

Mpox in Latin America: the Emergent STI

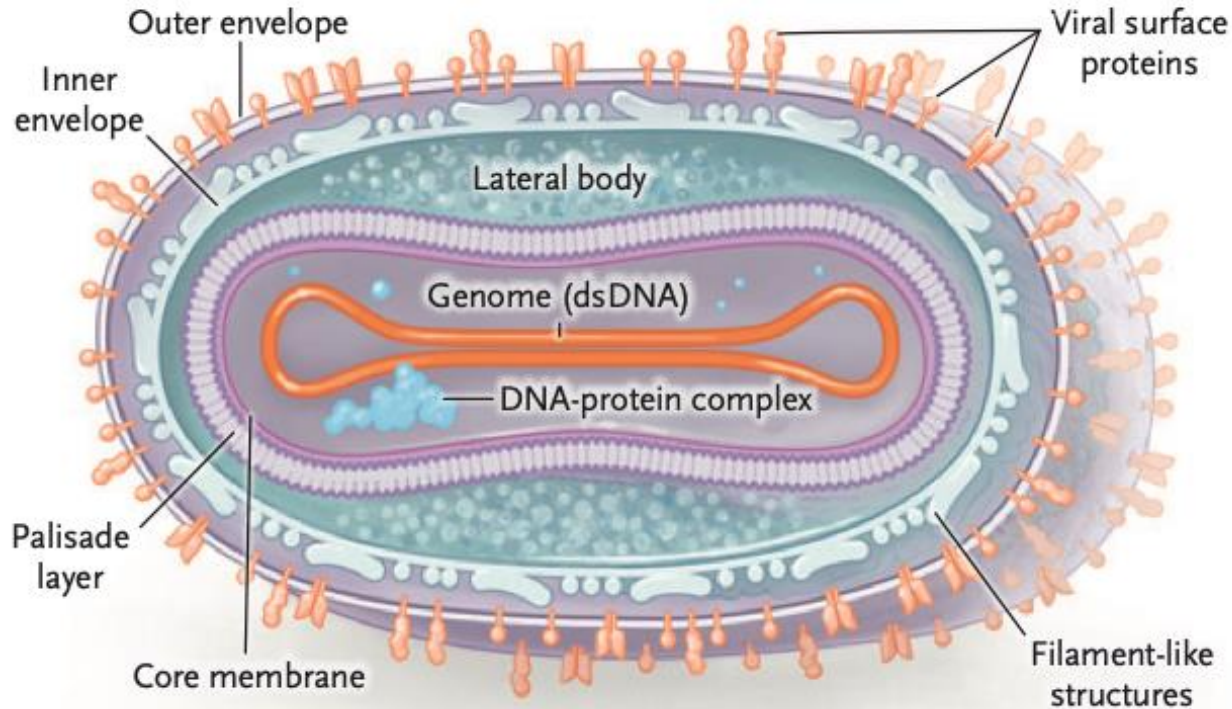
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Rio de Janeiro - Brazil



Monkeypox Virus



Monkeypox virus

Poxviridae family

Enveloped, generally oval or brick-shaped viruses, 220–450 nm long

Large single linear molecule of double stranded DNA

Identified in 1958 in monkey in monkey colonies maintained for research in Denmark



Pathogen

Clade I
Clade IIa
Clade IIb



Reservoir

e.g. rodents,
monkeys, rabbits



Transmission

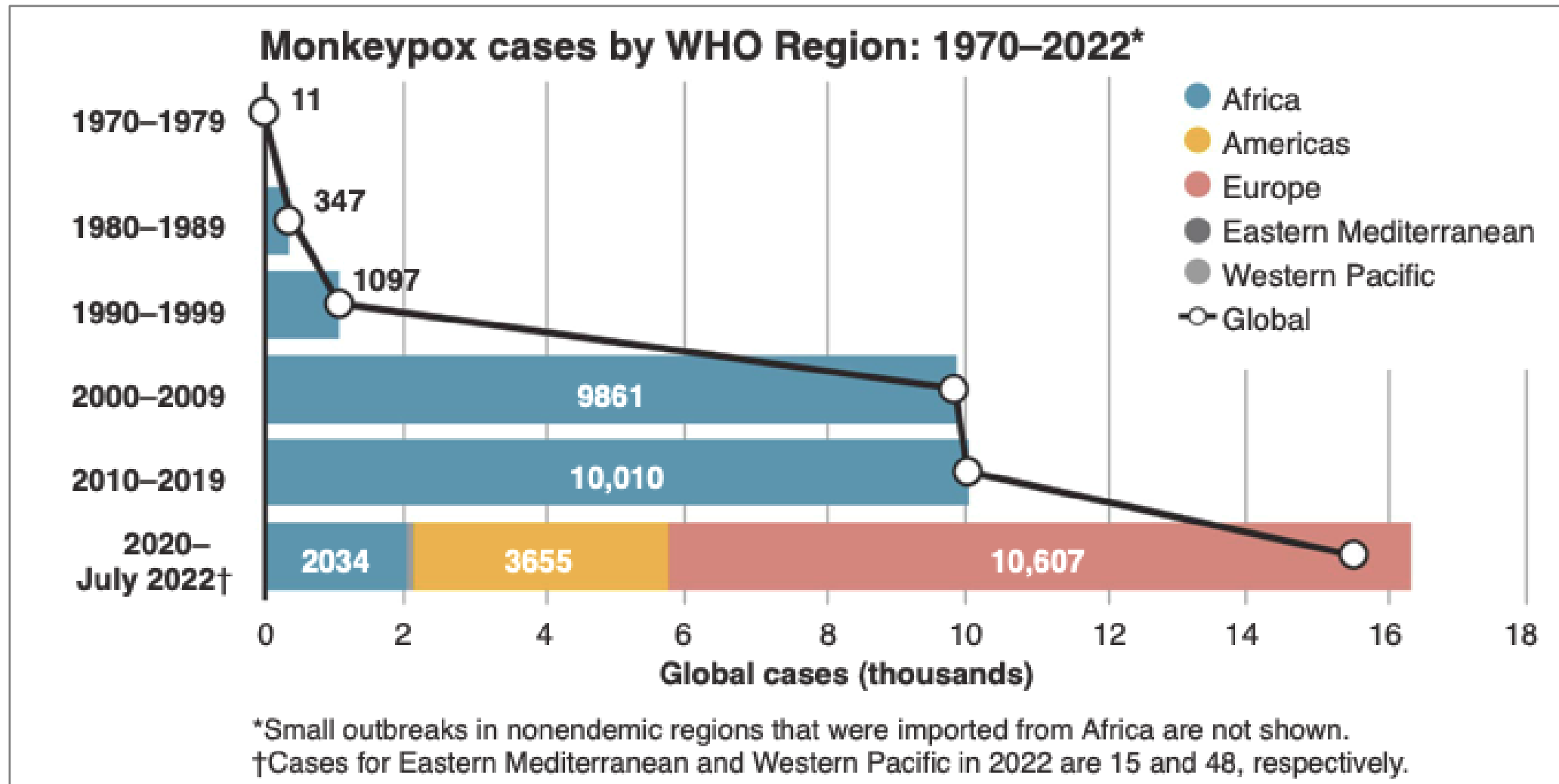
Zoonoses
Person-person



Humans

First case
identified in 1970

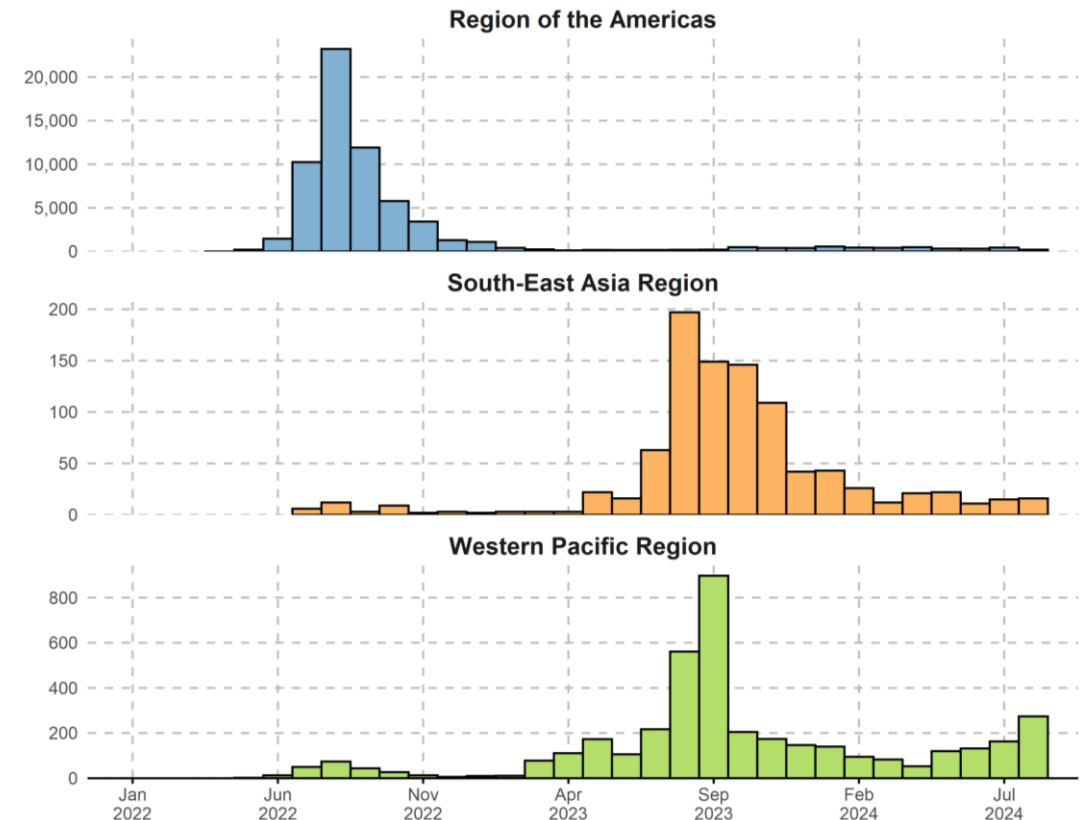
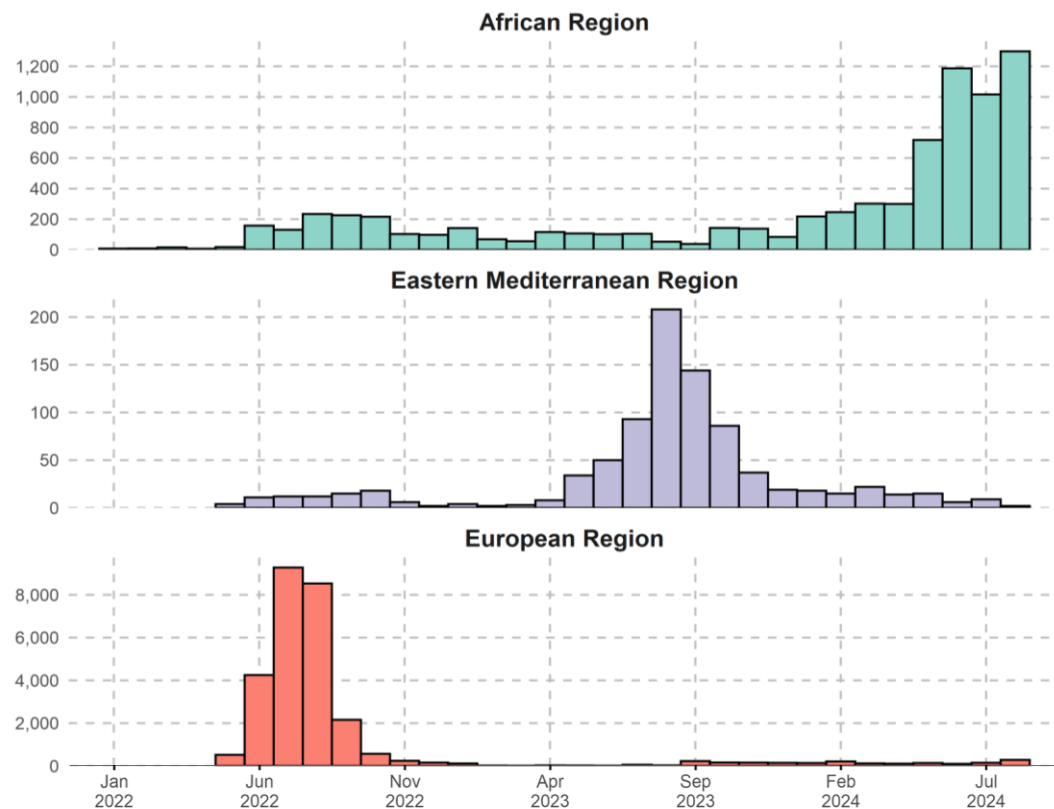
From a Neglected Disease to a Global Emergency



Global Overview of Mpox

106 310 confirmed cases and **234 deaths** reported to WHO

Americas are one of the most affected regions



Mpox Outbreak - Distribution by Clade



News / Press Releases

Africa CDC Declares Mpox A Public Health Emergency of Continental Security, Mobilizing Resources Across the Continent



13 August 2024

Theme

Emergency Response and Preparedness

Region

Central Africa, Eastern Africa, Northern
Africa, Southern Africa, Western Africa

Diseases

Mpox

Tags

Mpox

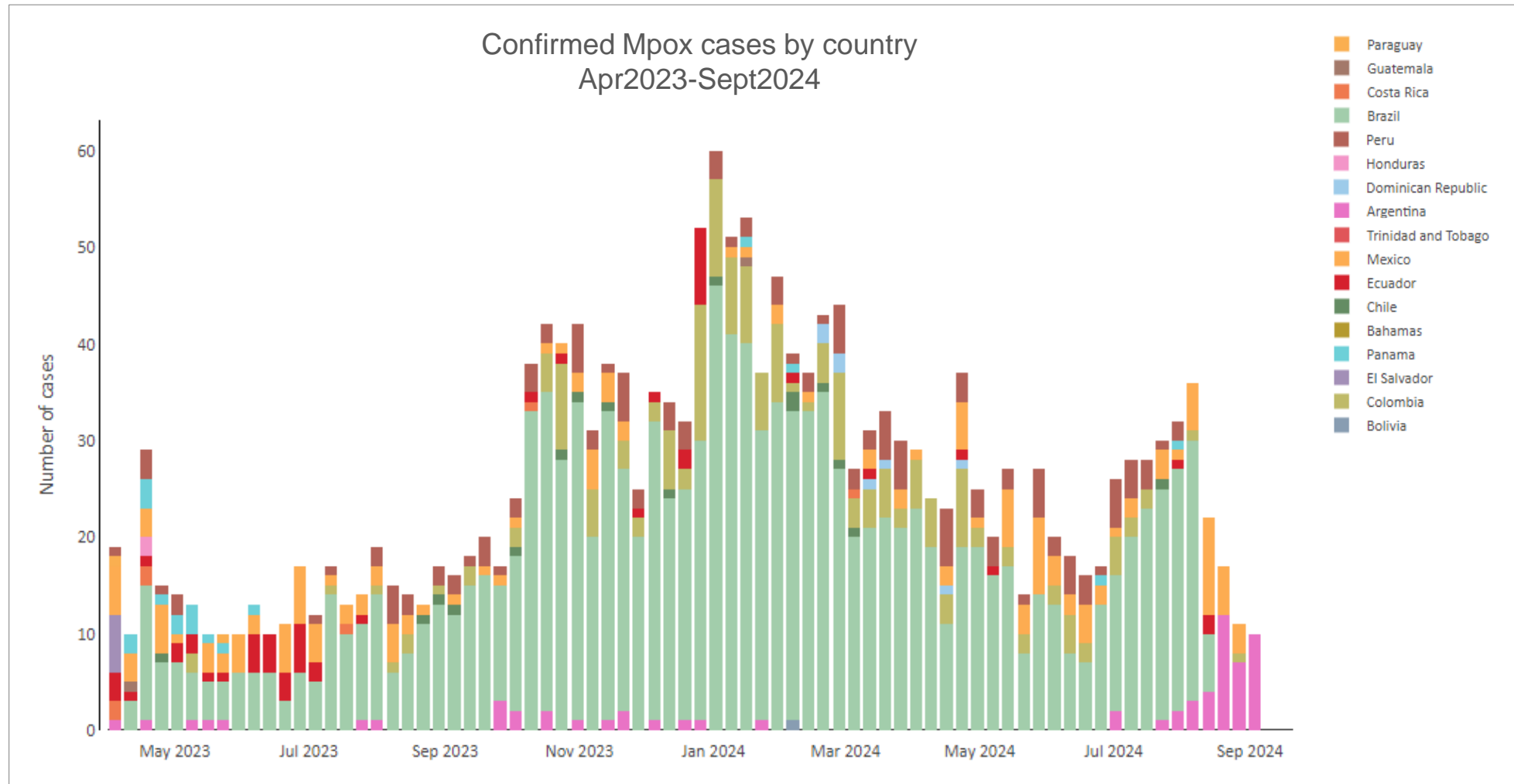
Home / News / WHO Director-General declares mpox outbreak a public health emergency of international concern



WHO Director-General declares mpox outbreak a public health emergency of international concern

Mpox in Latin America

25,273 confirmed cases and **52 deaths** reported to WHO



Cases and Deaths by Country and Year for Those Reporting Cases in 2024

Country	Confirmed 2022	Confirmed 2023	Confirmed 2024	Confirmed Total	Deaths 2022	Deaths 2023	Deaths 2024	Deaths Total
Total	57,567	4,091	3,223	64,881	119	24	5	148
United States of America	30,052	1,776	1,986	33,814	52	7	2	61
Brazil	10,639	839	728	12,206	14	2	0	16
Canada	1,402	69	178	1,649	0	0	0	0
Colombia	4,059	89	114	4,262	0	0	0	0
Peru	3,697	162	80	3,939	20	1	2	23
Mexico	3,773	306	76	4,155	25	9	1	35
Argentina	1,025	124	32	1,181	2	0	0	2
Dominican Republic	92	10	8	110	1	0	0	1
Chile	1,400	54	7	1,461	2	1	0	3
Ecuador	466	132	7	605	2	1	0	3
Panama	89	148	4	241	0	1	0	1
Guatemala	302	103	1	406	0	1	0	1
Bolivia	261	4	1	266	0	0	0	0
Costa Rica	102	122	1	225	0	1	0	1

(n=14 countries)

Temporary adaptations to sexual behaviour during the mpox outbreak in 23 countries in Europe and the Americas: findings from a retrospective cross-sectional online survey

Mateo Prochazka, Pietro Vinti, Ana Hoxha, Andy Seale, Antons Mozalevskis, Rosamund Lewis, Ruben Mayorga Sagastume, Martha Scherzer, Leilia Dore, Meg Doherty



- 16,875 individuals from SGM
- 95% cis men
- 97% non-heterosexual
- Western Europe (48%), Latin America (37%)



- 6.4% self-reported mpox
- 30% at least 1 vaccine dose; 21% two doses → **Lower rate in Latin America**



- ~50% reported changes in sexual behavior after the mpox outbreak → **Latin American participants more likely to adapt behavior**
- ~36% continued adaptations by May 2023

High Knowledge About Mpox Among SGM in Brazil

JMIR PUBLIC HEALTH AND SURVEILLANCE

Torres et al

Original Paper

Evaluation of Mpox Knowledge, Stigma, and Willingness to Vaccinate for Mpox: Cross-Sectional Web-Based Survey Among Sexual and Gender Minorities



- 91% cis men
- 98% non-heterosexual
- Median age: 36 years



- High mpox knowledge and perception of discrimination and stigma against SGM



- ~50% reported changes in sexual behavior after the mpox outbreak

6.236 individuals from sexual and gender minorities

5.6%

reported mpox diagnosis

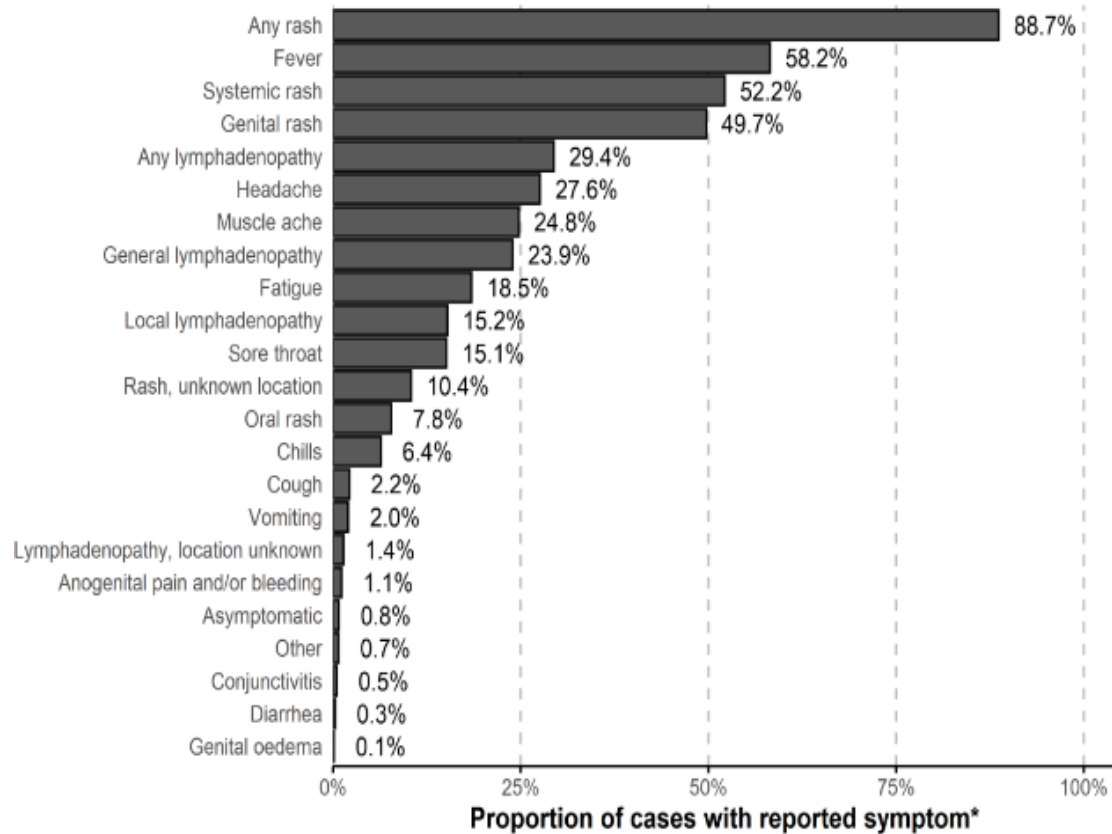
- More frequently Black (16%)
- Higher proportion of PrEP users (48%)
- Lower internalized homophobia

Main Characteristics by Mpox Clade

SUBSTITUIR PELO SLIDE MEG (SERÁ ENVIADO EM 20UT)

Symptoms: n=34,743

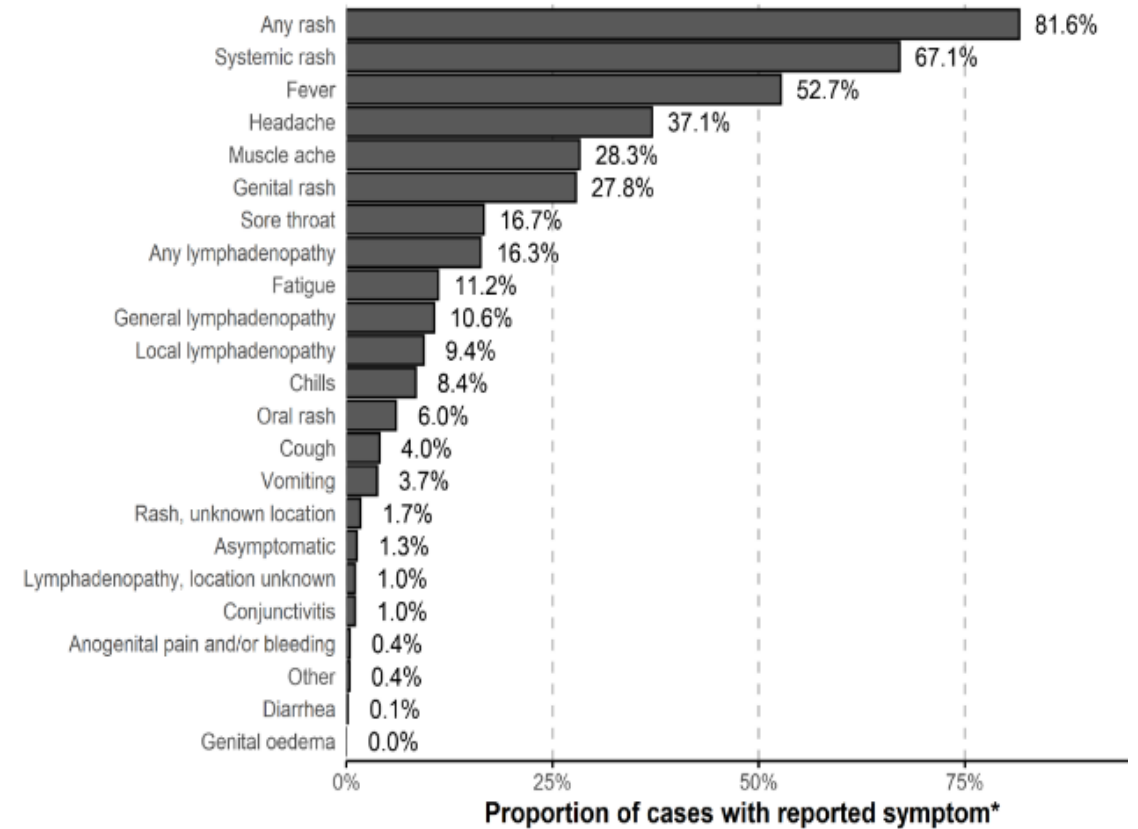
Clade 1?



Source: WHO

*33,430 cases with at least one reported symptom from a country where at least two unique symptoms reported used as denominator

Clade 2?



Source: WHO

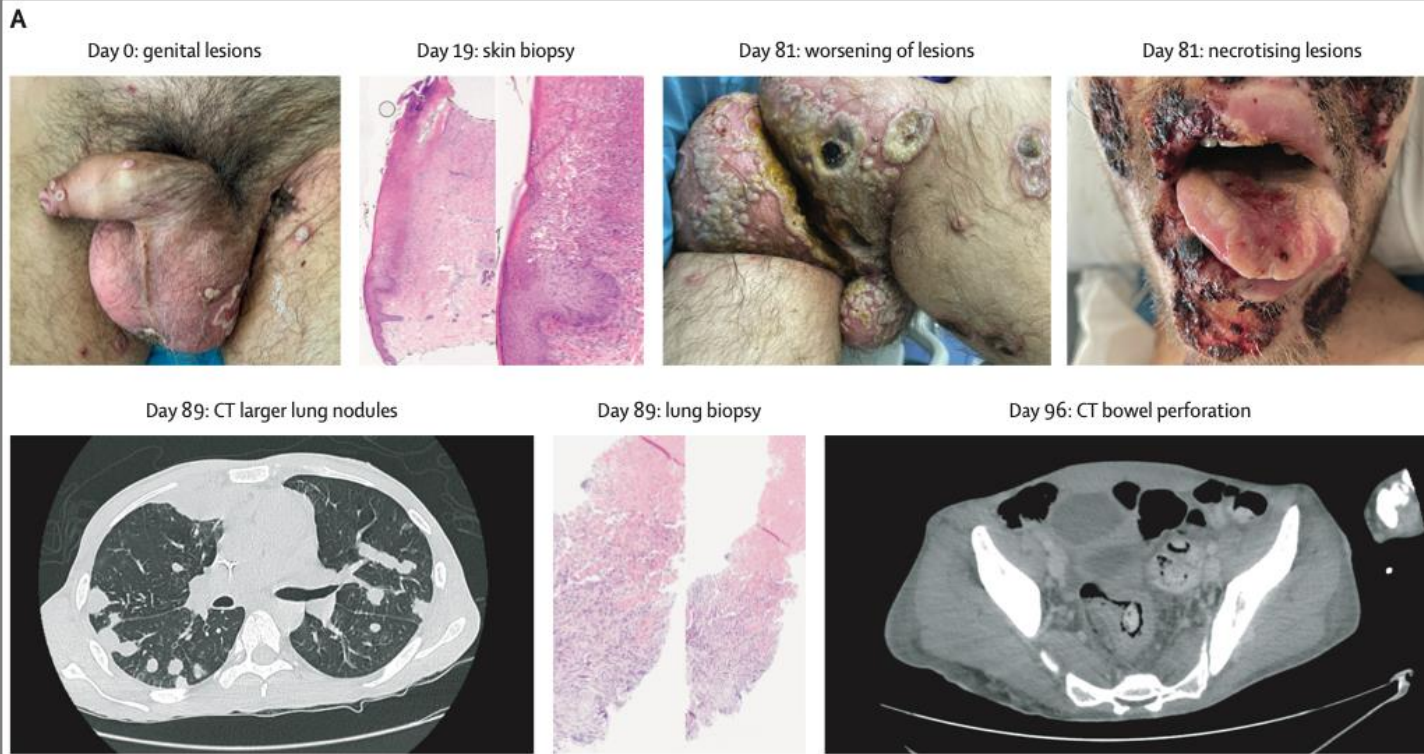
*1,343 cases with at least one reported symptom from a country where at least two unique symptoms reported used as denominator

Mpox and HIV: a New Opportunistic Infection?

Mpox in people with advanced HIV infection: a global case series



Severe clinical presentation, with fulminant progression and prolonged course, associated with coalescent necrotizing lesions, occasionally involving the lungs



382 PWH and Mpox with CD4<350

Lower CD4 counts and higher HIV VL associated to worst outcomes

Immune Reconstitution Inflammatory Syndrome (IRIS)

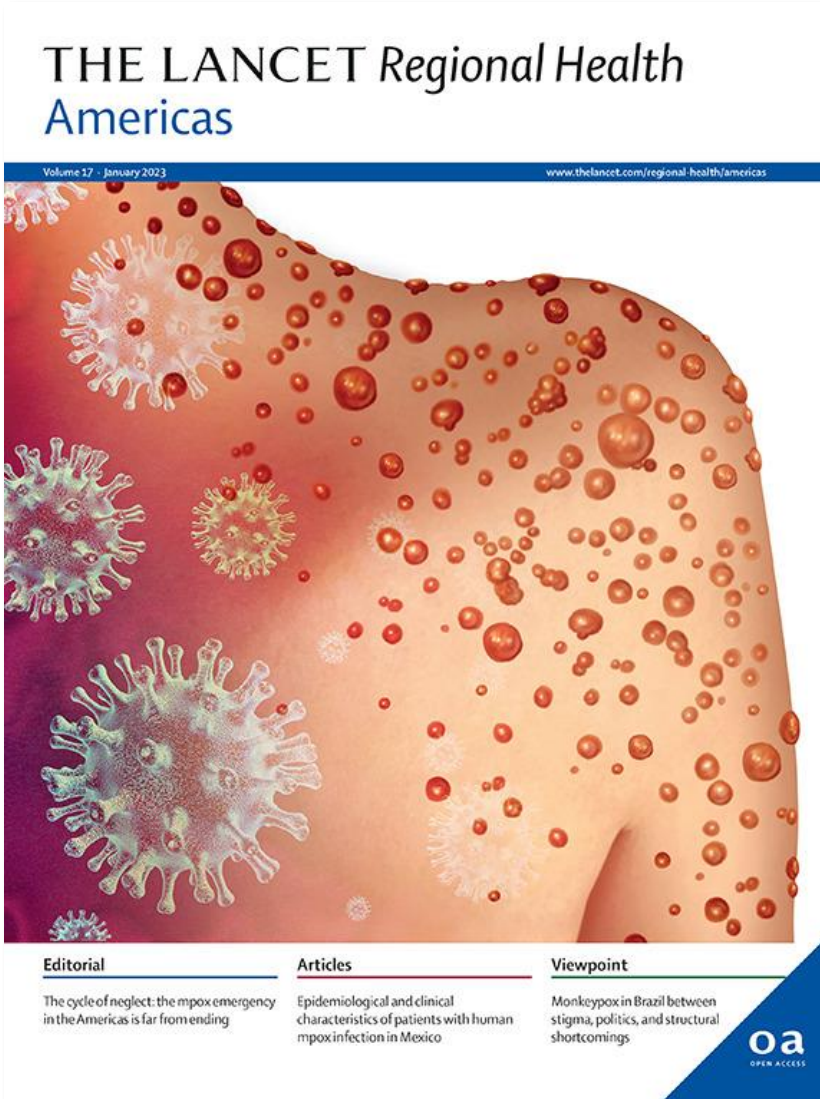
Coinfections management

Tecovirimat was given to less than 20% of participants: emerging resistance?

Mpox-related mortality among PWH with CD4 <100 (%)

VL HIV <50
7%

VL HIV >4 log
29.7%



Ambulatory and hospitalized patients with suspected and confirmed mpox: an observational cohort study from Brazil

Mayara Secco Torres Silva,^a Carolina Coutinho,^{a,c} Thiago Silva Torres,^{a,c} Eduardo Peixoto,^{a,c} Ronaldo Ismério,^{a,f} Flavia Lessa,^{a,f} Estevão Portela Nunes,^{a,f} Brenda Hoagland,^{a,f} Amanda Dolores Echeverria Guevara,^{a,g} Matheus Oliveira Bastos,^{a,g} Isabel Cristina Ferreira Tavares,^{a,g} Maria Pia Diniz Ribeiro,^a Maria Roberta Meneguetti Seravalli Ramos,^a Hugo Boechat Andrade,^a Ana Paula Lovetro Santana,^a Marilia Santini-Oliveira,^a Juliana Barbosa Santos Netto,^a Paula Reges,^a Monica Avelar Magalhães,^b Leonardo Azevedo Silva Rosadas,^a Sandro Nazer,^a Luciane Velasque,^c Sandra Wagner Cardoso,^a Edson Elias da Silva,^d Valdilea Gonçalves Veloso,^{a,h} Mayumi Duarte Wakimoto,^{a,h} and Beatriz Grinsztejn,^{a,*} on behalf of The INI-Fiocruz Mpox Study Groupⁱ

- First case series report of mpox in Brazil
- Mpox confirmation by PCR



By September 20, 2024:

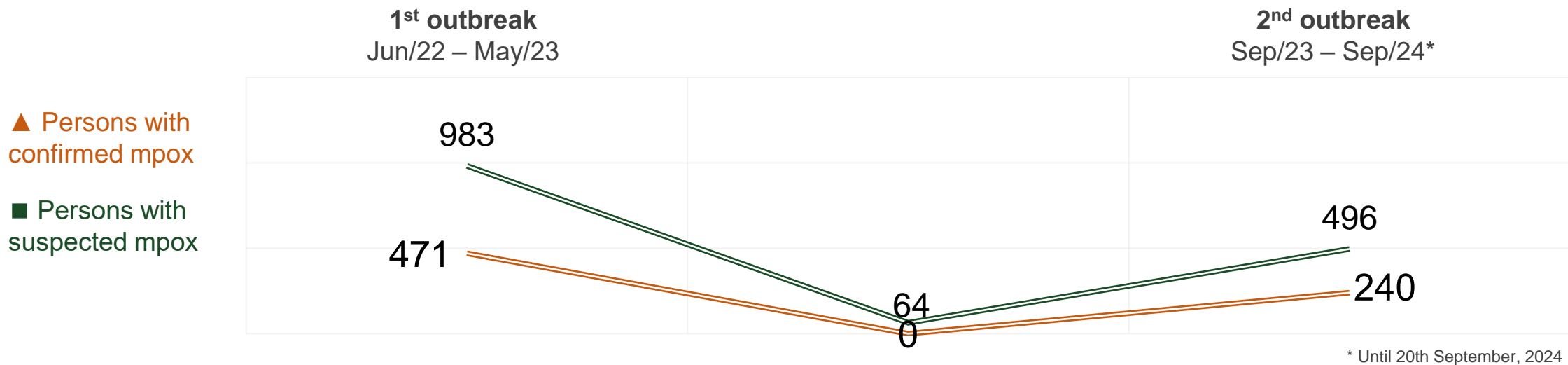
- 1479 suspected cases
- 711 confirmed cases

JOURNAL ARTICLE EDITOR'S CHOICE



Exploring the Resurgence of a Neglected Disease: Lessons From the 2023–2024 Mpox Outbreak in Rio de Janeiro, Brazil

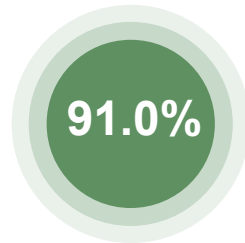
Number of persons with suspected and confirmed mpox according to time of diagnosis



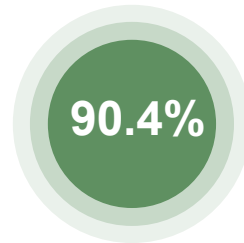
INI Mpox Cohort



confirmed cases



Cisgender men



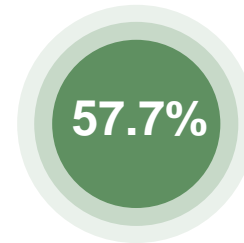
MSM



Black



Post-secondary education



PWH



PrEP use



Age

<18y 0.4%

18-24y 12.0%

25-29y 21.0%

30-39y 41.0%

40+y 25.6%

Signs & Symptoms

Disseminated exantema 73.1%

Local exantema 26.9%

Systemic symptoms 84.0%

Genital lesions 80.4%

Clinical features of proctitis 24.0%

Hospitalization 10.0%

Death 0.4%

Concomitant STIs

Gonorrhea 9.3%

HBV 1.2%

HCV 6.4%

Chlamydia – 8,8%

Syphilis – 21%

Mpox and Bacterial STIs

Prevalence of any concomitant bacterial STI concomitante



n=217/612

Active syphilis

21%

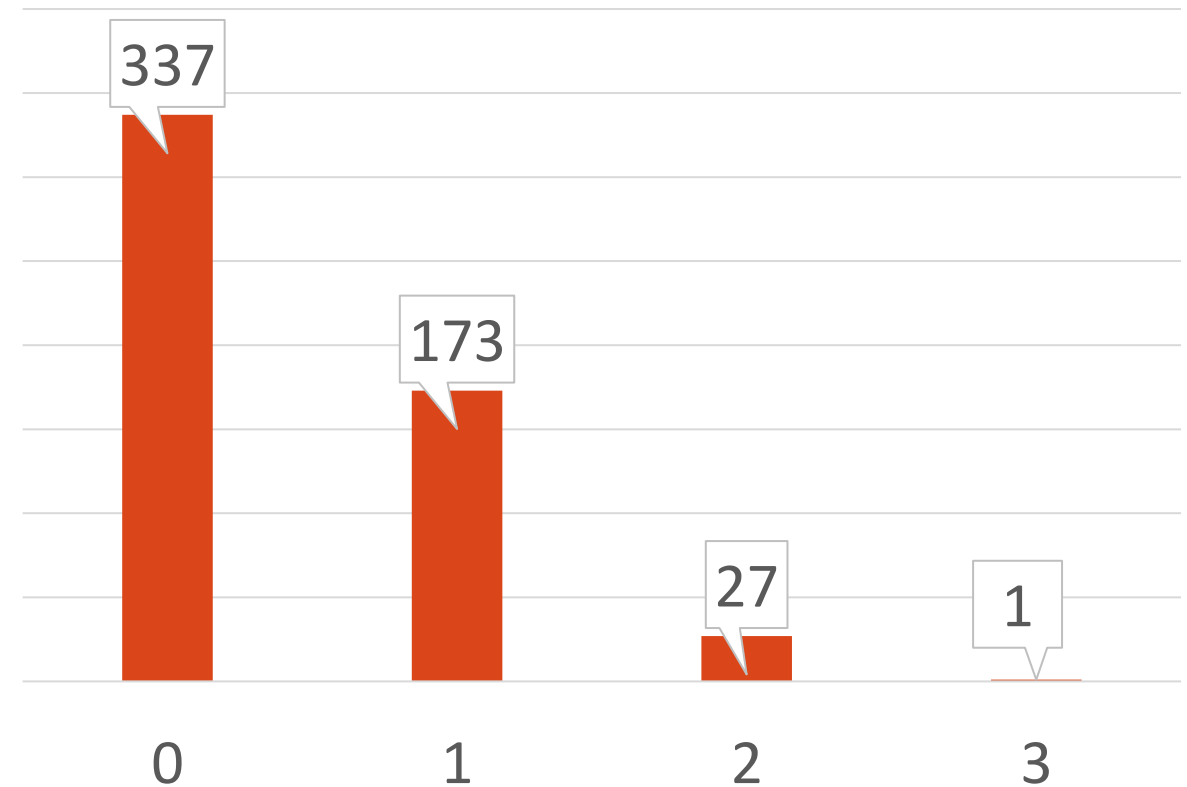
Anorectal chlamydia

9.3%

Anorectal gonorrhoeae

8.7%

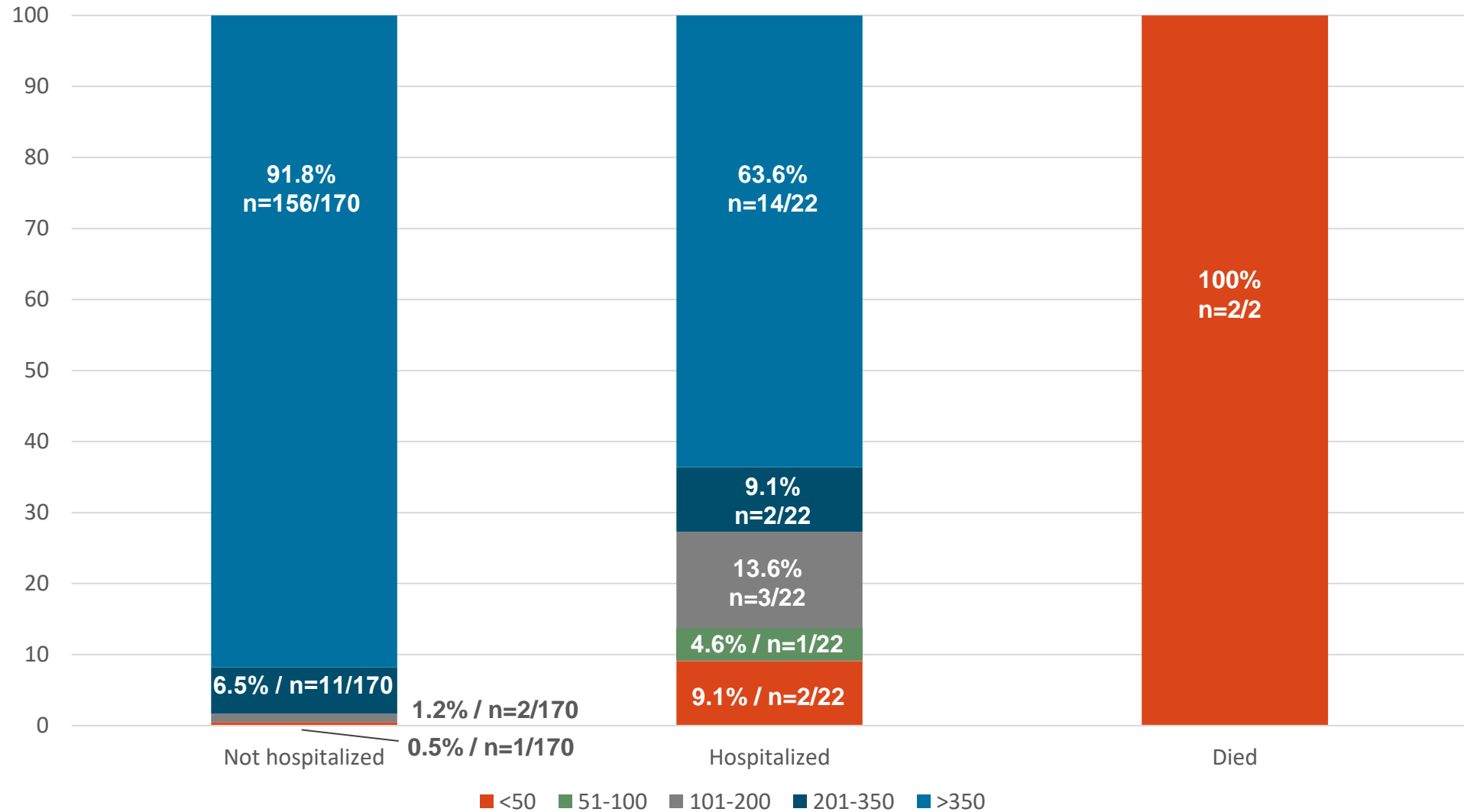
N. of concomitant bacterial STIs



INI Mpox Cohort

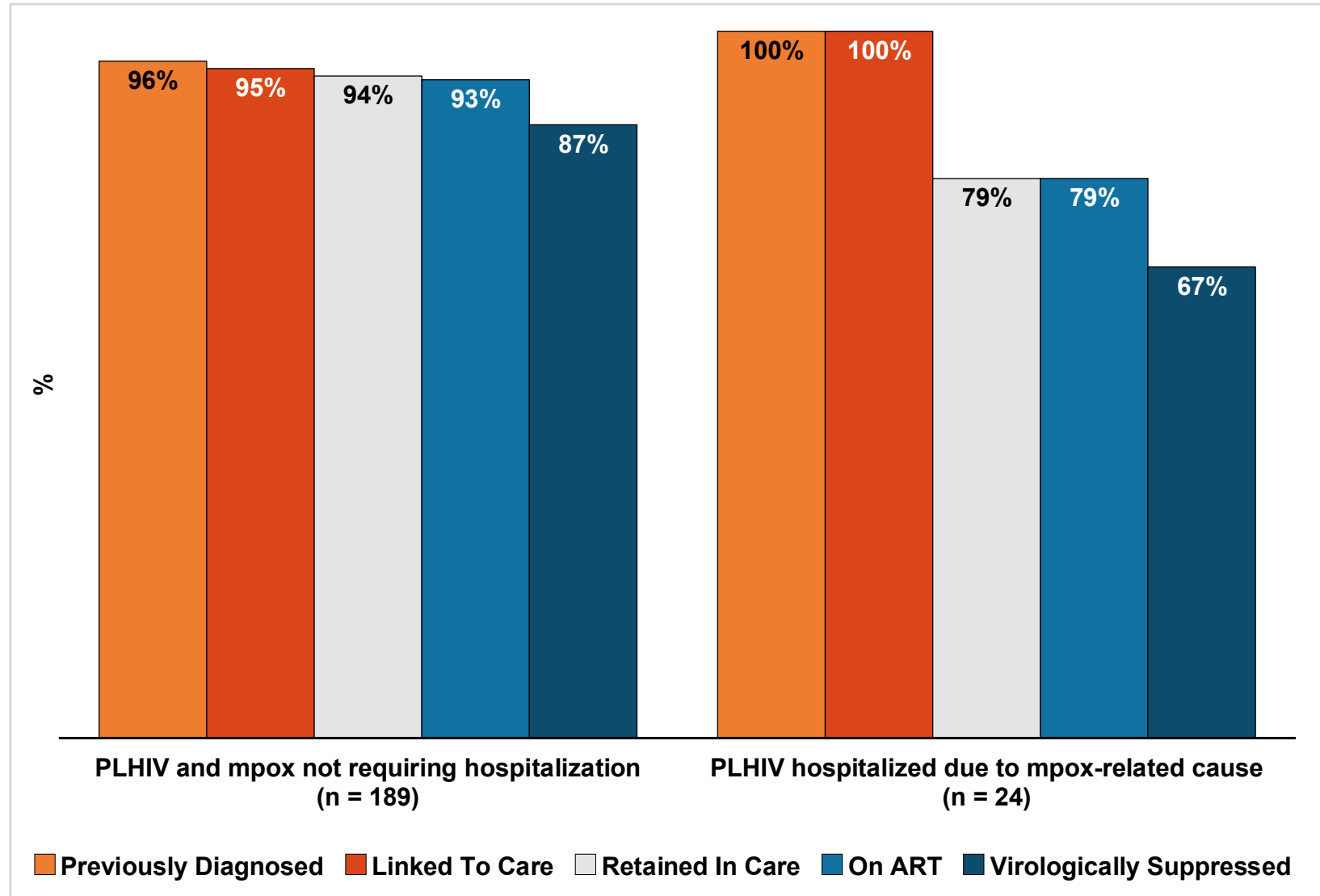
	Overall, N=703 (n, %)	People without HIV, N=340 ¹ (n, %)	People with HIV, N=363 (n, %)	p-value
Age (in years) [Median, IQR]	33 (28,40)	31 (26,38)	35 (30,41)	<0.01
Gender identity: Cisgender men	641 (91.2)	290 (85.3)	351 (96.7)	
Gender identity: Cisgender women	44 (6.3)	41 (12.1)	3 (0.8)	<0.01
Gender identity: TGW or Travesti	17 (2.4)	8 (2.4)	9 (2.5)	
Men who have sex with men	556 (86.7)	240 (82.8)	316 (90)	<0.01
Fever	411 (59.2)	177 (53)	234 (65)	<0.01
Genital lesions	559 (80.4)	255 (75.9)	304 (84.7)	<0.01
Proctitis	193 (27.7)	72 (21.5)	121 (33.5)	<0.01
Active syphilis²	137 (25.6)	34 (14)	103 (35.2)	<0.01
HCV seroprevalence	43 (6.4)	8 (2.4)	35 (10.2)	<0.01
Detectable MPXV PCR in Anorectal Swabs	101 (39)	67 (23)	168 (30)	<0.01

Mpox Hospitalization at INI-FIOCRUZ



















Mpox Hospitalization at INI-FIOCRUZ

HIV care cascade among people with mpox based on the need of hospitalization



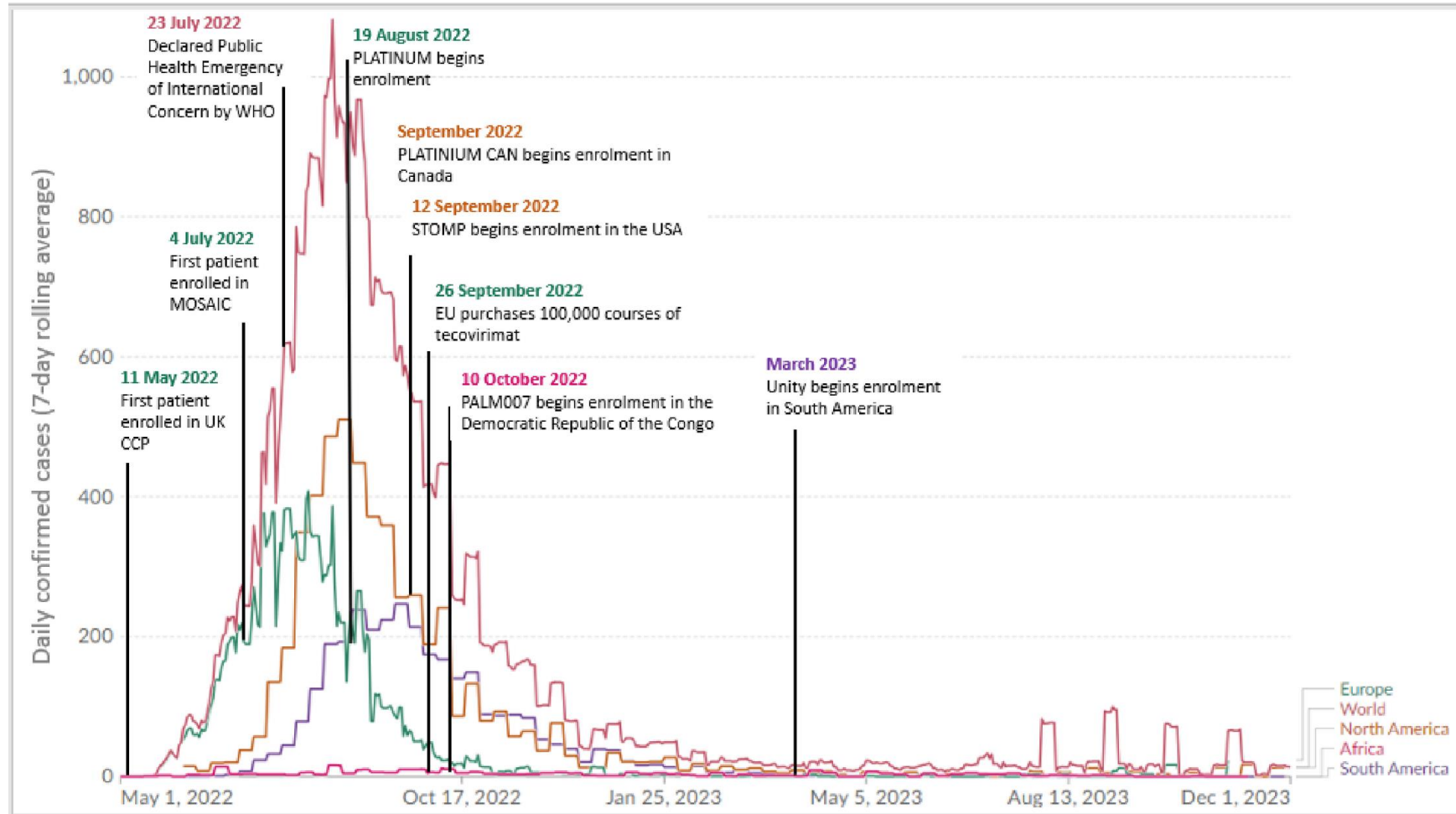
Landscape Analysis of Mpox Therapeutics

Candidate Manufacturer	WHO-listed authority approved	WHO EUL	Use in under- 18s	Ongoing trials	Availability	Manufacturing capability	Comments
Tecovirimat*  Siga	 EMA, US FDA**			8 0 Ph I 1 Ph II 6 Ph III 1 Ph IV	South Africa	Easily manufactured at scale	Primary endpoint not met in PALM007 (Clade I in DRC) PK/PD results awaited as well as Clade II results from UNITY and STOMP
Brincidofovir  Emergent BioSolutions				0 0 Ph I 0 Ph II 0 Ph III 0 Ph IV	Used under EIND for mpox in the USA	N/A	To be tested in the MOSA trial in DRC, Nigeria
VIGIV  Emergent BioSolutions				1 0 Ph I 1 Ph II 0 Ph III 0 Ph IV	N/A	N/A	Manufacturing/access at scale not currently feasible in LMICs
Cidofovir  Gilead				1 0 Ph I 0 Ph II 1 Ph III 0 Ph IV	N/A still in trials	N/A	No additional trials planned

Novel antivirals: 3 novel antiviral candidates for mpox in preclinical development; 1 in phase 1 (ASC10)

Monoclonal antibodies (mAbs): 2 anti-mpox mAbs with ongoing preclinical studies [BFI 753 (Biofactura) and JEPO-CBRND (Just Evotec)]

Timeline of the Events During the 2022 Multi-country Mpox Outbreak and Daily Confirmed Cases (Seven Day Rolling Average)





STUDY DESIGN

Randomized, placebo-controlled double blinded study to evaluate the safety and efficacy of tecovirimat



STUDY PARTICIPANTS

Symptomatic Mpox <14d
Any age

Symptomatic Mpox
any duration
>14 years of age

Lab confirmed Mpox
any duration
>13kg



OBJECTIVE

Time to lesion
resolution

Time to lesion
healing

Time to lesion
resolution



SECONDARY

Pain, viral clearance,
complete healing

Viral clearance,
lesion resolution

Viral clearance,
complete healing

PALM 007

- Randomized, placebo-controlled, double blinded study to test safety and efficacy of Tecovirimat
- Population
 - Adult and **pediatric** participants
 - Mpox of any duration
 - Clade I
- Primary outcome: Time to lesion resolution = all lesions are scabbed, desquamated or a new layer of epidermis has formed
- **Protocol shared with other mpox trials**



NEWS RELEASES

Thursday, August 15, 2024

The antiviral tecovirimat is safe but did not improve clade I mpox resolution in Democratic Republic of the Congo

NIH-cosponsored study examined tecovirimat in mpox-endemic country.

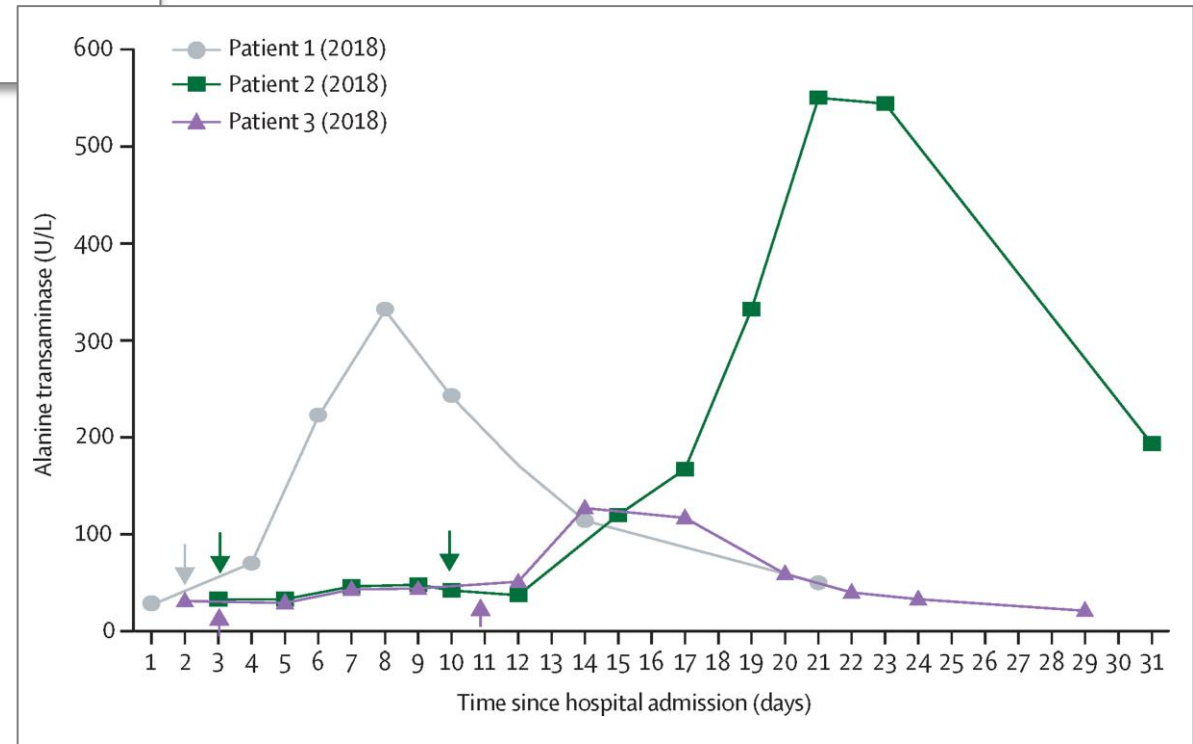
Mortality decreased to 1.7% in all participants indicating that better outcomes can be achieved with high quality supportive care

Clinical features and management of human monkeypox: a retrospective observational study in the UK



Hugh Adler, Susan Gould, Paul Hine, Luke B Snell, Waison Wong, Catherine F Houlihan, Jane C Osborne, Tommy Rampling, Mike BJ Beadsworth, Christopher JA Duncan, Jake Dunning, Tom E Fletcher, Ewan R Hunter, Michael Jacobs, Saye H Khoo, William Newsholme, David Porter, Robert J Porter, Libuše Ratcliffe, Matthias L Schmid, Malcolm G Semple, Anne J Tunbridge, Tom Wingfield*, Nicholas M Price* on behalf of the NHS England High Consequence Infectious Diseases (Airborne) Network†

- First three patients were treated with oral brincidofovir ~7 after onset of rash
- All three patients developed elevated alanine transaminase and none completed the course of treatment
- Evidence of synergy with tecovirimat in animal models of Cowpox



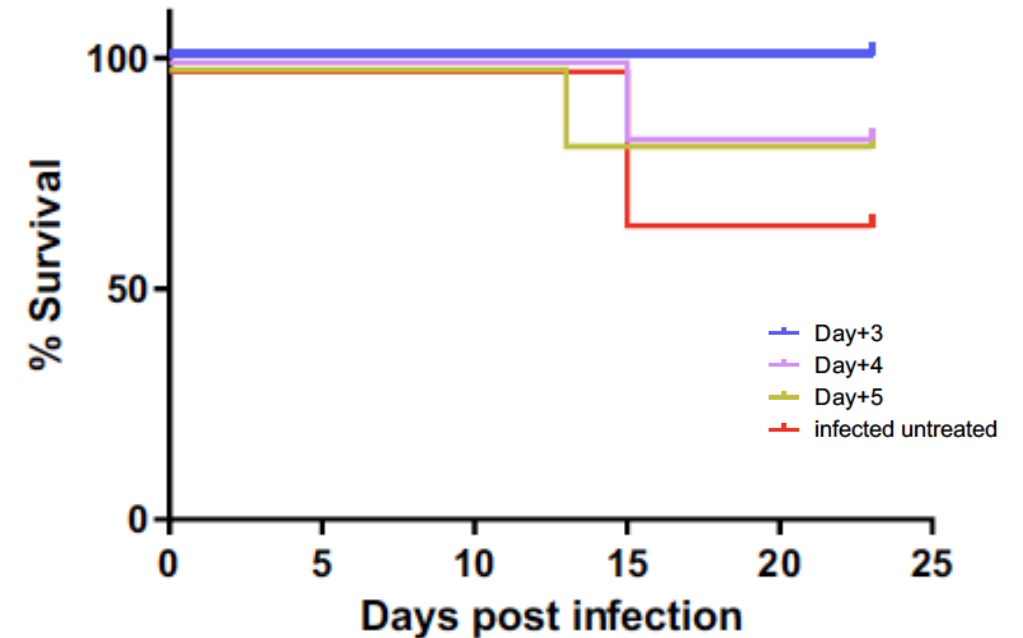
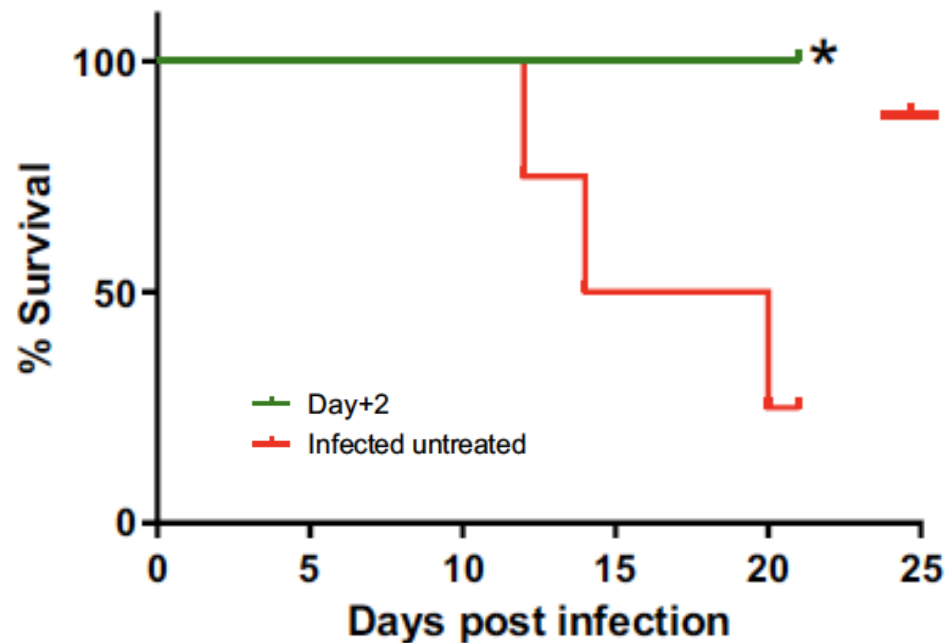
Mpox mAbs – Effective in Animal Models

nature communications

Article

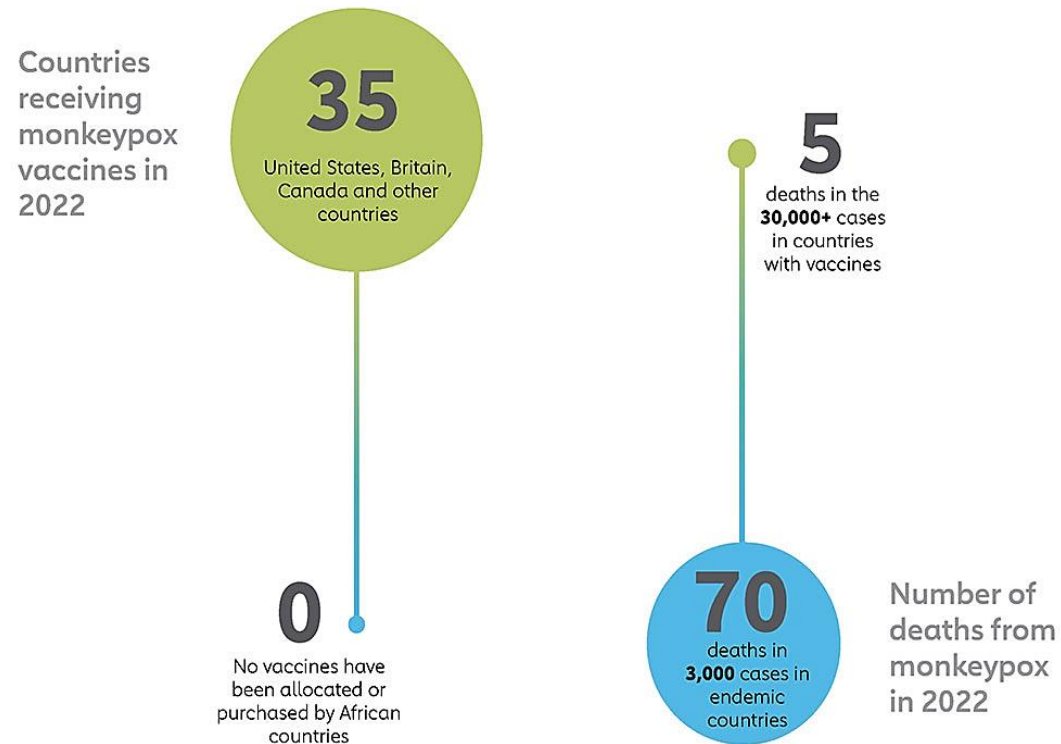
<https://doi.org/10.1038/s41467-024-47328-y>

Synergistic effect of two human-like monoclonal antibodies confers protection against orthopoxvirus infection



Mpox Vaccination

Monkeypox Vaccine Access & Mortality, 2022



Latin America: mpox vaccine access

Mexico: none
Argentina: none
Venezuela: none
Brazil: yes, for vulnerable individuals
Chile: yes, for vulnerable individuals
Dominican Republic: yes, for vulnerable individuals
Peru: vulnerable populations in 2022
Ecuador: yes, for vulnerable individuals in 2022

Mostly no actual access

Challenges in genomic surveillance and laboratory diagnosis

Mpox and HIV coinfection in the context of HIV late diagnosis and disengagement from care

Equitable distribution of medical countermeasures, tackling North-South disparities

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Thank you! Obrigada!

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