UGANDA NATIONAL INSTITUTE OF PUBLIC HEALTH
The Uganda Public Health Bulletin: October – December 2025
Volume 10 / Issue 4 /Article No. 1

Factors associated with mpox misdiagnosis, Mbarara City, Uganda, October 2024–May 2025

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Summary

Background: In Uganda, by April 2025, Mbarara City had the highest mpox attack rate (142 per 100,000 population), with patients reporting initial treatment for other infections before mpox diagnosis. We assessed the magnitude, types and factors associated with mpox misdiagnosis in Mbarara City, October 2024–May 2025.
Methods: A suspected mpox case was acute onset of skin rash or genital lesions with ≥2 symptoms: fever ≥38.5°C, headache, general body weakness, myalgia, back pain, genital discharge, lymphadenopathy, and mucosal lesions. A confirmed case was a suspected case with PCR-confirmed mpox. Misdiagnosed case was any mpox case that received a non-mpox diagnosis at first visit to a health facility and later diagnosed with mpox by PCR. We found cases through active house-to-house visits in Nyamityobora Ward, the most affected in Mbarara City. We interviewed cases using a standardized questionnaire, collecting socio-demographics, first health facility visited and diagnosis data. We performed modified Poisson regression to determine factors associated with mpox misdiagnosis.
Results: We identified a total of 106 mpox cases; 91% (96/106) sought care at a health facility and 50% (48/96) were misdiagnosed. Of the 96 case-patients, 69% (66) first sought care at private health facilities while 31% (30) sought care at government health facilities. Of the 48 misdiagnoses, 40% (19) were genital-urinary infections, 33% (16) were unspecified infections, 15% (7) were febrile illnesses and 13% (6) were chicken pox. Seeking care from private health facilities (adjusted prevalence ratio [aPR]=2.1, 95%CI:1.1-3.9) was significantly associated with mpox misdiagnosis.
Conclusion: Half of mpox cases were misdiagnosed at first health facility visit, mostly in private health facilities. Training of private health facilities' health workers on mpox detection could improve case identification.

Background

Mpox is a viral disease caused by the monkeypox virus (1). It is transmitted to humans through close contact with an infected person, notably sexual contact, by contact with an infected animal or by materials and surfaces contaminated with the virus (2). Globally, the clinical presentation of mpox since 2022 has differed from past outbreaks, with an

increasing number of patients manifesting atypical symptoms like genital lesions, pharyngitis, proctitis and epididymitis with a significant overlap with sexually transmitted infections (3).

Mpox has been frequently misdiagnosed in Uganda, with many cases initially presenting with syndromic diversity ranging from fever, sore throat, headache, confined skin lesions or disseminated rash, genital lesions and discharge (4). These symptoms are similar to those seen in several other infections such as malaria, chicken pox, measles, other skin and genital-urinary infections. This similarity leads to frequent misdiagnoses, delaying proper mpox identification and treatment, driving transmission of mpox within the communities.

By April 2025, Uganda had a total of 5,431 mpox cases and Mbarara City had the highest attack rate of 142 per 100,000 population. Nyamityobora Ward in Mbarara City was the most affected with an attack rate of 50 cases per 10,000 with many patients reporting initial treatment for other infections before mpox diagnosis (5). This pattern highlighted critical gaps in frontline disease recognition, leading to delayed outbreak detection and containment, underestimation of the true disease burden and missed opportunities for contact tracing and prophylaxis. We investigated to determine the scope of mpox misdiagnosis and the associated factors in Nyamityobora Ward during October 2024–May 2025.

Methods

Mbarara City is located in southwestern Uganda, with a population of 325,075 individuals residing in its 6 divisions, 23 wards, 52 cells (6). Nyamityobora Ward is located in the South division of Mbarara City and lies along Mbarara-Masaka highway. It is densely populated and hosts the city market and several entertainment places.

We defined mpox cases as suspected or confirmed cases. A suspect case was defined as acute onset of skin rash or genital lesions with ≥2 of the following: fever ≥38.5°C, headache, general body weakness, body aches, back pain, genital discharge, lymphadenopathy, mucosal lesions in a resident of Mbarara City from Oct 2024 to May 2025; a confirmed case was defined as RT-PCR-confirmed mpox infection in a patient residing in Mbarara City from October 2024 to May 2025. A misdiagnosed case was defined as any mpox case who received a non-mpox diagnosis at their first visit to a health facility after symptom onset and was later diagnosed with mpox by PCR.

We employed a cross-sectional study design and found cases systematically through active case search by house-to-house visits in Nyamityobora Ward. We interviewed the case-patients using a standardized questionnaire and collected data on socio-demographics, first health facility visited, and first diagnosis received. We performed modified Poisson regression analysis to determine the factors associated with mpox misdiagnosis.

Permission to conduct the investigation was obtained from the City Health office, Regional Emergency Operations Center and chairpersons of Nyamityobora cells. A non-research determination was obtained from the office of the Associate Director for Science, Centres

for Disease Control and Prevention, Uganda. We obtained verbal consent from participants that were 18 years and above and sought verbal consent from parents or guardians of children below 18 years. To ensure patient protection and confidentiality, patient data were anonymized and stored in a database on a password secured laptop.

Results

Descriptive epidemiology

A total of 106 mpox patients were interviewed. Of the 106 case-patients, 91% (96) had visited a health facility at symptom onset while 9% (10) did not visit a healthy facility. Of those who visited a healthy facility, 50% were misdiagnosed. Of the 96 case-patients, 69% (66) first sought care at private health facilities while 31% (30) sought care at government health facilities. Of the 48 misdiagnosed case-patients, 90% (43) were aged 18 years and above while 10% (5) were aged below 18 years. Males (50%) and females (50%) were equally misdiagnosed. Of the 48 misdiagnoses, 40% (19) were genital-urinary infections, 33% (16) were unspecified infections, 15% (7) were febrile illnesses and 13% (6) were chicken pox.

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At multivariate analysis, case-patients who first sought care at private health facilities were two times more likely to be misdiagnosed [aPR=2.1, 95%CI (1.1-3.9)] compared to those who sought care at government health facilities.

Table 1: Factors associated with mpox misdiagnosis at multivariate analysis in Nyamityobora ward, Mbarara City, October 2024–May 2025

Variable	Proportion		cPR (95%CI)	aPR(95%CI)
	Mpox misdiagnosed	Mpox diagnosed		
Age (Years)				
≥18	43 (90)	46 (96)	Ref	
<18	5 (10)	2 (4)	1.3 (0.59-2.7)	1.5 (0.55-4.1)
Sex				
Female	24 (50)	27 (56)	Ref	
Male	24 (50)	21 (44)	1.13 (0.76-1.7)	1.09 (0.66-1.8)
First health facility visited				
Government	22 (27)	8 (73)	Ref	
Private	28 (58)	38 (42)	2.2 (1.2-4.1)	2.1 (1.1-3.9)

Discussion

The majority of the case-patients (91%) sought care at a health facility at symptom onset, indicating good health seeking behavior. However, half of them were misdiagnosed, suggesting gaps in diagnostic capacity or clinical awareness of the disease(7).

Genital-urinary infections were the most alternative diagnosis for mpox in both males and females and they were only in individuals aged above 18 years. This misdiagnosis is often due to the initial mpox symptoms such as genital lesions, genital rash and discharge that resemble those of other genital-urinary infections like syphilis, gonorrhea, chlamydia and candidiasis. Presentation of genital lesions in adults is an indication of mpox transmission by sexual contact (8).

Case-patients who first sought care at private health facilities were two times more likely to be misdiagnosed compared to those who first sought care at government health facilities. This is likely due to the low suspicion index for mpox since clinicians in private health facilities tend to have limited knowledge of recognition of emerging infectious diseases like mpox (9).

Study limitations: Accuracy of reported diagnosis received at first visit to a health facility and of reported symptoms could have been limited by patient recall bias since by the time of the interview, some patients had already recovered. Recall bias may have led to underreporting of symptoms and misclassification of diagnoses at first health facility visit, potentially leading to an under estimation of the true extent of symptoms and misdiagnoses.

Conclusion: Half of mpox cases were misdiagnosed at first health facility visit, mostly in private clinics. Regular training of health workers in private clinics by ministry of healthy focused on the clinical presentation and early recognition of mpox using could increase the suspicion index, improve patient management outcomes and limit transmission.

Public health actions: The investigation team provided health education to the residents of Nyamityobora Ward during the house-to-house active case finding on: causes, transmission and prevention of mpox.

Conflict of Interest: The authors declare no conflict of interest

Author contribution: Aminah Namwabira took lead in conceptualizing the project, data curation, investigation, data analysis and original draft writing. Alex Riolexus Ario acquisitioned the funds. Nasif Matovu, Kyomugisha D. Aman, Vianney John Kigongo, Justine Wobusobozi, Martha Dorcas Nalweyiso, Alupo Anne Loy, Benon Kwesiga and Richard Migisha were involved in designing the methodology, investigation, writing, reviewing and editing the article. Stella Maris Lunkuse, David Muwanguzi, Alfred Wejuli, John Opolot and Alex Riolexus Ario were involved in supervision, visualization, validation and editing the article. All authors read and approved the final draft.

Acknowledgements: The authors appreciate Mbarara Regional Referral Hospital administration, the Regional Emergency Operations Center, Mbarara City Health Office and Village Health Teams of Nyamityobora Ward for providing administrative and technical support during the investigation.

References

1. World Health Organization. Mpox Fact Sheet [Internet]. 2024 [cited 2025 May 27]. Available from: https://www.who.int/news-room/fact-sheets/detail/mpox
2. Wilson ME, Hughes JM, McCollum AM, Damon IK. Human Monkeypox. Clin Infect Dis [Internet]. 2014 Jan 15 [cited 2025 May 27];58(2):260–7. Available from: https://dx.doi.org/10.1093/cid/cit703
3. Núñez-Cortés R, Calatayud J, López-Gil JF, Koyanagi A, Casaña J, López-Bueno R. Risk profile and mode of transmission of Mpox: A rapid review and individual patient data meta-analysis of case studies. Rev Med Virol [Internet]. 2023 Mar 1 [cited 2025 May 27];33(2):e2410. Available from: /doi/pdf/10.1002/rmv.2410
4. Daniel Wenani1* AK, Namulondo1 E, Hannington, Katumba1, Namara1 B, Rek1 J, et al. Epidemiological-characteristics-and-transmission-dynamics-of-the-first-66-confirmed-mpox-cases-Nakasongola-District-Uganda-September□November-2024.pdf. 2025.
5. Uganda Ministry of Health. National Mpox Situation Report. 2025;
6. Uganda Bureau of Statistics. National Population and Housing Census. Vol. Volume 1. 2024.
7. Janet Kobusingye Lubega, Emmanuel Mfitundinda, Emmanuel Okiror Okello, Cranima Turyakira, Mugasha Felix, Richard Migisha, Benon Kwesiga AR. Uganda Public Health Bulletin. 2025 [cited 2025 Jul 4]. Rapid containment of an Mpox outbreak, Uganda, Masindi Prison, June-October 2024 - UNIPH. Available from: https://uniph.go.ug/rapid-containment-of-an-mpox-outbreak-uganda-masindi-prison-june-october-2024/
8. He S, Zhao J, Chen J, Liang J, Hu X, Zhang X, et al. Urogenital Manifestations in Mpox (Monkeypox) Infection: A Comprehensive Review of Epidemiology, Pathogenesis, and Therapeutic Approaches. Infect Drug Resist [Internet]. 2025 Jan 10 [cited 2025 Jun 8];18:209–26. Available from: https://www.dovepress.com/urogenital-manifestations-in-mpox-monkeypox-infection-a-comprehensive--peer-reviewed-fulltext-article-IDR
9. Nka AD, Bouba Y, Fokam J, Ka'e AC, Gabisa JE, Mandeng N, et al. Current knowledge of human Mpox viral infection among healthcare workers in Cameroon calls for capacity-strengthening for pandemic preparedness. Front Public Heal [Internet]. 2024 [cited 2025 Jun 8];12:1288139. Available from: https://pmc.ncbi.nlm.nih.gov/articles/PMC10963399/