

MONTHLY SCIENTIFIC REVIEW ON MPOX VIRUS

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ANRS Emerging Infectious Diseases - Paris, France

Situation at a glance

- As of 26 January 2026, the country has reported 617 mpox cases, including 229 confirmed cases of clade 1b mpox, with no deaths reported to date, across 8 regions.
- As of 10 February 2026, two mpox cases imported from Madagascar have been detected on Réunion Island.
- In Mayotte, six mpox cases imported from Madagascar have recently been confirmed.
- In the Comoros, twelve confirmed mpox cases imported from Madagascar have been identified.

Scientific articles

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

This week, discover breakthroughs in chikungunya surveillance, and clinical description.

2026-02-09

Persistent Immunity From Historic Smallpox Vaccination and Its Limited Cross-Neutralization of Monkeypox Virus: A Population-based Serological Study in Taiwan.

Journal: Open Forum Infect Dis

Authors: An-Yu Chen, Yen-Chen Chen, Wen-Hui Fang, Le-Tien Lin, Yi-Jen Hung, Chih-Heng Huang

Over 80% of individuals born before Taiwan's 1979 smallpox vaccination cessation retained VACV-reactive antibodies, with 84% of this group exhibiting neutralizing activity. Cross-reactive MPXV antibodies were detected in 69% of VACV-seropositive individuals, but only 65%

[See details](#)

2025-12-31

Molecular Aspects of the Emergence of Monkeypox Virus Clades.

Journal: Viruses

Authors: Igor V Babkin, Irina N Babkina, Nina V Tikunova

MPXV's evolutionary rate accelerated 5-6-fold in subclade IIb post-2018, driven by non-synonymous substitutions in key host range genes, including those involved in immune evasion and protein synthesis inhibition. Clade divergence was facilitated by mutations in specific

[See details](#)

2026-01-01

Drosophila melanogaster as a prospective model organism for monkeypox virus research.

Journal: Front Microbiol

Authors: Mukarram Mudjahid, Andri Frediansyah, Youdiil Ophinni, Firzan Nainu

[See details](#)

2026-01-05

Monkeypox Virus: Epidemiology, Virology, Diagnosis, Vaccine, and Therapeutics.

Journal: MedComm (2020)

Authors: Yunzheng Yan, Yaqin Sun, Guangyan Sun, Cheng Niu, Xinyuan Zhao, Ming Zhao, Tongyao Liu, Suyue Zhang, Hui Zhai, Ankang Liu, Shouzhi Yu, Shuyuan Pan, Wu Zhong, Yuntao Zhang, Song Li

This review discusses the global mpox epidemic, summarizing epidemiological profiles, virological insights, diagnostic methods, vaccine efficacy, and therapeutic advancements. It highlights the evolution of MPXV, its lifecycle, and clinical characteristics, while evaluating current and emerging treatments to inform future research and clinical strategies.

[See details](#)

2026-02-03

T4 DNA ligase-mediated RAA coupled with RNA aptamer-driven cascade signal amplification for ultra-sensitive monkeypox virus detection.

Journal: Anal Chim Acta

Authors: Chenxi Li, He Sun, QingWen Jia, Zebin Zhang, Shengjun Bu, Hongtao Zhou, Longtao Wang, Jiayu Wan

MFTA integrates RAA and RNA aptamer sensing with T4 DNA ligase for ultra-sensitive MPXV detection. It employs a cascade signal amplification system with a detection limit of 1 copy/ μ L, showing high specificity and consistency with qPCR, making it a valuable tool for MPXV diagnostics.

[See details](#)

2026-01-27

MPXV RNA-seq data provide evidence for protection of viral transcripts from APOBEC3 editing.

Journal: J Virol

Authors: Alisa O Lyskova, Ruslan Kh Abasov, Anna Pavlova, Evgenii V Matveev, Alexandra V Madorskaya, Fedor M Kazanov, Daria V Garshina, Anna E Smolnikova, Gennady V Ponomarev, Elena I Sharova, Dmitry N Ivankov, Ogun Adebali, Mikhail S Gelfand, Marat D Kazanov

RNA-seq data from MPXV-infected samples reveal high-frequency C→T and G→A substitutions, consistent with APOBEC3 DNA-level mutagenesis. Evidence suggests these substitutions originate from DNA mutations, not RNA editing, with APOBEC3A/B likely drivers.

[See details](#)

2026-01-28

Unveiling Intra-Clonal Diversity of Monkeypox Virus from Brazil's First Outbreak Wave.

Journal: Viruses

Authors: Amanda Stéphanie Arantes Witt, João Victor Rodrigues Pessoa Carvalho, Izabela Mamede, Talita Emile Ribeiro Adelino, Felipe Campos de Melo Iani, Maurício Teixeira Lima, Thalita Souza Arantes, Denilson Eduardo Silva Cunha, Rodrigo Araújo Lima Rodrigues, Giliane de Souza Trindade, Erna Geessien Kroon, Nidia Esther Colquehuanca Arias, Glória Regina Franco, Jônatas Santos Abrahão

This study analyzed intra-clonal diversity of MPXV from a single lesion in a Brazilian patient during the 2022 outbreak. Three viral clones showed subtle genomic differences but no protein-level variations, with reduced EEV release compared to VACV-WR, suggesting potentia

[See details](#)

2026-01-23

First detection and autochthonous transmission of monkeypox virus clade Ib in the Netherlands, October to November, 2025.

Journal: Euro Surveill

Authors: Jelte Elsinga, Celine van de Ven, Anne de Vries, Hester Coppoolse, Mariska Petrignani, Brigitte van Cleef, Riemer van Markus, Nora Carpay, Catharina E van Ewijk, Sjoerd Rebers, Aldert Bart, Karin J von Eije, Brenda Westerhuis, Sylvia Bruisten, Leonard Schuele, Marjan Boter, Richard Molenkamp, Bregtje Lemkes, Suzanne Geerlings, Henry Jc de Vries, Marion Koopmans, Marcel Jonges, Bas B Oude Munnink, Matthijs Ra Welkers

In late 2025, the Netherlands reported eight autochthonous monkeypox clade Ib cases among men who have sex with men, with no severe outcomes. Phylogenetic analysis and contact tracing suggested multiple introductions or cryptic circulation, with related international sequences indicating sustained global transmission.

[See details](#)

2026-01-27

Protective efficacy of a genetically modified attenuated vaccinia virus Tiantan strain against monkeypox virus challenge in a small animal model.

Journal: J Virol

Authors: Wenhao Su, Tingting Zhao, Xiuxiu Ren, Shishi Li, Qiufang Huang, Jingjing Liu, Xiaohuan Zhang, Zihao Ge, Jiangbo Wei

This study developed an attenuated VTT strain, rVTT Δ C12K2 Δ A45, by deleting virulence and immune regulatory genes, showing reduced replication and virulence in mammalian cells and animals, while inducing neutralizing antibodies against MPXV in mice, suggesting its potentia

[See details](#)

2026-01-26

An mRNA Vaccine Based on Antigens From Conserved Regions of Monkeypox Virus A35R and M1R With a Dimer-Like Conformation Confers Protection Against Both Monkeypox Virus and Vaccinia Virus Infections in Mice.

Journal: MedComm (2020)

Authors: Cong Tang, Longhai Yuan, Yun Xie, Yun Yang, Yanan Zhou, Junbing Wang, Hao Yang, Rui Peng, Jiali Xu, Wenhai Yu, Qing Huang, Wenqi Quan, Baisheng Li, Youchun Wang, Shuaiyao Lu

Four mRNA vaccines targeting MPXV A35R and M1R proteins were developed. Dual-antigen vaccines MV1 and MV2 showed superior immunogenicity and protection in mice. MV2, with a dimer-like conformation, demonstrated optimal efficacy and durable immune responses, making it a promising clinical candidate for MPXV and VACV.

[See details](#)

2025-12-19

Nosocomial transmission in a monkeypox virus clade Ib outbreak, Ireland, August to October 2025.

Journal: Euro Surveill

Authors: Mark McLoughlin, Laura Fahey, Michael Carr, Billie Caceda, Derval Igoe, Jonathan Dean, Dominic Rowley, Alan Rice, Brian Keogan, Cillian De Gascun, Daniel Hare, Mary Ward

A monkeypox clade Ib outbreak in Ireland (Aug-Oct 2025) involved four linked cases, including nosocomial transmission, with phylogenetic ties to the Eastern Mediterranean. Highlights the need for vigilance, rapid diagnostics, and coordinated responses to prevent further spread in non-endemic regions.

[See details](#)

2025-12-15

Mpox animal models: A comprehensive evaluation of susceptible species for pathogenesis studies and drug discovery.

Journal: Emerg Microbes Infect

Authors: Marc-Antoine de La Vega, Ara Xiii, Courtney Woolsey, Gary P Kobinger

This review evaluates Mpox animal models, comparing rodent to non-human primate species, and outlines how host factors, viral clade, and inoculation route influence disease outcomes and immune responses. It provides a roadmap for selecting appropriate models to study pathogenesis, transmission, and medical countermeasure efficacy, aiming to streamline drug discovery.

[See details](#)

2025-12-09

Cross-Cell Line Transcriptome Profiling Reveals Host-Virus Interactions in Monkeypox Virus Infection.

Journal: Emerg Microbes Infect

Authors: Hongyang Yi, Sumei Yang, Jiayu Deng, Xiang Liu, Xiling Zhang, Xiaoxin Xie, Jing Li, Jiahao Wang, Li Wei, Zhenzhong Zheng, Mingxia Zhang, Liang Fang, Hongzhou Lu

This study profiles MPXV-host interactions across cell lines, revealing disruptions in immune, cell cycle, and metabolic pathways. It compares mRNA sequencing methods, identifies stage-specific MPXV gene regulation, and validates mTOR and growth factor receptor inhibitors as potential therapeutics.

[See details](#)

2025-12-11

Monkeypox Virus Partial-Genome Amplicon Sequencing for Improvement of Genomic Surveillance during Mpox Outbreaks.

Journal: Emerg Infect Dis

Authors: Jiusheng Deng, Daisy McGrath, Kimberly Wilkins, Luis A Haddock, Whitney Davidson, Demi B Rabeneck, Joseph Madden, Vaughn Wicker, Adrienne Amuri-Aziza, Tony Wawina-Bokalanga, Placide Mbala-Kingebeni, Christina L Hutson, Yu Li, Crystal Gigante

This study presents a cost-effective, high-throughput partial-genome sequencing method for MPXV, using short overlapping amplicons to generate high-quality sequences from clinical samples, including low viral DNA and formalin-fixed tissues, enabling subclade determination

[See details](#)

2025-12-07

Epidemiological characteristics of monkeypox virus Clade Ib in the Democratic Republic of the Congo.

Journal: Nat Commun

Authors: Cécile Kremer, Sabin Sabiti Nundu, Emmanuel Hasivirwe Vakaniaki, Isabel Brosius, Guy Mukari, Papy Munganga, Eugene Bangwen, Jean Claude Tshomba, Yves Mujula, Elise De Vos, Christophe Van Dijck, Sarah Houben, Oswaldo Gressani, Cris Kacita, Daniel Mukadi-Bamuleka, Tony Wawina-Bokalanga, Eddy Kinganda-Lusamaki, Adrienne Amuri-Aziza, Patrick Mutombo Lupola, Jean-Jacques Muyembe-Tamfum, Placide Mbala-Kingebeni, Laurens Liesenborghs, Niel Hens, Andrea Torneri

MPXV Clade Ib, emerging in DRC in 2023, shows sustained human-to-human transmission, primarily via sexual contact. Serial interval and incubation period are shorter for sexual transmission (8.57 and 9.56 days, respectively) compared to non-sexual. These differences highlight the importance of transmission context in shaping public health responses.

[See details](#)

2025-12-23

Maternal and neonatal outcomes after infection with monkeypox virus clade I during pregnancy in DR Congo: a pooled, prospective cohort study.

Journal: Lancet

Authors: Emmanuel Hasivirwe Vakaniaki, Isaac Barhishindi, Ange Mubiala, Espoir Bwenge Malembaka, Lydia Braunack-Mayer, Bruce Nganga, Sabin Sabiti Nundu, Isabel Brosius, Stefanie Bracke, Eugene Bangwen, Elise De Vos, Robert Colebunders, Mireille Ngale, Gabriel Kayembe, Christian Tshongo, Ali Dilu, Celestin Tshimanga, Jean-Luc Biampata, Patrick Musole Bugeme, Nsengi Ntamabyaliro, Bruce Kirenga, Misaki Wayengera, Joseph Nelson Siewe Fodjo, David Lupande Mwenebitu, Anne W Rimoin, Tony Wawina-Bokalanga, Koen Vercauteren, Daniel Mukadi-Bamuleka, Jean-Jacques Muyembe-Tamfum, Susanne Krasemann, Jason Kindrachuk, Andrew S Azman, Veronique Nussenblatt, Ian Crozier, Lori E Dodd, Olivier Tshiani-Mbaya, MBOTE-SK Consortium, PREGMPOX Consortium, PALM007 Consortium, Uvira Study Group, Nicola Low, Patrick D M C Katoto, Placide Mbala-Kingebeni, Laurens Liesenborghs

Pregnant women with MPXV clade I infection face high fetal loss risk, especially in the first trimester, with congenital infection possible. No maternal deaths occurred. Prevention and clinical strategies are crucial.

[See details](#)

Relevant news

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

2026-01-08

Mpox Virus: Identification of the First Case in Mayotte

Source: ARS

The first Mpox case in Mayotte, linked to Madagascar's outbreak, has been confirmed. The disease, caused by the Monkeypox virus, presents with a distinctive rash and flu-like symptoms, spreading via direct/indirect contact. Transmission through droplets is rare. Isolation for 3 weeks is recommended. Mayotte is enhancing vigilance and preventive measures.

[See details](#)

2026-01-23

Monkeypox (mpox): identification of the first case in Réunion

Source: ARS

First mpox case in Réunion Island confirmed in a traveler from Madagascar. Patient isolated, close contacts monitored. Mpox spreads via direct/indirect contact with lesions or surfaces; rare droplet transmission. Symptoms: rash, fever, lymphadenopathy; 5-21 day incubation

[See details](#)

2026-01-09

Mpox Virus: heightened vigilance in Réunion

Source: ARS

The abstract describes Mpox, a viral infection causing a distinctive rash, often with systemic symptoms like fever and lymphadenopathy, emphasizing the need for vigilance in Réunion.

[See details](#)

2025-12-30

Mpox cases in France. January 1st - November 20th, 2025.

Source: PRS

Since January 2025, France reported 174 mpox cases, primarily adult men. Four cases involved clade Ib, linked to African countries where clade I circulates. The last clade Ib case was confirmed in September.

[See details](#)

2026-01-22

WHO EPI-WIN webinar: safe & dignified Mpox care for displaced communities and overcrowded settings

Source: WHO

The WHO, in collaboration with UN agencies, released guidance on managing mild mpox cases in IDP and refugee settings, focusing on IPC, WASH, mental health, and community engagement. The webinar aims to present this guidance, highlight core measures, showcase country experiences, and discuss strategies to reduce stigma and promote reintegration.

[See details](#)

2025-12-08

UK health officials warn of new mpox variant

Source: CIDRAP

UKHSA identified a new recombinant mpox strain (clade 1b and 11b) in England. Clade 1b, more transmissible and virulent, is spreading globally, with community transmission reported in several non-endemic countries. WHO assesses moderate risk for MSM with multiple partners

[See details](#)

2026-01-06

Mpox antibodies wane 2 years after infection or vaccination, study finds

Source: CIDRAP

Mpox-specific neutralizing antibodies decline significantly within two years post-infection or Jynneos vaccination, with prior infection showing higher antibody retention than vaccination. Early antibody levels and prior smallpox vaccination were associated with higher ti

[See details](#)

2025-12-22

Mpox infection early in pregnancy linked to poor fetal outcomes, study suggests

Source: CIDRAP

Mpox in pregnancy, especially in the first trimester, is linked to high fetal loss rates (45%), including spontaneous abortion, missed abortion, and stillbirth. Adverse outcomes were more frequent in the first trimester (94%) compared to later trimesters. Factors like hig

[See details](#)

2026-01-20

Mpox doesn't always cause illness, yet many patients have long-term effects, studies suggest

Source: CIDRAP

Studies reveal "silent" mpox circulation in Nigeria, with 3% of healthy adults showing immune responses to mpox without symptoms. Additionally, 58% of mpox patients exhibit long-term signs or complications up to 1.5 years post-diagnosis.

[See details](#)

2025-12-11

Spain reports first known human-to-human mpox clade 1b transmission outside Africa

Source: CIDRAP

Spain reports first known human-to-human mpox clade 1b transmission outside Africa, involving a vaccinated 49-year-old man with no travel history. PCR confirmed clade 1b infection, prompting global investigations and highlighting the need for vigilance and targeted control measures.

[See details](#)

2026-01-19

Mpox worldwide overview

Source: ECDC

Every month ECDC provides detailed epidemiological overview of the worldwide transmission of mpox in its weekly threat report.

[See details](#)

2025-12-17

Mpox transmission, US flu surveillance highlighted in first Public Health Alerts reports

Source: CIDRAP

CIDRAP and NEJM Evidence launched Public Health Alerts, reporting potential clade 1b mpox community transmission in California and H3N2 predominance in the 2024-25 flu season, supporting WHO vaccine strain selections.

[See details](#)

2025-12-19

Reports show how mpox clade 1b spreads through non-sexual contact in DR Congo, Ireland

Source: CIDRAP

Mpox clade 1b outbreaks in DR Congo and Ireland show diverse transmission routes. In DR Congo, household contact, not sexual exposure, drove spread, primarily affecting children in crowded, malnourished settings. In Ireland, clade 1b spread via sexual, household, and heal

[See details](#)

2025-12-03

WHO EPI-WIN Webinar: building the future of public health intelligence: launch of the PHI Competency Framework and Curriculum

Source: WHO

WHO EPI-WIN webinar launches PHI Competency Framework and Curriculum to bolster global PHI capacities, defining essential skills and providing adaptable training modules. Speakers from WHO, Robert Koch Institute, and Lebanon's Ministry of Public Health will discuss implementation and collaboration.

[See details](#)

2026-01-16

Communicable disease threats report, 10-16 January 2026, week 3

Source: ECDC

This issue of the ECDC Communicable Disease Threats Report (CDTR) covers the period 10-16 January 2026 and includes updates on respiratory virus epidemiology in the EU/EEA, measles, mpox, and Marburg virus disease.

[See details](#)

2025-12-19

Communicable disease threats report, 13-19 December 2025, week 51

Source: ECDC

This issue of the ECDC Communicable Disease Threats Report (CDTR) covers the period 13-19 December 2025 and includes updates on respiratory virus epidemiology, SARS-CoV-2 variants, mpox, leprosy, Marburg virus disease, dengue, and chikungunya.

[See details](#)

Clinical Studies

This section presents relevant clinical trials.

2026-01-23

A Randomized Clinical Trial Investigating the Safety, Reactogenicity, and Immunogenicity After Immunization With an mRNA-based Mpox Vaccine Candidate in Africa

Status: Not yet recruiting

Sponsor(s): BioNTech SE, Coalition for Epidemic Preparedness Innovations

This is a randomized, double-blind, placebo-controlled study which aims to assess the safety, reactogenicity, and immunogenicity after one and two doses of BNT166a or placebo in healthy participants.

[See details](#)

2025-02-19

Phase 3 Maternal Safety & Immunogenicity Trial of MVA-BN® in DRC

Status: Active not recruiting

Sponsor(s): Jean-Pierre Van geertruyden, PENTA Foundation, Ace Africa, European and Developing Countries Clinical Trials Partnership (EDCTP), Bavarian Nordic, University of Kinshasa

This Phase 3 trial evaluates the safety and immunogenicity of the MVA-BN mpox vaccine in pregnant and postpartum women in the DRC, comparing immune responses with healthy adults and assessing maternal immunity transfer to neonates.

[See details](#)

2025-02-19

Phase 3 Infant Safety & Immunogenicity Trial of MVA-BN® in DRC

Status: Recruiting

Sponsor(s): Jean-Pierre Van geertruyden, Ace Africa, PENTA Foundation, Bavarian Nordic, European and Developing Countries Clinical Trials Partnership (EDCTP), University of Kinshasa, CEPI

Phase 3 trial in DRC infants (4-24 months) compares full-dose (0.5 mL) vs. half-dose (0.25 mL) MVA-BN mpox vaccine, aiming to demonstrate non-inferiority of both to adult full-dose, with 344 participants randomized into two groups, dosing 28 days apart.

[See details](#)

2025-02-17

DiagRaMIE Mpx Virus-RDC for the Diagnostic of Monkeypox

Status: Not yet recruiting

Sponsor(s): Assistance Publique - Hôpitaux de Paris, NG Biotech, Commissariat A L'energie Atomique

The NG-Test Monkeypox virus RDT, developed by CEA and NG Biotech, offers a rapid, cost-effective alternative to PCR, with preclinical trials showing high sensitivity and specificity. Ongoing clinical trials aim to validate its effectiveness for CE marking, potentially enabling rapid response to monkeypox outbreaks.

[See details](#)

2024-12-03

Tecovirimat for Treatment of Monkeypox Virus - Study Extension Providing Standard of Care Only

Status: Completed

Sponsor(s): National Institute of Allergy and Infectious Diseases, Institut National de Recherche Biomédicale. Kinshasa, République Démocratique du Congo

The purpose of the PALM007 extension is to further characterize the clinical and natural history of mpox, and to provide standard of care (SOC) during the ongoing outbreaks.

[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.

COREB	Mpox Practical Guidance (2025)
WHO	Infection prevention, control, and WASH measures for home care and isolation for mpox in resource-limited settings: Interim operational guidance (2025)
NIAID	NIAID Research Agenda for Mpox (2024)
UKHSA	Mpox: Scenarios and technical elements for preparedness and response to clade I (2024)
HAS	Opinion of the Haute Autorité de Santé on the vaccination strategy against Mpox (2024)
WHO	Temporary recommendations issued to States Parties regarding the PHEIC associated with the upsurge of mpox (2024)
WHO	Strategic Framework for Enhancing Mpox Prevention and Control, 2024-2027 (2024)
WHO	Surveillance, case investigation and contact tracing for mpox (monkeypox): Interim guidance (20 March 2024)
WHO	Diagnostic testing for monkeypox virus (MPXV): Interim guidance (2023)
COREB	Monkeypox virus infection: Operational sampling procedure (2023)
COREB	Monkeypox virus infection: Identification and clinical management in France (2023)
SPF	Case and contact definitions and procedures for contact tracing (2023)
ECDC	Public health considerations for mpox in EU/EEA countries (2023)

WHO	Public health advice on mpox in congregate settings
WHO	Public health advice for gay, bisexual and other men who have sex with men regarding the recent mpox outbreak
HCSP	Revision of the smallpox preparedness and response plan (2022)
WHO	Monkeypox strategic preparedness, readiness and response: Operational planning guidelines (2022)
WHO	Vaccines and immunization for monkeypox: Interim guidance (2022)
WHO	Monkeypox Strategic Preparedness, Readiness and Response Plan (2022)
WHO	Public health advice for sex workers on mpox (2022)
WHO	Risk communication and community engagement: Public health advice on understanding, preventing and addressing stigma and discrimination related to mpox (2022)
ECDC	Monkeypox infection prevention and control guidance for primary and acute care settings (2022)
ECDC/ WHO	Risk communication and community engagement approaches during the mpox outbreak in Europe (2022)
ECDC	Considerations for contact tracing during the mpox outbreak in Europe (2022)
WHO	Clinical characterization of mpox, including monitoring of therapeutic interventions (2022)
WHO	Clinical management and infection prevention and control for monkeypox: Interim rapid response guidance (2022)
ECDC	Navigating mpox: Considerations for gay, bisexual and other men who have sex with men (2022)

COREB

Monkeypox: Dermatological diagnostic support and symptomatic management (2022)

HCSP

Guidance for managing confirmed mpox cases at risk of severe disease and high-risk contacts (2022)

HCSP

Prevention measures against Monkeypox virus infection (2022)

HCSP

Guidance for managing suspected, probable or confirmed Monkeypox virus cases (2022)

Fact sheets

Transmission

Mpox is a zoonotic infectious disease caused by the mpox virus (MPXV), belonging to the Poxviridae family and Orthopoxvirus genus, similarly to smallpox. There are two known clades of MPXV: clade I originate from eastern regions in Central Africa and clade II prevalent in West Africa. Clades I and II are further subdivided into four distinct subclades: Ia, Ib, IIa, and IIb. Variants Ib and IIb which emerged in recent years exhibit APOBEC-3 type mutations, indicative of viral adaptation to human hosts. Clade I MPXV infections are at greater risk of severe disease, with a case fatality rate (CFR) ranging from 3 - 10%, while clade II MPXV generally causes milder symptoms, lower viremia and a CFR of 1 - 3%. The global mpox outbreak caused by the clade IIb in 2022-2023 showed a CFR of less than 0.1%. Clades Ia and IIa are transmitted from animals to humans through contact with live and dead animals through hunting or consumption of contaminated bushmeat. The animal reservoir remains unknown but African rodents such as tree squirrels, and Gambian pouch rats are currently considered to be strong candidates. Secondary human-to-human transmission of these clades occasionally occurs via respiratory droplets, direct close contacts with body fluids or skin abrasions, or through contaminated. Clades Ib and IIb have demonstrated sustained human-to-human transmission. Populations at higher risk of zoonotic transmission include small households or communities living in rural areas, where animal reservoirs may reside. High-risk groups for community transmissions also include sex workers, MSM with multiple sexual partners, or any other individuals with multiple casual sexual partners.

Diagnosis

Due to the range of health conditions that cause similar-appearing skin lesions, clinical differentiation of mpox is difficult without laboratory diagnosis. Detecting viral nucleic acids using polymerase chain reaction (PCR) is the gold standard technique for confirming MPXV diagnosis. The reliability of results depends on the type of biological specimen, with optimal samples obtained directly from skin lesions. In the absence of visible epidermal wounds, testing can be conducted on mucosal specimens using oropharyngeal or rectal swabs. Point-of-care and antigen rapid diagnostic test are rapid, cost-effective and easily interpretable diagnostic tools for use by health workers. POC tests such as GeneXPert (Cepheid, U.S.) and Standard M10 MPX/OPX® (SD Biosensor, South Korea) show promising clinical sensitivity on lesion samples and oropharyngeal swabs for clade I MPXV diagnosis.

Symptoms

The incubation period of MPXV ranges from 2 to 21 days, although some people may contract the infection without developing symptoms. Patients are considered infectious from the time of symptom onset until skin lesions have crusted and a fresh layer of skin has formed underneath. The disease is often mild, self-limiting with symptoms usually resolving spontaneously in two to four weeks but may last longer in immunocompromised individuals. Symptoms can be severe, and patients may develop multiple lesions. Complications may occur, such as septicemia, encephalitis. Higher case fatalities have been observed in vulnerable groups, such as young children, individuals with a weakened immune system or with advanced

HIV infection. Contracting mpox during pregnancy may lead to complications, such as congenital mpox, stillbirth or even death of the newborn. MPXV is classified as a risk group 3 (RG-3) pathogens and requires stringent containment and appropriate safety measures to minimize risk to laboratory personnel. Primary preventive vaccination is recommended for health workers, including laboratory personnel at risk for repeated exposure.

Treatment

Therapeutic management relies mainly on supportive care. One antiviral, tecovirimat, developed to treat smallpox, has been approved by the FDA and EMA as a compassionate use for the treatment of mpox. Several clinical studies (UNITY, EPOXI, MOSA, STOMP, PALM007, PLATINUM/PLATINUM-CAN) are underway in different regions of the world to evaluate the clinical efficacy of tecovirimat in treating mpox in adults and children.

Vaccination

There are currently three vaccines approved for the prevention of mpox. These third-generation smallpox vaccines contain non-replicating or minimally replicating strains of vaccinia virus such as MVA-BN (Bavarian Nordic, Denmark), LC16 (KMB Biologics, Japan) and OrthopoxVac (Russia). The most administered vaccine has been the MVA-BN, for which a favorable safety profile with mild side. The vaccination is recommended for the residents of high-risk areas, sex workers, MSM, health workers exposed to mpox, and contacts of mpox patients, including children. MVA-BN is not yet widely available in countries where the disease is endemic.