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Lack of mpox transmission in a long-term care facility despite widespread exposure: Kentucky, 2023

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Abstract

A certified nursing assistant at a long-term care facility worked 3 shifts while infectious with monkeypox virus providing direct care to facility residents. Despite exposures and a delay of 16 days from symptom onset to diagnosis and public health notification, there is no evidence of transmission. We describe details of this health care-associated exposure, public health response, situational risk factors for transmission, and discuss factors that might have contributed to the lack of transmission.

Keywords

Monkeypox virus; Hospital epidemiology; Healthcare-associated infection

BACKGROUND

Monkeypox virus, the causative agent of mpox disease, is an orthopoxvirus that often causes rash and fever and can be spread human-to-human by physical contact.^{1,2} During the global outbreak of clade IIb monkeypox virus beginning in 2022, infrequent patient-to-provider transmission in health care settings has been observed. However, mpox transmission from provider-to-patient has not been reported.^{3,4}

Long-term care facilities (LTCF's) are a challenging infection prevention environment because of congregate living of older, possibly immunocompromised residents who might have loss of skin integrity. Additionally, LTCFs frequently face staffing shortages, possibly leading employees to work while infectious with a communicable disease.⁵ Staffing pressures might inadvertently encourage "presenteeism," the practice of working while sick. Certified nursing assistants (CNAs) work closely with residents, engaging in physical contact through assistance with hygiene, feeding, and dressing.

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Conflicts of interest: None to report.

In 2023, the Kentucky Department for Public Health (KDPH) was notified of a person with mpox, confirmed by orthopoxvirus real-time polymerase chain reaction on a lesion swab, who worked as a CNA at a LTCF during their infectious period. KDPH responded to assess exposure within the LTCF, prevent ongoing exposure, provide postexposure prophylaxis (PEP), and monitor for secondary cases.

METHODS

After notification of the case, KDPH recommended that the CNA be excluded from work until recovered, with healed skin under all lesions. An investigation into health care-associated exposures was initiated. The CNA was interviewed to determine a timeline of symptom presentation, which was cross-referenced with their work schedule. The CNA was considered infectious from 4 days prior to symptom onset until lesions completely healed. Detailed questioning of the CNA and LTCF leadership was undertaken to identify residents who received care from the CNA. Residents with possible skin-to-skin contact with the CNA were considered at-risk, and those with possible contact to areas of compromised skin integrity were considered high-risk.

All affected residents were notified of their possible exposure by letter and provided the opportunity to receive PEP with JYNNEOS (Bavarian Nordic) vaccine if desired.

The LTCF implemented daily skin checks and temperature monitoring for each resident to identify secondary cases quickly and allow implementation of isolation precautions and antiviral treatment if needed. Daily checks continued for 21 days from the last day the CNA worked, which was the last day of potential exposure.

RESULTS

The CNA reported fever and malaise beginning 16 days (day 1) before diagnosis, with skin lesions on the face and genitals forming on day 5 of illness, and hands and arms on day 9. Sixteen lesions developed on the left hand, with fewer on the right. The CNA was sent home from a day shift with a fever on day 9 of illness but had worked 3 shifts while symptomatic on days 5 and 7, and a night shift on days 9 to 10 (Fig. 1).

Fifty-eight persons resided in the LTCF. The ill CNA reported working in all areas of the facility, provided feeding, hygiene, and other care as needed, and was not restricted to specific patients or areas of the building. The CNA reported adherence to standard precautions, which in their role generally meant glove use, unless other personal protective equipment was required by resident isolation precautions. Neither the CNA nor other LTCF staff were able to confidently state which residents received direct care by the CNA during the infectious period. Because some care, like bedding changes or meal tray distribution, might not usually prompt glove use but could result in skin-to-skin contact, all LTCF residents were assumed to be at risk, except for 2 in existing contact isolation precautions requiring gowning and gloving on room entry, putting the potential number of residents exposed at 56. LTCF staff were assessed for exposure; none reported close contact with the ill CNA.

Among those possibly exposed, 1 had an intravenous catheter and 1 had a percutaneous endoscopic gastrostomy tube; the CNA reported wearing gloves during all contact with these devices. The only resident with a wound requiring care was in preexisting contact precautions. Therefore, no resident was considered at high exposure risk from loss of skin integrity.

Among the 56 at-risk residents, 28 (50%), received mpox vaccine for PEP at the LTCF. The first dose was administered 10 days after the last day of possible exposure, and 15 days after the first day of possible exposure. All residents who received the first dose received a second dose 1 month later.

At 21 days after the last day of possible exposure, no residents had experienced fever or skin lesions consistent with mpox, and temperature and skin checks were discontinued. The index patient, the CNA, fully recovered.

DISCUSSION

We describe an exposure of > 50 LTCF residents to a health care worker with mpox, after which no transmission of mpox was observed. This indicates mpox might not be readily transmissible from providers to patients in a health care setting. This might be a result of the brief nature of contact and the routine use of gloves. Provision of PEP with mpox vaccine might have contributed to the lack of transmission. However, the 15-day delay from first exposure to PEP administration makes this less likely. Vaccination as PEP is most effective at preventing illness when administered within 4 days of exposure; in this case it seems unlikely that vaccination would prevent illness entirely.^{6,7} Additionally, only 50% of eligible residents elected to receive PEP, and no secondary cases were observed among unvaccinated residents.

CONCLUSIONS

Mpox transmission from health care provider to patient is certainly possible, and this incident involved multiple high-risk features. These included a long-term care setting, close contact inherent to the job duties of a CNA, lesion location on the hands, and delay in diagnosis leading to multiple shifts worked while symptomatic. This incident indicates there might be low risk for transmission from a symptomatic health care worker to a patient through routine care, especially if providers consistently adhere to standard precautions, including glove use. This case illustrates how standard precautions are critical for protection of both patient and provider.

Acknowledgments

This activity was reviewed by CDC, deemed not research, and was conducted consistent with applicable federal law and CDC policy (See eg, 45 C.F.R. part 56; 42 U.S.C. §241(d); 5 U.S.C. §552a; 44 U.S.C. §3501 et seq).

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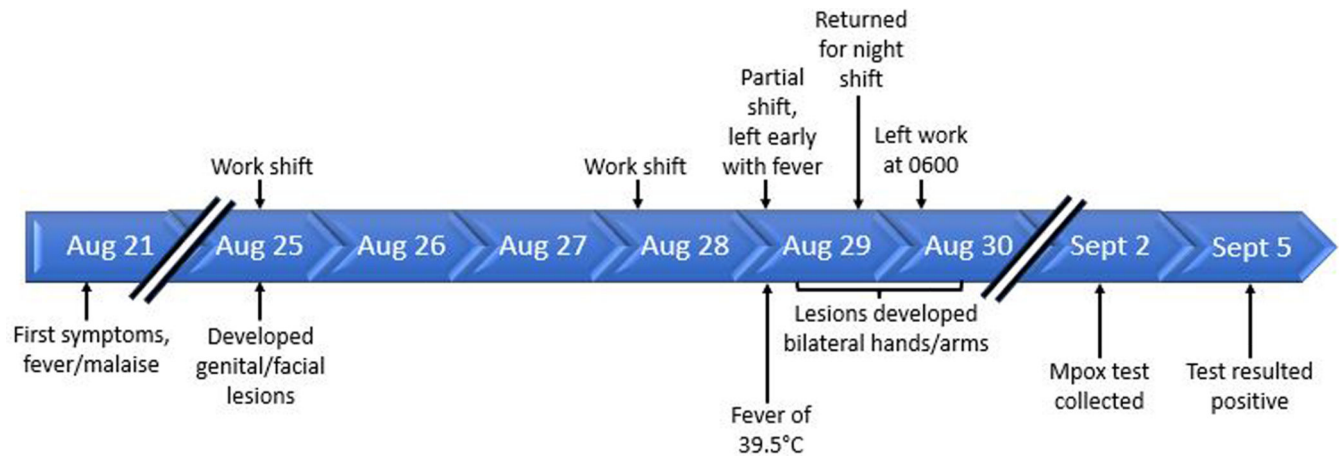


Fig. 1.
Timeline of the certified nursing assistant's mpox symptom onset, skin lesion formation, and shifts worked.