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## Letter to the Editor

## Fortuitous diagnosis of monkeypox in a patient hospitalized for several days: risk assessment and follow-up for exposed healthcare workers

Sir,

The current monkeypox (MKP) outbreak affects countries where the disease is non-endemic. Atypical presentations, with few skin lesions, have been described [1]. This may lead to delayed diagnosis of the disease, increasing the risk of healthcare worker (HCW) exposure. A recent review identified a single case of transmission to a HCW among 12 publications in high-income countries [2].

We report the outcomes in a cohort of HCWs who were exposed, without appropriate personal protective equipment (PPE), to an inpatient who had a late diagnosis of MKP.

A 41-year-old man was admitted to the emergency room (ER) with keratoconjunctivitis. He remained in the ER for 10 h before being transferred to a single room on a general surgery ward. He stayed on this ward for 48 h before an infectious disease consult was requested. MKP infection was then suspected based on the patient's sexual orientation, and vesicular skin lesions on his forearms, forehead, scalp, neck and eyelids. The skin lesions had appeared on the day of ER admission. The patient was transferred to the infectious disease unit with appropriate MKP precautions. From this point, it was assumed that there was no HCW exposure without appropriate PPE. The diagnosis of MKP was confirmed by polymerase chain reaction from a skin lesion swab sampled 1 day later. This triggered contact tracing 4 days after the patient was admitted to the ER.

All HCWs involved in the initial care of the patient were tracked through hospital software, and face-to-face interviews were conducted by the infection control and prevention team and an occupational physician. Interactions with the patient were categorized.

Risk exposure was assessed with a tool adapted from the US Centers for Disease Control and Prevention exposure risk assessment [3], and UK Health Security Agency contact tracing guidance for classification of contacts [4]. It was considered that hand hygiene with hydro-alcoholic products was performed on <100% of occasions, and multiple unprotected skin

contacts (not involving lesions) was categorized as medium-risk exposure.

For each contact, we assessed the appropriate use of PPE. Universal masking has been mandatory in our hospital since April 2020, and the patient had donned a surgical mask every time a HCW entered his room.

Data regarding age, pregnancy, immunodepression and type of exposure were collected. Information on MKP, including modes of transmission, symptoms and instructions for self-surveillance (including daily temperature), was provided. Follow-up calls were made on days 10 and 21 post exposure.

A total of 44 HCWs were identified who had potentially provided care to the index patient. Seventeen of them were excluded from follow-up because they had no direct contact with the patient or fomites, and had worn a facemask. Another HCW was on holiday and could not be contacted.

Twenty-six HCWs were assessed for vaccine eligibility. None of them were at risk of severe MKP. Eleven of these HCWs were offered vaccination (four high-risk and seven medium-risk) because of close patient contact without adequate PPE; two of the medium-risk HCWs declined vaccination. Type of care, number of care events, and characteristics of HCWs involved are summarized in [Table 1](#).

Vaccination was administered within a median of 5 days after first contact with the index case.

At the end of the 21-day follow-up period, none of the 26 HCWs had developed the disease. This report confirms that exposed HCWs are at low risk of contracting MKP in healthcare settings, even without adequate contact and airborne precautions [2].

The index patient was young and self-caring, and required nursing care for administration of intravenous antibiotics and eye care alone. He is probably representative of many of the inpatients with MKP during the current outbreak. Whilst this probably reduced the risk of transmission, it can also add to difficulty in tracing all HCWs who have had contact (because the contact is likely to have been trivial). The current global outbreak has shown that MKP is spread through close contact. Nevertheless, standard precautions and early suspicion of MKP are paramount to limit HCW exposure, and organizations must be prepared to respond to HCW exposure incidents.

It remains uncertain whether medium-risk contacts in healthcare settings should be vaccinated. Neither of the two vaccine refusers in this report developed MKP. Indeed, there is only one report of MKP transmission to an exposed HCW, and this was a high-risk contact who had received a single dose of smallpox vaccine 6 days after exposure [5]. The effectiveness of post-exposure prophylaxis (PEP) probably decreases if

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**Table 1**  
Characteristics of healthcare workers (HCWs) and type of care provided to patient with undetected monkeypox (MKP)

HCW	Age (years)	Ward	Profession	Number of care events	Type of care	PPE	Risk category	Vaccination
1	>42	GS	Nurse	2	Eye drops, helped with undressing	None	Medium	Yes
2	<42	GS	Nurse	3	Infusion, eye drops	Gloves for eye drops	Medium	Yes
3	<42	GS	Nurse	6	Infusion, eye drops	Gloves for eye drops	Medium	Yes
4	>42	GS	As nurse	Several	Undressing, making bed, temperature, blood pressure, local eye care	Gloves for eye care	Medium	Yes
5	<42	Scanner	RT	1	Contact with skin	None	Weak	NA
6	52	Scanner	RT	1	Contact with skin	None	Weak	NA
7	30	ER	Nurse	5–6	Eye drops, delivery of medications	None	Weak	NA
8	51	ER	As nurse	2–3	Blood pressure, temperature	None	Medium	Refused
9	36	ER	Nurse	3–4	Blood pressure, temperature, infusion	None	Medium	Yes
10	<30	ER	Resident	4–5	Clinical examination, fluorescein dye test	Gloves for eye test	High	Yes
11	21	ER	MS	2–3	Clinical examination, fluorescein dye test	Gloves for eye test	High	Yes
12	Unknown	Transport	Paramedic	2	Skin contact	Gloves	Very weak	NA
13	Unknown	Transport	Paramedic	1	Skin contact	Gloves	Very weak	NA
14	40	Transport	SB	1	Linen contact	None	Weak	NA
15	Unknown	Transport	Paramedic	1	Transport as MKP suspect	Gown, gloves, glasses, FFP2	Very weak	NA
16	Unknown	Transport	Paramedic	1	Linen contact	None	Weak	NA
17	Unknown	Transport	SB	1	Linen contact	None	Weak	NA
18	Unknown	Transport	SB	1	Skin contact	None	Weak	NA
19	>42	GS	MD	1	Eye examination	None	High	Yes
20	Unknown	GS	Resident	4	Eye examination	Gloves	Very weak	NA
21	Unknown	GS	Resident	1	Eye examination	Gloves	Very weak	NA
22	<42	GS	As nurse	1	Blood pressure	None	Medium	Refused
23	<42	GS	Nurse	4	Eye drops, eye cleaning	None	High	Yes
24	41	GS	Nurse	3–4	Infusion, no contact with skin	None	Weak	NA
25	36	GS	As nurse	1	Talking to the patient, no contact	None	Very weak	NA
26	31	GS	As nurse student	2–3	Bringing water, food, contact with linen	None	Weak	NA

PPE, personal protective equipment; GS, general surgery; ER, emergency room; As nurse, assistant nurse; RT, radiological technician; MS, medical student; SB, stretcher bearer; NA, not applicable.

delayed [6], so risk assessment and PEP should be conducted promptly.

In the context of a healthcare facility with high hygiene standards, HCWs are probably at low risk of contracting MKP. Risk assessment tools for HCWs should be developed or improved based on accumulated experience of the 2022 global outbreak.

#### Conflict of interest statement

None declared.

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None.

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