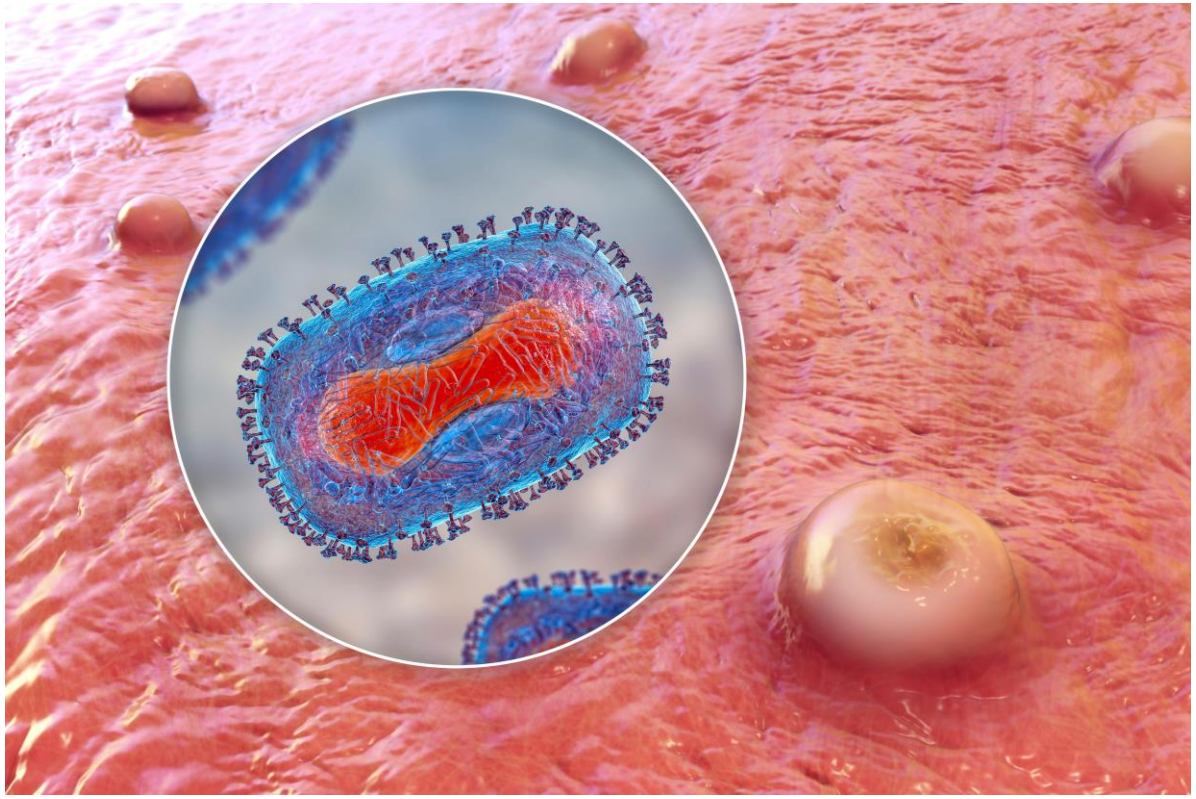
# *Case recognition and case definition in the multi country outbreak*

***Prof Chloe Orkin***

***Queen Mary University of London***

# I have no disclosures related to monkeypox



# Global picture – slide will *definitely* be out of date

Total cumulative number of cases

53K

VIEW MORE >>

Total cumulative number of deaths

18

VIEW MORE >>

Number of countries reporting at least one case

125

Total cumulative number of cases in WHO Region of the Americas

29.3K

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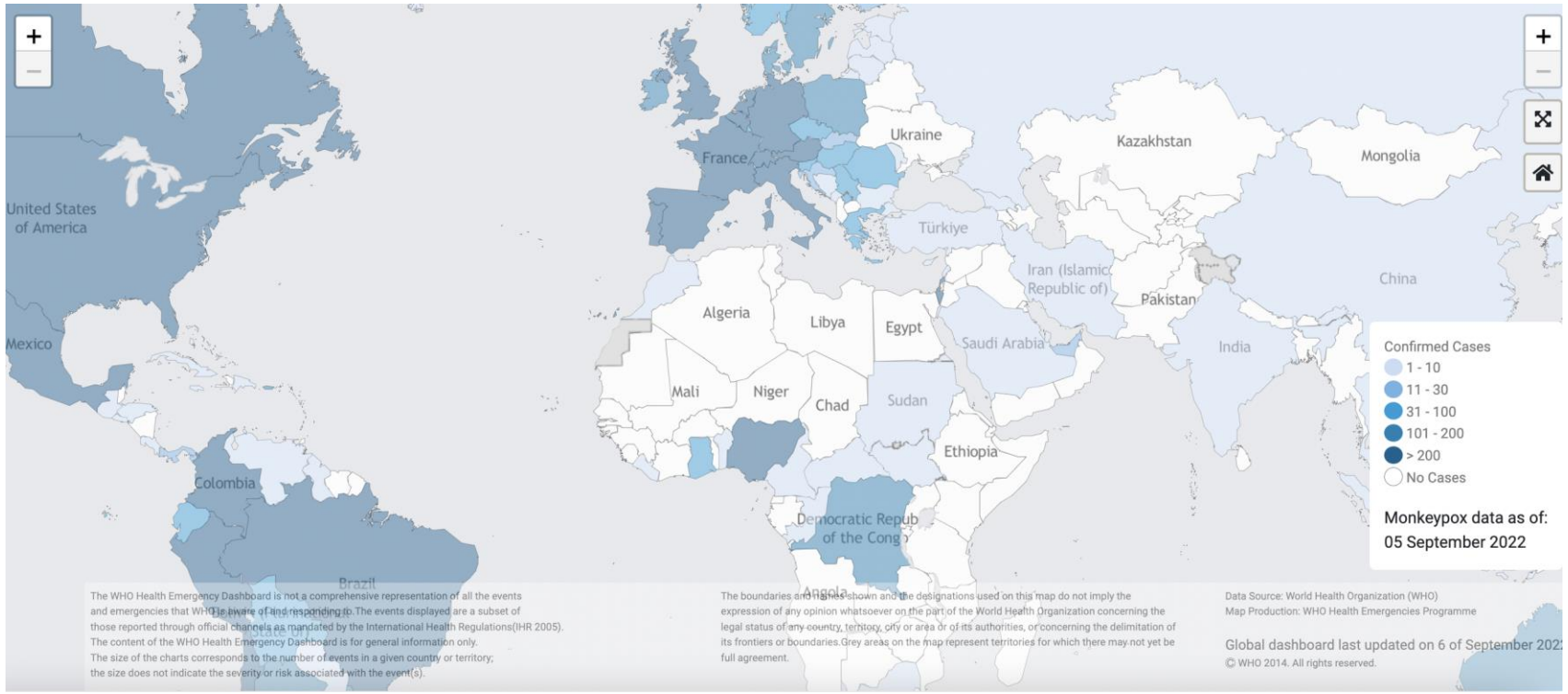
Total cumulative number of cases in WHO European Region

22.9K

Total cumulative number of cases in WHO African Region

521




https://worldhealthorg.shinyapps.io/mpx_global

# Key features WHO (Dataset n= 27K)

- 98% male
- 95% GBMSM (1.7% bisexual)
- Median age 36
- 1.8% female
- Most commonly reported setting: party with sexual contact
- Children(<17): 0.6%
- PWH: 45%
- 313 HCW (not all are occupational)

Case profiles

As of September 02 2022

| | Reported values[1] | | Unknown or Missing Value |
|---|---|---|---|
| | Yes | No | |
| Men who have sex with men | 11923 (95.2%) | 606 (4.8%) | 33442 |
| HIV-Positive | 5576 (44.9%) | 6833 (55.1%) | 33562 |
| Health worker | 313 (4.2%) | 7069 (95.8%) | 38589 |
| Travel History | 1212 (27.9%) | 3127 (72.1%) | 41632 |
| Sexual Transmission | 7822 (91.0%) | 777 (9.0%) | 37372 |
| Hospitalised[2] | 1549 (8.4%) | 16928 (91.6%) | 27494 |
| ICU | 9 (0.1%) | 8072 (99.9%) | 37890 |

https://worldhealthorg.shinyapps.io/mpx_global

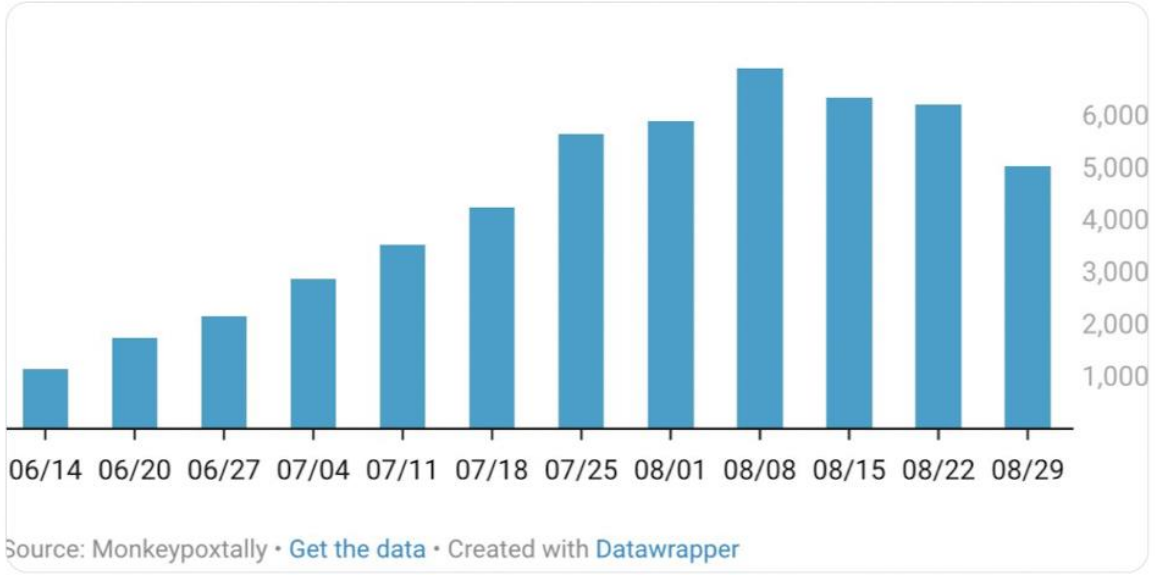
# Declining numbers globally

- Overall global decline
- Growing  fraction of people with no MSM contact

**Monkeypoxtally** @Monkeypoxtally · 2d

This is the third week in a row where we see **monkeypox cases decline** globally and we are seeing a plateauing/ slowing down trend in the last 6 weeks around 5,000-6,000 weekly **cases**.

This week we saw the biggest **decline** in **cases** among the last 3 weeks




https://worldhealthorg.shinyapps.io/mpx_global

# Case Definitions May 2022

- Expanded to specify at risk group as sexually active MSM, GBMSM

https://www.gov.uk/guidance/monkeypox-case-definitions ;https://www.cdc.gov/poxvirus/monkeypox/clinicians/case-definition.html ;https://www.who.int/publications/i/item/WHO-MPX-Surveillance-2022.2; https://www.ecdc.europa.eu/en/news-events/epidemiological-update-monkeypox-multi-country-outbreak-15-june

# Clinical symptom/sign case definitions May 2022



| | World Health Organization | ecdc EUROPEAN CENTRE FOR DISEASE PREVENTION AND CONTROL | CDC | UK Health Security Agency |
|---|---|---|---|---|
| Rash description | An unexplained acute rash or one or more acute skin lesions | An unexplained rash on any part of the body | Deep-seated,well-circumscribed lesion, central umbilication; lesion progression through specific sequential stages—macules, papules, vesicles, pustules, scabs | An unexplained rash on any part of their body |
| Fever | >38.3ºC (101ºF) | Fever (usually > 38.5ºC) | Not mentioned | >38.5°C |
| Lymphadenopathy | Lymphadenopathy | Generalised or localised | Not mentioned | Lymphadenopathy |
| Other | intense headache, back pain, myalgia and intense asthenia | headache, backache, and fatigue | Not mentioned | chills, headache, exhaustion,<br>Myalgia Back pain<br>Asthenia |

https://www.gov.uk/guidance/monkeypox-case-definitions ;https://www.cdc.gov/poxvirus/monkeypox/clinicians/case-definition.html ;https://www.who.int/publications/i/item/WHO-MPX-Surveillance-2022.2; https://www.ecdc.europa.eu/en/news-events/epidemiological-update-monkeypox-multi-country-outbreak-15-june

# Clinical symptom/sign case definitions May 2022

| | WHO | ECDC | CDC | UKHS |
|---|---|---|---|---|
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| Fever | >38.3°C (101°F) | ually > | | >38.5°C |
| Lymphadenopathy | Lymphadenopathy | C tioned | | Lymphadenopathy |
| Other | intense hea in, myal asthenia | headache, backache, and fatigue | Not mentione | chills, headache, exhaustion, lgia Back pain |

Mucosal Lesions not mentioned

https://www.gov.uk/guidance/monkeypox-case-definitions ;https://www.cdc.gov/poxvirus/monkeypox/clinicians/case-definition.html ;https://www.who.int/publications/i/item/ MPX-Surveillance-2022.2; https://www.ecdc.europa.eu/en/news-events/epidemiological-update-monkeypox-multi-country-outbreak-15-june

**Data covering April 27th to June 24th**



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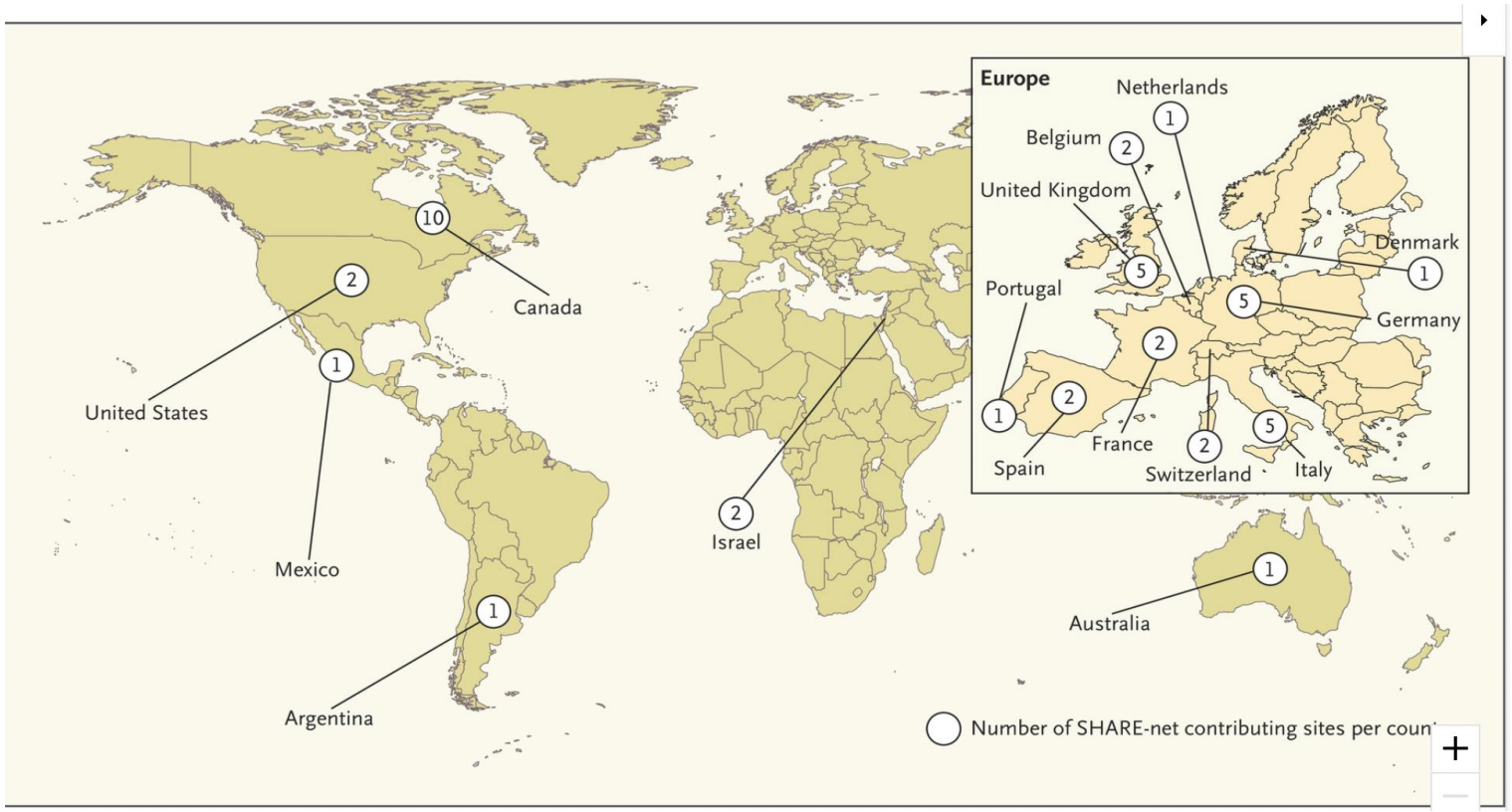
ORIGINAL ARTICLE

# Monkeypox Virus Infection in Humans across 16 Countries — April–June 2022

John P. Thornhill, M.D., Ph.D., Sapha Barkati, M.D., Sharon Walmsley, M.D., Juergen Rockstroh, M.D., Andrea Antinori, M.D., Luke B. Harrison, M.D., Ph.D., Romain Palich, M.D., Ph.D., Achyuta Nori, M.D., Iain Reeves, M.D., Maximillian S. Habibi, M.D., Ph.D., Vanessa Apea, M.D., M.P.H., Christoph Boesecke, M.D., Linos Vandekerckhove, M.D., Ph.D., Michal Yakubovsky, M.D., Elena Sendagorta, M.D., Ph.D., Jose L. Blanco, M.D., Ph.D., Eric Florence, M.D., Ph.D., Davide Moschese, M.D., Fernando M. Maltez, M.D., Ph.D., Abraham Goorhuis, M.D., Ph.D., Valerie Pourcher, M.D., Ph.D., Pascal Migaud, M.D., Sebastian Noe, M.D., Claire Pintado, M.D., Fabrizio Maggi, M.D., Ph.D., Ann-Brit E. Hansen, M.D., Ph.D., Christian Hoffmann, M.D., Ph.D., Jezer I. Lezama, M.D., Ph.D., Cristina Mussini, M.D., AnnaMaria Cattelan, M.D., Keletso Makofane, M.P.H., Ph.D., Darrell Tan, M.D., Ph.D., Silvia Nozza, M.D., Ph.D., Johannes Nemeth, M.D., Marina B. Klein, M.D., and Chloe M. Orkin, M.D. for the SHARE-net Clinical Group*




## 4 West London clinics Data covering 14-25/5/22

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Nicolò Girometti, MD • Ruth Byrne, MBBS • Margherita Bracchi, MD • Joseph Heskin, MBChB • Alan McOwan, MRCP • Victoria Tittle, MBBS • et al. Show all authors

Published: July 01, 2022 • DOI: https://doi.org/10.1016/S1473-3099(22)00411-X • Check for updates

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## Single south London clinic 13 May and 1 July 2022

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Research

### Clinical features and novel presentations of human monkeypox in a central London centre during the 2022 outbreak: descriptive case series

*BMJ* 2022 ; 378 doi: https://doi.org/10.1136/bmj-2022-072410 (Published 28 July 2022)
Cite this as: *BMJ* 2022;378:e072410

*Aatish Patel* , *infectious diseases registrar,*

**May 11 to June 29, 2022.**

THE LANCET

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# Clinical presentation and virological assessment of confirmed human monkeypox virus cases in Spain: a prospective observational cohort study

Eloy José Tarín-Vicente, MD • Andrea Alemany, MD • Manuel Agud-Dios, MD • Maria Ubals, MD • Clara Suñer, PhD • Andrés Antón, PhD • Maider Arando, PhD • Jorge Arroyo-Andrés, MD • Lorena Calderón-Lozano, MD • Cristina Casañ, PhD • José Miguel Cabrera, MD • Pep Coll, MD • Vicente Descalzo, MD • María Dolores Folgueira, PhD • Jorge N García-Pérez, MD • Elena Gil-Cruz, MD • Borja González-Rodríguez, MD • Christian Gutiérrez-Collar, MD • Águeda Hernández-Rodríguez, PhD • Paula López-Roa, PhD • María de los Ángeles Meléndez, PhD • Julia Montero-Menárguez, MD • Irene Muñoz-Gallego, PhD • Sara Isabel Palencia-Pérez, PhD • Roger Paredes, PhD • Alfredo Pérez-Rivilla, PhD • María Piñana, MD • Nuria Prat, MD • Aída Ramirez, MD • Ángel Rivero, MD • Carmen Alejandra Rubio-Muñiz, MD • Martí Vall, PhD • Kevin Stephen Acosta-Velásquez, MD • An Wang, MD • Cristina Galván-Casas, MD † • Michael Marks, PhD † • Prof Pablo L Ortiz-Romero, PhD † • Oriol Mitjà, PhD

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Published: August 08, 2022 • DOI: https://doi.org/10.1016/S0140-6736(22)01436-2

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SPAIN

# Demographics

| | Global[2] N=528 | West London[1] N=54 | South London[3] N=197 | Spain[4] N=181 |
|---|---|---|---|---|
| Male | 100% | 100% | 100% | 97% (3% female) |
| MSM | 98% | 100% | 99.5% | 92% |
| Age | 38 | 41 | 38 | 37 |
| White | 75% | 48% | N/R | N/R |
| PWH | 41% | 24% | 36% | 40% |
| PWH undetectable (VL<200c/mL) | 97% | 85% | 79% | N/R |
| PWH CD4 count | 668 | 500 | 664 | N/R |
| Prior small pox vaccination | 9% | N/R | N/R | 18% |

1.Girometti N , Lancet Infect Dis 2022 Sep;22(9):1321-1328; 2. Thornhill J N Engl J Med 2022; 387:679-691;3. Patel A; BMJ 2022 378; :e072410; 4. Tarin-Vicente E, Lancet 2022 Aug 27;400(10353):661-669

# Transmission



| | Global[2] N=528 | West London[1] N=54 | South London[3] N=197 | Spain[4] N=181 |
|---|---|---|---|---|
| Suspected sexual transmission | 95% | 96% | 96% | 97% |
| Number of partners (median) | 5 | ➢>5% | N/R | 6.5 |
| Travel history | 28% | 46% | 27% | 14% |
| Sex on site venue | 32% | N/R | N/R | N/R |
| Known sexual contact with monkeypox | 26% | 2% | 26% | 26% |
| Chemsex | 20% | N/R | N/R | 31% |
| Household contact | 1% | N/R | N/R | 3% |
| STI | 29% | 25% | 31.5% | 17% |

1.Girometti N , Lancet Infect Dis 2022 Sep;22(9):1321-1328; 2. Thornhill J N Engl J Med 2022; 387:679-691;3. Patel A; BMJ 2022 378; :e072410; 4. Tarin-Vicente E, Lancet 2022 Aug 27;400(10353):661-669

# Where did they attend?

- The health setting of initial presentation included sexual health, HIV clinics, emergency departments, and dermatology clinics , primary care and private clinics.

# Incubation period

- Median incubation period was 7 days (range, 3 to 20)

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# Clinical Presentation

- 95% of the persons presented with a rash
- **Where:**
  - 73% had anogenital lesions, 55% trunk, arms, or legs the face (25%); and the palms and soles (10%).
- **How many lesions?**
  - Most (64%) had < 10 lesions
  - 54 had a single genital lesion (10%).
- **What does rash look like:**
  - A wide spectrum including macular, pustular, vesicular, and crusted lesions, and lesions in multiple phases were present simultaneously.
  - 58% had lesions that were described as vesiculopustular.

# Rash Descriptors



| | Global[2] N=528 | West London[1] N=54 | South London[3] N=197 | Spain[4] N=181 |
|---|---|---|---|---|
| Anogenital rash | 73% | 94% | 88% | 78% |
| Description | 58% vestibulo-pustular | Multiple stages | Multiple stages | Pustular 90% |
| Number of lesions | 2-10 in 64% | 'Multiple' in 89% | 2-10 in 51% | 92% <20 |
| Single lesion presentations | 10% | 11% | 11% | N/R |
| Face | 25% | 20% | 36% | N/R |
| Body (trunk/limbs) | 55% | 40% | 73% | 57% |
| Hands /feet | 10% | 20% | 28% | 60% |

1.Girometti N , Lancet Infect Dis 2022 Sep;22(9):1321-1328; 2. Thornhill J N Engl J Med 2022; 387:679-691;3. Patel A; BMJ 2022 378; :e072410; 4. Tarin-Vicente E, Lancet 2022 Aug 27;400(10353):661-669

**A)** Evolution of cutaneous lesion in an individual with Human Monkeypox infection. A1-A3 show facial lesions, B1-B3 shows evolution of a penile lesion and C1-2 shows a lesion on the forehead. PCR status is indicated where available.








**Day -4**
Sexual Contact, MSM Condomless

**Day 0**
Single genital lesion
Treated with i.m penicillin as suspected Syphilis,

**Day 4-6**
Feeling unwell, development of additional lesions

**Day 11**
Confirmed Monkeypox - facial and genital lesions PCR positive

**Day 21**
Follow up #1
facial PCR negative, genital lesions PCR positive

**Day 28**
Follow up #2
genital lesions PCR negative

Thornhill J N Engl J Med 2022; 387:679-69

**Figure 21:** Penile/scrotal lesions in individuals with Human Monkeypox infection.



Thornhill J N Engl J Med 2022; 387:679-69

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# **New** mucosal presentations

- 41% had mucosal lesions
- Anorectal mucosa reported as the **presenting symptom** in **61 persons**
- Oropharyngeal symptoms were reported as the initial symptoms in **26 persons**
- In **3 persons, conjunctival mucosa**
- Penile oedema and urethritis reported by other groups (BMJ Patel group)

Thornhill J N Engl J Med 2022; 387:679-69; Patel A; BMJ 2022 378; :e072410; Tarin-Vicente E, Lancet 2022 Aug 27;400(10353):661-669

# Mucosal lesions



| | Global[2] N=528 | West London[2] N=54 | South London[3] N=197 | Spain[4] N=181 |
|---|---|---|---|---|
| Mucosal lesions | 41% | ?? | ?? | 35% |
| Oral lesions | 5% (as 1st symptom) | 7% | 16.8% | 25% |
| Anal lesions | 12% (as 1st symptom) | ?? | 36% | 25% |
| Conjunctival lesions | 0.2% | N/R | N/R | N/R |
| Urethral lesions/ Penile oedema | N/R | N/R | 15.7%<br>31 penile oedema | 8% |

1.Girometti N , Lancet Infect Dis 2022 Sep;22(9):1321-1328; 2. Thornhill J N Engl J Med 2022; 387:679-691;3. Patel A; BMJ 2022 378; :e072410; 4. Tarin-Vicente E, Lancet 2022 Aug 27;400(10353):661-669

# Noteworthy Oral Presentations

# **B)** Oral and perioral lesions in individuals with Human Monkeypox infection.




A. perioral umbilicated lesions. **B.** Perioral vesicular lesion, day 8, PCR positive. **C.** Ulcer left corner of the mouth, day 7, PCR positive. **D.** Tongue ulcer. **E.** Tongue lesion, day 5, PCR positive. **F, G, H.** Pharyngeal lesions, day 0, 3 and 21 respectively. PCR positive on day 0 and 3 and negative on day 21.

Thornhill J N Engl J Med 2022; 387:679-69

# Noteworthy Ano-rectal Presentations

**C)** Perianal, anal and rectal lesions in individuals with Human Monkeypox infection.


**A.** Anal and perianal lesions, day 6. **B, C.** rectal and anal lesions in a single individual **D.** Perianal ulcers. **E.** Anal lesions, PCR positive
**F.** Umbilicated perianal lesion, day 3, PCR positive. **G.** Umbilicated perianal lesions, day 3, PCR positive. **H.** Perianal ulcer, day 2, PCR positive

Thornhill J N Engl J Med 2022; 387:679-69

# Systemic Symptoms



| | Global[2] N=528 | West London[1] N=154 | South London[3] N=197 | Spain[4] N=181 |
|---|---|---|---|---|
| Fever | 62% | 67% | 62% | 72% |
| Headache | 27% | N/R | 25% | 53% |
| Myalgia | 31% | 30% | 32% | N/R |
| Lymphadenopathy | 56% | 56% | 58% | 85% |
| Arthralgia | N/R | N/R | 10% | N/R |
| Fatigue | 41% | 67% | 23% | N/R |
| Low Mood | 10% | N/R | N/R | N/R |

1.Girometti N , Lancet Infect Dis 2022 Sep;22(9):1321-1328; 2. Thornhill J N Engl J Med 2022; 387:679-691;3. Patel A; BMJ 2022 378; :e072410; 4. Tarin-Vicente E, Lancet 2022 Aug 27;400(10353):661-669

# Admissions / complications

| | Global [2] N=528 | West London[1] N=54 | South London[3] N=197 | Spain[4] N=181 |
|---|---|---|---|---|
| Admissions for medical reasons | 57 (11%) | 9% | 20 (10.%) | 2 (<2%) (bacterial cellulitis) |
| Infections | 18 | 6 (11%) | 3 groin<br>2 tonsillar | 6 (3%) |
| Rectal complications | 21 | ? 5 rectal cellulitis | 8 | No admissions (25% proctitis) |
| Oral lesion complications | 5 | N/R | 2 | Oral ulcers and tonisllitis (no admissions) |
| Penile swelling | N/R | 7% | 5 | 8% (15) |
| Other | Epiglottitis<br>Myocarditis x 2<br>AKI 2 | Ano-genital cellulitis<br>Dissseminated infection | Urinary retention<br>Paraphimosis<br>Conjunctival lesion 2<br>Rectal perforation 1<br>Disseminated lesions 1 | Paraphimosis 15(8%)<br>Bacterial skin Abscess 6 3%<br>Exanthem 4% |
| Received treatment | 5% | 2% (n=1) | Not mentioned | 6 |
| Deaths | 0 | 0 | 0 | 0 |

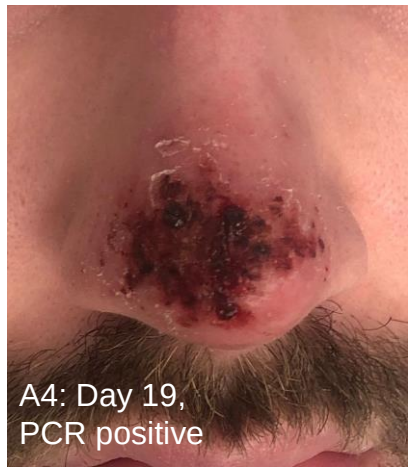
1.Girometti N , Lancet Infect Dis 2022 Sep;22(9):1321-1328; 2. Thornhill J N Engl J Med 2022; 387:679-691;3. Patel A; BMJ 2022 378; :e072410; 4. Tarin-Vicente E, Lancet 2022 Aug 27;400(10353):661-669

# Noteworthy complicated or unusual presentations

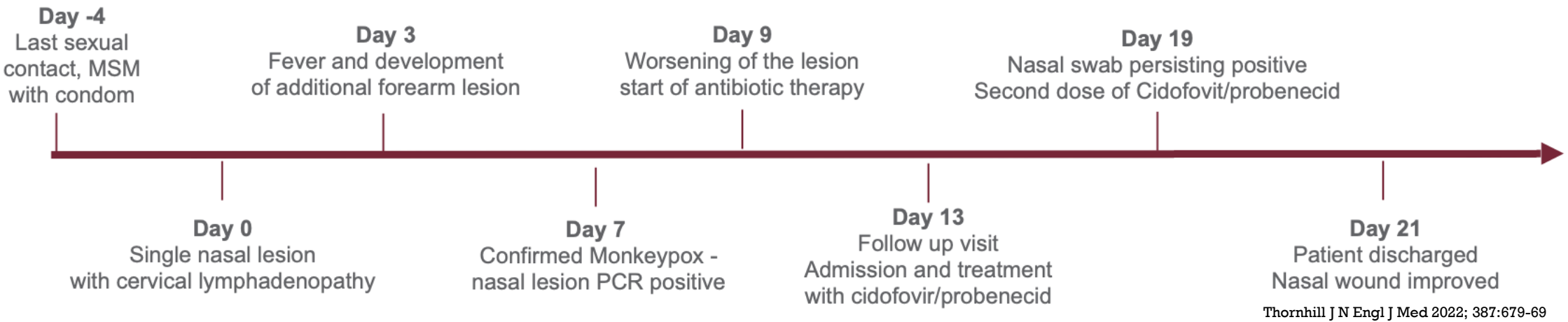
**Figure 15:** Evolution of nasal lesions in an individual with Human Monkeypox infection first presented with a single nasal lesion. A1-A5 show evolution of a nasal lesion, B shows a single forearm lesion. PCR status is indicated where available.












Thornhill J N Engl J Med 2022; 387:679-69

# Noteworthy bodily presentations

**Figure 23:** Bodily Skin lesions in  individuals with Human Monkeypox infection.

Thornhill J N Engl J Med 2022; 387:679-69

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# HIV

- 41% (218) were PWH

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# HIV

- Median CD4 680 cells/MM$^3$
- 97% VL <200 c/mL and on ART
- No differences in natural history or outcomes observed across entire cohort (see table in supplement)
- We reviewed site of presentation, nature. site and type of rash, extent of rash, mucosal presentations, systemic symptoms, admissions, complications
- However , of the three most significant complications (epiglottitis (1) , myocarditis (2), 2 were PWH

Thornhill J N Engl J Med 2022; 387:679-69

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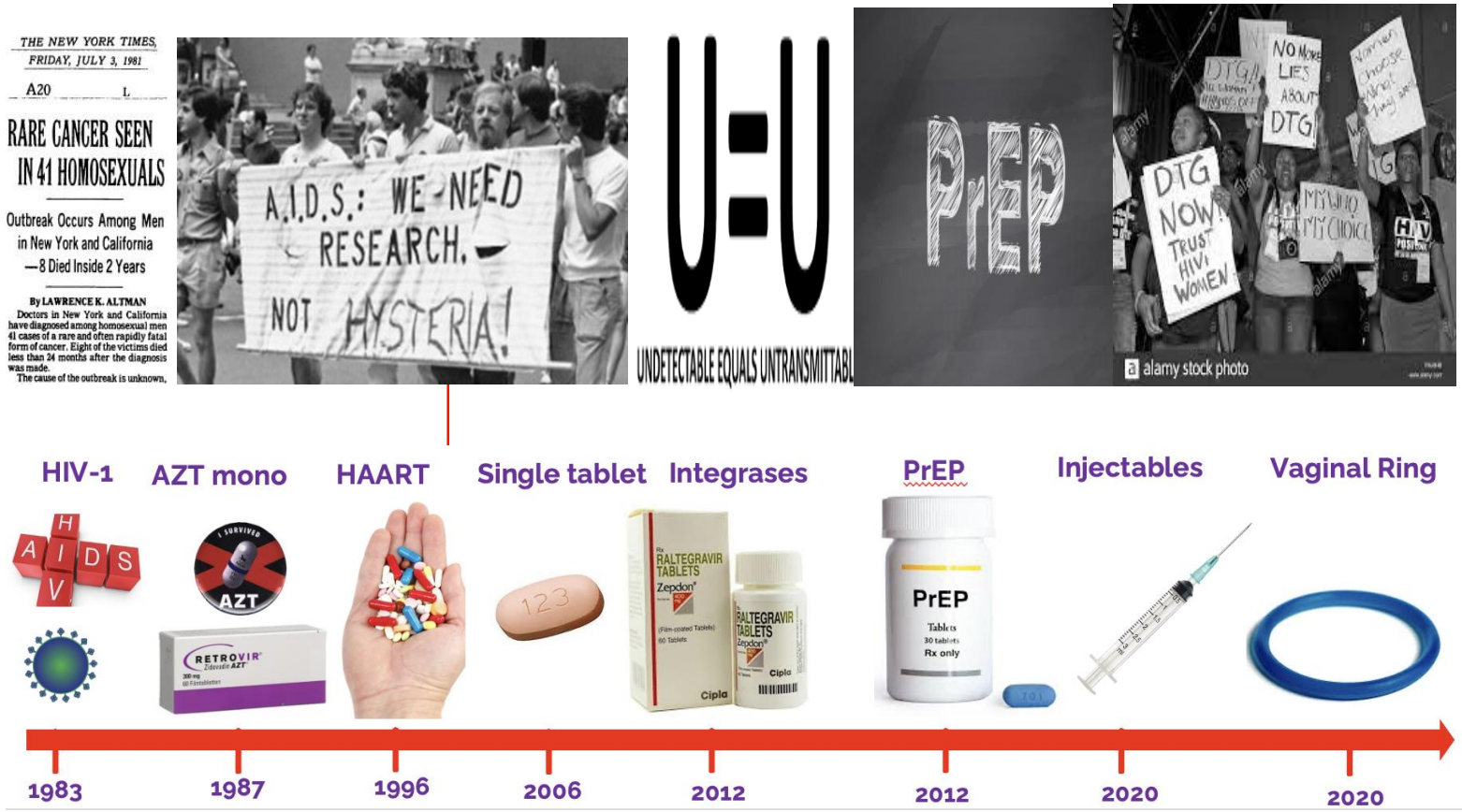
# Semen

- Found in 29/32 of samples tested

Thornhill J N Engl J Med 2022; 387:679-69

# HIV: 40 years of activism drove progress





# New monkeypox activists



**Harun Tulunay** @HarunTulunay · 27/08/2022
I was lucky to have support and understanding from @Positively_UK but government need to support people who are isolating with #monkeypox financially and legally.

islingtontribune.co.uk/article/monkey...

Calls for extra support for those with virus

Friday, 26th August — By Anna Lamche

pinknews.co.uk
Man who shared monkeypox experience flooded with disgusting, homophobic abuse

# ‘When will you include include mucosal and single lesions CDC , WHO, ECDC?’



Activism to change case definitions

AIDS2022 Conference , Monkeypox session, July, Montreal Canada

# ‘When will you include include mucosal and single lesions CDC?’

*New York Times*

Dr. Orkin is president of the Medical Women’s Federation, past president of the British H.I.V. Association and a governing council member of the International AIDS Society. “I’ve got a loud voice,” she said, “and I’m still finding it difficult to get a response.”

Senior members of the W.H.O. responded to Dr. Orkin on Aug. 2, asking to discuss the cases that she and her colleagues had described. The C.D.C. did not reply to Dr. Orkin but added rectal pain and bleeding, along with other new symptoms, to its guidance to clinicians on Aug. 5.

*Dear Dr Walensky… CDC*

**Chloe Orkin** @profchloeorkin · 6d

Thanks for sharing your (great) story again @g0ingmad.
The @CDCgov case definition still does not specify oral lesions.
I remain concerned this will lead to misdiagnosis.
People must be tired of me going on but effective activism is incessant advocacy ! @dr_demetre @CDCDirector

> **Madison Muller** @g0ingmad · 6d
> “Case recognition is vital, and we haven’t been equipped to actually recognize the disease,” @profchloeorkin told me back in July.
> (Story here: bloomberg.com/news/articles/...)
> Great to see the WHO is now broadening its case definitions. twit...

4 14

**Expanded case definition for monkeypox infection**

**Chloe Orkin** Saturday, 23 July 2022 at 15:27

**To:** rwalensky@cdc.gov; **Cc:** Carlos del Rio, MD

⚠ To protect your privacy, some external images in this message were not downloaded. Download external images

Dear Dr Walensky,

I am a clinician in London, past Chair of the British HIV Association and the senior author for the recently published large global case series on monkeypox infection published on Thursday in the NEJM.

https://www.nejm.org/doi/full/10.1056/

In our large global case series n=528 from 16 countries , we have described first presentations which are not included in the global case definitions. One example is single genital lesions (~10%) . But much more important were primary mucosal presentations with no other skin lesions.

Ano-rectal involvement as the first symptom was reported in 61 people (11.5%) associated with severe anorectal pain, proctitis, tenesmus and/or diarrhoea. Ano-rectal symptoms sometimes led to admission for pain control.

Oropharyngeal symptoms were the initial presentation reported in 26 individuals with pharyngitis, painful swallowing, epiglottitis, and oral or tonsillar lesions. Some required hospitalisation. Conjunctival mucosa and nasal lesions also occurred.

Managing these oral and rectal lesions has necessitated admission and we found these were amongst the most common causes of admission.

We found that people presented to a wide range of places including GPs and emergency departments. These clinicians are less likely to recognise monkeypox than clinicians at sexual health and HIV clinics making the case definition especially important.

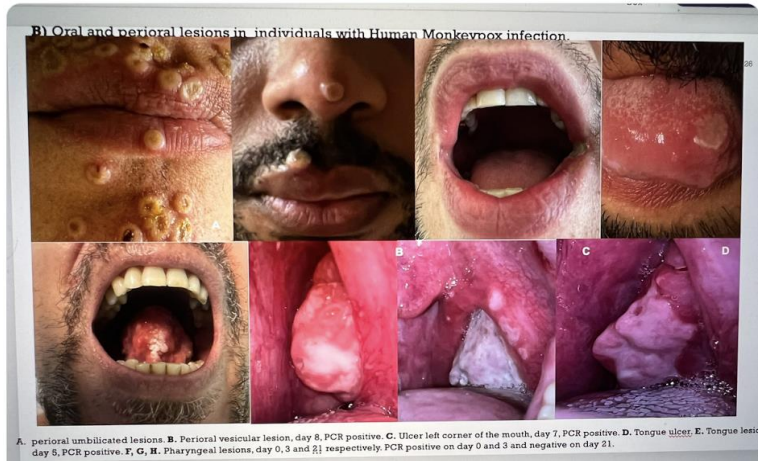
In our paper the authors called for an expanded case definition to assist with case recognition to include single lesions, and most importantly, to include mucosal primary presentations without other skin lesions.

**Chloe Orkin** @profchloeorkin · 1h

The @CDC definition still does not reference oral lesions even after the change on 5/8/22

This is an important omission given the severe tonsillar presentations which can require hospitalisation
@JohnPThornhill @Boghuma
@apoorva_nyc @dr_demetre

bit.ly/3PGg7js



# Case definitions- changed

# Clinical case Definitions August 2022- paraphrased



| | World Health Organization | ecdc | CDC | UK Health Security Agency |
|---|---|---|---|---|
| Rash description | An explained acute rash, mucosal lesions or lymphadenopathy (swollen lymph nodes). The skin rash may include single or multiple lesions in the ano-genital region or elsewhere on the body. | An unexplained rash on any part of the body | Lesions are firm or rubbery, well-circumscribed, deep-seated, and often develop umbilication (resembles a dot on the top of the lesion). Lesions typically develop simultaneously and evolve together on any given part of the body. The evolution has four stages—macular, papular, vesicular, to pustular— before scabbing over and desquamation. | Unexplained rash on any part of their body<br>Lesions, including but not limited to: genital, ano-genital lesions |
| Fever/prodrome lymphadenopathy | Acute onset of fever (>38.5°C), headache, myalgia (muscle pain/body aches), back pain, profound weakness or fatigue. | Fever (usually > 38.5°C) | Fever and other prodromal symptoms (e.g., chills, lymphadenopathy, malaise, myalgias, or headache) can occur before rash /after rash/ not occur | Febrile prodrome consists of fever ≥ 38°C, chills, headache, exhaustion, myalgia, arthralgia, backache, lymphadenopathy. |
| **Mucosal lesions** | **Mucosal lesions may include single or multiple oral, conjunctival, urethral, penile, vaginal, or ano-rectal lesions. Ano-rectal lesions can also manifest as ano-rectal inflammation (proctitis), pain and/or bleeding.** | **Not specifically mentioned** | **Rectal symptoms (purulent or bloody stools, rectal pain, or rectal bleeding). Mouth lesions** | **Oral lesion(s) – for example, ulcers, nodules<br>Proctitis – for example anorectal pain, bleeding** |

https://www.gov.uk/guidance/monkeypox-case-definitions https://www.cdc.gov/poxvirus/monkeypox/clinicians/case-definition.html
https://www.who.int/publications/i/item/WHO-MPX-Surveillance-2022.2https://www.canada.ca/en/public-health/services/diseases/monkeypox/health-professionals/national-case-definition.html
https://www.ecdc.europa.eu/en/news-events/epidemiological-update-monkeypox-multi-country-outbreak-15-june

# Thank you