The Independent Panel FOR PANDEMIC PREPAREDNESS & RESPONSE



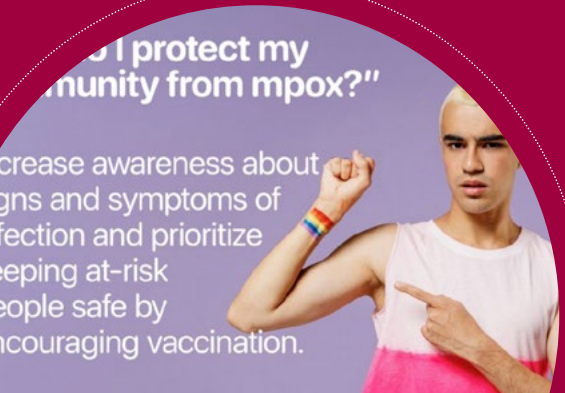
Hiding in Plain Sight

Mpox and the Cost of Neglecting Known Threats

October 2026







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Foreword

Every infectious disease outbreak provides lessons. These are unfortunately costly — people pay with their lives, health workers pay with their time, and governments pay to stop the outbreak and build back economies and societies when it's over. Communities pay in all these ways — in the livelihoods disrupted, in the trust eroded, and in the weight of coping long after the world's attention moves on.

We are learning these lessons, but are we applying them?

A remarkable and worrying fact is that since January 30, 2020, when COVID-19 was declared a Public Health Emergency of International Concern, the world has been in a state of health emergency for about 70% of the time (excluding polio). Mpox alone — the subject of not one but two avoidable international health emergencies — has accounted for more than a quarter of that period.

Whereas COVID-19 was a novel virus that took the world by surprise, mpox had been known for decades, hiding in plain sight. How did it escape its endemic regions and become a health threat now found on every continent?

This report answers that question. Through research, conversations with those close to the mpox efforts, and analysis through the lens of The Independent Panel's main recommendations, the evolution of mpox from sporadic zoonotic disease to worldwide spread is documented.

It finds repeats of the same weaknesses of the COVID-19 response. There was a lack of preparedness and investment in community resilience. There was yet again a scramble for funds for the emergency response. There was a failure to invest in tools such as vaccines and point-of-care diagnostics and securing them for people in low- and middle-income countries. There were also improvements. In the first emergency, communities built through the HIV response mobilised fast to help one another stop the spread of mpox. When mpox was declared a second emergency, WHO and Africa CDC came together for the first-ever joint continental plan.

The report looks deeper, and probes why communities themselves are left vulnerable to infectious diseases that could be relatively easily controlled, then subjected to explosive outbreaks they are not resourced to detect or contain. Emergency funds for community engagement are too often parachuted in, leaving little behind but posters fading on clinic walls. Instead, communities deserve sustained, patient investment that builds a lasting foundation of resilience.

Many health emergencies should not happen at all. They are a sign of failure. They happen when signals were missed, too many people have died or become ill, and viruses have crossed borders. Instead of springing to life for emergency response, policies and investments should aim to integrate neglected disease management into health programming. Scientists and manufacturers from the regions where these diseases prevail must be part of the solutions.

Full implementation of the International Health Regulations and the Pandemic Agreement provides a foundation for this shift, but the Agreement's promise depends on the completion of the PABS annex, ratification and financing.

Unfortunately, the lessons of mpox are being relearned this year. Knowledge of the potential of Andes hantavirus to cause outbreaks amongst people was not in the hands of those in the tourism sector who needed to know, or not acted on if it was. The Ebola Bundibugyo virus has caused two prior outbreaks in this century. Yet it too surprised the world in 2026, and communities affected were stranded with no near point-of-care tests, no vaccines, no treatments, and eroded trust in government and institutions.

A world that cannot manage known diseases will not be ready for Disease X, the next pandemic threat.

We say again: invest now — in neglected diseases with epidemic potential, and in preparation for Disease X, or we will all pay the price later — or sooner.



Her Excellency Ellen Johnson Sirleaf



The Right Honourable Helen Clark

Co-Chairs of The Independent Panel for Pandemic Preparedness and Response

Mpox timeline: from zoonotic outbreaks to global transmission

A history of viral evolution, outbreaks and emergencies, disease burden and the tools developed in response.

VIRUS EVOLUTION

1958
Virus first identified in laboratory macaques

1970s–2010s
Clades Ia and II
Spillovers and short chains of transmission particularly in DRC

2014 onwards
Clade IIb circulating in Nigeria
Revealed by genomic tracing in 2025

Mid-2022
Clade IIb sexual transmission, identified primarily among MSM
Milder systemic symptoms and more localised lesions

Late 2023–24
Clade Ia community transmission in DRC Équateur province
High burden in children

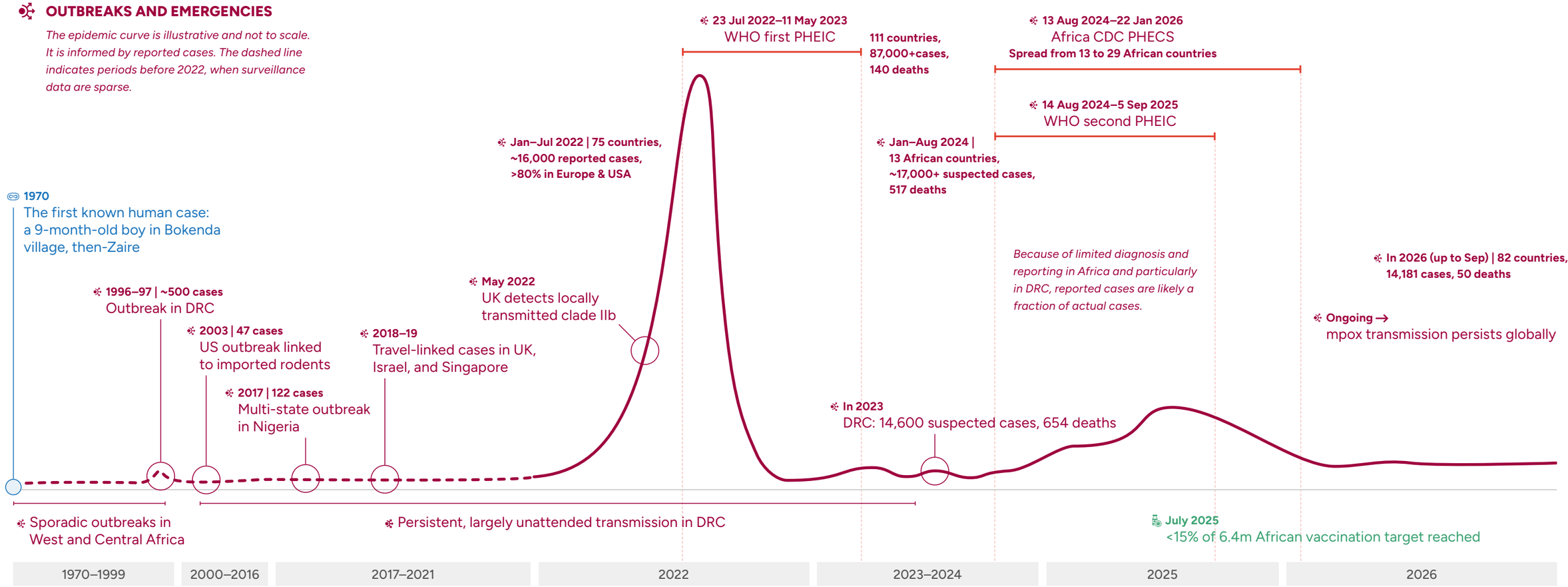
Clade Ib emerges in South Kivu, DRC
Heterosexual transmission and cross-border spread

Dec 2025–Jan 2026
Ib/IIb recombinant virus identified in India and UK

2026
Community transmission in Europe, Madagascar and West and Central Africa

OUTBREAKS AND EMERGENCIES

The epidemic curve is illustrative and not to scale. It is informed by reported cases. The dashed line indicates periods before 2022, when surveillance data are sparse.



TOOLS AND TRIALS

1975
LC16m8 approved for smallpox in Japan

1980
Smallpox eradicated; vaccine stockpiles retained

2007
ACAM2000 licensed in USA for smallpox

2013
EMA approves MVA-BN for smallpox

2018–21
US FDA approves tecovirimat and brincidofovir for smallpox; MVA-BN vx for smallpox and mpox

Late 2021
Tecovirimat access programme, CAR

Jan 2022
EMA approves tecovirimat for orthopox infections

2022–2023
MVA-BN and tecovirimat used and evaluated for the first time for mpox

Oct 2022
PALM007 trial for tecovirimat starts in DRC

May 2024
CEPI invests in mpox vaccine research and trials in Africa

Aug 2024
PALM007 finds tecovirimat safe but not effective for mpox clade I

2024–25
MVA-BN and LC16m8 vx donations begin

Sep 2024
WHO prequalifies MVA-BN vaccine

By Apr 2026
~5m doses of vaccines deployed

Sep 2026
mpox vaccine stockpile announced

Abbreviations

Africa CDC — Africa Centres for Disease Control and Prevention

AIDS — Acquired immunodeficiency syndrome

CAR — Central African Republic

CDC — Centers for Disease Control and Prevention

CEPI — Coalition for Epidemic Preparedness Innovations

COVID-19 — Coronavirus disease 2019

DRC — Democratic Republic of the Congo

EEA — European Economic Area

EMA — European Medicines Agency

EU — European Union

FDA — Food and Drug Administration (United States)

HIV — Human immunodeficiency virus

IHR — International Health Regulations

INRB — DRC's Institut National de Recherche Biomédicale

MHRA — Medicines and Healthcare products Regulatory Agency (United Kingdom)

MSM — Men who have sex with men

MVA-BN — Modified Vaccinia Ankara–Bavarian Nordic (vaccine)

NIH — National Institutes of Health (United States)

PABS — Pathogen Access and Benefit-Sharing

PCR — Polymerase chain reaction

PHECS — Public Health Emergency of Continental Security

PHEIC — Public Health Emergency of International Concern

UK — United Kingdom

US / USA — United States of America

WHO — World Health Organization

Acknowledgments

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The report is informed by comprehensive desk research supplemented with informants' insights. The authors are solely responsible for the collective analysis and conclusions.

Executive Summary

The next pandemic threat may not come from a novel virus "X", but from one we have long known, and neglected.

Mpox was a zoonotic disease with sporadic spillovers confined to forested regions of Central and West Africa. Despite growing warning signs that its epidemiology was changing, it was neglected for decades. Newly emerged variants of the monkeypox virus subsequently triggered not one but two avoidable and costly international public health emergencies.

As a test of our pandemic preparedness and response systems, mpox is a failure, not once, but three times. It is a failure to heed decades of warning signs, a failure in the fragmented and delayed responses to the emergencies that neglect produced, and a failure to act fully on the lessons those and previous responses made clear.

This report reviews the evolution of mpox, and the lead-up and responses to the two mpox Public Health Emergencies of International Concern (PHEIC). It is based on desk research and conversations with a range of actors and stakeholders in the mpox response. It also considers the earlier recommendations made by the Independent Panel for Pandemic Preparedness and Response to improve the international system for pandemic prevention, preparedness and response. The findings include clear lessons that must be acted upon, including the need for a shift in mind-set that treats the prevention of health emergencies as the real measure of success.

The five central lessons of this report are:

1. Stop ignoring neglected diseases with epidemic potential.

For families in the equatorial forests of Central and West Africa, mpox is not a new disease, but one reported in rural health clinics for fifty years. However, over those decades, little investment was made to understand mpox better, support vulnerable communities affected by outbreaks, or act on signals that transmission dynamics were changing. Investments in multi-disciplinary African-led research would have made mpox a better-understood infectious disease risk that could be easily controlled today. Instead, the neglect resulted in two costly international emergencies and spread to some 145 countries. Today, multiple subclades are circulating, including outside of the original endemic regions. Mpox has established itself in the human population, is able to spread through sexual contact, and there is potential for further outbreaks globally.

Mpox provides a clear lesson on the cost and consequences of neglecting diseases with epidemic potential.

2. An emergency is a signal of failure, and not a starting point.

Today, an emergency declaration serves as a signal for the international community to mobilise. In reality, it reflects a failure to stop an outbreak where and when it occurred. Prior to WHO's first PHEIC declaration for mpox, signals that the epidemiology of the disease was changing were not acted on. Attention only turned to this long-neglected disease once an international outbreak was well underway. And while well-resourced countries invested in ending that health emergency in 2022–2023 — including through focused public health measures for affected communities — at-risk communities in the original African endemic areas remained neglected. Ignoring the rise in mpox cases there paved the way for a second PHEIC in Africa just over one year later.

The bottom line is that an emergency declaration should not be the starting point for managing a health threat. Outbreak and pandemic prevention, preparedness and response should be designed, and financed, with the goal of avoiding international health emergencies from occurring at all.

3. Supported, resilient communities are the foundation of sustained health security.

Outbreak response must go beyond lowering case numbers to also ensure increased trust, resilience and greater health security for the future, including for fragile areas. Disease outbreaks begin and end in communities, at the intersection of social, economic, political, climate, biodiversity and animal health dynamics. In the first mpox emergency in higher-income countries, affected communities — long organized and supported already for HIV — were able to mobilise rapidly to inform their communities and act to end mpox in a matter of months. By contrast, in the second Africa-based emergency, vulnerable groups including women and children in endemic African regions, sex workers and their networks, and men who have sex with men were not necessarily engaged in weakened health systems. The funding in the second emergency was parachuted in to inform communities about mpox and receded again afterwards.

Instead of vertical, siloed health initiatives and parachuted emergency responses, "one country/one plan" strategies should continue the shift towards integrated programming. This should provide essential services that address people's needs and are easily accessible, with a focus on ongoing support in fragile areas. In the case of mpox, examples include integrated management with chickenpox and measles for children, and with sexually transmitted infection services for adults and adolescents.

4. Countries and communities must have access to the right tools, in the right place, at the right time.

In the 2022–2023 mpox emergency, a handful of high-income countries had stockpiles of a vaccine originally developed for smallpox, that, despite its potential, had not been fully tested for mpox. While the epidemic had already peaked by the time vaccine roll-out started, it was possible to collect data to show its efficacy. Despite this and the availability of another vaccine licensed in Japan, vaccines were not trialled, registered or made available in the African endemic regions until after the 2024 emergency declaration, significantly delaying their roll-out. Similarly, while it was well-known that the surveillance and specialized molecular testing diagnostic tools used routinely in high-income countries were not well adapted for use in the endemic regions, efforts to develop point-of-care tests for use in community settings were not prioritized.

Diagnostics, vaccines and treatments are most effective when deployed in a timely and deliberate way, together with the community. They must be ready when and where they are needed, rather than researching, licensing, regulating and negotiating their release only in times of crisis.

5. Prevention, preparedness and emergency response must be fully financed.

Prevention and preparedness require sustained, predictable investment before crises emerge. Yet the estimated US$15 billion of additional international financing needed yearly for preparedness remains largely unaddressed. At the same time, when outbreaks do occur, countries need rapid, pre-agreed surge financing that provides certainty, not the ad hoc pledges and fragmented funding streams that exist today.

Financing should operate across the full continuum — from prevention and preparedness to emergency response — with transparent tracking from pledge to disbursement and coordinated global and regional mechanisms capable of mobilising resources at the scale required.

A disease long neglected at our peril

Mpox is an infectious disease caused by the monkeypox virus, an orthopoxvirus related to the now eradicated smallpox.[1] The virus was first identified in 1958 in macaques used for research in Denmark. It was named monkeypox, though rodents are strongly suspected as its natural reservoir.*

In August 1970, a 9-month-old boy in forested Bokenda village, in what was then Zaire, developed skin lesions and went to hospital. There, a smallpox eradication team determined he was infected with monkeypox virus. Researchers documented 47 more cases over the next decade, mostly among children in small villages in the African equatorial rainforest.[2] Most experienced painful skin lesions and pustules which spontaneously cleared. Eight of the children died. Research since has shown that children, pregnant women, and immunocompromised people are at greater risk of severe or fatal disease. Most infections followed contact with animals, with limited transmission between people in households or communities.

Once smallpox was eradicated and surveillance for it declined, few mpox cases were identified.[3] It was not a surveillance priority, nor were there tests to detect it in situ. Sporadic outbreaks continued in Central Africa (clade I) and West Africa (clade II), but these were considered small, occurred in remote areas, and had relatively low mortality. As mpox remained outside of public health and research attention, case numbers and morbidity were underestimated, as was the risk of uncontrolled spillovers and cross-border spread.

The World Health Organization (WHO) expressed concern about a large outbreak in 1996–1997 in Kasaï-Oriental in the Democratic Republic of the Congo. This resulted in some 500 suspected cases, including a high proportion of secondary infections.[4] WHO noted that waning smallpox immunity may have contributed to the outbreak, but nothing materially changed in the research or public health approach to mpox. By the late 2000s, DRC was reporting around 2,000 suspected cases of mpox each year.[5]

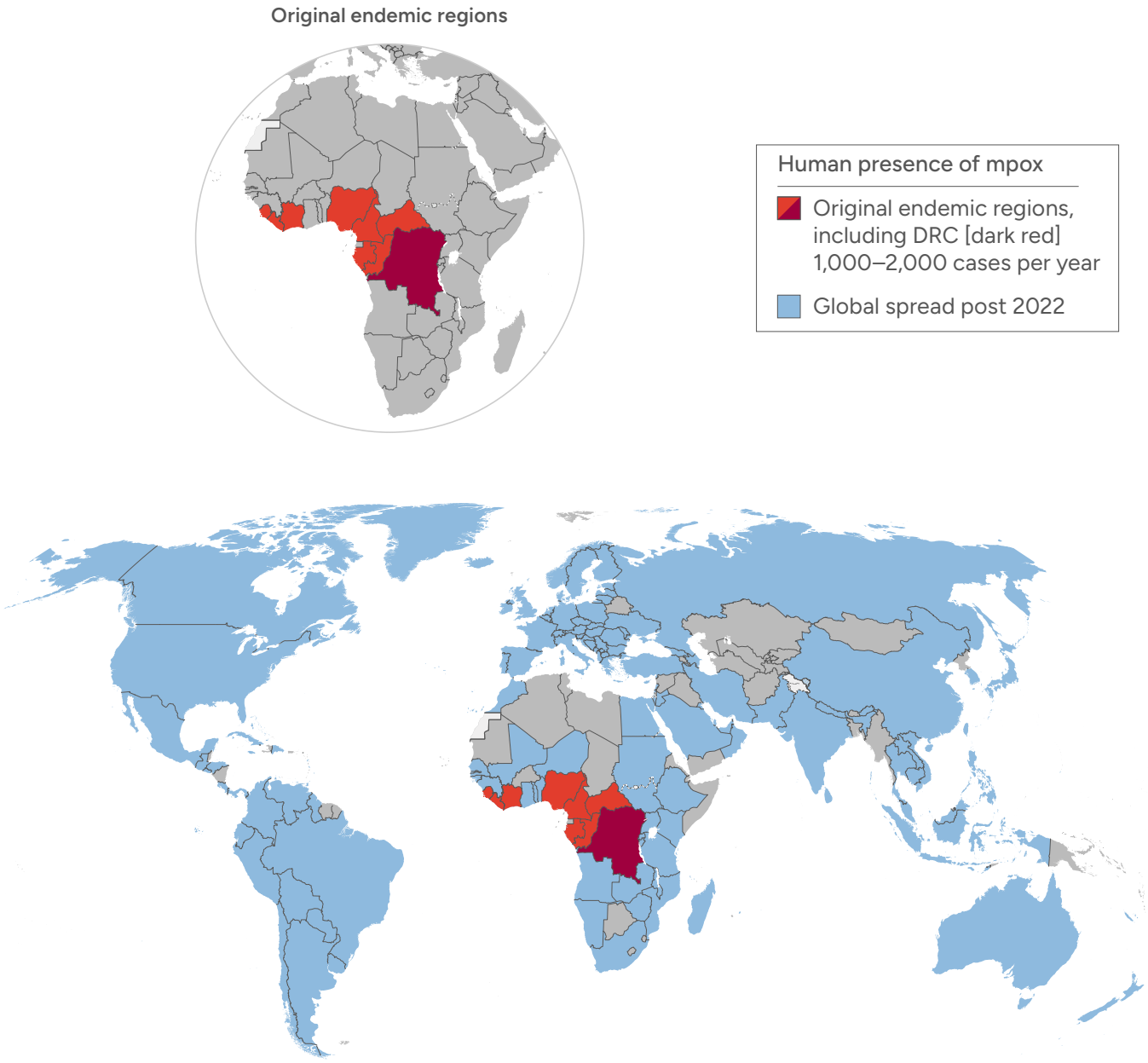
A decade later, warning signals grew stronger. In 2017, a multi-state clade II outbreak in Nigeria grew to 122 cases, with both primary zoonotic and secondary human-to-human transmission.[6] In 2018, a WHO expert consultation on the Research and Development Blueprint discussed the risks of mpox. The disease is not part of the Blueprint, but they nonetheless called for comprehensive surveillance and diagnostics, rapid evaluation of countermeasures, and accelerated research and development.[7]

The world suddenly took notice in 2022, when this known, preventable yet largely neglected disease caught countries off-guard and spread rapidly into a public health emergency of international concern (PHEIC). This was repeated in 2024.

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* In November of 2022, due to the stigmatization of people with 'monkeypox' infection, WHO adopted the name 'mpox' to refer to the disease. The virus continues to be called monkeypox.

Mpox map: from endemic regions to global spread



Source: WHO Global mpox Trends, https://worldhealthorg.shinyapps.io/mpx_global/#sec-global

"Mpox, originating in Africa, was neglected there, and later caused a global outbreak in 2022. It is time to act decisively to prevent history from repeating itself."

— Professor Dimie Ogoina, mpox Emergency Committee Chair, 14 August 2024

Waking up to mpox — the first emergency arrives

In 2022, a long known but neglected disease burst into global headlines.

In early May, surveillance in the United Kingdom reported an mpox variant, subclade IIb, that was locally transmitted through sexual contact. More countries soon reported cases of people infected with this novel mpox variant, the majority amongst men who have sex with men (MSM). It generally caused milder symptoms and more localised skin and mucosal lesions than subclade IIa, though severe and very painful cases were also reported.[8]

By July, mpox had spread globally. Seventy-five countries were reporting cases, over 16,000 in total — more than 80% of them in Europe and the USA. On 23 July, the WHO Director-General declared mpox a Public Health Emergency of International Concern (PHEIC).

The international spread of mpox and the ensuing PHEIC declaration highlighted that the world had collectively failed to stop the virus in its tracks. Instead of directly addressing and stopping outbreaks in Central and West Africa, mpox was left to circulate, increasing its transmissibility among humans and spreading beyond its endemic regions. To those familiar with the virus, the global outbreak did not come as a surprise, even if it was not on WHO's list of priority pathogens with outbreak potential.[9]

"This doesn't have to be like HIV. This is about information, it's about us knowing what we want to do, it's about us striving for solutions very quickly."

— Matt Phillips, Pink News

Community mobilisation was essential

During the 2022 mpox PHEIC, well-resourced countries built their responses on past knowledge, existing stockpiles of countermeasures and community action.

With COVID-19 still fresh in the mind and building on HIV/AIDS prevention experience and investment, MSM communities mobilised. Information campaigns, both sensitive and direct, contributed to behaviour change and to the containment of the sexually transmitted epidemic in the countries with well-established community platforms. Generally, people living in countries with strong, inclusive health systems, access to quality health care, and information for those made vulnerable, including people living with HIV, fared best.



Countermeasures existed, but weren't intended for mpox

Meanwhile, largely unknown to people in the countries affected by mpox or to the public at large, the United States government and others had used the monkeypox virus in experimental models for health security research to protect against a potential biological warfare use of smallpox. This resulted in next-generation smallpox vaccines and antiviral drugs authorised by the US Food and Drug Administration (US FDA) and the European Medicines Agency (EMA) using a special regulatory pathway (see boxes 1 and 2). Stockpiles of these products for biodefense and national health security existed in several countries, but details remained shrouded in secrecy. These products could have been tested or used for mpox in endemic countries, but in keeping with neglect of mpox itself, this was not actively pursued.

Timely availability and access to vaccines and therapies could have made an impact on the mpox emergency. However, in 2022, initial demands by patients and clinicians to access potentially useful smallpox vaccine and treatment stockpiles were met with hesitancy, delays, and a general lack of transparency about availability and supply options. The lack of clinical evidence about their efficacy for mpox, as well as regulatory barriers, further complicated their roll-out. For instance, in the USA, since the therapeutic, tecovirimat, was only registered for smallpox, clinicians could only access the drug for their patients through an expanded access ("compassionate use") request process.[10] In some places, access to MVA-BN vaccines was only possible in the context of a clinical trial. Taken together, by the time vaccines and tecovirimat became more widely available, case numbers were already dwindling, and it is unclear what effect, if any, these countermeasures had on the course of the epidemic.

From August 2022 onwards, the number of new cases started to decrease despite a growing number of countries affected. By May 11, 2023, when WHO ended the mpox PHEIC, 111 countries from all six WHO regions had reported cases. By the end of 2023, 120 countries had reported over 94,000 confirmed cases and 183 deaths to WHO.[11]

Newspaper headlines, May and July, 2022

News | Health

EU approves smallpox vaccine for use against monkeypox

Approval of Imvanex comes after the World Health Organization declared monkeypox a global health emergency.

Smallpox vaccines can protect against monkeypox, and U.S. has 100 million doses

Two FDA-approved vaccines for smallpox are in the Strategic National Stockpile, one of many reasons this outbreak is nothing like the coronavirus.

"Nothing has changed for us here. The focus is all on monkeypox in the West.

The countries in Africa where monkeypox is endemic are still in the same situation we have always been, with weak resources for surveillance, diagnostics and even the care of patients."

— Dr. Placide Mbala, virologist, DRC, in the Associated Press, Sept 14, 2022

Box 1: Existing mpox treatments, vaccines, diagnostics in 2022 — before the first PHEIC

Despite a longstanding need, no specific treatment or vaccine had been developed for mpox, and no point-of-care diagnostic tests existed. For surveillance and diagnostic purposes in endemic regions, samples were collected from clinically suspect cases and transported — sometimes hundreds of kilometres — to the handful of reference laboratories equipped with PCR-based testing.

However, in 2022, several potentially effective mpox vaccines and treatments were already in existence — developed and stockpiled against the closely related smallpox virus in the context of biodefense:

- In July 2018, the US FDA approved **tecovirimat**, an antiviral manufactured by the US pharmaceutical company SIGA Technologies, as the first drug indicated for the treatment of smallpox. Canada followed in 2021. In 2022, the EMA and MHRA — the UK's regulatory authority — approved tecovirimat for the treatment of smallpox, mpox, and cowpox.
- In June 2021, the US FDA also approved **brincidofovir** for treatment of smallpox. Initially produced by Chimerix, it was acquired by Emergent BioSolutions, both US companies. In Europe, the EMA gave brincidofovir orphan drug designation.

A small expanded access programme with tecovirimat was initiated in CAR in late 2021,[12] while a first trial to assess the clinical efficacy of this drug in mpox started in October 2022 in DRC.[13]

Several related smallpox vaccines have been developed based on the attenuated vaccinia viruses. They were used to achieve smallpox eradication in 1980 and later kept in stockpiles. Newer vaccines with improved safety profiles have been developed since, and stockpiled in unknown quantities in various countries.

- **ACAM2000**, a second generation vaccine (live *vaccinia* virus) currently owned by Emergent BioSolutions and licensed by the US FDA since 2007.
- **MVA-BN**, developed and produced by the Danish company Bavarian Nordic, with substantial US government support. This third-generation vaccine is based on non-replicating attenuated *vaccinia* viruses, resulting in an improved safety profile compared to ACAM2000. It was approved by the EMA against smallpox in 2013 and extended to mpox in 2022, by the US FDA against both smallpox and mpox in 2019, and later also in other countries.
- **LC16m8**, developed by Kaketsuken and manufactured in Japan since its approval in 1975, is a replicating attenuated strain of *vaccinia*, with a similar safety profile to MVA, and also approved (by Japan) for use in children.

Aside from a trial in 2017 with MVA-BN in health workers in DRC, conducted by the US CDC,[14] there is no indication that vaccines were ever considered in the context of mpox control in endemic regions before 2022.

Box 2: Special regulatory pathways when clinical evidence is absent

For diseases for which robust clinical efficacy testing is considered impossible, not practical, or not ethical, regulatory authorities like US FDA and EMA adopt special pathways towards marketing authorization based on animal data only (referred to as the "Animal Rule" in the US).[15,16] This is the case for medical countermeasures against emerging, yet still rare diseases, or diseases with high mortality. Such pathways enable stockpiles of potentially effective countermeasures to be built, ready to be deployed when needed. Ideally, such deployment is followed by collecting the missing clinical efficacy information, but in practice this is difficult to implement. This is because once a treatment or vaccine has received authorization and is available, people (at risk populations, patients, and health workers) assume efficacy is already demonstrated and will be less likely to accept taking part in a randomized clinical trial.

Mpox is a case in point. FDA and EMA approvals for smallpox and/or mpox of the MVA-BN vaccine and the anti-viral drug tecovirimat were secured without clinical evidence, because it was considered impossible or "too difficult" to set up studies and collect robust evidence. While this was certainly the case for smallpox, no efforts were made to set up trials for mpox in the endemic regions prior to seeking regulatory approval. During the 2022–2023 outbreak, after initial delays in availability, MVA-BN and tecovirimat were used relatively widely in the US, despite a lack of evidence of efficacy. For the vaccine, retrospective analyses showed even one dose significantly reduced the risk of infection. For tecovirimat, data collection was scant and did not lead to conclusive evidence on the drug's efficacy. A study conducted by the US NIH together with the DRC INRB during 2023–24 in patients with mpox clade I concluded that while tecovirimat was safe, it was not effective.[17]

The first global emergency ends, but little changes in endemic countries

African countries were largely unaffected by the clade IIb emergency, though genomic tracing showed that ancestors of this new variant had been spreading in low numbers since 2014 in Nigeria.[18] At the same time, with close to 2,000 confirmed cases in 2022–23, the majority of which were clade I in DRC, mpox continued to circulate at previously recorded levels in Africa.[19]

And while it advised ending the PHEIC, the WHO mpox Emergency Committee expressed concern about knowledge gaps in the African region, and the lack of access to vaccines, medicines and tests in low-income countries.[20] Their concerns, and those of other scientists, were well-founded but largely ignored.

The emergence and rapid, global, human-to-human spread of the new mpox clade IIb variant should have sent warning signals for future threats to come. It should have given impetus to effectively tackle mpox outbreaks in known endemic areas. Instead, the under-investment in research and in sustained prevention and preparedness in endemic areas continued. Surveillance and laboratory capacity, community engagement and awareness building were not strengthened. There was no development of point-of-care diagnostics to rapidly detect new infections. No mpox vaccine deliveries took place on the African continent during the first PHEIC, or in the months after. There is no public evidence of DRC requesting access to any vaccines to support its mpox control efforts, or that Africa CDC made public calls for access to vaccines or other countermeasures. The work to ensure emergency use of these vaccines, to register them and to make them available in endemic countries was not prioritized. That wouldn't change until more than a year later, with the onset of the next emergency.[21]

Caught on the back foot of a new emergency

From late 2023 and into early 2024, out of international headlines, clade I mpox was surging to historic highs in DRC, with some 14,600 suspected cases and 654 deaths in 2023 alone. There was also an alarming surge of cases in children linked to clade Ia community transmission in DRC's Équateur province.

Also troubling were reports of a novel subclade linked to sexual transmission. The new clade 'Ib' mpox was initially reported in DRC's South Kivu province, where mpox had traditionally not circulated.[22] It then spread to other provinces, including non-endemic ones, and into neighbouring countries including Burundi, Kenya and Uganda. From January to August 2024, more than 17,000 suspected cases and 517 deaths were reported in 13 African countries. As there were no point-of-care diagnostics, rapid, accurate testing was not possible.

Unlike the 2022–23 global outbreak, this clade Ib cross-border outbreak appeared primarily driven by heterosexual transmission, especially through sex worker networks. This in turn raised additional health risks for maternal-foetal transmission and adverse pregnancy outcomes. Regional conflict and humanitarian crises added to the fragility, further complicating the outbreak response. Vulnerable populations were at increased risk of severe infection and death, including malnourished children and people who were immunocompromised.

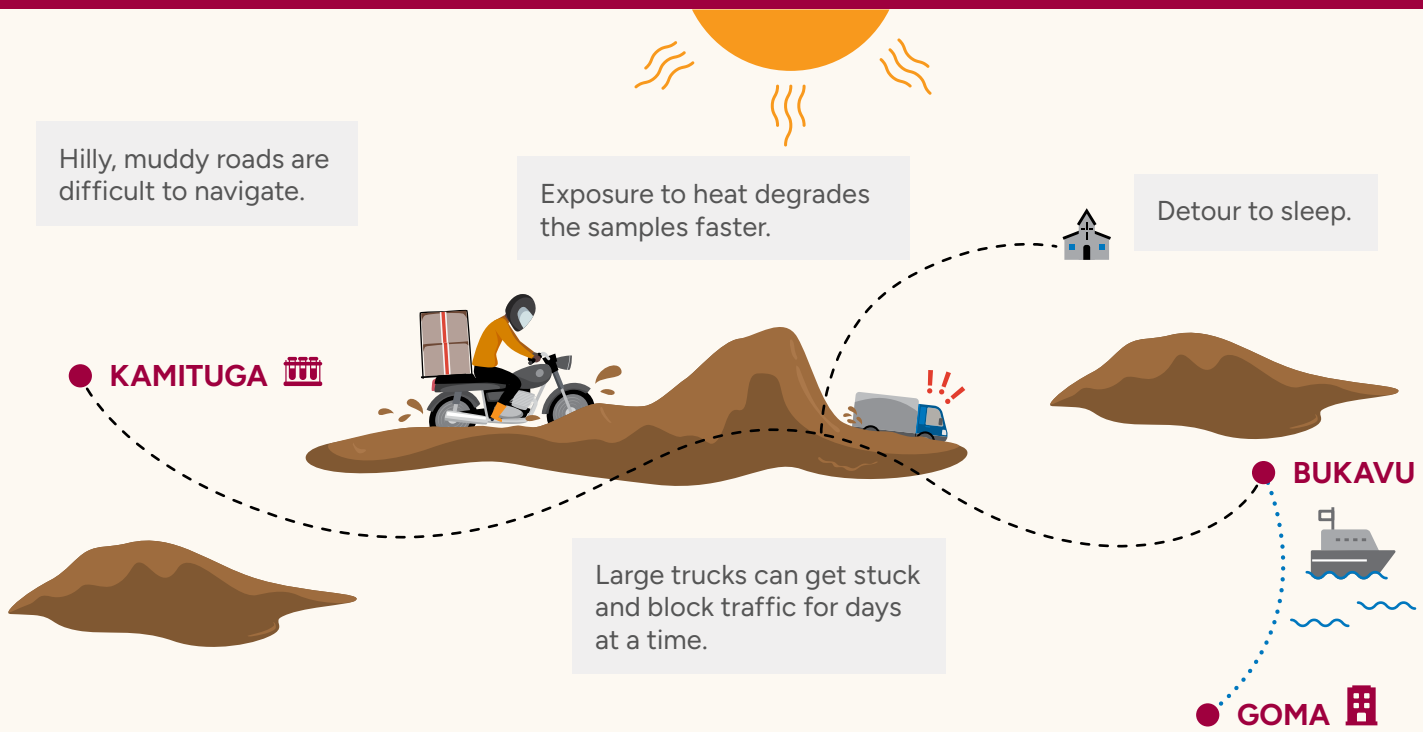
The international spread triggered Africa CDC's first-ever Public Health Emergency of Continental Security (PHECS) on August 13, 2024.[23] The WHO followed with a PHEIC declaration the next day. Africa CDC and WHO worked together to issue a first-ever joint continental plan and appeal.[24] This comprised a multi-pillar, integrated six-month response plan costed at almost US$600 million. The plan excluded the costs of vaccines, and like many emergency responses to outbreaks, likely outstripped the costs of preventing the crisis in the first place.

The existence of one collective continental plan was important politically and strategically, though it is difficult to determine if it led to a more effective response. Implementation faced multiple challenges. The effectiveness of a country's response to mpox was largely dependent on several factors including its health system and the ability to manage major financial inflows. Also critical was the capacity for surveillance, access to healthcare services for vulnerable populations, and the level of community awareness, behaviours, and beliefs around infectious diseases.





Virus sample: a days-long journey from village to laboratory in the DRC [25]



KAMITUGA —— ~300KM | UP TO 3 DAYS ——→ BUKAVU — ~100KM | 1 DAY → GOMA

The second mpox emergency leads to a scramble for funds

In the wake of COVID-19, The Independent Panel recommended a simplified pre-agreed emergency surge financing mechanism to avoid the time-consuming and confusing scramble for funding when a crisis strikes. For mpox, pots of funding were pledged through several sources including domestically, through WHO, from the African Union, from the Pandemic Fund, Gavi and the Global Fund, and from bilateral donors. Pledges came rapidly including a significant US$500 million by the United States. However, efforts by Africa CDC to transparently publish funding flows on a website were halted after a few weeks. A Finance Tracking Mechanism promised by the WHO to provide transparent tracking and reporting was prepared but never made public. Only about 10% of pledged funding flowed within the first weeks of the emergency. An intra-action review highlighted challenges both in delays in fulfilment of pledges, and in tracking where funds were spent.[26, 27]

In terms of roll-out, the ability to absorb sudden inflows of one-off aid was a major factor in its effectiveness. Funding flows were dependent on donors' decisions and priorities, and complicated by internal rules, timelines and bureaucracy. This led to strategic choices that were at times more a reflection of donor priorities. For instance, the strong emphasis on "tools", especially vaccines, under the donor-supported "100 Days Mission" umbrella may have shifted attention away from mpox-specific community challenges, including in the context of extreme fragility in some of the most affected regions. Similarly, the requirement for WHO prequalification for products already approved by US FDA and EMA is difficult to justify at a time when speed is essential to protect people's health.

Vaccine delivery slow and fragmented, impact unclear

Africa CDC made a clear call for vaccines on day one of the emergency. Vaccine pledges were made quite rapidly, but, in some cases, the actual delivery of doses to countries took months (box 3). In an obvious failure of preparedness, neither of the vaccines (MVA-BN and the Japanese-made LC16m8) was registered in endemic countries, nor stockpiled in the endemic regions. The WHO prequalification process only started in early August 2024, adding avoidable delays.

An ad hoc 'Access and Allocation Mechanism' of vaccine-related organizations determined distribution based on available supplies, country plans, and readiness. But the reality was a piecemeal in-country arrival of vaccines and the funds to roll them out. Vaccination was more a function of available supplies than a science-based strategy designed for maximum impact on the epidemic. In addition to challenges around the timely supply of sufficient vaccines, countries were left with conflicting guidance on the choice of vaccination strategy. By July 2025, when case numbers had already started to decrease, less than 15% of the projected 6.4 million target population in Africa had been vaccinated since the emergency declarations.[28] Ultimately, it is difficult to assess the degree to which vaccines impacted the course of the epidemic, despite significant investments in time and resources (box 3). As of April 2026, CEPI had committed up to US$155 million in mpox vaccine research on both existing and next generation vaccines — a welcome investment in a neglected area. Yet strikingly, these actions and investments do not in themselves guarantee timely availability and affordable access to vaccines for all in need during the next outbreak. The continued vaccine shortages during the 2026 outbreak in Madagascar are a case in point and a cause of concern.[29] And whereas the September 2026 announcement of a new long-term mpox vaccine stockpile is very welcome, questions remain about its size, the composition of the vaccines it will hold, and the price per dose.[30,31] Those are not minor details and they need to be made clear urgently. The test for any mechanism is whether it can deliver fast, equitable access that helps to change the trajectory of the next outbreak.

Attention to diagnostics falls short

Point-of-care rapid tests would have best served the emergency response and ongoing mpox testing, given the most affected regions are remote and/or poorly resourced areas in DRC. However, there are still no mpox diagnostic tests that are cheap, quick and easy to use in communities. Instead, samples must be shipped to often distant and better equipped laboratories for confirmation through molecular testing. This causes delays and additional costs for basic surveillance and case detection, one of the pillars of effective pandemic prevention and preparedness. Timely case confirmation is also essential to follow up contacts, and for potential post-exposure vaccination. In DRC, where the bulk of the cases occur, confirmatory testing could only be done in one-third of suspected cases.[32] This is not just an issue for mpox. In late 2024, more than three months passed before an outbreak of over 400 cases of undiagnosed febrile illness in Panzi Health Zone, southwestern DRC, was correctly diagnosed.[33] In 2026, a lack of species-specific or all-species testing led to a major gap in detection of the Bundibugyo Ebola outbreak in DRC's Ituri province.[34]

Box 3: Access to mpox vaccines: too little, too late to be effective?

During the 2022–2023 mpox PHEIC, some countries made MVA-BN vaccines available from their smallpox stockpiles. The combined results from multiple small studies provided the first clinical evidence for its use as pre- and post-exposure prophylaxis for clade IIb mpox.

When Africa CDC declared a PHECS in August 2024, the Director-General announced an ambitious plan to vaccinate 10 million people to curb mpox spread in Africa. While this target was questioned by some, everyone agreed that Africa should have access to the mpox vaccines that were made available during the 2022–23 global outbreak, so as not to repeat the COVID-19 vaccine inequity. The US offered up to a million doses of MVA-BN, and the European Union, some 12 European countries and Canada donated as well, while Japan offered three million doses of its LC16m8 vaccine. Yet in an obvious failure of preparedness, particularly given the 2022–23 PHEIC, neither of these vaccines was registered in endemic countries, creating avoidable administrative hurdles and delays before any significant number of doses started to arrive.[35] Moreover, bureaucratic processes that insist on WHO-prequalification for products already approved by US FDA and EMA are an expensive redundancy at a time when speed protects people's health.

To distribute doses equitably as they became available, an ad hoc Access and Allocation Mechanism was coordinated by WHO, based on country needs, requests and readiness. However, aligning supply from multiple donations with country demands and funding for vaccination teams was a challenge. The resulting piecemeal in-country arrival of doses and funds precluded efficient vaccination roll-out,[36] as did the fact the adopted vaccination strategy was more a function of available supplies than a science-based strategy for maximal impact. This was further complicated by disagreements, including some personality-driven ones, within and among organizations on the optimal strategy to pursue given the different transmission patterns of different (sub)clades (pre-or post-exposure vaccination, the feasibility of contact tracing or geographical targeting, and the role of the different vaccines (MVA-BN, LC16m8)). Countries were caught in the middle.

There were also concerns about MVA-BN supply sustainability given the single producer and a donation-based model. Price was also at issue, at US$55–100 per dose, and Bavarian Nordic was unwilling to lower it significantly despite the substantial public investments — totalling over US$2 billion — that supported the vaccine's development.[37] The company also came under pressure to support technology transfer, including from the US, and closed a deal with the Serum Institute of India for future production. The timeline and expected price remain unclear, and African producers that had stood ready to engage were sidelined.

As of July 2025, when case numbers had already started to reduce in most countries, less than 15% of the projected 6.4 million target population in Africa had been vaccinated since the declaration of the PHECS and PHEIC.[28] As of April 2026, an estimated 5 million vaccine doses had been deployed on the African continent,[38] and more vaccines have arrived in countries with outbreaks including Angola and Madagascar. However, it is difficult to assess whether they have impacted the course of the epidemic, despite considerable resources that have gone towards vaccines and vaccination.

As case numbers decreased DRC declared the end of its outbreak as a public health emergency on 4 April 2026. Africa CDC is now shifting its approach to integration and considering the future use of preventive vaccination as part of a broader preparedness strategy. This will require much cheaper vaccines that are hoped to become available via local production.[39] Ongoing CEPI-supported research to further strengthen the evidence base on MVA-BN and LC16m8 will also contribute to decision-making.

No proven treatment in sight

Before the 2024–25 outbreak, tecovirimat, an antiviral drug approved by the US FDA for smallpox (box 1) had been offered to patients under expanded access programmes, mainly in the USA, and in very limited numbers in Europe and Central African Republic. Randomised controlled trials subsequently showed that tecovirimat is safe but does not provide clinical or virologic benefit for either clade Ia in DRC or clade IIb in multi-country trials. Alternatives are limited, and current dwindling case numbers are slowing recruitment into a trial testing brincidofovir against all clades.

Community awareness is under-supported

The joint WHO-Africa CDC plan devoted one funding pillar to risk communication and community engagement, with about 12% of the total budget allocated to that area. However, it is unclear how much of this was pledged, and how much actually reached communities.

These funds were also part of a time-limited vertical emergency response to curb the ongoing outbreak. This was a missed opportunity to invest in community health education and mobilisation as an essential part of long-term prevention and preparedness built on trust and mutual respect. As emergency responses show time and again, effective community engagement cannot be parachuted in, nor be built around single diseases. It must become a foundation, built bottom-up through investment in civil society engagement. This requires modest yet sustained resources over longer periods of time, integrating multiple health challenges based on community health needs (see box 4).

In September 2025, WHO ended the second mpox PHEIC. The Director-General noted that while the emergency was lifted, the threat was not over, and stressed that financial resources would be needed to support continued work on mpox.[40]



Mpox is now global

Mpox has not gone away. Rather it has established itself in the human reservoir and is no longer only a zoonotic disease. The first nine months of 2026 saw more than 14,000 confirmed cases and 50 deaths in 82 countries.[41] In the 12 months to September 2026, almost 3,800 confirmed mpox cases were reported in the EU/EEA. Among cases with known travel history, more than 80% had not travelled, indicating local transmission.[42] A possible outbreak of clade IIb in Pakistan may be linked to the death of five neonates.[43] There is continued geographical expansion to countries that were not previously affected, such as Madagascar, which has experienced the largest outbreak in 2026.[44] The co-circulation of subclades in several areas is also reported, which, worryingly, is leading to genetic recombination: an mpox strain with genomic sequences linked to both clades Ib and IIb has been identified in India and the UK.[45]

Box 4: Community engagement — a switch turned on and off

When mpox cases appeared for the first time in South Kivu province of DRC, there was little awareness about what it was, how it was spread, and how people could protect themselves. As mpox was not endemic to South Kivu, doctors may never have seen mpox, and it resembled other common rash-causing diseases like chickenpox or measles. Laboratory confirmation required a days-long journey by road and boat. Added to the challenge was insecurity in the region, mobile populations travelling to itinerant work in gold mines, and hard-to-access communities connected by poor roads. The emerging pattern of transmission increased the risks of stigmatization of groups including men who have sex with men and sex workers.

When cases started to climb, community organizations stood ready to work. The efforts do not cost enormous amounts of money — but still require a budget. Community workers must pay for their transport, for materials like leaflets, and they should be paid for their time.

The leader of a prominent community organization told the report authors that funding was hard to secure, and the landscape was confusing with many government and international agencies involved in the response. Still, he and his colleagues saw the importance of community engagement particularly with communities who were made vulnerable. He used his own funds, and raised money through small donations locally. He said the work was challenging, with a need to travel into insecure areas, where volunteers were subjected to violence or had to negotiate passage across disputed lines. Nonetheless, he and his colleagues managed to mobilise teams who could help to communicate risks, combat stigma, identify suspected cases and their contacts, and refer people to treatment.

These kinds of efforts can make a notable difference. A survey conducted in 2024 among nearly 2,800 people at elevated risk across three DRC provinces found that only 6% had previously heard of mpox. By early 2025, after community engagement had been substantially scaled up, assessments in South Kivu, Kinshasa and Équateur were finding high levels of knowledge about mpox transmission and prevention, as well as greater acceptance of vaccination in some communities.[46,47]

Yet a real challenge lies in the cyclical support for community engagement work — which tends to increase in emergencies, and recedes when they are over. Continuous support for community engagement would build a foundation of knowledge and awareness, reduce stigma and build trust over time. It would enable communities to identify and report disease outbreaks and immediately take part in the work to end them. This foundation is essential for frequent outbreaks, and could protect whole societies faced with a pandemic threat.

A welcome shift to an integrated approach

Africa CDC's PHECS was lifted in January 2026, with plans to transition mpox to a 'country-led pathway towards elimination.'[38] It is promising to see this shift in approach to mpox from a vertical, disease-specific response towards a cross-cutting coordination model capable of simultaneously managing multiple outbreaks, including mpox, cholera, measles, anthrax, and Marburg.[48]

In countries, the approach will require the integration of mpox surveillance and case management within broader disease control programmes — for example, as a paediatric disease alongside measles and chickenpox[49]; or as part of sexually transmitted infections for adolescents and adults.[50] It will necessitate significant and sustained investments in community engagement efforts across a range of health threats common to regions where health systems are weaker and the risks of zoonotic spillovers are high, such as in Africa's equatorial forests. Addressing zoonotic risks demands a One Health approach, with sustained funding for environmental and health workers, community-based organizations and civil society groups that support rural and remote communities to build community resilience and sustainable livelihoods.

An integrated approach will also require countries, donors and international agencies to shift financing upstream, into the sustained, integrated programming that builds resilience and preparedness between outbreaks, rather than the current model where the bulk of funds arrives with an emergency declaration and disappears when it is lifted.

With regard to scientific advances, country-led research should explore how the different public health interventions and countermeasures can be used for preparedness, as long-term investments in resilience, and to develop new countermeasures better adapted to local needs.[39] This can include multiplex rapid diagnostic tests that can distinguish between mpox, measles and chickenpox, or technology transfer to support African manufacturers to produce mpox vaccines at a fraction of the current prices charged by international companies.

The transition from emergency response to integration must build on lessons learnt from the mpox experience. Any outbreak, however small, must contribute to building a more robust, integrated approach to respond to outbreaks and contain them. This cannot only be measured in case numbers and countries affected — but rather in the success of avoiding a crisis from happening at all.

Lessons learnt — again — from mpox

Mpox was neglected for decades. Documented outbreaks, changing transmission dynamics, and expert warnings were not acted on. The result was two costly international emergencies, worldwide spread and multiple variants of the virus now established in the human population. The same gaps for mpox have been seen in previous outbreaks and health emergencies, including COVID-19. Lessons from mpox also go deeper, exposing a continued neglect of community needs, particularly in fragile environments.

1. Stop ignoring neglected diseases with epidemic potential

Neglecting a known disease with epidemic potential is neither morally right nor scientifically rational.

For a long time, mpox was contained to the equatorial forests of a few countries in Africa. It spread relatively inefficiently through close skin contact and was not considered a public health problem by decision-makers in national, regional and global capitals. For those setting priorities and making investments, the disease and the people it most affected were out of sight and out of mind. The neglect of a painful disease affecting these communities led to two costly health emergencies, neither of which the world was ready to manage. Now, surveillance systems worldwide must be on guard for it, several subclades can be sexually transmitted, and outbreaks with sustained human transmission are now happening in countries where mpox had never been known. It now poses risks to even more children in endemic regions in Africa, and it could flare again globally at any time.

Mpox provides a clear lesson on the cost and consequences of neglecting diseases with epidemic potential. Leaders must ask — what other infectious diseases are we neglecting, and how do we contain them now?

2. An emergency is a signal of failure, and not a starting point

Today, a public health emergency declaration serves as a signal to mobilise the international community. In reality, it reflects a failure to have stopped the outbreak where and when it occurred.

By the time an emergency is declared, prevention, surveillance, notification, and public health measures have all failed — too many people have become ill or died, and what might have been a localised pathogen has spread beyond borders, requiring a costly, multinational response.

Prior to WHO's first mpox PHEIC declaration, signals that the epidemiology of the disease was changing were not acted on. Attention only turned to this long-neglected disease once an international outbreak newly affecting countries of the Global North was well underway.

The neglect and worldwide spread of mpox, once a relatively containable disease, demonstrates the imperative to act upstream, and address known risks when and where they occur.

3. Supported, resilient communities are the foundation of sustained health security

Each outbreak should find communities ready, not vulnerable. Building a resilient system means anticipating recurring threats and preparing for them year-round, not only in a moment of crisis.

The case of mpox clearly shows that sustained investments must focus on strengthening health and socio-political systems, and people's livelihoods through a cross-sectoral, and cross-disease fragility-based approach centred on community resilience. As international financing for health declines and national governments take on a greater share of health spending, a focus on communities most at risk is essential, to raise general health awareness and develop tailored interventions to prevent infection or curb spread through, for example, access to water, sanitation, food security, climate change mitigation, and economic sustainability.

There must be constant attention to community engagement and trust, including in fragile settings. Trust cannot be built in the moment of an outbreak — it can only be drawn on when it has been sustained between them.

Policies, institutional strategies and funding must move away from vertical health initiatives towards integrated activities and increased 'inter-outbreak' financing of preparedness. "One country/one plan" is regaining traction within the global health reform agenda, and this approach must integrate community engagement and resilience as a foundation for health programme delivery and outbreak prevention, with approaches tailored to fragile contexts.

4. Countries and communities must have access to the right medical countermeasures, in the right place, at the right time

The right tools must be in place before an outbreak, not scrambled for after it begins. Medical countermeasures can make a material difference, but only when they are the right tools for the local context, put in the hands of the people who need them most, at the time when they're required.

The use of countermeasures during epidemics must be needs-driven and based on the best available evidence, weighing direct and indirect costs, appropriateness, and expected impact. For mpox specifically, vaccines should have been registered for use and stockpiled strategically for endemic country access well before the 2024 emergencies. The same holds true for countermeasures for other outbreak-prone diseases including those already the subject of PHEIC/PHECS.

Point-of-care tests that can be used in remote communities should be prioritized and subsidized. Investments in multi-disease diagnostic platforms that can be used in fragile, resource-limited settings would be even more valuable.

Mpox, as did COVID-19, makes plain that the development and supply of essential countermeasures cannot rely on market dynamics based on high-income country needs or demands. Ownership of the diagnostics, treatments and vaccines agenda for endemic diseases must sit with endemic-country scientists and manufacturers. The pathogen access and benefit sharing annex to the Pandemic Agreement must be finalised and deliver on this principle, and efforts to transfer technology and knowledge must be implemented to help meet the goal of regional self-reliance.

5. Finance prevention, preparedness and response as a continuum

Mpox shows the costs — in lives and economies — of not investing in prevention, especially in the community systems and structures that are critical to identifying and rapidly stopping an outbreak when it arises.

Upstream prevention efforts would require investment in a One Health approach to identify where and how the monkeypox virus moves from animals to people, including identifying its still uncertain natural reservoir(s), and engagement with communities to design strategies to minimise risk of spillover.

Overall pandemic preparedness requires approximately US$15 billion annually in new international finance — a figure the Independent Panel and others set out in 2021[51] — and current investment is nowhere near this level.

When emergencies do occur, financing must then flow through pre-agreed surge mechanisms that provide certainty, rather than through the scramble that characterised the mpox response, where pledged funds did not result in enough dollars on the ground in the first critical months. Fragmentation across donors, channels and disbursement rules is now a well-documented cause of suboptimal response, not a neutral or necessary feature of the architecture.

Continued investment — including in endemic areas — during and following an emergency is essential to implement lessons, strengthen health systems, roll-out surveillance and public health measures and invest in countermeasures that will support public health and protect people on an ongoing basis, as well as ensure strategically located stockpiles for emergencies in the most at risk areas.

The Coordinating Financial Mechanism, agreed under the IHR and the Pandemic Agreement, must ensure transparent, traceable financing from pledge through disbursement to use. And a Global Public Investment model — capacity-weighted contributions and needs-based access — should replace the donor-charity logic that has left preparedness chronically underfunded.

Conclusion

Mpox was hiding in plain sight for decades, and its neglect was both a disservice to the affected communities and came at great cost.

We ignore the lessons from mpox at our peril.

Too much focus on the quality of an international emergency response, rather than the patient ongoing work of community protection and outbreak prevention, costs lives and hundreds of millions if not billions of dollars. We can map where the most vulnerable communities are — it's time to invest in their health systems, and socio-economic wellbeing to build a foundation of resilience.

Countries must both take on and be supported to own the agenda of developing countermeasures most suited to their needs. This will take domestic and international financing. Investments to prevent and contain outbreaks are dwarfed by the costs incurred to address health emergencies.

Mpox, and the human and health system costs that come with it, are now with us to stay.

As leaders make decisions to reform global health, and developing countries take more ownership of their own systems, they must ask themselves: what other diseases are we neglecting? Which communities are we overlooking, whether in remote forests, or urban centres? What tools do they need, and how do we ensure they have them before it's too late?

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