

Outbreak Reports

The Cluster of Mpox (Clade Ib) Infections — Yiwu City, Zhejiang Province, China, July–August 2025

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Summary

What is already known about this topic?

Mpox transmission occurs primarily through close skin-to-skin contact, sexual contact, and exposure to contaminated materials; imported cases can establish local transmission clusters in settings characterized by high international mobility.

What is added by this report?

This report documents the first identified cluster of mpox virus Clade Ib infections in Yiwu, China, an international trade hub. A total of six laboratory-confirmed cases were identified between July 23–August 6, 2025, including one imported source case from Tanzania and five locally linked secondary cases. Among 43 environmental samples, 27 (62.8%) tested positive for MPXV DNA. Ninety close and general contacts were traced and monitored under 21-day health surveillance, with no additional infections detected. We also report a case with oropharyngeal PCR positivity prior to rash onset, suggesting potential pre-symptomatic viral shedding.

What are the implications for public health practice?

Rapid multi-agency collaboration encompassing case identification, isolation protocols, contact tracing, and environmental decontamination proves effective for interrupting transmission in international trade hubs; targeted surveillance and proactive outreach to high-risk social and sexual networks remain essential components of outbreak control.

municipal, and county expert teams conducted systematic case finding, interview-based exposure mapping, and linkage analysis of public security and border records to reconstruct contact trajectories. The investigation included comprehensive contact tracing, environmental sampling, and real-time PCR testing of lesion and oropharyngeal specimens for MPXV detection.

Results: Six laboratory-confirmed cases were identified with symptom onset dates spanning July 23 through August 6. Five patients received treatment in Yiwu, while one was managed in Changzhou. The cases were predominantly male (5/6), with ages ranging from 22–43 years (median 30 years). Four of the six cases were foreign nationals. Investigators identified and monitored 52 core close contacts and 38 general contacts under 21-day health surveillance protocols. Environmental sampling ($n=43$) conducted at five case residences and personal items yielded 27 positive results (62.8%) for MPXV.

Conclusions: This outbreak represents an imported mpox cluster with subsequent person-to-person transmission occurring primarily through intimate contact. We documented substantial household environmental contamination, emphasizing the critical importance of comprehensive decontamination measures. Rapid case detection, systematic contact management, and terminal disinfection protocols effectively contained further viral spread.

ABSTRACT

Introduction: On August 6, 2025, the Yiwu CDC received notification of a suspected mpox case. Subsequent laboratory testing confirmed mpox virus (MPXV, Clade Ib) infection, prompting the initiation of a comprehensive multi-level epidemiologic investigation.

Methods: Between August 6–10, 2025, provincial,

Mpox is an emerging zoonotic disease caused by the mpox virus (MPXV), a member of the Orthopoxvirus genus (1). MPXV Clade Ib was first identified in September 2023 in the Democratic Republic of Congo and, following its rapid global dissemination, was declared a Public Health Emergency of International Concern by the WHO in August 2024 (2). Prior to January 2025, all reported mpox cases in China were

attributed to Clade IIB; however, five MPXV Clade Ib infections were detected that month, marking the strain's initial documented entry into the country (3). This clade demonstrates sustained human-to-human transmission, occurring primarily through sexual contact networks (accounting for 72% of cases), household exposure, and community contact, with no evidence supporting airborne transmission (4). Unlike previous clades, MPXV Clade Ib exhibits enhanced virulence, with a case fatality ratio (CFR) of 5.3%. The strain disproportionately affects pediatric populations (67% of cases) and young adults in high-risk groups, including sex workers (5).

This report describes the first documented cluster of MPXV (Clade Ib) infections in Zhejiang Province, originating from an imported case that traveled from Tanzania to Yiwu City. We present the epidemiological, clinical, and virological characteristics of this outbreak and detail the coordinated public health interventions implemented to prevent secondary transmission.

INVESTIGATION AND RESULTS

Case Report

On August 6, 2025, the fever clinic at Yiwu Central Hospital notified Yiwu CDC of a male patient (Case 1) presenting with fever and genital rash. Considering Yiwu's substantial international population mobility and recent global mpox alerts, the attending physician suspected mpox and immediately implemented isolation protocols. Lesion and oropharyngeal swabs were collected and transported to Yiwu CDC, where same-day real-time PCR testing confirmed MPXV DNA positivity. Jinhua CDC verified these results on August 7, prompting immediate notification of the Zhejiang Provincial CDC. A joint investigation team

comprising provincial, municipal, and county CDC experts was established that same day.

Epidemiologic interviews revealed that Case 1 had recent sexual contact with a foreign national (Case 2), who had arrived in Yiwu in late July from Tanzania via Guangzhou. Case 2 reported multiple sexual encounters with local individuals between July 23 and August 7. During the subsequent investigation, we defined a “high-risk sexual network” as individuals connected through recent anonymous or casual sexual relationships occurring within the 21-day MPXV incubation period. Network membership was traced through: 1) standardized epidemiological interviews with cases and contacts, including sexual-history modules; 2) verification of travel, residence, and activity patterns via immigration and public-security databases, supplemented with mobile-signaling data when available; and 3) venue-based tracing conducted with community health service centers and managers of high-risk venues (bars, clubs, guesthouses). These findings confirmed that the outbreak originated from an imported case and spread within a confined high-risk sexual network (Figures 1 and 2).

We established a working case definition as any individual presenting with acute rash, fever, or lymphadenopathy, with documented epidemiologic linkage to a confirmed or probable case in Yiwu since July 21, and laboratory confirmation of MPXV via PCR from lesion, oropharyngeal, or other clinical samples. Active case finding encompassed reviewing outpatient and inpatient records in dermatology, infectious disease, and fever clinics; systematically interviewing identified contacts; and collaborating with community health stations. [Supplementary Table S1](#) (available at <https://weekly.chinacdc.cn/>) presents a detailed chronology of case detection, reporting, laboratory confirmation, and public health

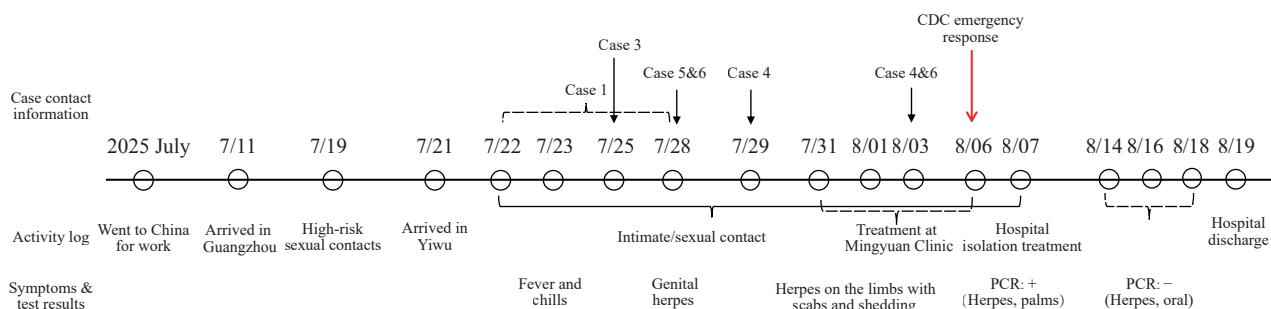


FIGURE 1. Travel and movement patterns of Case 2 confirmed by public security and immigration data — Yiwu City, July–August, 2025.

Abbreviation: PCR=polymerase chain reaction.

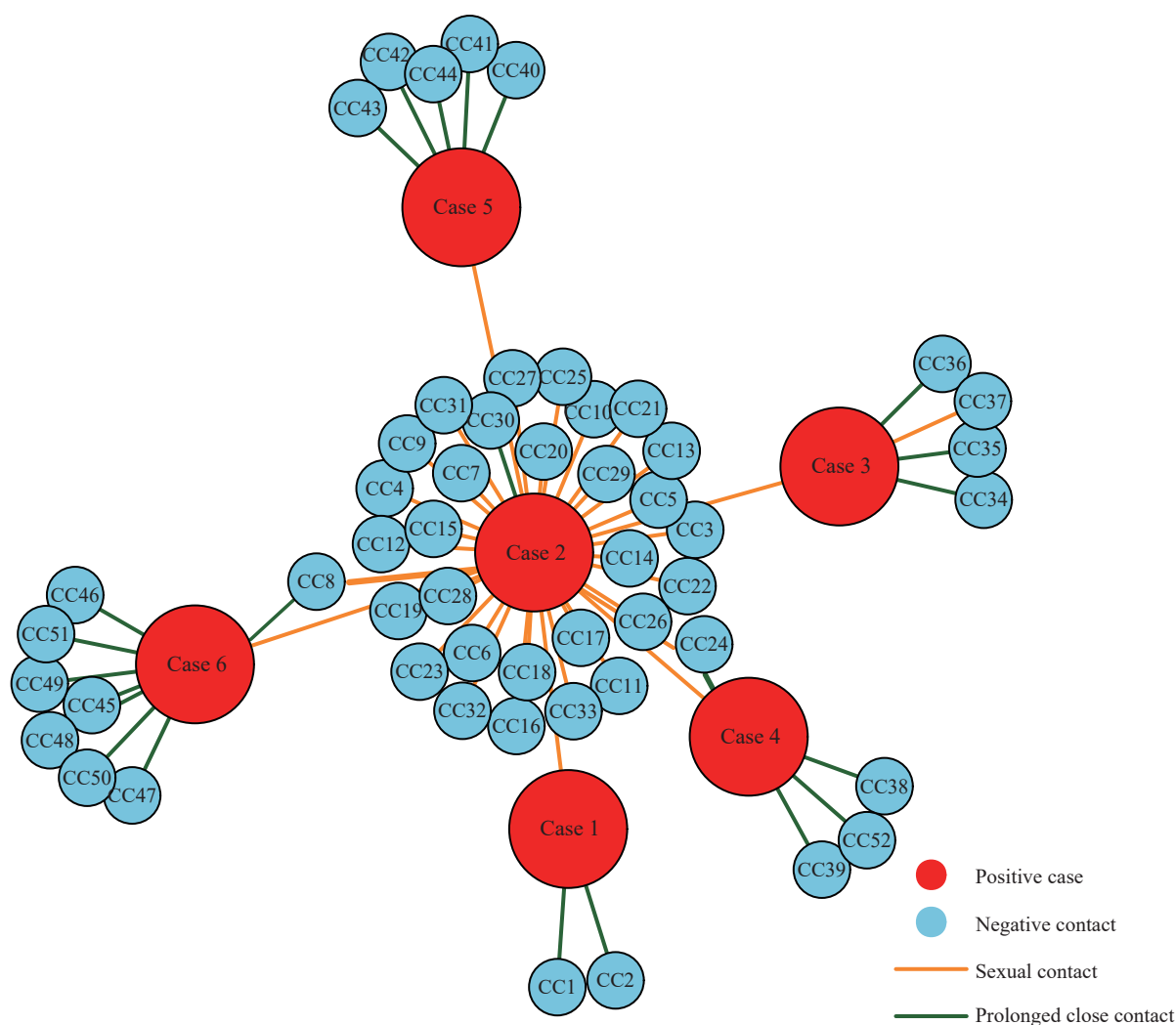


FIGURE 2. Schematic diagram of the transmission chain and contact tracing for the mpox Clade 1b cluster — Yiwu City, July–August 2025.

Note: This figure illustrates the 6 laboratory-confirmed mpox cases and all 52 core CCs identified during the investigation. The 52 core contacts comprise 31 individuals with documented sexual contact (either with the imported source Case 2, which represents the cluster's epidemiological origin, or with other confirmed cases) and 21 individuals with non-sexual prolonged close contact (including shared living spaces and repeated in-person interactions). All core close contacts tested negative for mpox throughout the 21-day health-monitoring period.

Abbreviation: CC=close contact.

intervention implementation, demonstrating the response's timeliness and effectiveness.

Between August 6 and 10, six laboratory-confirmed cases (Cases 1–6) were identified. The transmission network, illustrated in [Supplementary Figure S1](#) (available at <https://weekly.chinacdc.cn/>), demonstrates that Cases 1 and 3–6 acquired MPXV infection through direct sexual contact with the imported source case (Case 2). Case 2, a female foreign national from Tanzania, was epidemiologically confirmed as the sole source of viral introduction into the network. [Table 1](#) summarizes the demographic and clinical characteristics of all cases. Among the five cases with

documented sexual exposure histories, the median interval from last sexual contact to symptom onset was 6 days (range: 5–10 days), consistent with established MPXV incubation periods. Cases were predominantly male (5/6) and aged 22–43 years (median 30 years); four were foreign nationals (from Tanzania, Azerbaijan, and Burkina Faso) and two were Chinese nationals. Clinically, all patients developed cutaneous rash lesions — predominantly affecting genital, perianal, and facial areas — accompanied by fever (100% of cases) and lymphadenopathy (67% of cases). Lesion counts ranged from fewer than 10 to more than 50. No severe complications or fatalities occurred.

TABLE 1. Demographic and epidemiological characteristics of mpox (Clade Ib) cases in the transmission chain — Yiwu City, July–August 2025.

Transmission branch	Case number & name	Gender	Age (years)	Nationality/region	Yiwu status	Sexual contact period with index case	Onset of illness	Tested positive
Top node (index)	Case 2	Female	27	Tanzanian	Entered Guangdong (July 11 2025); Arrived in Yiwu (July 20 2025)	N/A (Index Case)	July 23	August 7
Branch 1	Case 1	Male	37	Azerbaijani	Arrived in Yiwu (July 8 2025)	July 22–July 28	August 1	August 6
Branch 2	Case 3	Male	31	Xinjiang, China	Permanent resident in Yiwu	July 25	July 31	August 7
Branch 3	Case 4	Male	22	Burkinabe	Arrived in Yiwu (May 9 2025)	July 29, August 3	August 6	August 8
Branch 4	Case 5	Male	42	Xinjiang, China	Traveled between Jiangsu and Yiwu	July 28	August 2	August 8
Branch 5	Case 6	Male	38	Tanzanian	Permanent resident in Yiwu	July 28, August 3	August 3	August 8

All patients received treatment at designated hospitals — five in Yiwu and one in Changzhou — where they received symptomatic supportive care, including antipyretics and topical treatments. Isolation was maintained until complete lesion crusting occurred and PCR testing of lesion and oropharyngeal samples returned negative results.

In total, 52 core close contacts and 38 general contacts were identified and placed under 21-day health monitoring. The 52 core close contacts included sexual partners of confirmed cases, household members, and individuals with prolonged close-range exposure; the 38 general contacts comprised primarily healthcare workers from clinics and hospitals where confirmed cases sought medical care. All contacts remaining in Yiwu underwent daily temperature and symptom monitoring for 21 days, with no mpox-compatible symptoms reported during the surveillance period.

Laboratory Testing

Laboratory confirmation for all cases relied on PCR testing of lesion and oropharyngeal specimens. Lesion samples consistently demonstrated higher viral loads than oropharyngeal swabs, as evidenced by lower Ct values (27.10 ± 4.48 *vs.* 30.74 ± 4.00). Notably, Case 6 exhibited positive oropharyngeal PCR results prior to rash onset, with a Ct value of 25.29, confirming that oropharyngeal viral shedding can occur before cutaneous lesion development.

Environmental investigations were conducted from August 7 to 9 in the residences of five cases and on selected personal items. Forty-three environmental surface swabs were collected from bedding, towels, bathroom fixtures, door handles, and electronic

devices. The detection results of MPXV nucleic acid in different surface samples are presented in [Supplementary Table S2](https://weekly.chinacdc.cn/) (available at <https://weekly.chinacdc.cn/>). Twenty-seven samples (62.8%) tested positive for MPXV DNA by PCR, with the highest positivity rates observed on bedding and bathroom surfaces. These findings revealed substantial and heterogeneous MPXV contamination throughout home environments, emphasizing the critical importance of comprehensive disinfection protocols.

The comprehensive investigation, supported by epidemiological and laboratory evidence, confirmed that this Yiwu cluster originated from an imported mpox case and subsequently spread within a defined high-risk network primarily through intimate and sexual contact.

PUBLIC HEALTH RESPONSE

Local health authorities and CDC teams implemented a comprehensive, multi-agency coordinated response to contain the mpox outbreak. Key interventions included: 1) Immediate isolation of confirmed cases in designated hospitals with strict infection prevention and control protocols, coupled with timely clinical management; 2) Systematic environmental disinfection of case residences and personal belongings using chlorine-based disinfectants, followed by verification testing to confirm decontamination effectiveness; 3) Enhanced active surveillance for rash and vesicular illnesses across key healthcare settings, including fever clinics, dermatology departments, and community health centers; and 4) Targeted risk communication and health education delivered in both Chinese and relevant foreign

languages, with proactive outreach to high-risk social and sexual networks to promote early care-seeking behaviors and prevention practices.

These coordinated measures successfully interrupted further transmission. No additional cases were detected beyond the identified cluster, and all contacts completed the 21-day medical observation period without developing mpox-compatible symptoms, ultimately leading to formal closure of the outbreak investigation.

DISCUSSION

This investigation documented a cluster of six laboratory-confirmed mpox cases (Clade Ib) in Yiwu City, Zhejiang Province, with one imported source case and five epidemiologically linked secondary cases. This represents the first documented Clade Ib MPXV transmission cluster in Yiwu, China, driven primarily by sexual contact within high-risk networks. The importation pathway is confirmed by the travel history of the source case (Case 2), who arrived from Tanzania — a country with documented endemic circulation of Clade Ib MPXV (6). The outbreak occurred in an international trade hub characterized by substantial cross-border mobility, diverse sexual networks, and dense population settings, creating optimal conditions for rapid person-to-person transmission. Notably, four of the six cases were foreign nationals, highlighting the critical role of global travel in introducing mpox into non-endemic regions.

The epidemiologic pattern reflects recent global outbreaks where close skin-to-skin and sexual contact serve as the primary transmission routes (7). However, the involvement of heterosexual commercial sex in this cluster expands the recognized transmission contexts in China. The attack rate within this defined sexual network was high, consistent with reports documenting efficient Clade Ib transmission within sexual networks from other regions (7–8). Unlike scenarios involving household transmission, particularly to children in endemic areas (7–8), we observed no secondary transmission to household contacts despite extensive environmental contamination. This suggests that while highly transmissible through intimate contact, the effective reproduction number (R_{eff}) in non-intimate household settings may be lower, potentially influenced by viral load, contact type, and timely decontamination efforts. This contrast emphasizes the

importance of context-specific transmission risk assessment. Notably, one case (Case 6) yielded a positive oropharyngeal real-time PCR result before rash onset, suggesting potential pre-symptomatic viral shedding. While this single observation is intriguing, it cannot confirm pre-symptomatic transmission. However, it aligns with clinical guidelines indicating that some cases may be infectious 1–4 days before symptom onset (9). This finding warrants further investigation and underscores the need to re-examine current contact tracing and isolation protocols to account for potential pre-symptomatic transmission (10).

Extensive environmental contamination — identified through PCR positivity on bedding, household surfaces, and personal hygiene items — demonstrates widespread viral DNA distribution and highlights the potential for indirect transmission via contaminated objects (8). This finding reinforces the critical importance of comprehensive environmental decontamination in outbreak response protocols (11). However, it is essential to recognize that PCR detection of viral DNA does not necessarily indicate the presence of viable, infectious virus, which requires confirmation through cell culture methods. The rapid containment achieved through coordinated interventions — including timely case isolation, systematic contact tracing, targeted health education, and thorough environmental disinfection — demonstrates the effectiveness of multi-agency public health responses.

This investigation has several important limitations. First, the small outbreak size limits our statistical power to draw definitive conclusions, particularly regarding the significance of pre-symptomatic oropharyngeal viral shedding observed in one case. Second, the inherently clandestine and anonymous nature of high-risk sexual networks likely resulted in incomplete case detection and underreporting, suggesting our investigation may not have captured the full transmission network. Third, without viral culture performed on environmental samples, we cannot confirm whether the detected viral DNA represented infectious virus, potentially leading to overestimation of fomite transmission risk. Future investigations with larger sample sizes and systematic viral culture integration are needed to validate these preliminary findings.

Despite these limitations, this outbreak underscores the necessity of proactive surveillance within high-risk

sexual and social networks, culturally appropriate risk communication strategies, and the integration of environmental and genomic data into comprehensive outbreak management. Additionally, the observed pre-symptomatic oropharyngeal viral shedding warrants further investigation to refine diagnostic protocols and optimize prevention strategies. Sustained vigilance, rapid detection capabilities, and cross-sectoral collaboration remain essential for preventing future introductions and limiting the spread of MPXV (Clade Ib) in China's high-mobility urban centers.

Ethical statement: Approval from the Ethics Committee of Jinhua Center for Disease Control and Prevention, China (approval number: 2025-22).

Conflicts of interest: No conflicts of interest.

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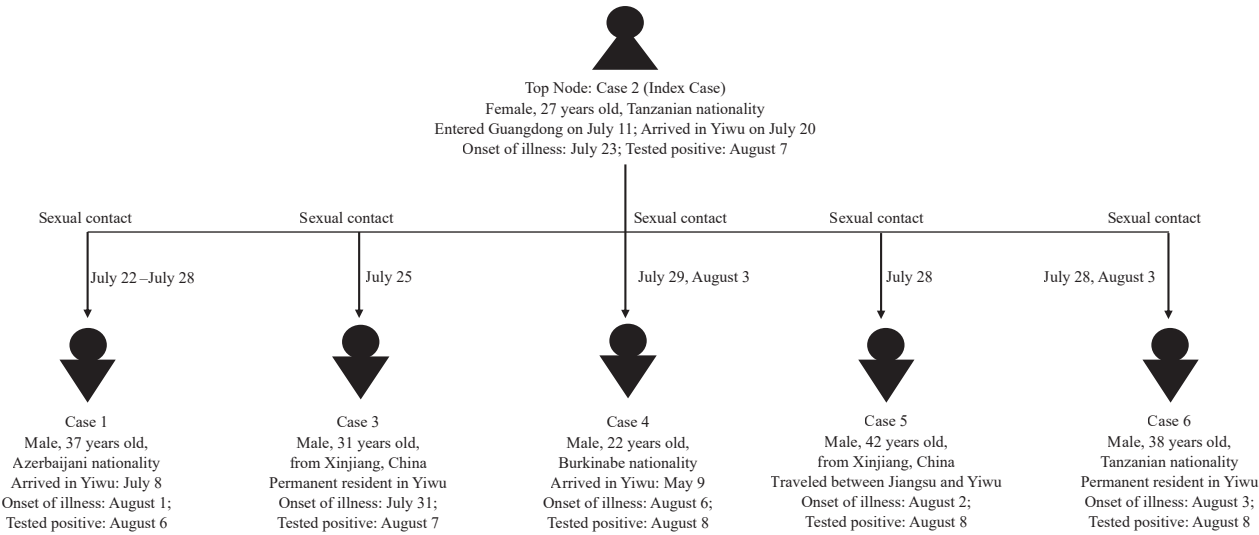
SUPPLEMENTARY MATERIAL

SUPPLEMENTARY TABLE S1. Chronological timeline of events and public health interventions during mpox Clade Ib outbreak —Yiwu City, July–August 2025.

Date	Event/node	Public health intervention
July 11	Imported source case (Case 2) entered China via Guangzhou	Not recognized (incubation period)
July 21	Case 2 arrived in Yiwu	Not recognized (incubation period)
July 23–30	Case 2 developed symptoms	Self-medication, no medical visit
July 31–Aug 4	Case 3 developed symptoms, multiple hospital visits	Not recognized, symptomatic treatment
July 31–Aug 5	Index case (Case 1) developed symptoms, multiple clinic/hospital visits	Not recognized, symptomatic treatment
July 31–Aug 6	Case 2 visited clinics repeatedly	Not recognized, symptomatic treatment
Aug 2–5	Case 5 developed symptoms	No medical visit
Aug 3–8	Case 6 developed fever, cough, lymphadenopathy	No medical visit
Aug 6–7	Case 4 developed symptoms	Self-medication, no medical visit
Aug 6	Case 1 detected and reported by Yiwu Central Hospital; Yiwu CDC PCR positive; patient isolated the same night	Emergency response activated; case transfer, lab testing, preliminary epidemiologic investigation
Aug 7	Jinhua CDC confirmed Case 1; Case 2 identified and confirmed via investigation; Case 3 revisited and tested positive; 21 field teams established	Provincial–municipal expert guidance; “three-sector” joint tracing; contact tracing and management; case isolation; environmental sampling and disinfection
Aug 8	Cases 4, 5, and 6 identified as close contacts, PCR positive	Contact tracing and management; case isolation; environmental sampling and disinfection
Aug 9	Last case (Case 6) transferred for management	Completion of centralized isolation and treatment
Aug 10–12	21-day monitoring of close and general contacts initiated	Continued tracing, testing, and health monitoring; environmental sampling and disinfection
Aug 19–22	Discharge of hospitalized cases in Yiwu	Medical treatment with psychosocial support
Aug 30	Completion of 21-day monitoring of close contacts	No new cases; outbreak under control
Sep	Outbreak report finalized	Evaluation of interventions; recommendations for improvement

SUPPLEMENTARY TABLE S2. Environmental detection results for Mpox virus DNA from case residences — Yiwu city, July–August 2025.

Object	Sample type	Total number of samples collected	Number of positive samples	Names of positive sites	Names of negative sites
Case 1	External environment of residence	2	1	Staircase	Door handle
	Internal environment of residence	8	8	Pillow, quilt, stool, sofa, towel, desktop, toilet, washbasin	/
	Personal belongings	/	/	/	/
Case 2	External environment of residence	3	1	Door handle	Staircase, door handle on the first floor
	Internal environment of residence	7	5	Pillow, quilt, TV cabinet, sofa, desktop	Toilet faucet, towel
	Personal belongings	1	1	Mobile phone	/
Clinics visited by Case 1, Case 2, and coffee shop they frequented	/	10	0	/	Stool in coffee shop, table in coffee shop, Weiqiang Clinic (stool, infusion stool, infusion sofa, table), Jiaming Clinic (stool, table), Zhong Xiaorong Clinic (door handle, desktop in clinic)
Case 3	External environment of residence	2	1	Door handle (inside and outside)	Door handle of company (outside)
	Internal environment of residence	5	3	Door handle (master bedroom), bedside switch and charger, desktop and kettle handle	Door handle of company (inside)
	Personal belongings	0	0	/	/
Case 4	External environment of residence	1	1	Door handle	/
	Internal environment of residence	5	5	Refrigerator, wardrobe, door handle, etc.	/
	Personal belongings	0	0	/	/
Case 6	External environment of residence	1	0	/	Door handle
	Internal environment of residence	7	0	/	Towel, bed, etc.
	Personal belongings	1	1	Mobile phone	/
Total	Smear samples from living environment and personal belongings	43	27	/	/
	External environment (nonresidence)	10	0	/	/



SUPPLEMENTARY FIGURE S1. Transmission chain of the Mpox (Clade Ib) outbreak —Yiwu City, July–August 2025.