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Mpox outbreak investigation in Mbarara City, Uganda, October 2024–March 2025

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Summary

Background: Uganda has reported multiple mpox outbreaks, including in Mbarara City, a densely populated urban center in western Uganda. The first mpox case in Mbarara was confirmed in October 2024. By February 2025, the city had recorded 188 cases. We estimated the scope of the outbreak, identified transmission risk factors, and recommended control and prevention measures.
Methods: We conducted a descriptive epidemiological investigation in Mbarara City from October 2024 to March 2025. Mpox cases were classified as suspected, probable, or confirmed based on Uganda Ministry of Health and World Health Organization case definitions. Data were collected through active case finding, interviews and medical record reviews. Analyses included person, place, and time distribution.
Results: A total of 304 mpox cases were reported, yielding an overall attack rate of 127 per 100,000 population. Males were more affected (137/100,000) than females (118/100,000). Nyamitanga Division had the highest attack rate (223/100,000), while Nyakayojo had the lowest (39/100,000). Common symptoms included skin lesions (99%), swollen lymph nodes (91%), and sore throat (73%). The index case, a 35-year-old male, reported unprotected sexual contact prior to illness onset and tested positive on October 14, 2024. The outbreak peaked with 12 new cases on March 5, 2025. Two deaths occurred, both in HIV-positive females.
Conclusion: We confirmed the first documented mpox outbreak in Mbarara City, with widespread transmission and elevated attack rates in more densely populated divisions. These findings underscore the urgent need for strengthened surveillance, early case detection, and targeted risk communication. Integrating mpox screening and education into existing HIV and sexual health services could enhance future outbreak prevention and control in urban areas.

Background

In Uganda, the first identified known human case were declared on July 24, 2024, in Kasese District(1). The Ministry of Health (MoH) reported that the two cases were imported and originated from the Democratic Republic of Congo (DRC). Following this, mpox spread to other districts and cities in Uganda. On October 11, 2024, the first two cases in Mbarara were reported: a 28-year-old female and a 35-year-old male. Both cases were confirmed on October 14, 2024. The cases increased to 188 mpox cases by February 2025 prompting national response team to intervene and support Mbarara City. We estimated the scope of the mpox outbreak, assessed risk factors for transmission, and recommended evidence-based control and prevention measures

Methods

Mbarara City is situated around 270 kilometres (roughly 168 miles) to the southwest of Kampala, the capital of Uganda. The city has a population of approximately 238,500 people, according to local statistics. Mbarara City is widely recognized as a major hub of trade, industry, and administration in Western Uganda.

We defined mpox cases as suspected, probable or confirmed cases using the standard case definition by the Ministry of health, Uganda and the World Health Organization(2,3).

We line listed cases using the snowball method where individuals in the community with already existing symptoms led us to others.

We performed descriptive epidemiology on the line-listed case-patients. Case-patients were described by time, place, person characteristics.

A total of 304 samples from the skin lesions were collected and transferred to the testing laboratory using the hub system. Mpox confirmation was based on identification of mpox by PCR.

This outbreak investigation was in response to a public health emergency and was therefore determined to be non-research. The Ministry of Health (MoH) gave permission to investigate this outbreak. The Office of the Associate Director for Science, US CDC/Uganda determined that this activity was not human subject research and that its primary intent was public health practice or disease control activity (specifically, epidemic or endemic disease control activity). Prior to data collection, informed consent was obtained from all the participants who were aged 18 years or older (legal age in Uganda). For those below 18 years, consent was sought from their parents/guardians and assent was also obtained from them to participate in the study.

Results

Descriptive epidemiology

Between October 2024 and March 2025, a total of 304 cases were documented in Mbarara City. The majority of cases 152 (50%) occurred in individuals aged 15–30 years, followed by 123 (41%) in the 30–45-year age group. Cases who were below 15 years accounted for 4 (1%), while those over 45 years comprised 25 (8%). Males accounted for 161 cases (53%), and females for 143 (47%).

Among 304 mpox cases, the most commonly reported symptoms were lesions 301(99%), swollen lymph nodes 278(91%), and sore throat 221(73%) (Figure 1).

The overall attack rate (AR) in Mbarara City was 127 per 100,000. Males more affected (AR=137 per 100,000) compared to females (AR=118 per 100,000). The highest division-specific attack rates were observed in Nyamitanga (223/100,000) and Kakiika (219/100,000). These were followed by Kakoba (AR=170/100,000), Biharwe, Kamukuzi, and Nyakayojo (AR=75, 70, and 39/100,000, respectively).

Exposure sources were largely unknown, with 213 cases (70%) reporting no identifiable exposure. Among known exposures, sexual contact was the most common, with 89 (29%) cases. Other exposures included contact with cases in public transport and hospital exposure, each accounting for one case (0.3%). Regarding comorbidities, 52(17%) cases were HIV-positive, 92 (30%) were HIV-negative, and the HIV status was unknown for 160 (53%) cases.

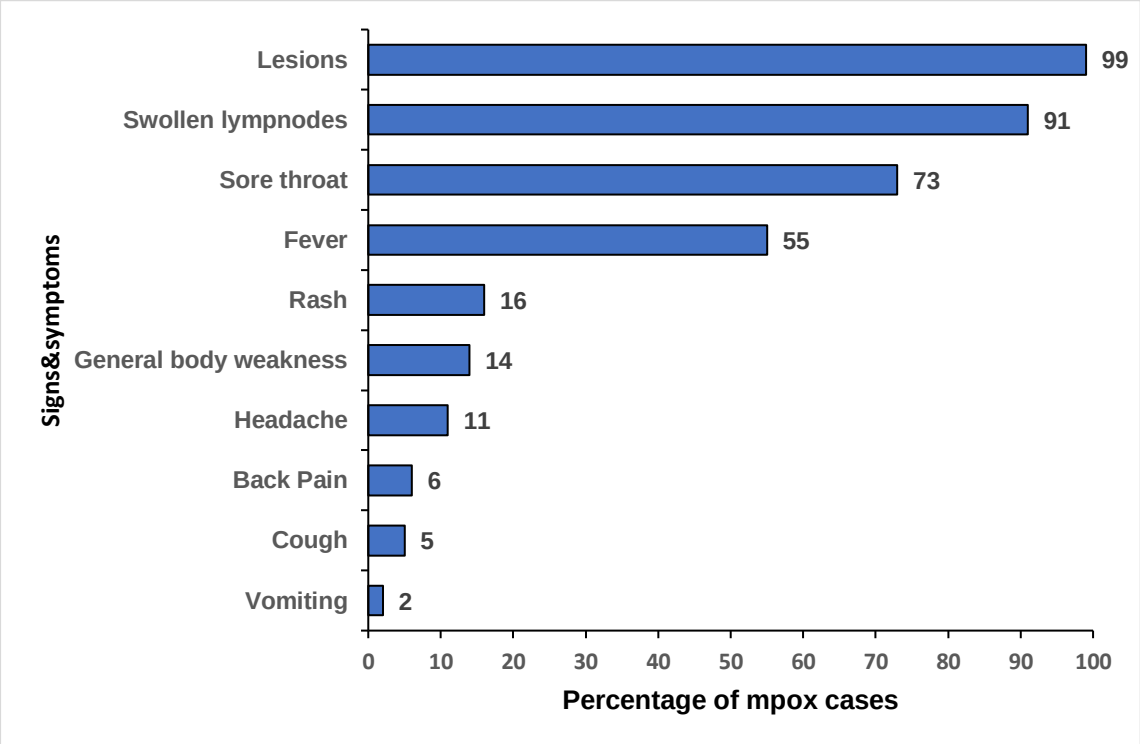

Figure 1: Distribution of clinical symptoms of mpox cases during mpox outbreak, Mbarara City, October 2024–March 2025 (n=304)

On October 6, 2024, a 35-year-old man from Nyarubanga parish, Mbarara City, sought medical attention after developing a fever for two days, followed by a generalized rash and swollen lymph nodes. The index reported to have had hard random sex with an unknown girl he picked from the club. Despite initial treatment with antibiotics from the clinics, his condition worsened, and he was referred to Mbarara Regional Referral Hospital (MRRH) on October 11, 2024, where lesion swab samples were collected and confirmed positive for mpox on October 14, 2024. This case marked the start of the outbreak in Mbarara. The outbreak continued to

escalate, with cases increasing to 41 in December 2024. By January 2025, the number of cases significantly increased to 99 and reached the notable peak of 188 in February 2025. In response to the rising cases, the Ministry of Health responded on March 4, 2025, acknowledging the ongoing rise in cases and calling for enhanced surveillance and more public awareness. The outbreak peaked in early March 2025, with 12 cases reported on March 5. Two death occurred first one on March 15, 2025, a 24-year-old HIV positive female. The second one occurred on March 30, 2025, a 25-year-old HIV positive female. Cases decreased towards end of March 2025 (Figure 2).

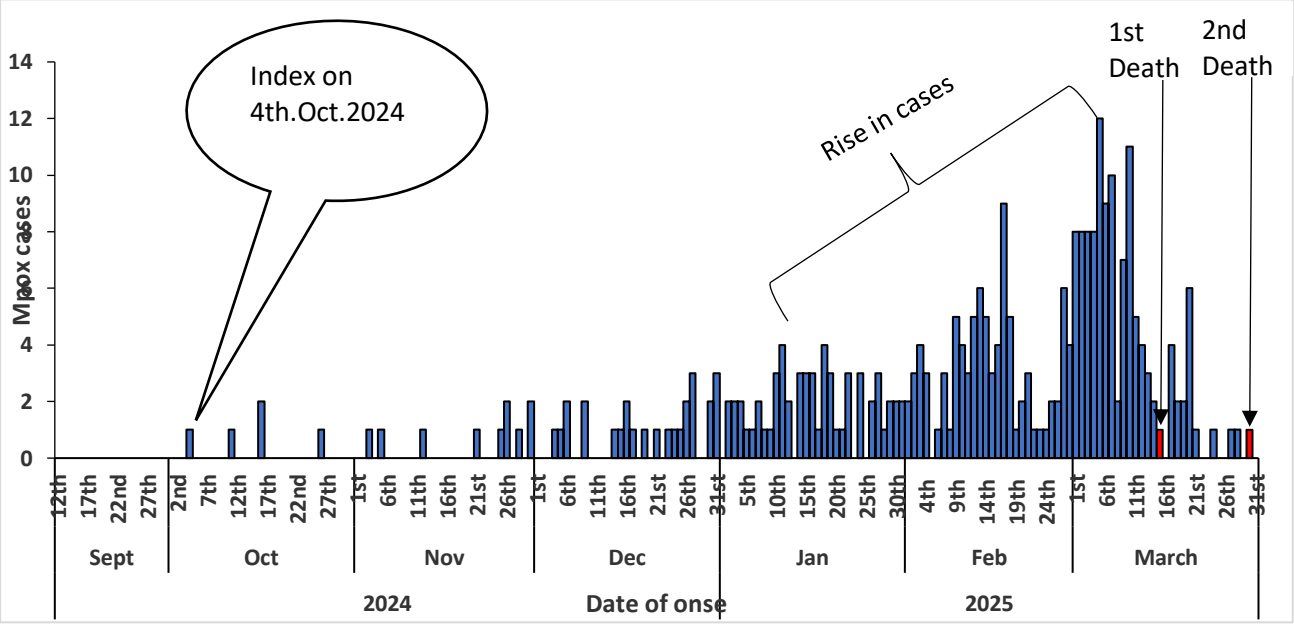

Figure 3: Distribution of mpox cases by time in Mbarara City, Oct 2024–Mar 2025

Discussion

This outbreak marked the first confirmed mpox occurrence in Mbarara City, with cases across all six divisions, indicating urban community transmission. The index case had classical mpox symptoms and a history of sexual contact, aligning with prior findings on sexual exposure as a transmission route (4,5). Higher case concentrations in densely populated, socially active divisions support existing evidence that crowding and social interaction facilitate mpox spread in urban settings (6,7).

Males were more affected than females. This sex distribution is consistent with findings from previous studies, which have noted similar patterns of disproportionate impact (8).

Clinically, most cases presented with characteristic features of mpox, including skin lesions, lymphadenopathy, and sore throat. These findings are consistent with previously described symptom profiles in both endemic and non-endemic settings(9–11).

The majority of cases were mild and moderate cases, However, the death of a female with underlying immunosuppression highlights the heightened vulnerability of certain populations. This observation reinforces earlier findings that individuals with compromised immune systems, such as those living with HIV, are at increased risk of severe outcomes(12).

Study limitations

The study relied on self-reported exposure histories, which may be biased. Over half of the cases had unknown HIV status, limiting analysis of disease severity in immunocompromised individuals. As a descriptive study, it could not establish causal relationships.

Conclusion

This outbreak showed the potential for rapid mpox spread in densely populated urban settings, especially among young adults and immunocompromised people. Early detection and tailored interventions are critical for managing urban mpox outbreaks. Mpox screening should be integrated into sexual and reproductive health services, especially for people living with HIV. Strengthening community-based surveillance and targeted awareness in high-density areas is essential for outbreak control.

Conflict of Interest

The authors declared no conflict of Interest

Author contribution

PK, CM, JLK, BK, RM, ARA conceived and designed the study. PK, CM, JLK contributed to data collection, cleaning and analysis. PK, CM, JLK, BK, RM, ARA took lead in developing the bulletin. All authors contributed to the final draft of the bulletin. All the authors read and approved the final bulletin.

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