Changing epidemiology of mpox

22 February 2023

Ana Hoxha, Epidemiology lead
Rosamund Lewis, Technical and health operations lead

WHO Incident Management Team
WHO global mpox outbreak response

Monkeypox virus, illustration. Credit: MAURIZIO DE ANGELIS/SCIENCE PHOTO LIBRARY
Geographical spread

**1970 - 2021**

Countries reporting confirmed human cases of monkeypox (mpox) 1970 – 2021

Source: [https://apps.who.int/iris/bitstream/handle/10665/365629/WER9803-eng-fre.pdf](https://apps.who.int/iris/bitstream/handle/10665/365629/WER9803-eng-fre.pdf)

---

**2022-23 outbreak**

Confirmed cases of mpox from 1 Jan 2022, as of 18 Feb 23

Source: [https://worldhealthorg.shinyapps.io/mpx_global/](https://worldhealthorg.shinyapps.io/mpx_global/)
## Transmission dynamics

<table>
<thead>
<tr>
<th>Most affected groups</th>
<th>1970 - 2021</th>
<th>2022-23 outbreak</th>
</tr>
</thead>
<tbody>
<tr>
<td>Children and young adults with gradually increasing mean age</td>
<td>Primarily adult men who have sex with men (MSM) (as well as other groups)</td>
<td></td>
</tr>
<tr>
<td>Sporadic cases and outbreaks</td>
<td>Sustained community transmission</td>
<td></td>
</tr>
<tr>
<td>Contact with infected animals; short chains of human-to-human transmission (up to 9 serial infections documented)</td>
<td>Almost exclusively human-to-human transmission, through large amplifying events and community spread</td>
<td></td>
</tr>
<tr>
<td>Mainly infections related to hunting with household spread or travel</td>
<td>Mostly sexual contact through MSM sexual networks</td>
<td></td>
</tr>
</tbody>
</table>
Clinical manifestation

1970 - 2021

- Initial prodromal phase with temperature, headache, fatigue, and lymphadenopathy
- Lesions in centrifugal distribution, primarily on face, trunk, arms, and legs, palms, soles
- Stages of lesions: macules, papules, vesicles, and finally, pustules
- Genital and mucosal lesions well documented

2022-23 outbreak

- Some cases do not have a prodromal phase
- There are cases with few or no lesions
- Some cases present with anorectal mucosal lesions
- More genital and anal lesions than previously observed
- New clinical manifestations include parotitis, balanitis, urinary retention, proctitis...

https://academic.oup.com/cid/article-abstract/76/3/528/6692817
### Disease severity

#### 1970 - 2021
- More severe in children, pregnant women, immunocompromised patients
- Complications:
  - Corneal ulceration and vision loss
  - Bacterial infections, sepsis, encephalitis
  - Depigmentation
- Case fatality ratio (CRF):
  - Historically < 1% for Clade II
  - 6% of confirmed cases in Nigeria since 2017 due to deaths in patients with untreated HIV
  - Up to 11%; 10% of suspected cases Clade I

#### 2022-23 outbreak
- Information from many countries, mainly in Europe and the Americas
- Most cases present with less severe illness
- More severe disease in children, elderly and immunocompromised patients
- Complications:
  - Meningoencephalitis
  - Extensive necrotizing lesions
  - Multi-organ involvement
- Case fatality ratio (CRF):
  - ~0.1% globally
  - ~3% in Africa (Clades I and II together)

---

**Potential confounders:** Surveillance, healthcare capacity and access
Genomic spread

Monkeypox virus (MPXV)
- Clade I → only in African countries, animals and humans
- Clade II
  - Lineage IIA in animals and humans
  - Lineage IIB only in humans, driver of 2022-23 outbreak
    o First identified in Nigeria in 2017

1970 - 2021

2022-23 outbreak

Clade IIB distribution 2022
WHO 4th IHR Emergency Committee for mpox

• 4th IHR EC meeting 9 February 2023
• Concerns expressed about Central America, Africa, hard to reach and marginalized populations and access to diagnostics and vaccines
• Continue engagement with regions, countries, and other partners
• Strategic direction endorsed
• Recommended the Public Health emergency of International Concern be maintained for 3 months
• Countries to plan a smooth transition to mpox elimination or control actions
### Strategic directions endorsed by EC

<table>
<thead>
<tr>
<th>Maintain surveillance</th>
<th>Integrate with HIV &amp; STI programmes</th>
<th>Strengthen capacity</th>
<th>Implement research</th>
<th>Enhance access</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maintain epidemiological surveillance, consider making mpox infection nationally notifiable and continue to share confirmed and probable mpox case reports with WHO to support elimination where feasible</td>
<td>Integrate mpox surveillance, detection, prevention, care and research into innovative primary health care, sexual health, HIV and STI prevention and control programmes and services.</td>
<td>Strengthen capacity in resource-limited settings where mpox continues to occur, including for One Health and animal health</td>
<td>Implement a strategic research agenda to ensure ongoing evidence generation</td>
<td>Enhance access to diagnostics, vaccines and therapeutics through allocation mechanisms and technology transfer to advance global health equity, including for ethnic and racial minorities and those in the global south.</td>
</tr>
</tbody>
</table>

**Countries to develop elimination or control plans according to national context**