



Published in final edited form as:

J Travel Med. 2024 December 10; 31(8): . doi:10.1093/jtm/taae135.

Characteristics of aircrew who flew while infectious with mpox during the 2022 multi-country mpox outbreak, United States, May 10–September 30, 2022

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Prior to 2022, mpox clade II cases in the United States occurred only in travellers from endemic countries or through exposure to imported animals.¹ Human-to-human transmission of mpox during the global 2022 outbreak,² which involved clade IIb, was primarily associated with sexual contact. In response to this outbreak, the U.S. Centers for Disease Control and Prevention (CDC) initially recommended aircraft contact investigations (CIs) when the CDC was notified of passengers or aircrew who were infectious with mpox during air travel.³ If the infected person was a crew member, passengers were not considered at elevated risk due to limited exposure time. Other aircrew members were considered to be at increased risk due to the potential for longer duration (≥ 3 h) of exposure in close proximity (within 6 ft) (direct CDC communication to airlines via the Federal Aviation Administration).

Published data on aircrew who travelled while infectious with mpox are limited. Among 13 of the 44 aircrew previously identified and included in a recent Morbidity and Mortality

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Author contributions

S.R., S.G. and A.G. led writing, editing and revising of manuscript. S.R., S.G. and K.D. performed initial data extraction. S.R. performed data analysis with oversight from A.G. and S.G. All authors contributed to conceptualization, editing and reviewing of the manuscript.

Conflict of interest: All authors state they have nothing to declare and no conflicts of interest.

Disclaimer

The findings and conclusions of this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

Weekly Report (MMWR), no aircraft contacts were reported as developing mpox following exposure, based on aggregate health department (HD) outcome reporting.³ The current analysis characterized clinical characteristics of- and in-flight infection control measures taken by aircrew who travelled on U.S. domestic and inbound international commercial flights while infectious with mpox.

Clinical and epidemiological data and in-flight mitigation measures taken by aircrew who worked on aircraft while infectious with mpox (The infectious period was defined as the period commencing with the onset of illness through such time that all lesions had crusted over, the crusts had separated, and a fresh layer of healthy skin had formed under the crust) from May 10 through September 30, 2022, were provided by U.S. HDs to the CDC and entered into the CDC's Port Health Activity Reporting System (PHARS).

PHARS was queried for these reports. Variables, including flight details, demographics, in-flight infection control measures taken by aircrew, and symptoms, and reported secondary cases were extracted from identified reports. Aircraft contacts were defined as aircrew who flew with an infected aircrew member for a cumulative flight time of ≥ 3 h. De-identified data were analysed using SQL and Excel. This activity was reviewed by CDC, deemed not research, and conducted in accordance with applicable federal law and CDC policy (45 C.F.R. part 46.102(l)(2), 21 C.F.R. part 56; 42 U.S.C. Sect. 241(d); 5 U.S.C. Sect. 552a; 44 U.S.C. Sect. 3501 et seq).

HDs notified CDC of 44 aircrew who flew while infectious on 177 domestic flights and 70 U.S.-bound international flights. Among the 44 aircrew with mpox, 41 (93%) were male; median age was 35 years (range=23–59 years). Among aircrew with mpox for whom data were available, 22/38 (58%) reported fever, 8/38 (21%) reported respiratory symptoms and 38/40 (95%) reported a rash before or during the flight. Rash, when present, was reported most commonly in the genital or perianal area (18/38, 47%); 13/38 (34%) reported lesions on the hands, fingers or wrists. Six of the thirty-eight (16%) reported lesions on the mouth, chin, lips or tongue, and 7/38 (18%) reported lesions on the head, neck or in the throat (Figure 1).

Among those for whom data were available, 63% (15/24) reported masking, and 78% (21/27) reported covering their lesions during the flight. Among those who did not report covering all lesions during the flights (6/44), lesion locations were noted to be in multiple areas, including face, limbs and head (Table 1). Among the eight reporting respiratory symptoms, 2/8 (25%) reported wearing a mask during the flight, 4/8 (50%) did not wear a mask, and for 2/8 (25%) information about mask wearing was unknown.

Seven hundred and ninety aircraft crew contacts were identified. Available CI outcomes data have been published previously.³

While the CDC recommends that people with mpox remain in isolation and not travel until considered noninfectious, the CDC has additionally provided guidance for situations when travel is necessary, including to wear a mask and cover all lesions during travel, and to not travel with respiratory symptoms or oral lesions.⁴ During the 2022 mpox outbreak, aircrew worked on multiple flights during their infectious period; of those reporting, most

followed recommended precautions to mask and cover lesions (notably this period was after the federal order requiring masking on public conveyances during the COVID-19 pandemic, was no longer in effect⁵), although 21% reported having travelled with respiratory symptoms, which potentially pose a greater risk for transmission through respiratory droplets. Furthermore, a substantial proportion reported lesions on the hands or face, which may have been difficult to keep covered. Of the 13 aircrew included in an analysis of CI outcomes, for whom outcomes data were reported, no secondary cases associated with air travel occurred.³ Although it was outside the scope to determine how these 44 cases were exposed, they do not likely reflect occupational transmission.

The analysis reported here has several limitations. Reporting on infection control measures taken by aircrew was missing some data. Although the CDC is unaware of secondary cases associated with exposures to aircrew with mpox during travel, outcome reports for CIs were unavailable for all 44 aircrew members included in this analysis; therefore, secondary cases may have been unreported and missed. Finally, CDC did not include passengers in the aircraft contact definition for aircrew with mpox; therefore, secondary cases among passengers may have also been missed.

During the 2022 outbreak, the CDC provided guidance to airlines regarding educating their aircrew about mpox transmission, considerations for providing aircrew sick leave and developing flexible leave policies to support aircrew while infectious with mpox, including those with respiratory symptoms or lesions that are difficult to cover (CDC communication to airlines via the Federal Aviation Administration). Guidance from the CDC was discretionary, and policies can vary across airlines. In light of the added risk posed by the clade I mpox outbreak in the Democratic Republic of Congo and neighbouring countries, the CDC is advising airlines that people with mpox should not travel.^{6,7} Even if the risk in the aircraft cabin is very low,³ new transmission chains can be established in new locations by travellers. CDC's recommendation against travel is consistent with the World Health Organization's advice. It is especially important that people with mpox not travel if they have a fever, mouth sores, or respiratory symptoms. Aircrew who have mpox, or who have had close contact with someone with mpox, should be aware of applicable public health regulations in countries they visit to anticipate any movement or other restrictions that might be imposed.

Acknowledgements

We would like to thank the CDC port health station staff who work around the clock to manage reports to CDC of ill passengers and aircrew. We would also like to acknowledge the continued excellent partnership of health department staff across the country and airline and airport partners, without whom, none of this work could be done.

Funding

No funding was received for this work.

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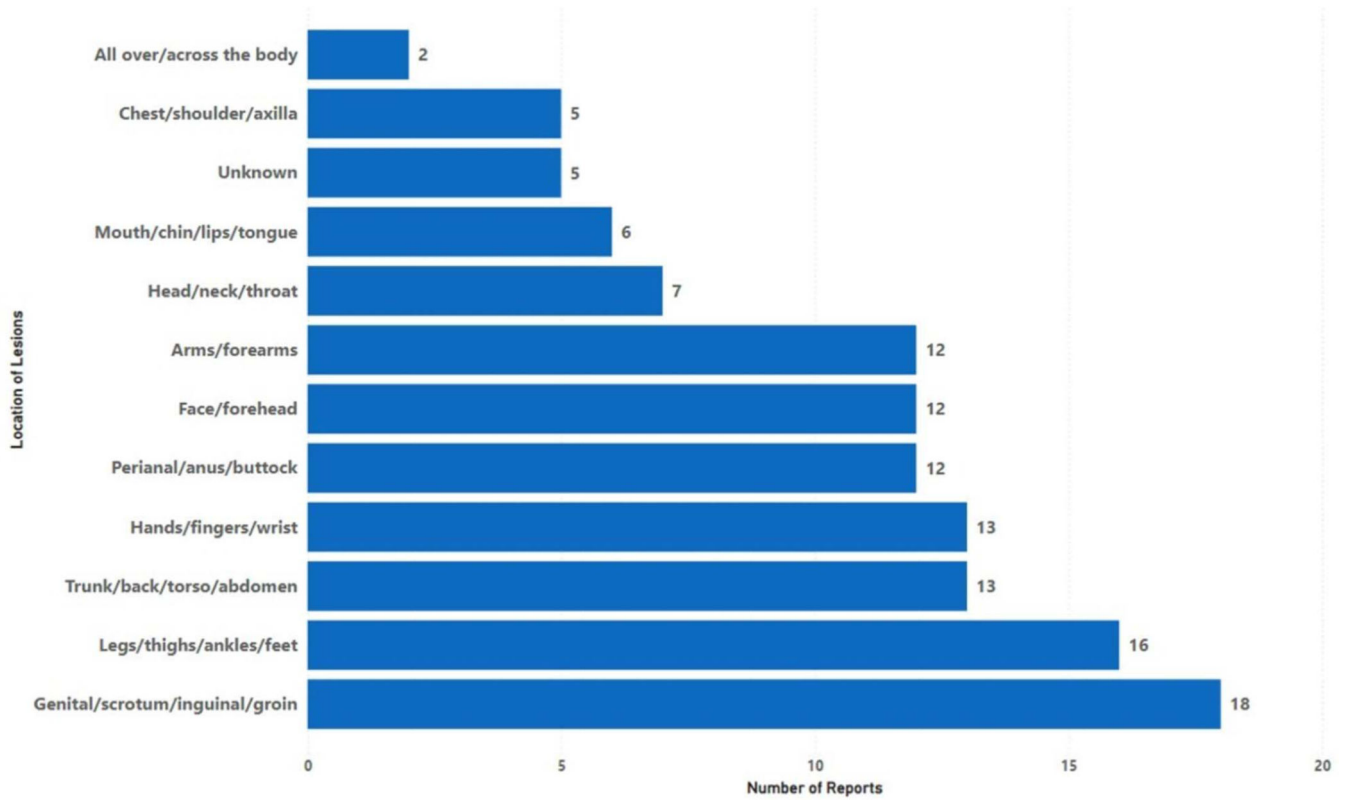


Figure 1.

Locations of lesions of aircrew who worked while infectious with mpox on aircraft flying into or within the United States with subsequent notification to the U.S. Centers for Disease Control and Prevention from May through September 2022

Locations of lesions of six aircrew who reported not covering lesions and who worked while infectious with mpox on aircraft flying into or within the United States with subsequent notification to the U.S. Centers for Disease Control and Prevention from May through September 2022

Table 1

Covered all lesions on each flight?	Location of lesions	Comments
No	Arms, legs, forehead, genitals	Only covered genital lesions
No	Face, hand, limbs	Didn't cover lesions on some flights
No	Scalp, hands, trunk, arms, scrotum, genitals, ankle	Covered all lesions except those on scalp and hands
No	Face, head, neck, arms, palms	Only covered lesions on face
No	Face, abdomen, forearm	Lesions on face were not covered by mask
No	Lip, leg, hand	Did not wear gloves