



Expert Views

2024 MPOX (Monkeypox) Outbreak:

What Insurers Need to Know

SCOR
The Art & Science of Risk

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Executive summary

Understanding and sharing knowledge of emerging risks is a key part of SCOR's role as a reinsurer. As a new outbreak of MPOX (monkeypox) has emerged and the World Health Organization (WHO) declared a second MPOX public health emergency of international concerns (PHEIC) in August 2024, our L&H researchers and medical experts have updated the previous [research report published in 2022](#) to better understand the risk posed by the increasing spread of this virus. This article highlights our current understanding of this disease, including transmissions, vaccines, treatments, and the potential impact it may have on society.

Key Points

- MPOX clade Ib, originating in the Democratic Republic of the Congo (DRC) in November 2023, has spread to several African countries.
- **The case fatality ratio in DRC is 3.6%.**
- A tested vaccine with good results (up to 82% effectiveness) can be used after contact/infection with the virus.
- In August 2024, a case of MPOX was found in Europe as well as in Thailand. There is a possibility of more cases emerging in other countries. It is important for countries in the affected regions to be prepared to manage these cases and stop the virus from spreading further.
- **Better management of the disease and supportive care provided in developing countries is likely to reduce this case fatality ratio.** According to the U.S. Centers for Disease Control and Prevention, first estimation is around 1.7%.
- It is important to note that key parameters to improve pandemic assessment such as R0, age-specific mortality rate, and risk factors for severe cases and death are still unknown.

MPOX clade Ib characteristics

Symptoms & different forms of the diseases

MPOX is an infectious disease caused by a virus of the same family as the one that causes smallpox. It regularly spreads among animals in Central and Western Africa, such as rodents and monkeys, but it sometimes jumps to humans, causing local outbreaks. Diagnosis of the disease is based on RT-PCR on skin or oropharyngeal sample.

There are two distinct lineages of MPOX: clade I and clade II. **Clade I is associated with more severe disease and a higher risk of death.** A subtype of clade I, called **clade Ib, is causing the current outbreak in Democratic Republic of Congo**, while the global outbreak of MPOX in

2022 and 2023 was caused by a subtype of clade II.

MPOX clade Ib infection is followed by different phases:

- Incubation period: Symptoms usually appear six to thirteen days after infection but can take up to 21 days.
- Initial symptoms: General febrile symptoms such as fever, back pain, and muscle aches.

Patients typically develop a pruritic or painful rash within the first one to three days. This rash often affect the face (up to 95% patients), upper limbs (81.3%), lower limbs (65.6%), oral mucosa (70%), genitals (30%), and conjunctiva (20%). The rash



spreads centrifugally and may affect the palms and soles (up to 75%). The lesions progress from maculopapular to vesicular to pustular stages, remaining in the pustule stage for about five to seven days. They then crust over and fall off within one to two weeks. The entire rash usually lasts around two to three weeks from onset to desquamation. Lesions may all be in the same stage of development, similar to smallpox, or appear in various stages, similar to chickenpox.

Most people experience mild to moderate symptoms lasting two to four weeks.

Severe disease due to MPOX may include larger, more widespread lesions (especially in the mouth, eyes, and genitals), secondary bacterial infections of the skin or blood, and lung infections. Complications can include severe bacterial infection from skin lesions, MPOX affecting the brain (encephalitis), heart (myocarditis), or lungs (pneumonia), and eye problems. People with severe MPOX may require hospitalization, supportive care, and antiviral medicines to reduce the severity of lesions and shorten time to recovery.

Risk factors & ways of transmission, mainly behavioural

Risk factors for MPOX infection (whatever the clade) in Africa are the following:

- Contact with bushmeat or rodents
- Not having been vaccinated against smallpox
- Having multiple sexual partners
- Having close physical contact with someone with the disease.

MPOX can be transmitted through several routes:

- **Close physical contact:** Direct contact with the rash, sores, or body fluids of an infected person

- **Sexual and non-sexual transmission:** Both types of contact have been documented, including through sexual activities
- **Household transmission:** Close contact within households can lead to the spread of the virus
- **Zoonotic transmission:** In some settings, transmission from animals to humans has been reported

Treatments & medical guidelines

There is currently no approved treatment specifically for MPOX infections. However, there are treatments available to manage symptoms and support recovery:

- Isolation to cut off viral transmission for 21 days, i.e., the maximum incubation period.
- Supportive care to manage symptoms such as pain control, to prevent bacterial superinfection skin damage from the rash – cleaning with soap and water and monitoring – and to ensure adequate hydration
- Antiviral drugs **that are in evaluation** (“**Tecovirimat**” and others)
- Vaccination

For most patients with MPOX, isolation and supportive care are sufficient. **However, some patients with severe manifestations of MPOX require specialized care and/or hospitalization** (eye infections, neurological complications, myopericarditis, complications associated with mucosal lesions - oral, rectal, genital, and urethral) **due to uncontrolled viral spread.**

Immunity & vaccines

Several studies have shown that anti-MPXV neutralizing antibodies (nAbs) and anti-MPXV immunoglobulin G (IgG) can be detected in the serum of participants who received the smallpox vaccine in the past.



There are several approved vaccines worldwide:

- MVA-BN smallpox vaccine, consisting of modified vaccinia Ankara-Bavarian Nordic (MVA-BN), a live, attenuated, non-replicating, proprietary version of the MVA virus, used for the prevention of smallpox and MPOX
- ACAM2000, is a smallpox second-generation vaccine (cell-cultured), manufactured by Sanofi Pasteur Biologics Co. ACAM2000 vaccine is also produced from the Vaccinia virus (MVA)
- The third-generation non-replicating smallpox vaccine, known as Imvanex (or JYNNEOS in the US), is authorized for protection against MPOX in adults. It was used during the 2022 outbreak and has shown effectiveness in preventing the disease. The vaccine can be administered both pre-exposure and post-exposure to the virus
- Other vaccines exist, such as LC16 from Japan's KM Biologics or, more recently, OrthopoxVac from Russia's state-owned Vector Laboratories. They remain almost exclusively intended for their respective national markets

- Note that ARNm vaccines against MPOX are in development (phases I-II)

Although specific clade I data is currently lacking to assess the effectiveness of vaccines, the **2022 MPOX outbreak figures with clade II are expected to be close**. Its effectiveness is the following:

- Pre-exposure vaccination: Two doses provide an estimated effectiveness of 82%. Even one dose offers 76%. Three doses are recommended for immunocompromised people.
- Post-exposure vaccination: It must be administered within four days after the risky contact and a maximum of 14 days. The effectiveness is estimated at 20%.

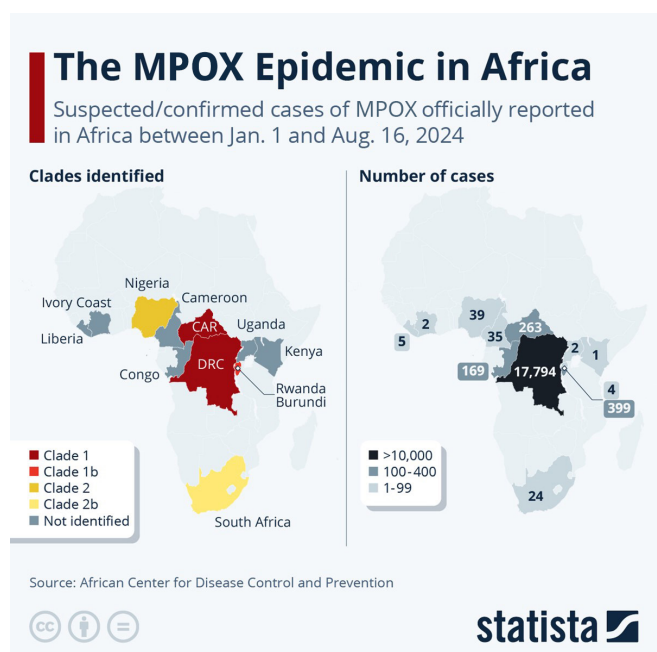
Moreover, vaccinated individuals who do get infected tend to experience less severe symptoms compared to those who are unvaccinated.

Pandemic risk estimations as of September 2, 2024

Infections

Since the beginning of 2024, over 20,000 cases of MPOX have been reported from 13 African Union Member states, including more than 3,000 confirmed cases and over 500 deaths, according to the European Centre for Disease Prevention and Control's report on September 2. Democratic Republic of Congo, where clade 1 is prevalent, represents 19,667 suspected and confirmed cases alone, among which 575 people have died. This is already more than the total recorded in 2023. Some cases were also reported in Pakistan, Sweden and Thailand.

First imported cases to other regions have also been reported, including in Pakistan and in Sweden. An increase in imported cases is expected.





Estimated mortality rate

Initial trial analyses released in August 2024 by the CDC indicated that Tecovirimat did not reduce the duration of MPOX lesions among children and adults with clade I MPOX in DRC.

However, the CDC's study has estimated an **1.7% overall mortality which was much lower than the MPOX mortality of 3.6%** or higher reported among cases looked at together across all the DRC, showing that better outcomes among people with MPOX can be achieved when they are hospitalized and provided high-quality supportive care. The two groups compared from DRC share similar age and gender characteristics.

Remaining uncertainties

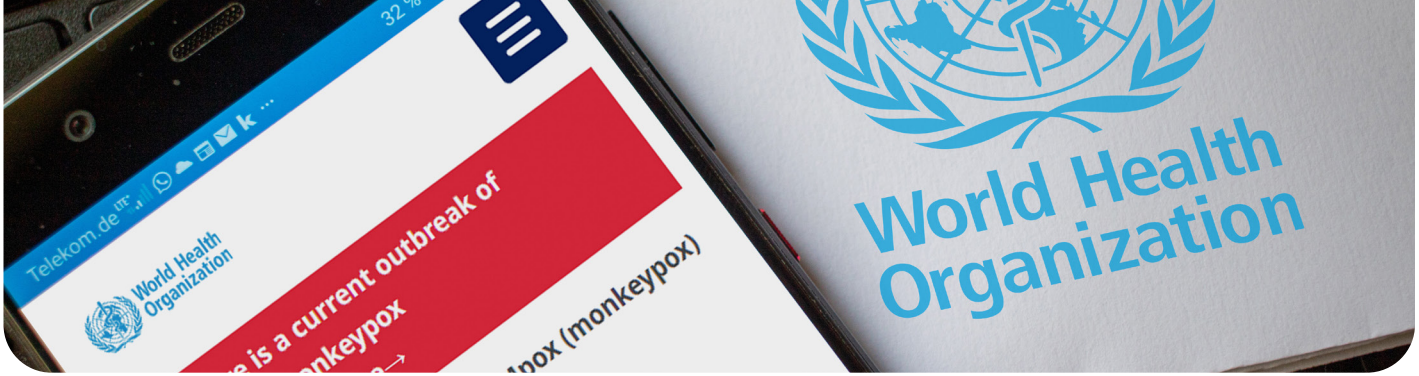
Note that some important parameters to improve pandemic assessment as shown below are still unknown:

- R0 (reproduction number, i.e., how contagious an infectious disease is) of virus transmission outside Africa countries
- Global mortality and age-mortality in countries with medical high-quality supportive care
- Risk factors for severe cases and death

Implications to insurers

Given MPOX's relatively low mortality and morbidity rates under the current conditions, we anticipate that insurers will not experience a significant impact on their results due to this outbreak. SCOR constantly monitors the progress of this and other infectious disease developments and is dedicated to sharing the information with their clients.

We invite you to contact your local SCOR representative for more information.



Sources

Table 1. Summary of the risk due to MPXV clade I for the populations under assessment

	Likelihood of infection	Impact	Overall risk for the assessed population
In the affected countries			
EU/EEA citizens travelling to the affected countries and having close contact (healthcare workers, household or other close contact and/or multiple sexual contacts) with affected communities or living in the affected countries	High	Low	<u>Moderate</u>
EU/EEA citizens travelling to the affected countries, but not having close contact with affected communities	Low	Low	<u>Low</u>
In the EU/EEA			
Close contacts of possible or confirmed imported cases	High	Low	<u>Moderate</u>
Close contacts of possible or confirmed imported cases with underlying immunocompromising conditions and those with an untreated HIV infection	High	Moderate	<u>High</u>
EU/EEA general population	Very low	Low	<u>Low</u>

Source: European Centre for Disease Prevention and Control. Risk assessment for the EU/EEA of the mpox epidemic caused by monkeypox virus clade I in affected African countries – 16 August 2024. ECDC: Stockholm; 2024.

<https://www.cdc.gov/poxvirus/mpox/clinicians/treatment.html>

Everything you need to know about the mpox outbreak. 19 August, 2024. <https://id-ea.org/everything-you-need-to-know-about-the-mpox-outbreak/>

WHO. Mpox.08/17/2024

<https://www.who.int/news-room/questions-and-answers/item/monkeypox>

CDC. Mpox Rapid Risk Assessment. AUGUST 14, 2024. [HTTPS://WWW.CDC.GOV/CFA-QUALITATIVE-ASSESSMENTS/PHP/DATA-RESEARCH/MPOX-RISK-ASSESSMENT/INDEX.HTML](https://www.cdc.gov/cfa-qualitative-assessments/php/data-research/mpox-risk-assessment/index.html)

CIDRAP. EUROPEAN OFFICIALS SAY MORE IMPORTED CLADE 1 MPOX CASES LIKELY. AUGUST 16, 2024. [HTTPS://WWW.CIDRAP.UMN.EDU/MPOX/EUROPEAN-OFFICIALS-SAY-MORE-IMPORTED-CLADE-1-MPOX-CASES-LIKELY](https://www.cidrap.umn.edu/mpox/european-officials-say-more-imported-clade-1-mpox-cases-likely)

McQuiston JH, Luce R, Kazadi DM, et al. Preparedness and Response to Increasing Clade I Mpox Cases in the Democratic Republic of the Congo - United States, 2024. MMWR Morb Mortal Wkly Rep. 2024 May 16;73(19):435-440. doi: 10.15585/mmwr.mm7319a3. PMID: 38753567; PMCID: PMC11115432.

CDC. Interim Clinical Considerations for Use of JYNNEOS Vaccine for Mpox Prevention in the United States <https://www.cdc.gov/poxvirus/mpox/clinicians/vaccines/vaccine-considerations.html>

van Nispen C, Reffett T, Long B, Gottlieb M, Frawley TC. Diagnosis and Management of Monkeypox: A Review for the Emergency Clinician. Ann Emerg Med. 2023 Jan;81(1):20-30. doi: 10.1016/j.annemergmed.2022.07.014. Epub 2022 Sep 15. PMID: 36117012; PMCID: PMC9533988



Sanz-Muñoz I, Sánchez-dePrada L, Sánchez-Martínez J, Rojo-Rello S, Domínguez-Gil M, Hernán-García C, Fernández-Espinilla V, de Lejarazu-Leonardo RO, Castrodeza-Sanz J, Eiros JM. Possible Mpox Protection from Smallpox Vaccine-Generated Antibodies among Older Adults. *Emerg Infect Dis*. 2023 Mar;29(3):656-658. doi: 10.3201/eid2903.221231. Epub 2023 Feb 2. PMID: 36732061; PMCID: PMC9973709.

Musuka G, Moyo E, Tungwarara N, Mhango M, Pierre G, Saramba E, Iradukunda PG, Dzinamarira T. A critical review of mpox outbreaks, risk factors, and prevention efforts in Africa: lessons learned and evolving practices. *IJID Reg*. 2024 Jul 6;12:100402. doi: 10.1016/j.ijregi.2024.100402. PMID: 39157420; PMCID: PMC11326932

Liu H, Wang W, Zhang Y, Wang F, Duan J, Huang T, Huang X, Zhang T. Global perspectives on smallpox vaccine against monkeypox: a comprehensive meta-analysis and systematic review of effectiveness, protection, safety and cross-immunogenicity. *Emerg Microbes Infect*. 2024 Dec;13(1):2387442. doi: 10.1080/22221751.2024.2387442. Epub 2024 Aug 16. PMID: 39082272; PMCID: PMC11332295.

Baraniuk C. The state of global mpox in 2024: new variants, rising outbreaks in Africa, and vaccine trials just starting. *BMJ*. 2024 Jul 30;386:q1554. doi: 10.1136/bmj.q1554. PMID: 39079713.

<https://www.cdc.gov/poxvirus/mpox/about/index.html>

https://www.ined.fr/en/everything_about_population/population-games/world-population-me/

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