MONTHLY SCIENTIFIC REVIEW
ON FILOVIRUS

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All informations comes from a valid and credible source.

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Situation at a glance

- In January 2025, two filovirus outbreaks occurred on the African continent: a Marburg virus disease outbreak in Tanzania and a Sudan virus disease outbreak in Uganda.
- On 1 September 2025, the Democratic Republic of the Congo reported an outbreak of Ebola virus disease (EVD) in Kasaï Province, in the southwest of the country. More than 53 cases were confirmed, including at least 45 deaths. The health authorities officially declared the end of the outbreak on 1 December 2025.
- In November 2025, a new Marburg outbreak occurred in Ethiopia, with 13 confirmed cases and 8 deaths as of 10 December 2025.

Scientific articles

This section presents relevant articles published on peer-reviewed scientific journals or pre-print platforms.

2026-02-03

Immunoinformatics-guided design of a universal chimeric multi-epitope subunit vaccine against Marburg virus disease and Ravn virus co-infection.

Journal: Sci Rep

Authors: Sardar Ali, Abdullah Shah, Sikandar Khan, Muhammad Suleman, Ziaul Islam, Muhammad Tahir Aleem

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2026-03-08

Dynamics of natural selection preceding human viral epidemics and pandemics.

Journal: Cell

Authors: Jennifer L Havens, Sergei L Kosakovsky Pond, Jordan D Zehr, Jonathan E Pekar, Edyth Parker, Michael Worobey, Kristian G Andersen, Joel O Wertheim

This study finds no evidence of pre-zoonotic adaptation for Ebola, Marburg, mpox, influenza A, or SARS-CoV-2, but detects selection changes in SARS-CoV in an intermediate host and 1977 H1N1 influenza A virus, suggesting laboratory passage. Phylogenetic analysis can help i

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2026-02-27

Subcellular Characterization of the Molecular Determinants of Ebola Virus VP40 Trafficking and Assembly.

Journal: bioRxiv

Authors: Tyler Huth, Ella Wiggenhorn, Susmita Khanal, William Wan

This study characterizes Ebola VP40 mutants to elucidate its trafficking and assembly, revealing novel phenotypes and suggesting a membrane-binding-dependent trafficking mechanism.

See details

2026-02-23

Low-dose VSV-EBOV vaccination provides rapid protection from lethal Ebola virus challenge.

Journal: bioRxiv

Authors: Andrea Marzi, Wakako Furuyama, Amanda J Griffin, Friederike Feldmann, Kyle W Shifflett, Elizabeth R Wrobel, Kyle L O'Donnell, Patrick W Hanley, Heinz Feldmann

Updated VSV-EBOV vaccine with EBOV-Makona GP at moderate dose protected only 50% of NHPs within 10 days, unlike the approved vaccine. Lower doses may compromise sterile immunity, risking EBOV persistence and transmission. Reserve for severe shortages.

See details

2026-02-26

Long non-coding RNAs in response to Ebola virus vaccine-induced immunity.

Journal: Front Immunol

Authors: Izabela Mamede, Thomaz Luschër-Dias, Isabelle Franco Moscardini, Patrícia Gonzales-Dias, Bárbara Marinho, Fernando Marcon, Thiago Dominguez Crespo Hirata, Michael Eichberg, Donata Medaglini, Ali M Harandi, Claire-Anne Siegrist, Tom H M Ottenhoff, Francesco Santoro, André Gonçalves, Daniela M Ferreira, Rafael Polidoro, Glória R Franco, Paulo P Amaral, Helder Nakaya, Marylyn M Addo, VSV-EBOPLUS Consortium

This study identifies conserved lncRNA signatures, including LEF1-AS1 and DOCK8-AS1, post-Ebola vaccination, linked to immune responses and antibody production, with LEF1-AS1 uniquely associated with Ebola vaccination.

See details

Relevant news

This section presents official reports from health agencies, manufacturers and press releases with reliable sources.

Clinical Studies

This section presents relevant clinical trials.

2025-01-27

A Trial to Evaluate Safety, Tolerability, and Immune Responses of an Investigational Monovalent Chimpanzee Adenoviral Vectored Sudan Ebolavirus Vaccine in Healthy Adults

Status: Active not recruiting

Sponsor(s): Sabin Vaccine Institute, Biomedical Advanced Research and Development Authority

A Phase 2, Randomized, Double-blind, Placebo-Controlled Trial to Evaluate Safety, Tolerability, and Immune Responses of an Investigational Monovalent Chimpanzee Adenoviral Vectored Sudan Ebolavirus Vaccine in Healthy Adults

See details

2024-02-09

Study to Evaluate the Recombinant VSV (rVSV)-Marburg Virus Vaccine Candidate (PHV01) in Healthy Adult Subjects

Status: Completed

Sponsor(s): Public Health Vaccines LLC, Biomedical Advanced Research and Development Authority

Phase 1 trial of rVSVΔG-MARV-GP (PHV01) vaccine in healthy adults, assessing safety, tolerability, and immunogenicity (Marburg-specific IgG, neutralizing antibodies) via single IM dose with 181-day follow-up.

See details

2025-02-05

Long-Term Neurologic and Neurocognitive Sequelae Following Pediatric Ebola Virus in Liberia

Status: Completed

Sponsor(s): National Institute of Neurological Disorders and Stroke

This study investigates long-term neurologic and neurocognitive effects of pediatric Ebola virus disease (EVD) in Liberia. Participants, aged under 18 during the PREVAIL III study, undergo neurologic exams, blood tests, and cognitive assessments. The aim is to understand EVD's impact on the brain and nervous system in childhood survivors and close contacts.

See details

2026-02-11

A Phase 1 Randomized, Observer-blind, Placebo-controlled, Dose-escalation Clinical Trial to Evaluate the Safety and Immunogenicity of rVSVΔG-MARV-GP Vaccine in Adults in Good General Health

Status: Not yet recruiting

Sponsor(s): International AIDS Vaccine Initiative, Biomedical Advanced Research and Development Authority

A Phase 1 Randomized, Observer Blind, Placebo-controlled, Dose-escalation and dose expansion Clinical Trial to Evaluate the Safety and Immunogenicity of rVSVΔG-MARV-GP Vaccine in Adults in Good General Health

See details

2025-01-28

EBOla Post-Exposure Prophylaxis

Status: Not yet recruiting

Sponsor(s): ANRS, Emerging Infectious Diseases, Alliance for International Medical Action, Centre de Recherche et de Formation en Infectiologie de Guinée (CERFIG), Medecins Sans Frontieres, Netherlands, Barcelona Institute for Global Health, University of Bordeaux, INSERM UMR S 1136, Agence Nationale de Sécurité Sanitaire de Guinée (ANSS), National Institute for Biomedical Research DRC, Cheikh Anta Diop University, Senegal, PACCI Program, The PANdemic preparedness plaTform for Health and Emerging infectious Response, University of Sierra Leone College of Medicine and Allied Health Sciences, National Public Health Institute of Liberia

EBO-PEP is a phase III trial comparing Ervebo alone (ERV) versus Ervebo plus Inmazeb (ERV+IMZ) for EVD post-exposure prophylaxis in high-risk, asymptomatic individuals. ERV+IMZ arm includes revaccination at day 56. Follow-up is 21 days minimum, with in-person and remote v

See details

2024-09-18

A Trial to Evaluate Safety, Tolerability, and Immune Responses of an Investigational Monovalent Chimpanzee Adenoviral Vectored Marburg Virus Vaccine in Healthy Adults

Status: Active not recruiting

Sponsor(s): Sabin Vaccine Institute, Biomedical Advanced Research and Development Authority

A Phase 2, Randomized, Double-blind, Placebo-Controlled Trial to Evaluate Safety, Tolerability, and Immune Responses of an Investigational Monovalent Chimpanzee Adenoviral Vectored Marburg Virus Vaccine in Healthy Adults

See details

2024-11-07

Study of Obeldesivir as Postexposure Prophylaxis for Filovirus Diseases Virus Disease

Status: Withdrawn

Sponsor(s): Gilead Sciences (Group)

The goal of this clinical study is to learn more about the study drug, obeldesivir (ODV), and how safe and effective it is preventing Filovirus disease in participants with known or suspected exposure to Filovirus disease. The primary objective is to evaluate the safety and tolerability of ODV for Ebola virus (EBOV), Sudan virus (SUDV), and MARV postexposure prophylaxis (PEP).

See details

Guidelines and practical information

This section lists official manuals of recommendations for clinical practice or public health policy published by leading health organizations.

WHO	**Diagnostic testing for Ebola and Marburg virus diseases (December 2024)**
WHO	**Risk communication and community engagement for Marburg virus disease outbreaks (November 2024)**
WHO	**Ebola and Marburg virus disease epidemics: preparedness, alert, control, and evaluation (August 2024)**
CDC	**Public Health Management of People with Suspected or Confirmed VHF or High-Risk Exposures (May 2024)**
WHO	**Contact Tracing During an Outbreak of Ebola Virus Disease (January 2024)**
WHO	**Country Readiness Strengthening workshop on infection prevention and control for Ebola and Marburg disease outbreaks (December 2023)**
WHO	**Infection prevention and control guideline for Ebola and Marburg disease (August 2023)**
WHO	**Clinical management of patients with viral haemorrhagic fever: A pocket guide for front-line health workers (January 2016)**
WHO	**Case definition recommendations for Ebola or Marburg virus diseases: interim guideline (August 2014)**

Fact sheets

Marburg virus

Phylogeny

The Marburg virus (MARV) belongs to the Filoviridae family and is responsible for Marburg virus disease (MVD). Since its identification in 1967, it has caused 14 outbreaks over 50 years, primarily in Africa. The most severe outbreak occurred in Angola in 2005, with 252 cases and a case fatality rate (CFR) of 90%.

Transmission

MARV is a zoonotic hemorrhagic fever transmitted by Rousettus aegyptiacus fruit bats. Other bat species and certain non-human primates can also be infected, acting as intermediate hosts. Human-to-human transmission occurs through direct contact with bodily fluids from infected individuals or contaminated surfaces. Healthcare workers and close contacts, especially during funeral rites, are at high risk. Vertical transmission has not been demonstrated, but the virus can persist in semen for up to three months after recovery.

Diagnosis

The incubation period ranges from 2 to 21 days. Initial symptoms include fever, headache, and muscle pain, followed by skin rashes around day 7. The disease often leads to rapid multi-organ failure, with death occurring between days 8 and 9. Due to symptom overlap with other viral hemorrhagic fevers like Ebola, clinical diagnosis is challenging and requires confirmation by RT-PCR. IgG testing is used for late-stage confirmation. Samples must be handled in biosafety level 4 (BSL-4) laboratories.

Symptoms

The disease begins with fever, headache, and muscle pain. Around day 7, patients develop skin rashes, followed by multi-organ failure, which frequently leads to death between days 8 and 9. The CFR ranges from 24% to 90%, depending on the quality of supportive care.

Treatment

There is currently no specific antiviral treatment for MVD. Management is primarily supportive. Research is ongoing on several antiviral agents, including galidesivir, favipiravir, and remdesivir, which have shown promising results in animal models. The monoclonal antibody MBP091 demonstrated 100% efficacy in non-human primates and successfully completed a phase 1 clinical trial confirming its safety. The WHO has launched the SOLIDARITY PARTNERS clinical trial to assess these treatments during successive outbreaks.

Vaccination

Currently, 28 vaccine candidates are under development. The MARVAC consortium has prioritized four vaccines, focusing on two main platforms: • rVSV-MARV: The VSVΔG-MARV-GP (Musoke) vaccine, developed since 2005, has shown 100% protection in non-human primates after a single intramuscular injection, with

durable neutralizing antibody responses lasting up to 14 months. The rVSVΔG-MARV-GP (Angola) or PHV01 vaccine has demonstrated rapid protection within three days post-vaccination, making it a potential candidate for post-exposure prophylaxis. • ChAdV: The ChAd3-Marburg vaccine, developed by the Sabin Vaccine Institute, has shown rapid and long-lasting protection in non-human primates and was deployed during the 2024 Marburg outbreak in Rwanda. The ChAdOx1 Marburg vaccine, developed by the Oxford Vaccine Group, entered a phase 1 clinical trial in July 2024 to assess its safety and immunogenicity. The WHO has rapidly implemented a ring vaccination protocol in Tanzania to evaluate these vaccines in an emergency setting.

Zaire Ebola Virus

Phylogeny

Ebola virus is a filovirus belonging to the Filoviridae family and classified under the genus Orthoebolavirus. Six distinct viruses within this genus are known to cause Ebola Virus Disease (EVD): Ebola virus (EBOV), also referred to as the Zaire ebolavirus subtype; Sudan virus (SUDV); Reston virus (RESTV); Taï Forest virus (TAFV); Bundibugyo virus (BDBV); and Bombali virus (BOMV). The first documented outbreaks of Ebola occurred in 1976, with simultaneous epidemics in South Sudan and the Democratic Republic of the Congo.

Transmission

EVD is a zoonotic disease, with fruit bats of the Pteropodidae family considered the most likely natural reservoir. Animal-to-human transmission occurs through contact with infected animals. Human-to-human transmission is primarily via direct contact with blood or bodily fluids of symptomatic or deceased individuals, or indirectly through contaminated fomites. There is also evidence of sexual transmission post-recovery due to viral persistence in semen. The virus has been detected in breast milk as well.

Diagnosis

Diagnosis can be established using various methods, including ELISA assays, antigen-capture detection tests, serum neutralization assays, RT-PCR, electron microscopy, and virus isolation via cell culture. These tests are typically performed on blood samples, or oral fluids when blood collection is not feasible.

Symptoms

EVD is a viral hemorrhagic fever that induces severe and often fatal illness in humans, with a case fatality rate averaging around 50%, ranging from 25% to 90%. The incubation period spans 2 to 21 days. The disease progresses in two phases:The “dry” phase includes symptoms such as fever, fatigue, myalgia, headache, and sore throat. The “wet” phase follows, characterized by vomiting, diarrhea, cutaneous eruptions, and signs of renal and hepatic dysfunction. Complications may include multiorgan failure, internal or external hemorrhage, shock, and spontaneous miscarriage during pregnancy.

Treatment

Two therapeutic agents—Inmazeb and Ebanga—received FDA approval in 2020 for the treatment of EVD in adults, children, neonates born to infected mothers, and pregnant or lactating women.

Vaccination

Two vaccines targeting EBOV have been approved by both the FDA and EMA: Ervebo (rVSV-ZEBOV), currently deployed in outbreak response in the DRC, and Zabdeno/Mvabea (Ad26.ZEBOV/MVA-BN).