Multi-country outbreak of mpox

External Situation Report 14, published 19 January 2023
Data as received by WHO national authorities by 17:00 CEST, 15 January 2023

Risk assessment	Laboratory confirmed cases	Deaths	Countries/ areas/ territories
Global risk – Moderate WHO Regional risk • Region of the Americas – High • African Region, Eastern Mediterranean Region, European Region, Southeast Asia Region – Moderate • Western Pacific Region – Low	84 733	80	110

Highlights

- Since the last situation report published on 5 January 2023, 790 new cases (a 1% increase in total cases) and five new deaths have been reported.
- WHO led an expert consultation towards development of target product profiles (TPPs) for monkeypox virus (MPXV) diagnostics. These draft TPPs are available online for public consultation until 01 February 2023.
- Since June 2022, WHO has procured nearly 90 000 commercial molecular tests for over 60 countries across five WHO regions, and enabled exchange of reagents between laboratories across the world.
- This situation report contains a special focus on genomic sequencing of monkeypox virus from around the world and an overview of the clinical and public health links between HIV and mpox.

Epidemiological Update

Data source: WHO Multi-country mpox outbreak- Global trends

From 1 January 2022 through 15 January 2023, a cumulative total of 84 733 laboratory-confirmed cases of mpox and 80 deaths have been reported to WHO from 110 countries/territories/areas (hereafter 'countries'[i]) in all six WHO Regions (Table 1). Since the last situation report published on 5 January 2023, 790 new cases (a 1% increase in total cases) and five new deaths have been reported.

From 2 January 2023 through 15 January 2023, 11 countries reported an increase in the weekly number of cases, with the highest increase reported in Mexico (n=59). As of 15 January, 78 of the 110 affected countries have not reported new cases for over 21 days, the maximum disease incubation period.

The number of weekly new cases reported globally has declined by 12.7% in week 2 (9 January 2023 through 15 January 2023) (n = 302 cases) compared to week 1 (2 January 2023 through 8 January 2023) (n = 346 cases), with the largest proportional decrease observed in the Region of the Americas (-17%) and the European Region (-12%).

From 2 January 2023 through 15 January 2023, a total of five deaths were reported from the Region of the Americas, in Peru (four deaths), and in Chile (one death).

As of 15 January 2023, the 10 countries that have reported the highest cumulative number of cases globally are the United States of America (n = 29 787), Brazil (n = 10 625), Spain (n = 7505), France (n = 4114), Colombia (n = 4049), the United Kingdom (n = 3730), Germany (n = 3700), Peru (n = 3698), Mexico (n = 3696), and Canada (n = 1460). Together, these countries account for 85.4% of the cases reported globally.

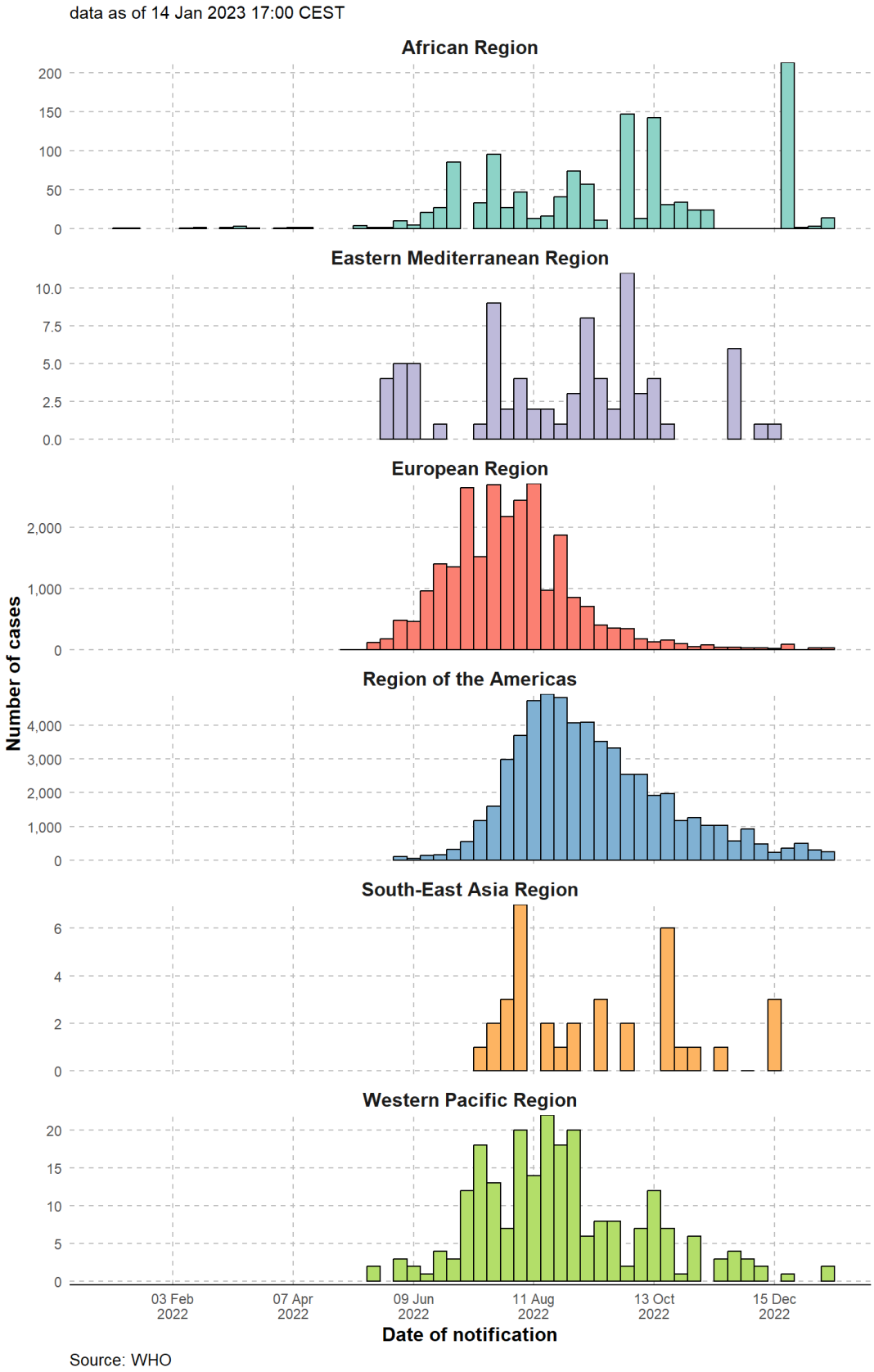
Table 1. Number of cumulative confirmed mpox cases and deaths reported to WHO, by WHO Region, from 1 January 2022 to 15 January 2023 17:00 CEST

WHO Region	Total Confirmed Cases	Total Deaths	Cases in past week[1]	7-day change in cases (%)
Region of the Americas	57 406	58	257	- 17%
European Region	25 767	5	29	- 12%
African Region	1214	15	14	367%
Western Pacific Region	231	0	2	-
Eastern Mediterranean Region	80	1	0	-
South-East Asia Region	35	1	0	-
Total	84 733	80	302	-13%

(-) Zero cases were reported in at least one week in the past two weeks

[1] Using the most recently completed international standard week (Monday - Sunday)

Figure 1. Epidemiological curves of weekly aggregated confirmed cases of mpox by WHO Region, from 1 January 2022 to 15 January 2023, 17:00 CEST*

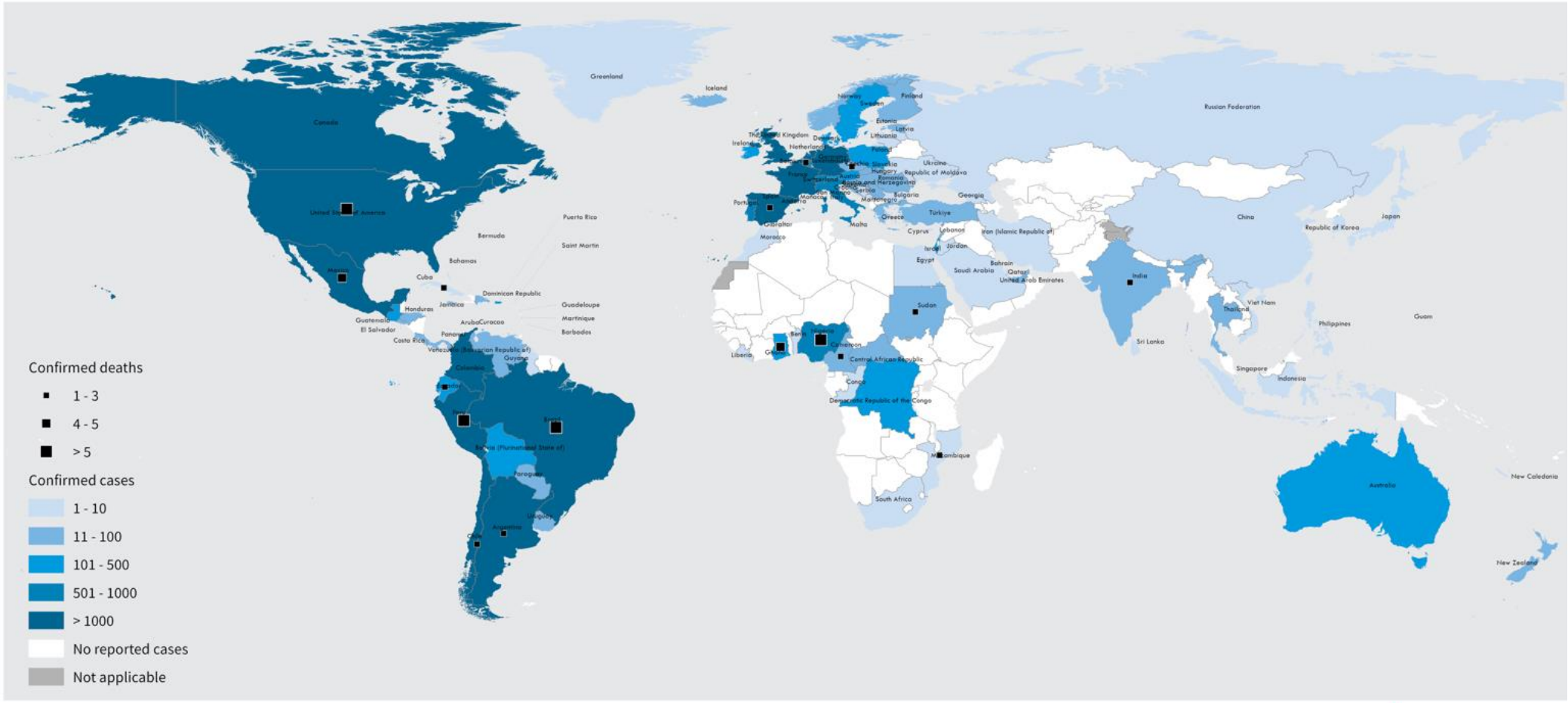


**This figure shows aggregated weekly data, for completed epidemiological weeks ending on Sundays. Data on the current week will be presented in the next situation report.*

Other key epidemiological findings:

- As of 15 January 2023, 96.6% (72 374/74 928) of cases with available data are men, with a median age of 34 years (interquartile range: 29-41 years); 1% (n=783) of cases with age data available are aged 0-17 years, and 214 (0.3%) are aged 0-4 years. This proportion differs between regions, with the largest proportion of cases aged 0-17 years being reported from the Region of the Americas (630/783; 80%).
- Among cases with sexual orientation reported, 84.3% (26 246/31 152) have identified as gay, bisexual and other men who have sex with men. Of all reported modes of transmission, transmission through skin and mucosal contact during sexual activities was most reported, in 14 779 of 21 417 (69%) of all reported transmission events.
- Detailed information on the route of transmission is not available for most cases from Africa and available information on transmission might not fully describe the epidemiological spread of the virus in the region. Countries from this region have reported both person-to-person transmission as well as infection from presumed contact with infected animals.
- The most reported exposure setting is a party setting with sexual contact, comprising 3856 of 8231 (46.8%) reported exposure settings.
- Among the cases (n=37 899) who reported at least one symptom, the most common symptom is any rash and is reported in 79% of cases followed by fever (57%) and systemic and genital rash (49.9% and 44.6% respectively)

Figure 2. Geographic distribution of confirmed cases of mpox reported to or identified by WHO from official public sources from 1 January 2022 to 15 January 2023 17:00 CEST



The designations employed and the presentation of the material in this publication do not imply the expression of any opinion whatsoever on the part of WHO concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted and dashed lines on maps represent approximate border lines for which there may not yet be full agreement.

Data Source: World Health Organization
Map Production: WHO Health Emergencies Programme
Map Date: 17 January 2023

World Health Organization

HIV and mpox

Clinical and public health links between HIV infection and mpox: overlapping epidemics

Globally, as of 15 January 2023, 44% (34 791/79 730) of mpox cases with detailed information reported to WHO have information on HIV status. Of these, 48% (16 749/34 791) are reported to be living with HIV. Epidemiological studies in various settings including Germany, United States, The United Kingdom and a multi-country case series have also suggested that between 44-77% of individuals diagnosed with mpox who do not have HIV infection were nonetheless accessing HIV services and using Anti-Retroviral Therapy (ART) for pre-exposure prophylaxis (PrEP) to prevent HIV acquisition. These data suggest that among communities where HIV risk is high, some may have been at increased risk of acquiring mpox, likely due to transmission of both infections in sexual networks.

Understanding and addressing links between HIV and mpox is particularly important to reduce morbidity and mortality associated with mpox. Multi-country epidemiological data suggests that people living with HIV, especially if infection is poorly controlled, may be at increased risk of severe presentations of mpox, including more severe rash. More severe outcomes have been reported in the US where the hospitalization rate was higher in people with mpox who were living with uncontrolled HIV (27%), compared to people with controlled HIV (8%) and people who were HIV negative (3%). European surveillance data also showed higher hospitalization rates for mpox in people living with HIV (4.6%) compared to those who were HIV negative (3%). Additionally, new HIV diagnoses made among people presenting with mpox suggests the need to include HIV testing within comprehensive mpox case management and assess the need for combined HIV risk assessment and prevention as well as referral to HIV care, based on test results. The association between mpox severity and untreated HIV suggests that, in order to reduce mpox morbidity and mortality, people not aware of their HIV status need to know their status, access antiretroviral treatment and achieve viral suppression, as presented in WHO's Global health sector strategies on, respectively, HIV, viral hepatitis, and sexually transmitted infections for the period 2022-2030.

Due to its epidemiology, the mpox outbreak in newly affected countries has reinforced stigma and discrimination towards men who identify as gay or bisexual, people who are transgender, and sex workers. Many of these communities have been historically stigmatized and discriminated against, and much of this stigma has been fueled by the HIV epidemic in recent decades. Transmission of mpox through sexual contact between men may have reinforced discriminatory stereotypes of those who identify as gay or bisexual. Moreover, stigma and discrimination in health care is an important barrier for HIV control and likely to have hindered the mpox outbreak response in many settings. Eliminating stigma, discrimination and other structural barriers is a key strategy both to achieve global health sector HIV targets and to stop mpox transmission.

In many countries that reported their first mpox cases in 2022, the emergency response to mpox rapidly identified and leveraged existing links between HIV services and communities at risk for mpox, implementing interventions aimed at preventing, diagnosing and treating mpox in HIV services. In collaboration with partners, WHO is currently finalizing considerations and rapid recommendations for a longer-term approach to integrating interventions to control mpox – namely in the domains of surveillance, detection, prevention, care and research – particularly for services that have established links to communities at risk. This is particularly important to achieve the strategic goal of stopping mpox transmission, given the continuing risk of further resurgences in any country.

Response Pillar Update: Laboratory and Surveillance

Laboratory response

Laboratory testing for mpox is essential for disease surveillance, the adequate management of cases and the understanding of the outbreak transmission locally and globally.

WHO has supported equitable access to testing throughout the mpox response and has advocated for the development and evaluation of much needed tests for detection of monkeypox virus (MPXV). A rapid review of available commercial diagnostic tests was done to identify kits that performed well and could be procured as part of readiness and response to the outbreak. As part of follow up work on this, WHO collaborated with the Robert Koch Institute, who undertook an evaluation of 11 commercial PCR assays for MPXV and found that they were all comparable and sensitive enough to detect MPXV DNA [1]. Since June 2022, WHO has procured nearly 90000 commercial molecular tests for over 60 countries across five WHO regions and facilitated exchange of reagents between laboratories across the world.

For countries with limited access to molecular diagnostics, a shipping fund is available to facilitate shipment of samples to international referral laboratories for confirmatory testing, which can be accessed via WHO country and regional offices. To date, 85 samples have been shipped from 10 countries with this support. Additional support to build and strengthen diagnostic capacity in countries has been provided through procurement of PCR equipment and specific training for laboratory staff.

WHO guidance on testing for mpox can be found in the interim guidance for Laboratory testing for the monkeypox virus and interim guidance for Surveillance, case investigation and contact tracing for mpox (monkeypox).

Target product profiles for diagnosis of mpox

Availability of quality assured, accurate and affordable diagnostics is crucial and there remains a clear need for decentralization of mpox testing, and simplified, more accessible assays. In November 2022, WHO initiated an expert consultation towards the development of two target product profiles (TPPs) for MPXV diagnostics, as follows:

> TPP 1: *Tests to be used for mpox diagnosis within health care settings and laboratories*
> TPP2: *Tests to be used as an aid to mpox diagnosis, by targeting orthopoxvirus antigen(s), that are amenable to decentralized use, including in the community*

These TPPs are now available online for public consultation, and feedback until 01 February 2023, following which all comments will be consolidated for the final published versions.

Molecular epidemiology of monkeypox virus

New nomenclature for monkeypox virus clades, whose historical names were felt to be discriminatory and stigmatizing,[2] was agreed upon by a group of experts convened by WHO[3] . There are two monkeypox virus (MPXV) clades, clade I and clade II, previously referred to as the Congo basin (or Central African) clade and the West African clade, respectively. As of 16 January 2023, 4652 sequences from 60 countries are available in GISAID and 3986 sequences from 49 countries are available in GenBank.

Clade II is divided into two subclades (IIa and IIb) and appears to cause less severe disease compared to clade I[4]. There has been an epidemic resurgence of clade II in Nigeria since 2017[5]. The large ongoing multi-country outbreak of mpox is due to clade IIb. Clade IIb is further divided into lineages and sub lineages, notably lineages A and B. Phylogenetic analysis of outbreak sequences revealed the presence of many more mutations than expected from MPXV, which is a large DNA virus. The mutation rate since 2017 is approximately 20-fold greater than the long-term evolutionary rate estimated for MPXV in the animal reservoir.[6] A high prevalence of a specific mutational pattern (cytosine deamination by molecules in the APOBEC3 family) can be observed.[7] This pattern is not seen in sequences prior to 2017, prompting the hypothesis that the current epidemic arose from an animal-to-human jump prior to 2017. Given that APOBEC3-type mutations are indicative of replication within human cells and that all such mutations reconstructed in the phylogenetic tree of genomes from 2017 onwards are the result of APOBEC3, it is estimated that the jump to humans occurred in April 2016 (95% CI July 2015 - December 2016).[7]

The majority of clade IIb sequences from the 2022 multi-country outbreak belong to the clade IIb.B.1 lineage. A-lineages are present mainly in the Middle East and South East Asia, in addition to Nigeria (Figure 1). A phylogenetic tree of publicly available sequences reveals limited diversity of sequences within clade IIb detected during the 2022 multi-country outbreak (Figure 2).

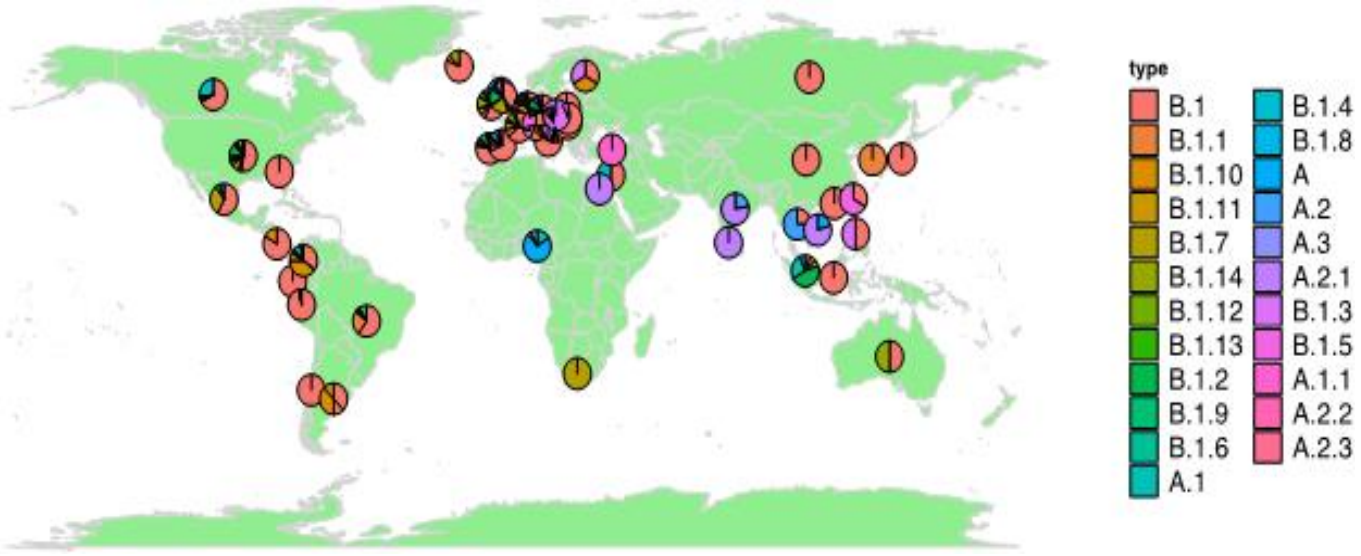


Figure 1: Distribution of clade IIb lineages across the world (source WHO analysis of publicly available genomic data).

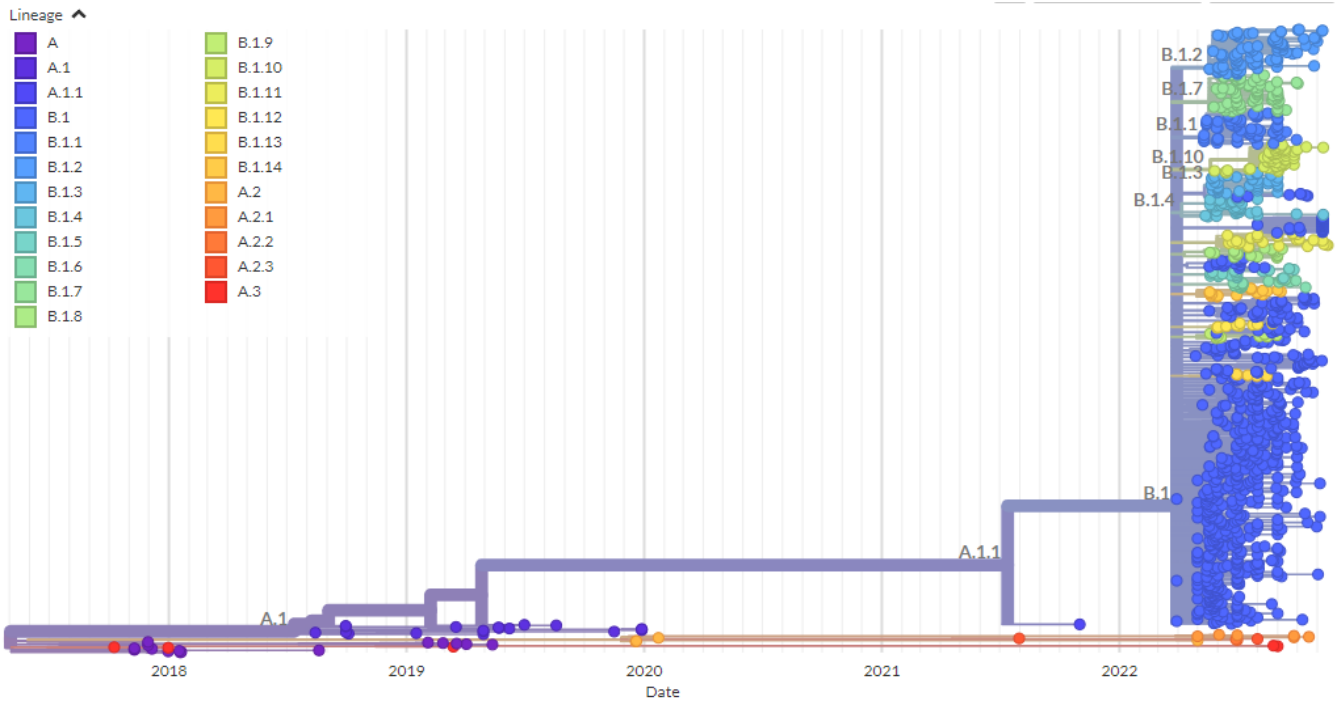


Figure 2. Phylogenetic tree of monkeypox virus sequences from the 2022 multi-country outbreak by clade IIb lineages (Source: Nextrain.org).

Genetic sequence data from animal reservoirs

The animal reservoir of mpox requires further investigation. Clade I and IIa sequences from animal hosts are available (Figure 3), while clade IIb has only been detected in humans to date and is hypothesized to have adapted to humans in recent years. Clade IIa sequences have been isolated from animals including monkeys and rodents, with one human sequence and one from the environment; there are more sequences of clade IIa from animal hosts than from humans. A 2003 outbreak of clade IIa in the United States of America, the first mpox outbreak recorded outside the African continent, caused 47 confirmed and probable human infections, and was linked to infected pet prairie dogs following importation of rodents from Ghana.[8]

Clade I sequences have mainly been isolated from humans; one sequence was from a squirrel and one from a shrew.

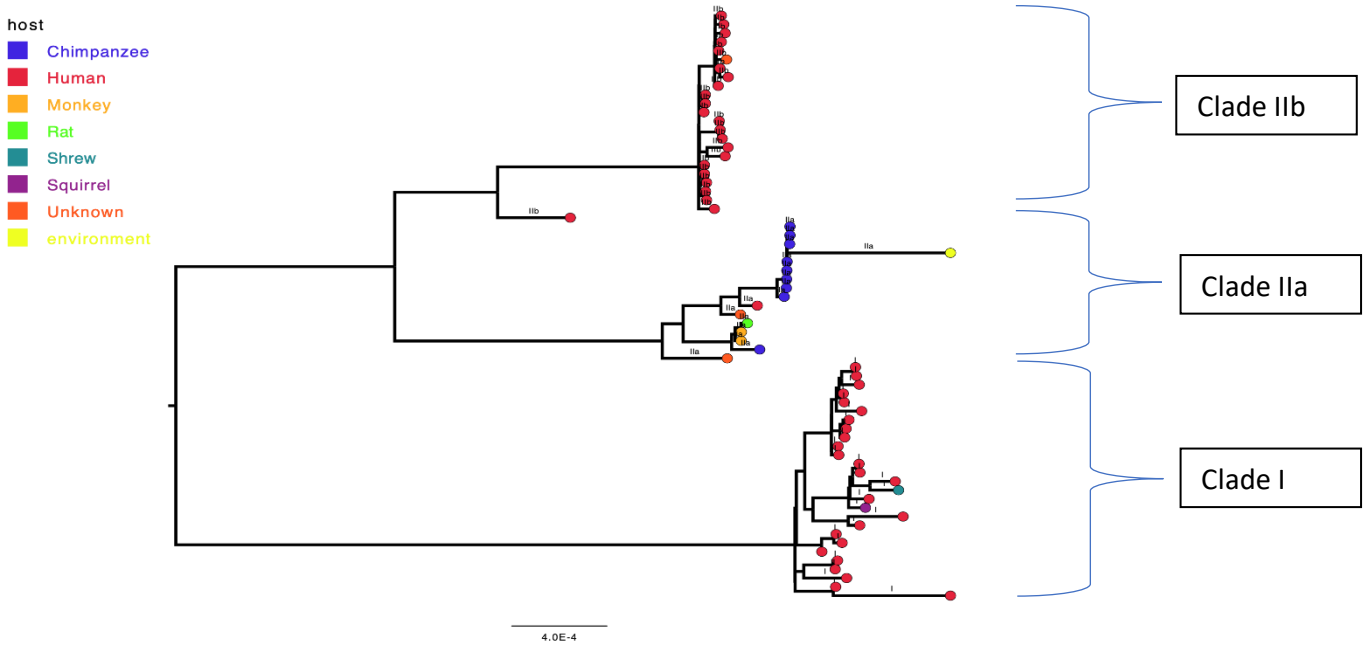


Figure 3. Phylogenetic tree of monkeypox virus (MPXV) sequences by host (source WHO analysis of publicly available genomic data).

References:

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2. Happi C, Adetifa I, Mbala P, et al. Urgent need for a non-discriminatory and non-stigmatizing nomenclature for monkeypox virus. *PLOS Biol*. 2022;20(8):e3001769. doi:10.1371/journal.pbio.3001769

3. WHO recommends new name for monkeypox disease. Accessed January 18, 2023. https://www.who.int/news/item/28-11-2022-who-recommends-new-name-for-monkeypox-disease

4. Bunge EM, Hoet B, Chen L, et al. The changing epidemiology of human monkeypox—A potential threat? A systematic review. *PLoS Negl Trop Dis*. 2022;16(2):e0010141. doi:10.1371/journal.pntd.0010141

5. Yinka-Ogunleye A, Aruna O, Dalhat M, et al. Outbreak of human monkeypox in Nigeria in 2017-18: a clinical and epidemiological report. *Lancet Infect Dis*. 2019;19(8):872-879. doi:10.1016/S1473-3099(19)30294-4

6. Patrono LV, Pléh K, Samuni L, et al. Monkeypox virus emergence in wild chimpanzees reveals distinct clinical outcomes and viral diversity. *Nat Microbiol*. 2020;5(7):955-965. doi:10.1038/s41564-020-0706-0

7. An APOBEC3 molecular clock to estimate the date of emergence of hMPXV - Monkeypox / Evolution - Virological. Accessed January 16, 2023. https://virological.org/t/an-apobec3-molecular-clock-to-estimate-the-date-of-emergence-of-hmpxv/885

8. Past U.S. Cases and Outbreaks | Mpox | Poxvirus | CDC. Accessed January 16, 2023. https://www.cdc.gov/poxvirus/monkeypox/outbreak/us-outbreaks.html

Mpox situation update: African Region

Between 1 January 2022 and 15 January 2023, 1214 laboratory-confirmed cases have been reported from 10 countries in the WHO African Region, including from, in descending order of the number of cases reported, Nigeria (763), the Democratic Republic of the Congo (DRC) (279), Ghana (121), Cameroon (18), the Central African Republic (CAR) (13), Liberia (6), the Republic of Congo (5), South Africa (5), Benin (3), and Mozambique (1). Two of these countries, Ghana and South Africa, had not reported human mpox or the monkeypox virus before 2022, although animals from Ghana were previously linked to the 2003 outbreak in the United States of America. A summary of previous case data from around the world from 1970 to 2021 is to be presented in the Weekly Epidemiological Record (World Health Organization. Epidemiology of human monkeypox (mpox) – worldwide, 2018–2021. Wkly Epidemiol Rec. 2023 Jan 20;98(3), 29-40.)

The six countries with the highest number of cases in the African region are Nigeria (62.8%), DRC (23.0%), Ghana (10.0%), Cameroon (1.5%), CAR (1.1%), and Liberia (0.5%). Nigeria, DRC, and Ghana account for 95.8% (1163) of all mpox cases in the region. Six countries, Benin, Cameroon, CAR, Congo, Mozambique, and South Africa have not reported new cases for six weeks, and Liberia has not reported in three weeks.

The average age of mpox cases reported between January through December 2022 in Africa is 21.0 years, ranging from 0 - 87 years, and the majority are males (60.2%). Sixteen deaths were reported in the continent in 2022, from Nigeria (7), Ghana (4), Cameroon (3), Mozambique (1), and Sudan (1). The more than 100 deaths reported by DRC among suspected cases of monkeypox are not included here as the global database includes only deaths reported among laboratory-confirmed cases. Predominant signs and symptoms include rash, fever, dysphagia, pain, and headache.

The WHO Regional Office for Africa (AFRO) is supporting countries to investigate modes of transmission and determine the characteristics of mpox cases in the region. WHO is also supporting improvement of laboratory testing capacity and, performance of genomic sequencing to identify the main clades involved in the outbreak. However, both clades I and II are circulating in African countries and causing illness. Clade I is predominant in CAR, the Republic of Congo and DRC, and was also recently reported to have caused outbreaks in Sudan; suspected cases have been reported in Ethiopia linked to the Sudan outbreaks. Clade II occurs in Ghana, Nigeria and South Africa, while Cameroon has both Clades. The clades reported in Benin, Liberia and Mozambique are unknown.

WHO response to mpox in the African region

WHO AFRO is providing countries with technical support and coordinating efforts across multiple sectors to support effective response for controlling and preventing the spread of mpox in the region.

Surveillance and case investigation

WHO AFRO supports countries to update mpox risk profiles, build capacity for case detection and reporting, strengthen alert management systems and establish and strengthen national contact tracing systems. The region also supports countries in conducting case investigations and specimen collection, strengthening the capacity for data analysis.

- WHO AFRO has developed electronic data collection and reporting tools for aggregated data, an online case investigation form, a dashboard to facilitate data visualization, analysis, and follow-up of mpox cases and an African region multi-country outbreak of mpox situation report.

Coordination and Resource Mobilization

Through the WHO contingency fund for emergencies, more than USD 900 000 has been disbursed to eight priority countries to support preparedness and response activities in the African region. The region has created its Strategic Preparedness and Response Plan with a budget of USD9 520 000. This funding will support these

countries in developing strategic readiness, preparedness, and response plans and mobilize resources to address the identified gaps and challenges.

WHO has also deployed high-level support missions to Ghana, Nigeria, and CAR in October and November 2022 to augment the monkeypox response efforts and work closely with the countries to to enhance surveillance and respond effectively to the outbreak. The region also plans to deploy experts to the Democratic Republic of the Congo

Laboratory

WHO AFRO provides laboratories across the region with essential reagents and training in collaboration with Africa CDC and the West African Health Organization (WAHO).

Risk communication and community engagement (RCCE)

There is an ongoing development of the regional RCCE strategy and plan. This plan includes key messages developed based on feedback from the field and will continue to be adapted as needed to ensure messages are correct and useful.

There is ongoing social listening involving monitoring social media and other online platforms to understand how people are talking about control measures and responding to the key messages that have been developed. This will help identify gaps or areas where the messaging may need to be adjusted.

In addition to developing key messages and monitoring social media, there is also a focus on capacity building, involving training community volunteers on how to communicate about control measures effectively. Volunteers are trained to identify key audiences, tailor messages to different groups, and use different communication channels.

WHO AFRO has developed and shared a readiness assessment tool to determine countries' readiness. Over eighty percent (39/47) of AFRO countries have evaluated their response capacity. Three countries (8%) reported adequate readiness, 18 (46%) reported moderate capacity, and 18 (46%) reported limited capacity.

Technical guidance and other resources

Strategic Planning and Global Support

- WHO recommends new name for monkeypox disease-28 November 2022 https://www.who.int/news/item/28-11-2022-who-recommends-new-name-for-monkeypox-disease
- Monkeypox Strategic Preparedness, Readiness and Response Plan (SPRP) Operational planning guidelines – 2 November 2022 https://www.who.int/publications/m/item/monkeypox-strategic-preparedness--readiness--and-response--operational-planning-guidelines
- WHO Emergency Appeal: Monkeypox - July 2022 – June 2023, 13 October 2022 https://www.who.int/publications/m/item/who-emergency-appeal--monkeypox---july-2022---june-2023
- Monkeypox Strategic Preparedness, Readiness, and Response Plan (SPRP)- 5 October 2022, https://www.who.int/publications/m/item/monkeypox-strategic-preparedness--readiness--and-response-plan-(sprp)

International Health Regulations Emergency committee and Temporary Recommendations of the Director-General

- WHO Third meeting of the International Health Regulations (2005) (IHR) Emergency Committee regarding the multi-country outbreak of monkeypox, 1 November 2022. https://www.who.int/news/item/01-11-2022-third-meeting-of-the-international-health-regulations-(2005)-(ihr)-emergency-committee-regarding-the-multi-country-outbreak-of-monkeypox
- WHO Second meeting of the International Health Regulations (2005) (IHR) Emergency Committee regarding the multi-country outbreak of monkeypox, 23 July 2022. https://www.who.int/news/item/23-07-2022-second-meeting-of-the-international-health-regulations-(2005)-(ihr)-emergency-committee-regarding-the-multi-country-outbreak-of-monkeypox
- WHO Director-General's statement at the press conference following IHR Emergency Committee regarding the multi-country outbreak of monkeypox, 23 July 2022. https://www.who.int/director-general/speeches/detail/who-director-general-s-statement-on-the-press-conference-following-IHR-emergency-committee-regarding-the-multi--country-outbreak-of-monkeypox--23-july-2022

WHO Interim Guidance and Public Health Advice

- Surveillance, case investigation and contact tracing for mpox (monkeypox): interim guidance, 22 December 2022. https://www.who.int/publications/i/item/WHO-MPX-Surveillance-2022.4
- WHO Vaccines and immunization for monkeypox: Interim guidance, 16 November 2022. https://apps.who.int/iris/bitstream/handle/10665/364527/WHO-MPX-Immunization-2022.3-eng.pdf
- WHO Surveillance, case investigation and contact tracing for Monkeypox: Interim guidance, 25 August 2022. https://www.who.int/publications/i/item/WHO-MPX-Surveillance-2022.3
- WHO Global clinical data platform for monkeypox case report form (CRF), 21 July 2022, https://www.who.int/publications/i/item/WHO-MPX-Clinical_CRF-2022.3
- Public health advice for gatherings during the current monkeypox outbreak, 28 June 2022: https://www.who.int/publications/i/item/WHO-MPX-Gatherings-2022.1
- Clinical management and infection prevention and control for monkeypox: Interim rapid response guidance, 10 June 2022. https://www.who.int/publications/i/item/WHO-MPX-Clinical-and-IPC-2022.1
- Emergency use of unproven clinical interventions outside clinical trials: ethical considerations: https://www.who.int/publications-detail-redirect/9789240041745
- WHO Technical brief (interim) and priority actions: enhancing readiness for monkeypox in WHO South-East Asia Region, 7 July 2022. https://cdn.who.int/media/docs/default-source/searo/whe/monkeypox/searo-mpx-tbrief22.pdf

Data management

- Monkeypox Case and contact investigation form (CIF) and minimum dataset Case reporting form (CRF). 19 August 2022. https://www.who.int/publications/m/item/monkeypox-minimum-dataset-case-reporting-form-(crf)
- The WHO Global Clinical Platform for monkeypox, 14 June 2022. https://www.who.int/tools/global-clinical-platform/monkeypox
- WHO Go.Data: Managing complex data in outbreaks. https://www.who.int/tools/godata

Risk communication and community engagement

- Public health advice for sex workers on monkeypox 30 September 2022. https://www.who.int/publications/m/item/public-health-advice-for-sex-workers-on-monkeypox
- Risk communication and community engagement public health advice on understanding, preventing and addressing stigma and discrimination related to monkey pox 1 September 2022. https://www.who.int/publications/m/item/communications-and-community-engagement-interim-guidance-on-using-inclusive-language-in-understanding--preventing-and-addressing-stigma-and-discrimination-related-to-monkeypox
- Monkeypox Q&A, 31 August 2022. https://www.who.int/news-room/questions-and-answers/item/monkeypox
- Monkeypox: public health advice for gay, bisexual and other men who have sex with men, 18 July 2022. https://www.who.int/publications/m/item/monkeypox-public-health-advice-for-men-who-have-sex-with-men
- Risk communication and community engagement (RCCE) for monkeypox outbreaks: Interim guidance, 24 June 2022. https://www.who.int/publications/i/item/WHO-MPX-RCCE-2022.1
- Interim advice for public health authorities on summer events during the monkeypox outbreak in Europe, 2022. 14 June 2022. https://www.who.int/europe/publications/m/item/interim-advice-for-public-health-authorities--on-summer-events-during-the-monkeypox--outbreak-in-europe--2022

- Interim advice on Risk Communication and Community Engagement during the monkeypox outbreak in Europe, 2022. Joint report by WHO Regional office for Europe/ECDC, 2 June 2022. https://www.euro.who.int/__data/assets/pdf_file/0009/539046/ECDC-WHO-interim-advice-RCCE-Monkeypox-2-06-2022-eng.pdf
- WHO Monkeypox outbreak: update and advice for health workers, 26 May 2022. https://www.who.int/docs/default-source/coronaviruse/risk-comms-updates/update_monkeypox-.pdf?sfvrsn=99baeb03_1
- Risk communication and community engagement. Public health advice on the recent outbreak of monkeypox in the WHO European Region, 24 May 2022. https://www.euro.who.int/__data/assets/pdf_file/0004/538537/public-health-advice-monkeypox-eng.pdf

EPI - WIN Webinars and Updates

The recordings of the previous EPI-WIN Webinars related to current monkeypox outbreak:

- WHO monkeypox technical briefing for the transport and tourism sector, 5 October 2022, https://www.who.int/news-room/events/detail/2022/10/05/default-calendar/technical-briefing-on-monkeypox-for-transport-and-tourism-sector
- Managing stigma and discrimination in health-care settings in public health emergencies such as monkeypox (Sept. 22, 2022)
- How is monkeypox spreading? What do we know so far (July 27, 2022)
- Monkeypox outbreak and mass gatherings (June 24, 2022)

EPI-WIN updates

- Update 79: Monkeypox outbreak update: Situation - transmission - countermeasures
- Update 78: Monkeypox and mass gatherings
- Update 77: Monkeypox outbreak, update and advice for health workers

Laboratory and diagnostics

- Monkeypox: experts give virus variants new names, 12 August 2022. https://www.who.int/news/item/12-08-2022-monkeypox--experts-give-virus-variants-new-names
- WHO Laboratory testing for the monkeypox virus: Interim guidance, 23 May 2022. https://apps.who.int/iris/handle/10665/354488
- WHO Guidance on regulations for the transport of infectious substances 2021-2023, 25 February 2021. https://www.who.int/publications/i/item/9789240019720
- Genomic epidemiology of monkeypox virus. https://nextstrain.org/monkeypox?c=country

One Health and animal health

- WOAH Risk Guidance on Reducing Spillback of Mpox (Monkeypox) virus from Humans to Wildlife, Pet Animals and other Animals
- WOAH Website and FAQs on Monkeypox in animals

Disease Outbreak News and situation reports

- Monkeypox outbreak 2022: https://www.who.int/emergencies/situations/monkeypox-oubreak-2022
- Multi-country outbreak of mpox, External situation report #13- 5 January 2023: https://www.who.int/publications/m/item/multi-country-outbreak-of-mpox--external-situation-report--13---5-january-2023
- Multi-country outbreak of mpox, External situation report #12- 14 December 2022: https://www.who.int/publications/m/item/multi-country-outbreak-of-mpox--external-situation-report-12--14-december-2022
- Multi-country outbreak of mpox, External situation report #11- 1 December 2022: https://www.who.int/publications/m/item/multi-country-outbreak-of-mpox--external-situation-report--11---1-december-2022
- Multi-country outbreak of monkeypox, External situation report #10- 16 November 2022: https://www.who.int/publications/m/item/multi-country-outbreak-of-monkeypox--external-situation-report--10---16-november-2022
- Multi-country outbreak of monkeypox, External situation report #9- 2 November 2022: https://www.who.int/publications/m/item/multi-country-outbreak-of-monkeypox--external-situation-report--9---2-november-2022
- Multi-country outbreak of monkeypox, External situation report #8- 19 October 2022: https://www.who.int/publications/m/item/multi-country-outbreak-of-monkeypox--external-situation-report--8---19-october-2022
- Multi-country outbreak of monkeypox, External situation report #7- 5 October 2022: https://www.who.int/publications/m/item/multi-country-outbreak-of-monkeypox--external-situation-report--7---5-october-2022
- Multi-country outbreak of monkeypox, External situation report #6- 21 September 2022: https://www.who.int/publications/m/item/multi-country-outbreak-of-monkeypox--external-situation-report--6---21-september-2022
- Multi-country outbreak of monkeypox, External situation report #5- 7 September 2022: https://www.who.int/publications/m/item/multi-country-outbreak-of-monkeypox--external-situation-report--5---7-september-2022
- Multi-country outbreak of monkeypox, External situation report #4- 24 August https://www.who.int/publications/m/item/multi-country-outbreak-of-monkeypox--external-situation-report--4---24-august-2022
- Multi-country outbreak of monkeypox, External situation report #3 - 10 August 2022: https://www.who.int/publications/m/item/multi-country-outbreak-of-monkeypox--external-situation-report--3---10-august-2022
- WHO Multi-country outbreak of monkeypox, External situation report #2 – 25 July 2022: https://www.who.int/publications/m/item/multi-country-outbreak-of-monkeypox--external-situation-report--2---25-july-2022
- WHO Multi-country outbreak of monkeypox, External situation report #1 - 6 July 2022: https://www.who.int/publications/m/item/multi-country-outbreak-of-monkeypox--external-situation-report--1---6-july-2022

- WHO disease outbreak news: Monkeypox, all items related to multi-country outbreak: https://www.who.int/emergencies/emergency-events/item/2022-e000121
- WHO disease outbreak news: Monkeypox, all previous items including endemic countries and traveler-associated outbreaks: https://www.who.int/emergencies/emergency-events/item/monkeypox

Training and Education

- WHO monkeypox outbreak toolbox, June 2022. https://www.who.int/emergencies/outbreak-toolkit/disease-outbreak-toolboxes/monkeypox-outbreak-toolbox
- WHO factsheet on monkeypox, 19 May 2022. http://www.who.int/news-room/fact-sheets/detail/monkeypox
- Health topics – Monkeypox: https://www.who.int/health-topics/monkeypox
- Open WHO. Online training module. Monkeypox: Introduction. 2020
  English: https://openwho.org/courses/monkeypox-introduction
  Français: https://openwho.org/courses/variole-du-singe-introduction
- Open WHO. Extended training. Monkeypox epidemiology, preparedness and response. 2021.
  English: https://openwho.org/courses/monkeypox-intermediate;
  Français: https://openwho.org/courses/variole-du-singe-intermediaire

Other Resources

- WHO AFRO Weekly Bulletin on Outbreaks and Other Emergencies, all previous items: https://www.afro.who.int/health-topics/disease-outbreaks/outbreaks-and-other-emergencies-updates
- WHO 5 moments for hand hygiene. https://www.who.int/campaigns/world-hand-hygiene-day
- WHO One Health. https://www.who.int/health-topics/one-health
- World Organisation for Animal Health, founded as OIE: Monkeypox. https://www.woah.org/en/disease/monkeypox/
- Joint WHO Regional Office for Europe - European Centre for Disease Prevention and Control, Monkeypox surveillance bulletin Situation reports (who.int)
- Joint WHO Regional Office for Europe - European Centre for Disease Prevention and Control, Monkeypox Resource toolkit to support national authorities and event organizers in their planning and coordination of mass and large gathering events. https://www.who.int/europe/tools-and-toolkits/monkeypox-resource-toolkit-for-planning-and-coordination-of-mass-and-large-gathering-events/
- WHO. Monkeypox & mass gatherings. Recommendations for mass gatherings during a monkeypox outbreak. https://cdn.who.int/media/docs/default-source/epi-win/update78_monkeypox-mass-gatherings.pdf?sfvrsn=dfc9ee5a_1&download=true
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- Weekly epidemiological record (WER) no.11, 16 March 2018, Emergence of monkeypox in West Africa and Central Africa 1970-2017. http://apps.who.int/iris/bitstream/handle/10665/260497/WER9311.pdf;jsessionid=7AB72F28D04CFE6CE24996192FC478FF?sequence=1 Jezek Z., Fenner F.: Human Monkeypox. Monogr Virol. Basel, Karger, 1988, vol 17, pp 1-5. doi: 10.1159/isbn.978-3-318-04039-5
- Clinical management and infection prevention and control for monkeypox: Interim rapid response guidance, 10 June 2022. https://www.who.int/publications/i/item/WHO-MPX-Clinical-and-IPC-2022.1
- Monkeypox in the Region of the Americas - Risk assessment. https://www.paho.org/en/documents/monkeypox-region-americas-risk-assessment

Annex 1: Data, table and figure notes

Caution must be taken when interpreting all data presented. Differences are to be expected between information products published by WHO, national public health authorities, and other sources using different inclusion criteria and different data cut-off times. While steps are taken to ensure accuracy and reliability, all data are subject to continuous verification and change. Case detection, definitions, testing strategies, reporting practice, and lag times differ between countries/territories/areas. These factors, amongst others, influence the counts presented, with variable underestimation of true case and death counts, and variable delays to reflecting these data at the global level.

[i]'Countries' may refer to countries, territories, areas or other jurisdictions of similar status. The designations employed, and the presentation of these materials do not imply the expression of any opinion whatsoever on the part of WHO concerning the legal status of any country, territory, or area or of its authorities, or concerning the delimitation of its frontiers or boundaries.

Annex 2: Confirmed cases of mpox by WHO region and country from 1 January 2022 to 15 January 2023, 17:00 CEST.

*Countries with no reported cases for more than 21 days

WHO Region	Country	Total confirmed cases	Total deaths#
African Region	Benin*	3	0
	Cameroon*	18	3
	Central African Republic*	13	0
	Congo*	5	0
	Democratic Republic of the Congo*	279	0
	Ghana	121	4
	Liberia	6	0
	Mozambique*	1	1
	Nigeria	763	7
	South Africa*	5	0
Eastern Mediterranean Region	Bahrain*	1	0
	Egypt*	3	0
	Iran (Islamic Republic of) *	1	0
	Jordan*	1	0
	Lebanon*	24	0
	Morocco*	3	0
	Qatar*	5	0
	Saudi Arabia*	8	0
	Sudan*	18	1
	United Arab Emirates*	16	0
European Region	Andorra*	4	0
	Austria*	327	0
	Belgium*	790	1
	Bosnia and Herzegovina*	9	0
	Bulgaria*	6	0
	Croatia	31	0
	Cyprus*	5	0
	Czechia*	71	1
	Denmark*	192	0
	Estonia*	11	0
	Finland*	42	0
	France	4114	0
	Georgia*	2	0
	Germany	3700	0
	Gibraltar*	6	0
	Greece*	85	0
	Greenland*	2	0
	Hungary*	80	0
	Iceland*	16	0
	Ireland	227	0
	Israel*	262	0
	Italy	951	0
	Latvia*	6	0
	Lithuania*	5	0
	Luxembourg*	57	0

	Malta*	33	0
	Monaco*	3	0
	Montenegro*	2	0
	Netherlands	1260	0
	Norway	94	0
	Poland*	214	0
	Portugal	950	0
	Republic of Moldova*	2	0
	Romania*	46	0
	Russian Federation*	2	0
	San Marino*	1	0
	Serbia*	40	0
	Slovakia*	14	0
	Slovenia*	47	0
	Spain	7505	3
	Sweden	255	0
	Switzerland*	551	0
	The United Kingdom*	3730	0
	Türkiye *	12	0
	Ukraine*	5	0
Region of the Americas	Argentina	1037	2
	Aruba*	3	0
	Bahamas*	2	0
	Barbados*	1	0
	Bermuda*	1	0
	Bolivia (Plurinational State of)	263	0
	Brazil	10 625	14
	Canada*	1460	0
	Chile	1398	2
	Colombia	4049	0
	Costa Rica	77	0
	Cuba*	8	1
	Curaçao*	3	0
	Dominican Republic*	52	0
	Ecuador	460	2
	El Salvador	69	0
	Guadeloupe*	1	0
	Guatemala	290	0
	Guyana*	2	0
	Honduras	13	0
	Jamaica*	18	0
	Martinique	7	0
	Mexico	3696	4
	Panama	82	0
	Paraguay	63	0
	Peru	3698	12
	Puerto Rico	209	0
	Saint Martin*	1	0
	United States of America	29 787	21
	Uruguay*	19	0
	Venezuela (Bolivarian Republic of) *	12	0

South-East Asia Region	India*	20	1
	Indonesia*	1	0
	Sri Lanka*	2	0
	Thailand*	12	0
Western Pacific Region	Australia*	144	0
	China*	6	0
	Guam*	1	0
	Japan*	8	0
	New Caledonia*	1	0
	New Zealand*	40	0
	Philippines*	4	0
	Republic of Korea*	4	0
	Singapore	21	0
	Viet Nam*	2	0
Cumulative	**110 Countries/territories/areas**	**83 943**	**80**

[#]Only deaths among confirmed cases are reported here; the reported number of deaths due to mpox among suspected cases are available at regional or national level.