



Risk assessment tool for identifying and managing health and care workers with a potential occupational exposure to monkeypox virus

This risk assessment tool should be used to assess all health and care workers in health-care settings (health facilities, mpox treatment centres) who have had an occupational exposure to a person with mpox.

An **occupational exposure** is defined as unprotected contact between an exposed health and care worker and skin lesions, body fluids or respiratory droplets and/or secretions from a person with mpox (1). This unprotected contact may occur through the inadvertent splash of an infected mpox person's saliva into the health and care workers eyes or mouth, injury with a contaminated sharp, unprotected physical contact during medical care or with visibly contaminated materials (e.g. linens, clothing) (1,2). Care provided to a suspected or confirmed mpox patient by a health and care worker who has properly put on, worn and removed the appropriate personal protective equipment (PPE) does not constitute an exposure.

This assessment tool determines the risk categorization of health and care workers who have been exposed to the monkeypox virus and informs the recommended clinical and public health management of the exposed health and care worker (see Table 1). This tool is applicable for all monkeypox virus clade outbreaks.

This tool should be completed as soon as a health and care worker exposure has been identified by interviewing the health and care worker in a quiet and private space. Ideally, the focal person for occupational health and safety (OHS) or infection prevention and control (IPC) or an IPC link person at the mpox treatment centre or health-care facility where the exposed health and care worker works should conduct the interview and complete this tool. This tool can be initiated by either the health and care worker themselves or through documented observations made by OHS/IPC focal person or the IPC link person.

Before starting the interview, confirm that the health and care worker has no signs or symptoms consistent with mpox. If they do, refer them immediately for screening, triage and isolation and complete a thorough investigation using this tool and case reporting forms.

Emphasize at the start of the interview with the health and care worker that their honest answers are important to understanding what actually occurred. Explain that this information will help protect them, their family, their co-workers and their patients, and that the information they provide will not be used to penalize them. If more than one health and care worker has been exposed, complete an interview and risk assessment tool for each of them. See Annex 1 for details on the methods used for this document.

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Risk assessment tool

1. Interviewer information			
1a. First Name:			
1b. Last name:			
1c. Interviewer role:			
1d. Interview date:			
1e. Phone number:			
1f. Consent obtained from health and care worker for interview:	<input type="checkbox"/> Yes Signature: <hr/>	<input type="checkbox"/> No (specify reason):	
2. Health and care worker information			
2a. First name:			
2b. Last name:			
2c. Date of birth (DD/MM/YYYY):			
2d. Sex:	<input type="checkbox"/> Female	<input type="checkbox"/> Male	<input type="checkbox"/> Prefer not to answer
2e. Address:			
2f. Phone number:			
2g. Occupation:	<input type="checkbox"/> Medical doctor	<input type="checkbox"/> Nurse	
	<input type="checkbox"/> Midwife	<input type="checkbox"/> Medical/Health-related student	
	<input type="checkbox"/> Radiology/X-ray technician	<input type="checkbox"/> Phlebotomist	
	<input type="checkbox"/> Physical therapist	<input type="checkbox"/> Nutritionist/dietitian	
	<input type="checkbox"/> Pharmacist/technician or dispenser	<input type="checkbox"/> Laboratory worker	
	<input type="checkbox"/> Volunteer	<input type="checkbox"/> Patient transporter	
	<input type="checkbox"/> Office staff/Administrator	<input type="checkbox"/> Cleaner (such as hygienist or laundry worker)	
	<input type="checkbox"/> Catering/food staff member	<input type="checkbox"/> Ambulance driver	
	<input type="checkbox"/> Vaccinator	<input type="checkbox"/> Security guard	
	<input type="checkbox"/> Traditional healer	<input type="checkbox"/> Community health worker	
	<input type="checkbox"/> Medical attendant	<input type="checkbox"/> Mortuary staff member	
	<input type="checkbox"/> Other (specify):		

3. Exposure information		
3a. What type of facility were you [the health and care worker] working in at the time of exposure?	<input type="checkbox"/> Mpox treatment centre/isolation unit	<input type="checkbox"/> Health-care facility (all levels)
3b. Where in the facility were you [the health and care worker] working at the time of the exposure? *For questions with Adult/Paediatric) - please circle the appropriate unit	<input type="checkbox"/> Intensive care Unit (ICU) (Adult/Paediatric)	<input type="checkbox"/> Screening/triage
	<input type="checkbox"/> Outpatient Department* (OPD) – (Adult/Paediatric)	<input type="checkbox"/> Inpatient Department* (IPD) – Medical (Adult/Paediatric)
	<input type="checkbox"/> Emergency (Adult/Paediatric)	<input type="checkbox"/> Maternity
	<input type="checkbox"/> Laboratory	<input type="checkbox"/> Pharmacy
	<input type="checkbox"/> Administration	<input type="checkbox"/> Inpatient Department* (IPD) - Surgery (Adult/Paediatric)
	<input type="checkbox"/> Monitoring or care of patient at home	<input type="checkbox"/> Morgue
	<input type="checkbox"/> Laundry management area	<input type="checkbox"/> Waste management area
	<input type="checkbox"/> Other (specify):	
3c. What is the name and district of the health-care facility/setting where the exposure occurred?	Name of health-care facility: Name of health-care setting district:	
3d. Do you work in more than one health-care facility/setting?	<input type="checkbox"/> Yes (specify the other facility/setting name and district) Name(s) of the other health-care facility/facilities: Name(s) of other facility/setting district(s): If the health and care worker visits households, check here: <input type="checkbox"/>	<input type="checkbox"/> No
3e. What was the date of the exposure?	Date: __ / __ / ____ [D D/ M M/Y Y Y Y]	<input type="checkbox"/> Don't know

3f. Select the activities the health and care worker was performing that may have led to the exposure. The interviewer should select all that apply from the following list of activities.

<input type="checkbox"/> Cleaned or disinfected patient environment	<input type="checkbox"/> Handled patient care equipment
<input type="checkbox"/> Handled patient waste, including linen, clothing or mattress	
<input type="checkbox"/> Handled patient skin lesions or body fluids	<input type="checkbox"/> Provided emergency care/resuscitation
<input type="checkbox"/> Provided clinical assessment (including taking of vital signs) and examination of patient	
<input type="checkbox"/> Bathed or washed patient	<input type="checkbox"/> Moved or transported patient
<input type="checkbox"/> Exchanged body fluids during sample collection from a person suspected or confirmed to have mpox	
<input type="checkbox"/> Inserted IV line(s)	<input type="checkbox"/> Gave an injection
<input type="checkbox"/> Handled intravenous line(s) (administered intravenous medications or infusions)	
<input type="checkbox"/> Handled urinary catheter	<input type="checkbox"/> Incurred a needle stick/sharps injury
<input type="checkbox"/> Exchanged body fluids while handling a sample of a person suspected or confirmed to have mpox	
<input type="checkbox"/> Fed patient	<input type="checkbox"/> Administered oral medication
<input type="checkbox"/> Had unprotected contact with another health and care worker suspected or confirmed to have mpox	
<input type="checkbox"/> Handled or processed lab specimens	<input type="checkbox"/> Performed blood test or finger prick
<input type="checkbox"/> Led or assisted with medical procedures that may have created aerosols from oral secretions (e.g. cardiopulmonary resuscitation, intubation)	
<input type="checkbox"/> Performed surgery or other invasive procedures	
<input type="checkbox"/> Handled or cleaned surgical instrument(s)	<input type="checkbox"/> Cleaned body fluid spill or contaminated surface
<input type="checkbox"/> Carried out a rectal/urogenital examination or provided rectal/urogenital care	
<input type="checkbox"/> Handled a dead body	<input type="checkbox"/> Led or assisted with childbirth/delivery
<input type="checkbox"/> Other (specify):	

Provide additional narrative details about the exposure activity and length of exposure (ask the health and care worker to describe):

3g. Did any of the exposures/activities listed in 3f, expose the health and care worker to any of the following? Select all that apply.

<input type="checkbox"/> Skin lesion(s)	<input type="checkbox"/> Saliva or vomit	<input type="checkbox"/> Faeces
<input type="checkbox"/> Blood	<input type="checkbox"/> Sweat	<input type="checkbox"/> Vaginal secretions
<input type="checkbox"/> Seminal fluid	<input type="checkbox"/> Vomit	<input type="checkbox"/> Ocular discharge or tears
<input type="checkbox"/> Skin lesions, including dried lesions exudate or crusts		
<input type="checkbox"/> Don't know	<input type="checkbox"/> None	
<input type="checkbox"/> Other (specify):		

3h. Did any of the activities listed above result in physical contact (i.e. direct touch) with a patient suspected or confirmed to have mpox or with their broken skin, mucous membranes, or skin lesions?

<input type="checkbox"/> Yes	Move to Question 3i
<input type="checkbox"/> No	Move to Question 3i
<input type="checkbox"/> Don't know or not applicable	Move to Question 3i

3i. Did you have physical contact (i.e. direct touch) with any objects, surfaces and/or materials (i.e. linens, clothing) that were in extended contact with a person suspected or confirmed to have mpox?

<input type="checkbox"/> Yes	Move to Question 3j
<input type="checkbox"/> No	Move to Question 3j
<input type="checkbox"/> Don't know or not applicable	Move to Question 3j

3j. Did you have contact with the body fluids of a person suspected or confirmed to have mpox?

<input type="checkbox"/> Yes	Move to Question 4a
<input type="checkbox"/> No	Move to Question 4a
<input type="checkbox"/> Don't know or not applicable	Move to Question 4a

*Note: If no contact from activities was found (no to 3h, 3i, and 3j) manage as an unlikely occupational exposure and stop completing this form. If contact was found, continue to section 4. Infection Prevention and Control to determine if it was considered an exposure.

4. Infection prevention and control

4a. Has the health and care worker been vaccinated against smallpox/mpox?
[Determined by asking and confirming, when possible, with records]

<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Don't know
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4b. During time of exposure, was any personal protective equipment (PPE) item used?

<input type="checkbox"/> Yes	Move to Question 4c
<input type="checkbox"/> No	Move to Question 4g
<input type="checkbox"/> Don't know	Move to Question 4g

4c. List all the items that were used during time of exposure – tick all that apply		
<input type="checkbox"/> Single pair of gloves	<input type="checkbox"/> Double pair of gloves	<input type="checkbox"/> Disposable gown
<input type="checkbox"/> Medical mask	<input type="checkbox"/> Face shield	<input type="checkbox"/> Goggles
<input type="checkbox"/> Closed-toe shoes/rubber boots	<input type="checkbox"/> N95 or equivalent respirator	<input type="checkbox"/> Waterproof apron
<input type="checkbox"/> Shoe covers	<input type="checkbox"/> Other (Specify):	
4d. Was the correct PPE worn according to the interaction? [Assessor to determine based on responses to 4c and activity risk assessment]		
<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Don't know
4e. Describe in detail what took place when removing the PPE worn during the exposure, including the steps taken, any problems that arose? [Ask the health and care worker to clearly describe the steps and order they took when removing PPE and record their response here]		
4f. Based on the answer to Question 4e, was there a breach* or break of PPE whilst wearing or removing the PPE? [Assessor to determine]		
*Breach of PPE can refer to defective PPE, a malfunction of the PPE, a puncture or break in PPE, or improper technique resulting in exposure (for example, during removal).		
<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Don't know
*Note: If the correct PPE was worn, there was no breach in PPE and proper IPC practices were in place (i.e. sharps safety and hand hygiene), manage as an unlikely occupational exposure and stop completing this form. Standard care of a person suspected or confirmed to have mpox with proper IPC measures is not considered an exposure.		
4g. Cite the reasons why PPE was not used at all, why the correct PPE was not used, or if it was unknown whether PPE was used during time of exposure – tick all that apply. [Assessor to determine based on asking the health and care worker for additional details]		
<input type="checkbox"/> PPE not available	<input type="checkbox"/> PPE available but not accessible (i.e. in a locked cabinet)	
<input type="checkbox"/> Lack of training on how to put on or take off PPE	<input type="checkbox"/> Lack of training on which PPE to use for mpox	
<input type="checkbox"/> Lack of interest in using PPE (too hot, hard to work in, etc.)	<input type="checkbox"/> Lack of time to put on (attending to emergency)	
<input type="checkbox"/> Unknown status of mpox patient	<input type="checkbox"/> Not applicable (answered "Yes" to 4b and all appropriate PPE was put on)	
<input type="checkbox"/> Other (specify):		

4h. During the activities listed in 3f, which of the following type(s) of exposure occurred? [Assessor to determine]	
<input type="checkbox"/> Penetrating sharps injury from a used intravenous cannula, needle or other sharps used on a patient with mpox.	Exposure risk
<input type="checkbox"/> Unprotected intact or non-intact (broken) skin or mucous membrane contact of the health worker with: <ul style="list-style-type: none"> <input type="checkbox"/> the skin lesions, dried lesion exudate or crusts of a patient with mpox. <input type="checkbox"/> the mucous membranes or body fluids of a patient with mpox. <input type="checkbox"/> objects/environment visibly contaminated with the body fluids, dried lesion exudate or crusts of a patient with mpox. 	
<input type="checkbox"/> Unprotected exposure (eyes and other mucous membranes or any broken skin not protected with PPE) during a medical procedure that may have created aerosols from oral secretions of patient with mpox.	
<input type="checkbox"/> Close contact (<1 metre) with a patient with mpox without wearing all recommended PPE, but no physical contact with the patient or objects/environment contaminated with body fluids.	Unlikely exposure risk
5. Assign level of exposure risk	
5a. What is the risk of exposure (based on responses to 4h)?	
<input type="checkbox"/> Unlikely risk exposure Select this answer if the answer to Question 4 or unlikely exposure risk was selected	<input type="checkbox"/> Exposure risk Select this answer if any exposures from 4h were selected (if multiple exposures were determined, one exposure is enough to select this box).
For details on management of health and care workers according to exposure risk, refer to Table 1.	
Additional notes:	

Management of health and care workers based on exposure risk

Based on the completed exposure assessment, an exposure risk level is assigned. This table outlines measures for managing health and care workers based on the assigned exposure risk. As these measures are discussed, it is important to start by reassuring the health and care worker that the appropriate steps will take place based on risk assessment.

Table 1. Management of health and care workers based upon exposure risk

Exposure risk	Unlikely exposure
<ul style="list-style-type: none"> <input type="checkbox"/> If not already done, the facility IPC/OHS focal point should notify the relevant public health authorities of the possible exposure. <input type="checkbox"/> The health and care worker should undergo medical evaluation and immediate consideration for possible interventions (vaccination or post-exposure prophylaxis (PEP), as available). <input type="checkbox"/> The health and care worker does not need to be excluded from work if they do not show signs or symptoms of mpox, but should undergo active, daily monitoring (in-person when possible or via phone) for signs or symptoms for 21 days post-exposure by the IPC or OHS focal point and be instructed not to work with vulnerable patients*. This surveillance is in addition to national mpox contact tracing measures in place. <input type="checkbox"/> Closely monitor that PPE is consistently and correctly utilized by the exposed health and care worker during the 21-day follow-up period. <input type="checkbox"/> As a precautionary measure, the health and care worker should be instructed to refrain from close contact with others for 21 days post-exposure. <input type="checkbox"/> Provide IPC re-education and counselling with a focus on preventative measures. If any knowledge gaps are identified during this interview, mentor the health and care worker on those specific topics of knowledge. 	<ul style="list-style-type: none"> <input type="checkbox"/> Continue normal duties following IPC standards. <input type="checkbox"/> Provide IPC re-education and counselling with a focus on preventative measures. If any knowledge gaps are identified during this interview, mentor the health and care worker on those specific topics of knowledge.

*A vulnerable patient is defined as a child under five years of age or someone who is pregnant, immunosuppressed (such as a person living with HIV), or has chronic or underlying illnesses related to the lung, heart, liver, kidney, skin, metabolic or mental health, such as diabetes or cardiovascular disease.

References

1. World Health Organization. *Mpox outbreak toolbox*. [Online]. Available at: <https://www.who.int/emergencies/outbreak-toolkit/disease-outbreak-toolboxes/mpox-outbreak-toolbox>.
2. Surveillance, case investigation and contact tracing for mpox (monkeypox): interim guidance, 20 March 2024. World Health Organization: Geneva, 2024. <https://iris.who.int/handle/10665/376306>.
3. Clinical management and infection prevention and control for monkeypox: interim rapid response guidance, 10 June 2022. World Health Organization: Geneva, 2022. <https://iris.who.int/handle/10665/355798>.

Annex 1. Methods

The exposures and associated risk categorizations outlined in this guide are derived from existing WHO documents, including the Surveillance, case investigation, and contact tracing for mpox: Interim guidance (1), the WHO case definition (2), and tools such as the WHO Case investigation form (2) and Go.Data templates (2). These resources also support recommendations for health and care worker exposure to mpox, as detailed in the Clinical management and infection prevention and control for monkeypox: Interim rapid response guidance (3).

This guide has been updated and adapted from existing IPC tools, specifically the Risk assessment form for health and care workers with potential occupational exposure to Ebola or Marburg Disease, which has been refined through extensive evaluation and feedback during past outbreaks. Exposures are categorized into two risk levels: exposure risk and unlikely risk, based on the precautionary principle of managing individuals conservatively and limiting ongoing exposure.

The document was widely circulated for feedback amongst relevant WHO mpox response teams; it was also shared externally with subject matter experts and implementing partners for their review and inputs.

References:

1. Surveillance, case investigation and contact tracing for mpox (monkeypox): interim guidance, 20 March 2024. World Health Organization: Geneva, 2024. <https://iris.who.int/handle/10665/376306>.
2. World Health Organization. *Mpox outbreak toolbox*. [Online]. Available at: <https://www.who.int/emergencies/outbreak-toolkit/disease-outbreak-toolboxes/mpox-outbreak-toolbox>.
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