION

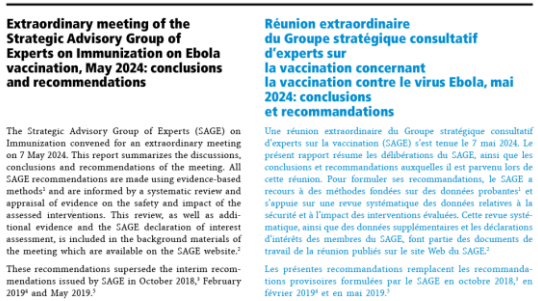
Ring vaccination *should continue to be the strategy of choice for EVD outbreaks. […] All contacts and contacts of contacts identified in a ring should be targeted for vaccination including children from birth, pregnant women and lactating women."*

Use of a ***single dose of rVSVΔGZEBOV-GP*** *vaccine in these situations, in which high efficacy has been demonstrated from day 10 post-vaccination onwards*

For affected areas with incident-confirmed cases of EVD, although outside of the immediate rings, SAGE recommended immunizing ***HCWs and FLWs*** *with a single dose of rVSVΔG-ZEBOV-GP vaccine.*

PREVENTIVE VACCINATION

Countries at risk of EVD *(i.e. countries with a history of EBOV outbreaks or in their neighbouring areas) should evaluate the transmission risk on the basis of outbreak epidemiology and available local evidence and should identify in each country priority areas and target populations for preventive vaccination. Given the available data on risks, SAGE does not recommend widespread vaccination of the general population.*



Extraordinary meeting of the Strategic Advisory Group of Experts on Immunization on Ebola vaccination, May 2024: conclusions and recommendations

The Strategic Advisory Group of Experts (SAGE) on Immunization convened for an extraordinary meeting on 7 May 2024. This report summarizes the discussions, conclusions and recommendations of the meeting. All SAGE recommendations are made using evidence-based methods[2] and are informed by a systematic review and appraisal of evidence on the safety and impact of the assessed interventions. This review, as well as additional evidence and the SAGE declaration of interest assessment, is included in the background materials of the meeting which are available on the SAGE website.[2]

These recommendations supersede the interim recommendations issued by SAGE in October 2018,[3] February 2019[4] and May 2019.[5]

Réunion extraordinaire du Groupe stratégique consultatif d'experts sur la vaccination concernant la vaccination contre le virus Ebola, mai 2024: conclusions et recommandations

Une réunion extraordinaire du Groupe stratégique consultatif d'experts sur la vaccination (SAGE) s'est tenue le 7 mai 2024. Le présent rapport résume les délibérations du SAGE, ainsi que les conclusions et recommandations auxquelles il est parvenu lors de cette réunion. Pour formuler ses recommandations, le SAGE a recours à des méthodes fondées sur des données probantes[2] et s'appuie sur une revue systématique des données relatives à la sécurité et à l'impact des interventions évaluées. Cette revue systématique, ainsi que des données supplémentaires et les déclarations d'intérêts des membres du SAGE, font partie des documents de travail de la réunion publiés sur le site Web du SAGE.[2]

Les présentes recommandations remplacent les recommandations provisoires formulées par le SAGE en octobre 2018,[3] en février 2019[4] et en mai 2019.[5]

SAGE policy document – Link
Systematic review of Ebola vaccines – Link

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Outbreak response vaccination in the Region

Year(s)	Country	Virus	EVD Cases	# Vaccinated
2014–2016	Guinea, Liberia, Sierra Leone	Ebola virus	28,610	~11,800 (Phase 3 trial)
2018	DRC (Équateur)	Ebola virus	54	~3,300 (expanded access)
2018–2020	DRC (N. Kivu/Ituri/S Kivu, Uganda)	Ebola virus	3,470	303,171 (expanded access)
2020	DRC (Équateur)	Ebola virus	130	44,578
2021	Guinea	Ebola virus	23	11,153
2021	DRC (N. Kivu)	Ebola virus	12	1,370
2021	DRC (N. Kivu)	Ebola virus	11	2,033
2022	DRC (Équateur)	Ebola virus	5	2,100
2025	DRC (Kasai)	Ebola virus	64	33,709

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Preventive vaccination in the Region

Year(s)	Country	Estimated target population	Number vaccinated	Coverage	Target group(s)
2023	N. Kivu, DRC	81,945	43,273	52.8%	HCW / FLW
2023	N. Kivu, DRC	34,445	22,569	65.5%	HCW / FLW
2024	Equateur, DRC	14,445	9,216	63.8%	Contacts of survivors
2022	Uganda	12,060	12,007	99.6%	HCW / FLW
2023	Uganda	11,096	9,640	86.9%	FLW & security forces
2023	Guinea-Bissau	7,835	5,529	70.6%	HCW / FLW
2024	Sierra Leone	20,621	17,454	84.6%	HCW / FLW
2025	Central African Republic	51,507	39,718	77.1%	HCW / FLW
		Planned			
2026	Guinea	TBD	TBD		HCW / FLW
2026	Congo	TBD	TBD		HCW / FLW
2026-2029	DRC	TBD	TBD		HCW / FLW

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Lessons learned from EVD vaccination activities throughout the Region

Enablers

Community trust
Early engagement with community leaders

Visible political leadership increased confidence

Local workforce ownership
Local staff were central to implementation
South–South collaboration strengthened readiness

Operational flexibility
Mobile teams supported delivery in remote areas, and insecure areas

Data and microplanning
Digital registration improved targeting
Mapping tools strengthened planning

Challenges

Access and insecurity
Poor infrastructure, insecurity complicated deployment

Data and targeting
Data collection delays affected planning
HCW estimates remained challenging

Community engagement
Vaccine hesitancy reduced uptake

Late sensitization limited participation

Preparedness gaps
Training and target population identification requires strengthening

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North Kivu and nearby areas have a long memory of EVD vaccination

"Ebola" vaccination is not abstract in eastern DRC, past campaigns shape expectations, confidence, and rumors today

303k vaccinated in the 2018-2020 North Kivu, Ituri, South Kivu and Uganda outbreak response

65.8k vaccinated in two 2023 preventive campaigns in North Kivu

33.7k vaccinated in the 2025 Kasai outbreak response

Implication for this outbreak

Previous Ebola vaccination can be a trust asset — but only if the response is transparent about what is known, what is not known, and why research is needed

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The vaccination question is different with Bundibugyo virus disease

For communities, “Ebola vaccine” is familiar
For this outbreak, the technical reality is more comple.

Licensed EVD vaccines exist	**This outbreak is BVD**	**Cross-protection is not confirmed**	**No BVD vaccine doses ready now**
SAGE recommendations support vaccination for EVD outbreaks and preventive vaccination in at-risk groups	BVD is caused by a different virus, but still called Ebola	Protection against BVD cannot be assumed	Candidate material is under development; clinical-grade doses are not immediately available

How do we explain why known Ebola vaccines are not being used as routine public health vaccination for BVD, without sounding like vaccines are being withheld?

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Mistrust is already visible in the response

Current signals from social listening and RCCE work point to risks that can directly affect trials, response operations, and future vaccine programmes

Denial and anger

Belief that response is "business"

Rumours that vaccines are withheld

Stigma and security events

Past Ebola vaccination → **Current BVD uncertainty** → **Community interpretation** → **Programme trust or mistrust**

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What should we protect during this outbreak

Future Ebola vaccination	Preserve confidence in EBOV outbreak response and preventive vaccination, especially among HCW/FLW and affected communities
Routine immunization	Avoid rumors that reduce demand for childhood vaccines or routine services in already fragile areas
Clinical research readiness	Make clinical trials understandable, ethical, locally owned, and visibly linked to care and response priorities
Community-centred response	Use feedback, social listening, survivors, local health workers, and trusted leaders to adapt operations quickly

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Summary

- Bundibugyo virus disease (BVD) is caused by a different orthoebolavirus than Ebola virus disease (EVD); no licensed vaccines or therapeutics currently exist for BVD
- Existing licensed Ebola vaccines were developed for Ebola virus (EBOV) and there is currently no clinical evidence that they protect against BVD
- Research on candidate vaccines and therapeutics is urgently needed, but scientific, ethical, operational, and community readiness must be established before implementation
- Community trust is a critical outbreak control tool, previous Ebola vaccination experiences shape current expectations, perceptions, and acceptance of response activities
- Communication should clearly explain what is known, what remains uncertain, and why research is needed while protecting confidence in routine immunization and future Ebola vaccination programmes
- Evidence generation and outbreak response must proceed together, with communities as partners throughout the process

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Merci

World Health Organization
African Region

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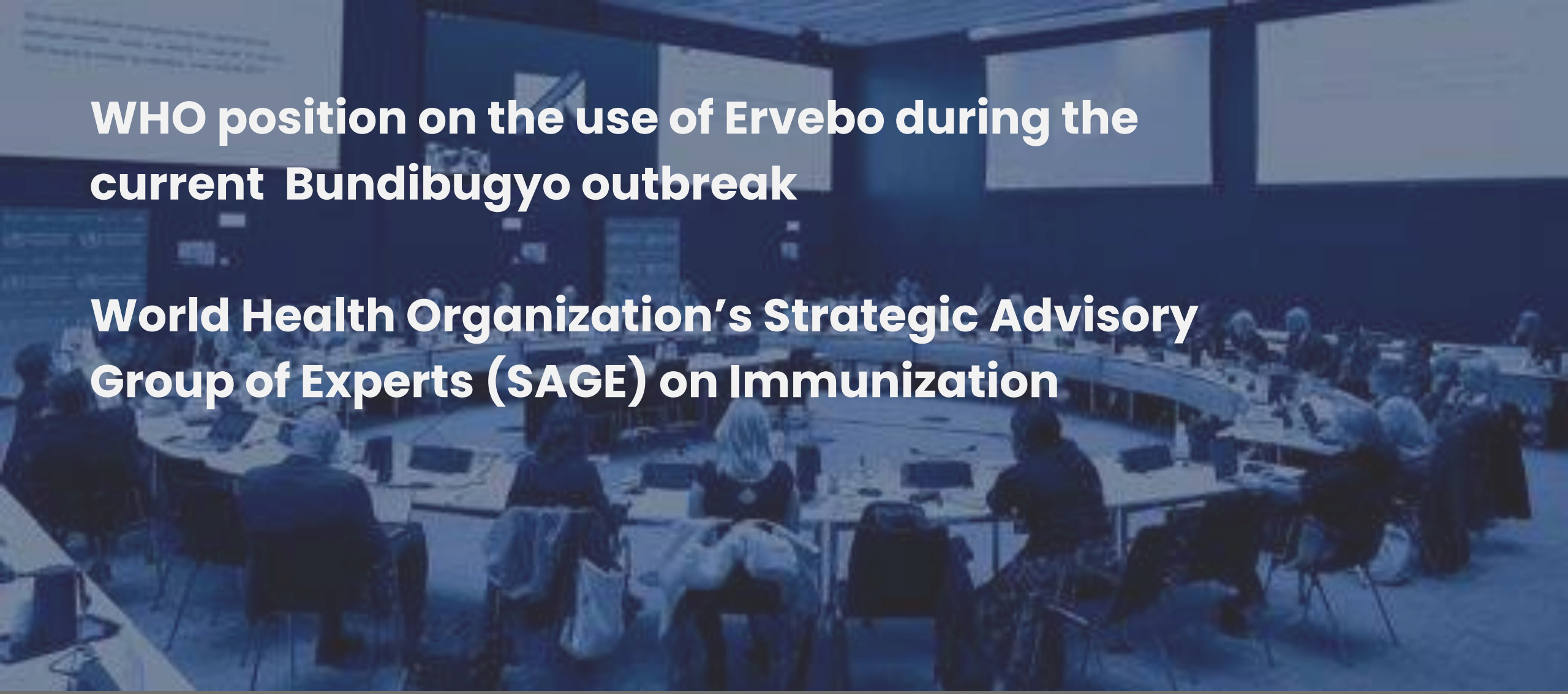


WHO position on the use of Ervebo during the current Bundibugyo outbreak

World Health Organization's Strategic Advisory Group of Experts (SAGE) on Immunization

World Health Organization | IVB

Global NITAG Network (GNN) Webinar
10 June 2026

Pierre Gsell, Focal Point Ebola vaccines
Melanie Marti, SAGE Secretariat
Immunization, Vaccines and Biologicals, World Health Organization

Policy question for deliberation

One WHO-prequalified and widely deployed Ebola virus vaccine available.

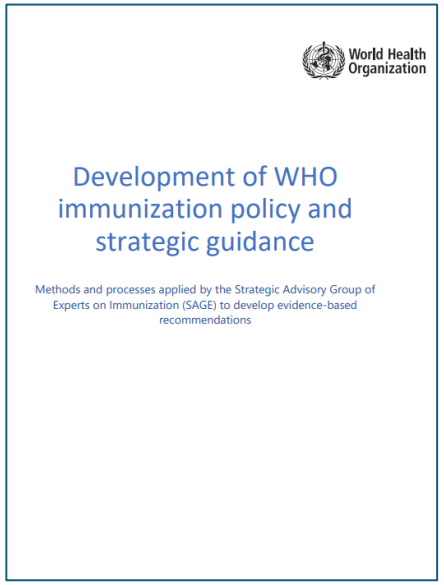
ERVEBO®/ rVSV-EBOV-GP is a live, recombinant vesicular stomatitis virus (rVSV)-based vaccine licensed for the prevention of Ebolavirus disease caused by Ebola virus (EBOV), species *Orthoebolavirus zairense*

Currently no licensed vaccine available for the prevention of disease caused by Bundibugyo virus (BDBV) causing Bundibugyo virus disease (BVD).

In the context of the current public health emergency of international concern (PHEIC) of BVD, should Ervebo® vaccine over no vaccination be provided using the currently recommended ring vaccination strategy to protect against BVD?

Processes and methods

SAGE WG Ebola vaccines convened to review the available evidence
GRADEing of available evidence
Input/vetting by SAGE



	Formal WHO recommendations	Rapid advice guidance	Emergency guidance
Title	"WHO vaccine position paper"	"Interim guidance"	"Emergency guidance"
Context	Outside of emergency, or public health emergency of international concern (PHEIC), stable (epidemiological) situation	PHEIC or other emergency, rapidly evolving (epidemiological) situation	Onset of PHEIC or other emergency, unclear or rapidly evolving (epidemiological) situation
Data availability	Data availability adequate for decision-making	Data with considerable limitations	No, or very limited, data
Methods	Standard processes of evidence-based decision-making + GRADE and Evidence to decision	Modifications at any step of evidence-based decision-making is acceptable to meet the accelerated timeline +/- GRADE and Evidence to decision	Evidence-informed as possible - GRADE and Evidence to decision
SAGE involvement	SAGE issues recommendation in Plenary meeting	SAGE issues recommendation in Plenary or Extraordinary meeting	Degree of SAGE involvement may range from not being involved (WHO Secretariat guidance) to minimal involvement (SAGE vetting)
Time	3 to 8 months	1 week to 3 months	Hours to days
Reassessment	Every 2 years; earlier if needed	Every 3 months; earlier if needed	Continuously

Development of WHO immunization policy and strategic guidance, www.who.int/publications/i/item/9789240090729

WHO emergency guidance on the use of licensed Ebola virus vaccine during Bundibugyo virus disease outbreaks, 28 May 2026

28 May 2026 | Technical document

Download (307.4 kB)

Overview

This emergency guidance document outlines the World Health Organization (WHO) position on the use of the licensed Ebola virus vaccine Ervebo® during outbreaks of Bundibugyo virus disease (BVD) caused by Bundibugyo virus (BDBV). Issued in the context of the 2026 Public Health Emergency of International Concern, the document reviews available evidence regarding potential cross-protection of Ervebo®, which is licensed for Ebola virus disease caused by Ebola virus (EBOV), against BDBV infection. WHO assessed preclinical and clinical immunological evidence, operational and ethical considerations, and implications for public confidence and outbreak response.

The review concludes that current evidence on cross-protection against BDBV is very limited and insufficient to determine or reliably estimate vaccine effectiveness. Existing studies suggest possible partial heterologous immune responses, but findings are inconsistent and based primarily on small nonhuman primate studies and laboratory immunological analyses. WHO therefore recommends that Ervebo® should not be used programmatically in response to BDBV outbreaks outside controlled research settings.

Summary of WHO position

- Available evidence regarding potential **cross-protection conferred by Ervebo®** against BDBV is currently **very limited**.
- **No human vaccine efficacy** data are available, and findings from the limited number of **preclinical studies** conducted to date are **inconclusive**.
- **Overall, the available evidence is insufficient to determine or reliably estimate the extent of any cross-protection against BDBV.**
- Programmatic use of Ervebo® may fail to convey protection against BDBV and could generate a false sense of security among affected communities and responders, potentially **undermining trust** and adherence to proven public health measures and damaging confidence in Ebola vaccination if breakthrough infections occur.
- **Consequently, WHO recommends that Ervebo® should not be used outside of controlled research settings in response to the current BDBV outbreak.**

Summary of WHO position

- Any consideration of Ervebo® use in **research protocols lies within the remit of national health authorities.**
- Given the limited capacity to evaluate multiple vaccine candidates simultaneously in randomized controlled study during BDBV outbreaks, **prioritization of pipeline vaccine candidates and/or therapeutics** for advancement into clinical trials will be conducted by the **WHO R&D Blueprint for Epidemics based on expert advice and consultation**.
- WHO recognizes that there are **a number of candidate BDBV vaccines** and candidate products for post-exposure prophylaxis in the pipeline. WHO recommends **accelerated investment in the research, development and evaluation of both preventive and post-exposure vaccination**. Related to vaccine research in the context of the current PHEIC, WHO will prioritize BDBV-specific and broadly protective pan-Orthoebolavirus vaccines.

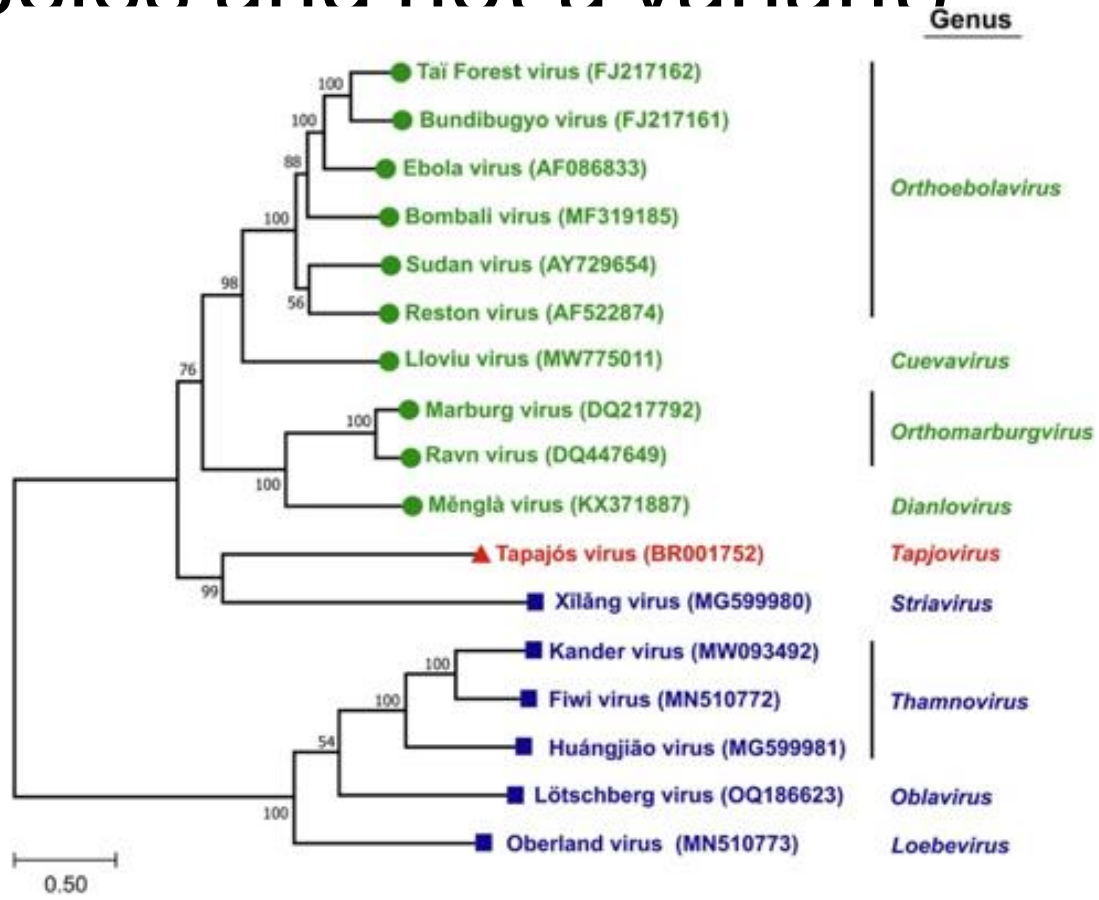
Cross-protection provided by ERVEBO against Bundibugyo virus (BDBV)
Review of evidence

(slides presented to WHO SAGE Working Group/SAGE)

Pierre Gsell

Bundibugyo virus BDBV is a different virus than Zaire Ebola virus (i.e. different species and not a variant)

- BDBV belongs to the same *Orthoebolavirus* genus as Zaire Ebola (EBOV)
- EBOV and BDBV share only approximately 60–65% amino acid identity
  - comparable to that observed between distinct morbillivirus species such as measles virus and rinderpest virus
  - By comparison, SARS-CoV-2 variants such as Omicron BA.1 still retain approximately 97% Spike amino acid identity relative to the ancestral Wuhan strain



Methodology

Objective

To assess available evidence on potential cross-reactive immunity and cross-protection of the Zaire ebolavirus vaccine ERVEBO (rVSV-ZEBOV) against Bundibugyo ebolavirus (BDBV).

Key studies included (based on CEPI review of literature, additional literature review and personal communications)

Study 1 - Falzarano et al., 2011 — heterologous protection of rVSV-ZEBOV against BDBV in macaques

Study 2 - Mire et al., 2013 — comparison of homologous and heterologous rVSV vaccine strategies against BDBV

Study 3 - Ehrhardt et al., 2019 — characterization of cross-reactive monoclonal antibodies induced by rVSV-ZEBOV

Study 4 - Smith et al., 2019 — Multiplex Pan-Filovirus assay (preprint)

Study 5 – Lhomme et al., 2026 – Cross-reactivitiy analyses from the PREVAC randomized trial

Disclaimer - review subject to revision as additional experimental, clinical, and outbreak data become available.

Study 1&2 –Animal data

Study 1 - Falzarano et al., 2011 — heterologous protection of rVSV-ZEBOV against BDBV in macaques

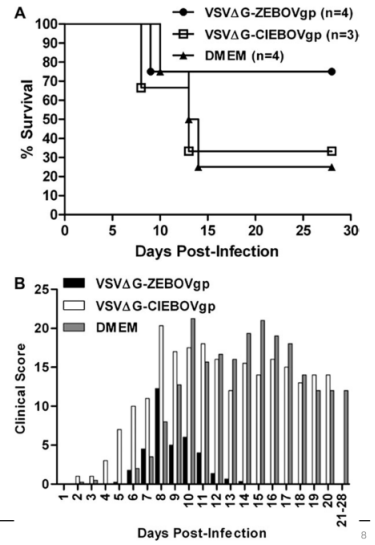
Methods
•Cynomolgus macaque challenge study
•3 groups:
- rVSV-ZEBOV-GP (n=3)
- rVSV-Côte d'Ivoire Ebola GP (n=4)
- mock vaccine (n=4)

•Challenge with 10,000 $TCID_{50}$ BDBV
•Assessment of survival, viremia, clinical disease, and IgG responses

Results
•Partial heterologous protection observed:
- 3/4 macaques survived after rVSV-ZEBOV vaccination
  - But "accelerated disease" in 1/4
- 1/4 macaques survived mock vaccine

•Reduced viremia and milder disease in survivors. No sterilizing immunity.
•Cross-reactive anti-BDBV IgG responses detected. No correlation with survival.

Limitations
•Very small NHP group sizes
•Experimental research-grade rVSV constructs rather than licensed ERVEBO



Study 2 - Mire et al., 2013 — comparison of homologous and heterologous rVSV vaccine strategies against BDBV

Methods
•Cynomolgus macaque challenge study
•4 groups:
- PBS Control (n=3)
- homologous rVSV-BDBV-GP (n=3)
- blended rVSV-SUDV + rVSV-ZEBOV (n=3)
- heterologous prime-boost rVSV-SUDV → rVSV-ZEBOV (n=3)

•Challenge with 1000 PFU BDBV
•Assessment of survival, viremia, disease severity, and IgG responses

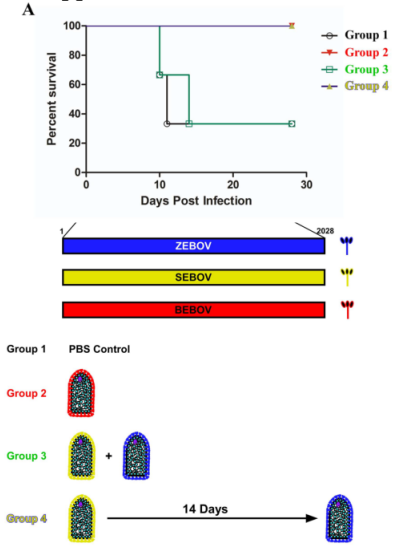
Results
•Homologous rVSV-BDBV vaccine:
- complete protection (3/3 survivors)

•Prime-boost heterologous strategy:
- complete protection (3/3 survivors)

•PBS Control and blended heterologous vaccine:
- 1/3 survivors

•Higher cross-reactive anti-BDBV IgG associated with survival

Limitations
•Very small NHP group sizes
•Experimental research-grade rVSV constructs rather than licensed ERVEBO



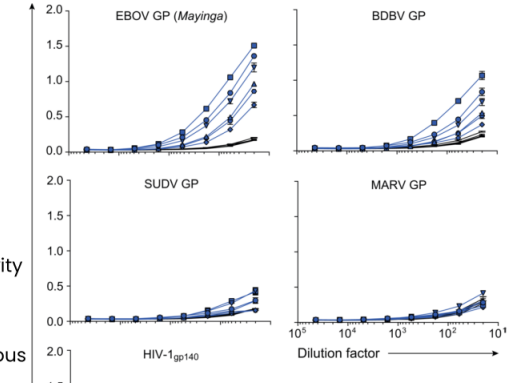
Study 3,4,5 – Cross-reactivity data in human sera

Study 3 - Ehrhardt et al., 2019 — characterization of cross-reactive monoclonal antibodies induced by rVSV-ZEBOV

Methods
•Analysis of samples from phase 1 ERVEBO vaccine recipients
•Isolation of Ebola GP-specific memory B cells
•Generation of monoclonal antibodies
•Assessment of:
- binding
- neutralization
- epitope specificity
- cross-reactivity against BDBV GP

Results
•Approximately 30–76% of isolated antibodies showed some cross-reactivity across Ebola species
•Overall serum-level heterologous responses against BDBV were substantially weaker than against Zaire Ebola
•No convincing evidence of strong cross-neutralization against heterologous ebolaviruses

Limitations
• No assessment of BDBV cross-neutralization or Fc-mediated function

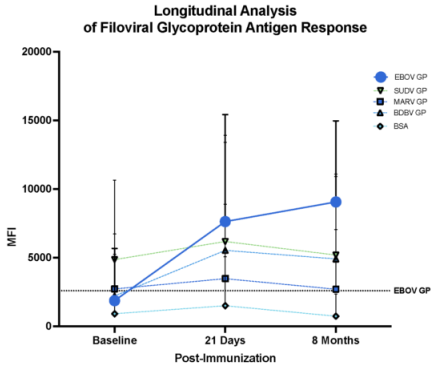


Study 4 – Smith et al., 2019 — Multiplex Pan-Filovirus assay (preprint)

Methods
- Multiplex pan-filovirus assay developed to evaluate antibody responses against EBOV, BDBV, SUDV, and MARV
- Assessed whether ERVEBO vaccination induces serum cross-reactivity against BDBV (858 serum samples at Day 21 and 8 months post-ERVEBO)

Results
"Additional evaluation of reactivity to other filovirus GP targets (MARV, SUDV, BDBV) showed that mean MFI values for non-EBOV GP antigens remained below their respective reactivity thresholds. These findings indicate minimal cross-reactivity within the vaccinated population and are consistent with the expected antigenic specificity of the ERVEBO vaccine."

Limitations
• Not peer-reviewed
• No assessment of cross-neutralization or Fc-mediated functions



Longitudinal Analysis of Filoviral Antigen Response for Detection of Cross-Reactivity

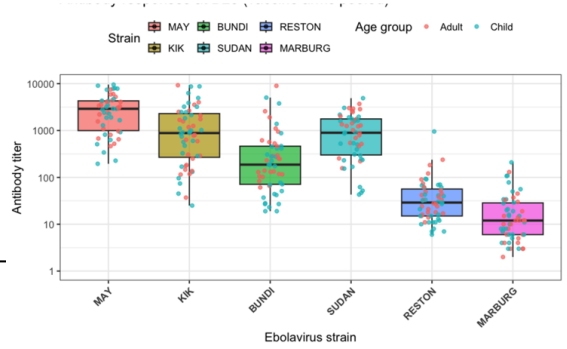
Cross-reactive humoral responses against Bundibugyo ebolavirus indced by licensed Ebola vaccines: Analyses from the PREVAC randomized trial

May 26th, 2026, Yves Lévy

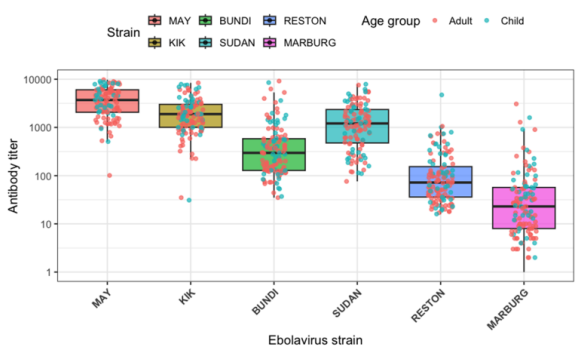
POPULATION: PREVAC trial conducted in West Africa: Evaluation of: **i) rVSVΔG-ZEBOV-GP** (1x, D0); **ii) rVSVΔG-ZEBOV-GP** (2x, D0, D56); **iii) Ad26.ZEBOV** (D0) **/MVA-BN-Filo** (D56).

METHODS Multiplex Luminex assay (GP MAY, KIK, BDBV, SUD, RES, MAR), sera at D28 (after Prime) (n=55) and M3 (after Boost) (n=124): Adults and children

Ab RESPONSES at D28 (all groups)



Ab RESPONSES at M3 (all groups)



Conclusions

•Available preclinical and immunologic evidence suggests that rVSV-ZEBOV/ERVEBO may induce some degree of heterologous cross-reactivity against Bundibugyo ebolavirus (BDBV), including cross-reactive IgG responses recognizing BDBV glycoprotein.

•Although cross-reactive binding antibodies were detected, their biological significance remains uncertain, as they were not consistently associated with survival, robust cross-neutralization, or reliable protection against BDBV.

•The available evidence base has major limitations, including very small nonhuman primate study sizes, variable experimental conditions, inconsistent findings across studies, and absence of human clinical effectiveness data against BDBV.

•None of the NHP studies evaluated the licensed ERVEBO product directly; instead, earlier research-grade rVSV-ZEBOV constructs were used, which may limit direct extrapolation to current ERVEBO use.

Taken together, current evidence does not demonstrate reliable or clinically proven protection of ERVEBO against Ebola virus disease caused by BDBV in humans.

Overview of BDBV-specific candidates

Vaccine Candidate	Vaccine Developer	Regulatory Status (platform for filovirus)	R&D Stage (candidate)	Manufacturing Stage (candidate)
rVSV-BDBV-GP	IAVI-UTMB	• Licensed vaccine (Ervebo) against Zaire	Preclinical • 100% protection in BDBV macaque model (3/3) - Mire et al 2011 • Postexposure protection in BDBV Macaque model - 83% (5/6) - Woolsey et al 2023 (a)	- Clinical grade material in 7 to 9 months. - IAVI to establish Master Virus Seed and Process for TT to CDMO
ChAdOx1 – BDBV GP	University of Oxford / Serum Institute of India	• Phase 1 bivalent (EBOV, SUDV)	Preclinical	- Clinical grade material in 2 months. - Manufacturing at SII
mRNA –LNP –BDBV GP	Moderna		Preclinical	- Rapid availability
rVSV – BDBV-GP	Gamaleya Research Institute	• GamEvac-Combi EUL in Russia against Zaire • Phase 1 – rVSV-tetravalent (EBOV,BVDB,MARV,SUDV)	Preclinical	- Clinical grade material in 6 months
rVSV-BDBV-GP	Public Health Vaccines, LLC	• Phase 1 – rVSV-MARV	Preclinical	- PHV to establish Master Virus Seed and Process

Broadly-reactive candidates

Vaccine/Platform & company/university	Immunogenicity / Efficacy evidence	Key references	Readiness
mRNA –LNP with mixed mRNAs (GP EBOV, SUDV, BDBV + NP EBOV) (Univ Sci.&Tech. China, RNAlfa Biotech)	Broad immunity elicited against EBOV, SUDV and BDBV in mice. Complete protection in EBOV mouse model, in IFNAR KO mouse model for BDBV, and SUDV hamster model with the mixture and some of the individual components	Zhang et al 2026	Pre-clinical data ; brand new report, full maturity unclear
ChAdOx1 + MVA , T cell epitopes from NP, VP40 and L (Oxford – Tomas Hanke)	ChAdOx1 prime and MVA boost elicited broad T cell responses and 100% protection in mice against EBOV and MARV.	Rahim et al 2019	Pre-clinical data only and lab scale material
Glycoprotein Multivalent Vaccines (Protein Subunit plus adjuvant (CPG, MPLA and Addavax) (UC Irvine / U. New Mexico)	Recombinant GP for EBOV, SUDV, BDBV + CPG, MPLA and Addavax elicited broad humoral immunity; moderate neutralizing titers.	Felgner et al 2024	Pre-clinical data only and lab scale material
EBOV/SUDV GPs + Gag-VLPs plus adjuvant (CCHMC/Emory/UNC)	Bivalent EBOV/SUDV GP Gag VLPs induced BDBV ELISA and neut titers in NHPs	Singh et al 2020	Pre-clinical data only and lab scale material
Recombinant modified EBOV, SUDV BDBV GP on nanoparticles (Scripps, Uvax)	Mutliple GP designs for EBOV, SUDV and BDBV expressed and assembled on nanoparticles; mouse immunogenicity of EBOV and SUDV designs elicited BDBV responses in mice	Lee et al 2025	Pre-clinical data only and lab scale material

Slide from Bill Dowling, CEPI - Draft subject to change with updated information

Vaccine R&D and manufacturing funding environment

CEPI

- ***CEPI funding will advance vaccine candidates towards clinical trials as quickly as possible.***
- ***Portfolio includes candidates under development by IAVI, Moderna and University of Oxford manufactured at Serum Institute of India.***

OSLO, 1 June 2026: The Coalition for Epidemic Preparedness Innovations (CEPI) will urgently accelerate development of three investigational vaccines targeting the Bundibugyo ebolavirus that has caused a rapidly spreading epidemic in the Democratic Republic of the Congo (DRC) and neighbouring Uganda. With no licensed vaccines available for Bundibugyo virus and none in clinical development, CEPI's action reflects the critical need to produce tools to help curtail the outbreak, complementing ongoing public health interventions by affected countries.

CEPI will invest in a portfolio of candidates under development from longstanding partners with proven capabilities. These include candidates developed by IAVI; Moderna; and the University of Oxford, which will be manufactured at the Serum Institute of India (SII). As work on these candidates begins, CEPI will continue to evaluate additional promising candidates to strengthen the pipeline, including through an open Call for Proposals, and expects to announce additional partnerships shortly.

Up to USD 50M to Moderna
Up to USD 3.2M to IAVI
Up to USD 8.6M to Oxford/SII
Up to USD 1.9M to PHV

Call for Proposals open til 12 June

Gavi
The Vaccine Alliance

As a response, Gavi will disburse up to US$ 50 million of the First Response Fund for potential vaccine manufacturing, scale-up, and delivery

Initial Estimate, subject to change

Expenditure	Amount, US$
Vaccine envelope	Up to 40
Country support envelope	Up to 10
Total	Up to US$ 50m

Sustaining routine immunization services

Why is maintaining services so critical?

- Past epidemics have shown that *lack of access to essential health services and shut down of services unrelated to the response* result in **more deaths** than those caused by the epidemic itself.
- Even a temporary interruption of RI services will lead to VPD outbreaks, and an increase in preventable morbidity and mortality (especially in young infants and other vulnerable groups)
- **Routine immunization services must continue uninterrupted** and, to the extent possible, **preventive vaccination campaigns (SIAs) should continue as planned,** as long as: planning and human resources are adequate to ensure a successful campaign achieving high coverage and the recommended IPC precautions can be effectively implemented at all times.
- Efforts must ensure that the population is **informed and encouraged to continue utilizing services**, and that these services are **safe and secure** for health care staff, patients, and their communities.

Under development: Programmatic principles for immunization activities during the Bundibugyo outbreak (WHO information note – coming soon)

Thank you

More information:

- **WHO Ebola BDV response:** https://www.who.int/emergencies/situations/ebola-outbreak---drc-2026
- **WHO Ebola vaccines:** https://www.who.int/teams/immunization-vaccines-and-biologicals/diseases/ebola-disease
- **Ebola vaccination toolkit:** https://www.technet-21.org/en/topics/programme-management/ebola-vaccination-toolkit
- **GNN NITAG Resource Center:** https://www.nitag-resource.org/

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