Infection Control & Hospital Epidemiology (2024), 1–3
doi:10.1017/ice.2024.12

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Concise Communication

Healthcare personnel with laboratory-confirmed mpox in California during the 2022 outbreak

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Abstract

The California Department of Public Health (CDPH) reviewed 109 cases of healthcare personnel (HCP) with laboratory-confirmed mpox to understand transmission risk in healthcare settings. Overall, 90% of HCP with mpox had nonoccupational exposure risk factors. One occupationally acquired case was associated with sharps injury while unroofing a patient's lesion for diagnostic testing.

(Received 23 October 2023; accepted 28 December 2023)

Few published reports describe human monkeypox virus (hMPXV) transmission in healthcare settings. In the 2022 mpox epidemic, hMPXV was transmitted primarily through sexual or intimate physical contact with lesions, scabs, body fluids, mucous membranes, or skin of a person with active mpox.[1] Rarely, contact with fomites contaminated with fluids from a person with mpox has occurred.[2,3] Sharps injuries sustained when unroofing lesions for diagnostic testing was the most common source of occupationally acquired mpox among healthcare personnel (HCP),[4] with only 1 report of hMPXV transmission from patient to HCP that was not associated with a sharps injury.[5] Conversely, there have been no reports of transmission from HCP with mpox to patients or other HCP in the work setting. Centers for Disease Control and Prevention (CDC) guidance for management of mpox-exposed HCP who develop symptoms of mpox during a 21-day monitoring period is to exclude them from work until proof of negative test.[6] For HCP with confirmed mpox, the CDC recommends work exclusion until systemic symptoms are resolved, all lesions are crusted, separated, and replaced with a fresh layer of healthy skin; this process may take up to 4 weeks.

Methods

Local health department staff collect demographic, clinical, laboratory, and epidemiologic data from persons in California with confirmed mpox and report these data to the California Department of Public Health (CDPH). We reviewed these surveillance data, free-text variables, interview notes, and other records reported to the California mpox case registry, and we obtained JYNNEOS vaccination data from the California Immunization Registry (CAIR2).

For this analysis, we included laboratory-confirmed mpox cases in persons who reported working as HCP and had onset of rash and/or prodromal symptoms between May 12 and September 30, 2022. We defined HCP as all persons working in healthcare settings who had the potential for direct or indirect exposure to patients or infectious materials.[6] We excluded persons reported to the Los Angeles County Department of Public Health (LACDPH) because of differences in data collection.

We defined high-risk sexual behavior as new, multiple, or anonymous sexual partners of any gender. Because travel had been considered a risk factor at the time of the analysis,[7] we defined travel to include international and domestic destinations. Symptoms were self-reported, and HCP were defined as working while symptomatic if their last reported day of work was after the onset of lesions or other mpox symptoms.

Analyses were conducted using SAS version 9.4 software (SAS Institute, Cary, NC). The State of California Committee for the Protection of Human Subjects determined that this analysis was nonresearch under their criteria for review.

Results

From May 12 to September 30, 2022, California had 3,185 mpox cases outside the LACDPH, and 109 (3.4%) of these cases were among HCP. These 109 individuals are the subjects of this analysis and represent 19 counties in California. The demographic characteristics of HCP with mpox are displayed in Table 1.[8]

Overall, 39 HCP (35.8%) with mpox received at least 1 dose of JYNNEOS vaccine. Of these, 8 (20.5%) received their first dose ≥14 days before symptom onset and 2 (5.1%) received both doses >14 days before symptom onset. All HCP with mpox reported lesions (Table 2), most commonly on their arms (n = 65,

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Cite this article: Bailey A. E., Chai S. J., Snyder R. E., *et al.* Healthcare personnel with laboratory-confirmed mpox in California during the 2022 outbreak. *Infect Control Hosp Epidemiol* 2024. doi: 10.1017/ice.2024.12

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Table 1. Demographics of Healthcare Personnel (HCP) with Mpox

Characteristic	HCP with Mpox[a] No. (%)	Mpox in California[a] No. (%)
Race[b]		
White	33 (30.28)	1,035 (32.59)
Black or African American	12 (11.01)	284 (8.94)
Asian, non-Hispanic	17 (15.60)	203 (6.39)
Hispanic or Latino[c]	43 (39.45)	1188 (37.41)
Unknown	4 (3.67)	293 (9.23)
Age[d]		
20–29 y	20 (18.35)	714 (22.48)
30–39 y	48 (44.04)	1199 (37.75)
40–49 y	30 (27.52)	765 (24.09)
≥50 y	11 (10.09)	481 (15.14)
Gender identity		
Male	102 (93.58)	3030 (95.40)
Female	4 (3.67)	77 (2.24)
Genderqueer/Nonbinary	1 (0.92)	15 (0.48)
Transgender female	2 (1.83)	32 (1.04)
Transgender male	0 (0.00)	12 (0.39)
Unknown	0 (0.00)	4 (0.13)
Sexual orientation		
Gay, lesbian, or same-gender loving	89 (81.65)	1954 (61.52)
Bisexual/Pansexual	9 (8.26)	245 (7.71)
Heterosexual/Straight	6 (5.50)	230 (7.24)
Unknown/Refused to answer	5 (4.59)	747 (23.52)

[a]Not including patients reported to Los Angeles County Department of Public Health.
[b]Distribution of race and ethnicity among HCP with mpox more closely reflects the general California population than the population of California residents with mpox.
[c]Hispanic or Latino can be of any race.
[d]Age distribution among HCP with mpox reflects the working population.

Table 2. Clinical Characteristics of Healthcare Personnel (HCP) with Mpox Infection

Characteristic	No. (%)
Lesions	109 (100)
Arms, hands	65 (59.63)
Face, head, neck, mouth	55 (50.46)
Genital/perianal area	50 (45.87)
Trunk (chest, abdomen, back)	46 (42.20)
Legs, feet	40 (36.70)
Most common prodromal symptoms	
Pruritis/Itching	68 (62.39)
Myalgia/Other pain	66 (60.55)
Fever	65 (59.63)
Chills	55 (50.46)
Enlarged lymph nodes	52 (47.71)

59.6%) and face (n = 55, 50.5%). Also, 38 HCP (34.9%) received tecovirimat and 5 (4.5%) were hospitalized.

Most HCP (n = 98, 90%) had risk factors for exposure to mpox outside the workplace; many reported multiple community exposures. During the 21 days before symptom onset, 76 HCP (69.7%) reported engaging in high-risk sexual behavior, 25 HCP (22.9%) traveled, and 36 (33.0%) had contact with a person in the community who had confirmed mpox or mpox symptoms. Furthermore, 9 HCP (8.3%) reported no known exposure. Follow-up with local health department investigators confirmed the absence of occupational exposure during the incubation period for these HCP.

Many HCP were in direct patient-care roles, including 34 nurses (31.2%), 20 clinical support staff members (18.3%), and 5 physicians and physicians assistants (4.6%). Other HCP were in roles with less direct patient interaction, including 12 social workers and mental health professionals (11.0%), 10 administrators and nonclinical staff members (9.2%), 7 pharmacists or pharmacy technicians (6.4%), and 1 environmental services employee (0.92%). Types of facilities that employed these HCP included 45 acute-care facilities (41.3%), 15 outpatient facilities (13.8%), and 10 long-term care facilities (9.2%).

In our analysis population, only 1 HCP had confirmed occupational exposure resulting in mpox. A nurse practitioner sustained a sharps injury through their glove while using a scalpel to unroof a patient's lesion for diagnostic testing. They received the first dose of JYNNEOS vaccine 4 days after exposure and developed a single lesion at the injury site 9 days after exposure.

Of the 60 HCP (55%) who provided information about the days they worked, 35 (58%) reported working while symptomatic for a mean of 3.15 days (median, 2; interquartile range, 1–4). Also, 2 HCP worked for 12 days after symptom onset. Of the 35 who worked while symptomatic, 17 (48.5%) experienced prodromal symptoms (ie, fever, chills, or enlarged lymph nodes) before the appearance of lesions; 18 (51.5%) reported prodromal symptom onset at the same time or after onset of lesions. The CDPH received no reports of secondary mpox cases among patients or HCP associated with HCP with mpox.

Discussion

This case review of 109 California HCP with mpox identified nonoccupational exposures in 90% of the analysis population. Only 1 case was confirmed to be occupationally acquired. Our findings suggest that the risk of occupational mpox acquisition in HCP is low when following recommended infection control practices. The CDPH published a health alert[9] on October 5, 2022, reminding HCP and employers about the recommendation against unnecessary use of sharps, especially to collect mpox specimens for diagnostic testing.[10]

We found no evidence of hMPXV transmission from HCP to patients or colleagues in the workplace, and we are not aware of any other reports that describe transmission from HCP to workplace contacts. Future studies may confirm the observation that close contact with lesions or fluid from lesions, mucous membranes, body fluids, or skin is required for transmission in healthcare settings. Then, recommendations necessitating notifying patients, monitoring exposed HCP, and excluding HCP from work may be reconsidered for relaxation if there are no systemic symptoms, no

https://doi.org/10.1017/ice.2024.12 Published online by Cambridge University Press

lesions in areas likely to come in contact with others in the workplace, and lesions are covered.

This analysis had several limitations. First, the primary data source was surveillance data, which are known to be subject to variations in quality and completeness. Second, the case report forms were not designed to capture all data needed for an occupation-focused analysis. Third, fear of negative repercussions or stigma may bias information elicited during interviews. Finally, HCP were only included if they were interviewed and disclosed their occupation.

In addition to understanding infection prevention measures to prevent occupational exposure, HCP should be aware of the most common nonoccupational risk factors for hMPXV exposure so they can obtain pre-exposure or postexposure prophylaxis with JYNNEOS vaccine when indicated and can monitor themselves for symptoms after potential exposures. Our findings underscore the need for healthcare facilities to implement policies encouraging HCP to stay home when sick. We encourage collaboration among infection prevention and occupational health programs with input from public health authorities in return-to-work decisions. Continued surveillance for possible transmission of mpox in healthcare settings is advised to evaluate prevention practices.

Acknowledgments. The authors acknowledge the response efforts of local health departments staff. The findings and conclusions in this article are those of the authors and do not necessarily represent the views or opinions of the California Department of Public Health, the California Health and Human Services Agency, or the Centers for Disease Control and Prevention.

Financial support. This study was supported by the US Centers for Disease Control and Prevention Epidemiology and Laboratory Capacity for Infectious Diseases (Cooperative Agreement no. CK19-1904 Strengthening HAI/AR Program Capacity).

Competing interests. All authors report no conflicts of interest relevant to this article.

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https://doi.org/10.1017/ice.2024.12 Published online by Cambridge University Press