Infection prevention and control measures for clinically suspected and confirmed cases of mpox in healthcare settings

1. Introduction

Mpox is an infectious disease that is caused by infection with monkeypox virus (MPXV).

This document outlines recommended infection prevention and control (IPC) measures to prevent the transmission of mpox in healthcare settings in England, and to operationalise pathogen-specific guidance on mpox from the UK Health Security Agency (UKHSA).

This document should be read alongside:

- the National infection prevention and control manual (NIPCM) for England (published on the NHS England website)
  - specifically the addendum on high consequence infectious disease (HCID) personal protective equipment (PPE)
- the updated UKHSA guidance (via the gov.uk website), including the Operational mpox HCID (Clade I) case definition

The NIPCM for England informs the content of this document and should be used by organisations and employers to support local implementation and risk assessment, ensuring the appropriate application of IPC measures across the health system.

All healthcare workers must be familiar with the principles of standard infection control precautions (SICPs) and transmission based precautions (TBPs) for preventing the spread of infection in healthcare settings.

Since May 2022, cases of human mpox have been reported in multiple countries that have not previously had MPXV in animal or human populations, including the UK.

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There are 2 genetically distinct clades described for MPXV:

- Clade I, formerly called the Congo Basin (Central African) Clade
- Clade II, formerly called the West African Clade

Clade I is split into Clade Ia and Clade Ib. Clade II is split into Clade IIb and Clade IIa, with subgroup clusters called lineages.

Most of the cases seen in the outbreak in 2022 were from Clade IIb, lineage B.1.

Since January 2023, Clade II mpox is no longer considered an HCID within the UK, as described in the Principles for non-HCID mpox in the UK 4 nations consensus statement on the gov.uk website.

Clade I mpox remains classified as an HCID. Below is a list of guidance to support the application of these measures:

- UKHSA mpox (monkeypox): guidance
- UKHSA HCID status of mpox (monkeypox)
- UKHSA Operational mpox HCID (Clade I) case definition
- HCID printable resources (HCID training website)
- Mpox patient information (nhs.uk)
- NHS response to outbreak of Clade I mpox in Eastern and Central Africa (NHS England website)

2. General information

Healthcare providers must establish a clinical pathway for the isolation and management of suspected Clade I MPXV cases within their setting.

This pathway should include isolation of the patient, co-ordination with local IPC teams, and arrangements for consulting with local infectious disease, microbiology, or virology experts if a Clade I MPXV is suspected.

This will ensure appropriate clinical management, testing and infection control measures are implemented.

Refer to NHS England pathway action cards for Clade I mpox pathway actions in community settings, emergency departments and general practice.

2.1 Mode of transmission

Mpox is transmitted primarily through 3 main routes:

- Direct contact
- Indirect contact (fomite)
- Respiratory droplets

In cases where there is evidence of lower respiratory tract involvement or severe systemic illness requiring hospitalisation, airborne transmission cannot be ruled out. In the context of HCID classification, Clade I mpox is classified as an airborne HCID.

The incubation period for mpox ranges from 6 to 13 days, although it can be as short as 5 days or as long as 21 days.

The infectious period extends from the onset of symptoms until all lesions have healed and scabs have fallen off. It is important to note that scabs are considered potentially infectious.

Transmission occurs through direct contact with infectious skin or lesions, indirect contact with contaminated items (such as clothing and bed linen) and via respiratory droplets.

Although sexual activity was an important transmission risk during the 2022 outbreak, mpox can be transmitted through any type of close physical contact, whether sexual or non-sexual.

Prior to 2022, mpox cases in the UK were either imported from endemic countries or linked to documented contacts with imported cases.

From 2018 to 2021, there were 7 confirmed cases in the UK: 4 imported; 2 in household contacts; and 1 in a healthcare worker who was involved in the care of an imported case before mpox was suspected.

There was no documented community transmission in UK before 2022.

2.2 Symptoms

MPXV is a virus related to smallpox. It causes a rash illness that can range from mild and localised to severe and widespread.

Symptoms of mpox typically start 5 to 21 days after exposure, with an average onset of 6 to 16 days.

Initially, individuals may experience clinical symptoms before the rash appears, which can include fever, malaise, lymphadenopathy, and headache.

Common symptoms of mpox include:

- rash or isolated skin lesions
- fever
- sore throat
- headache
- muscle aches
- back pain
- low energy
- swollen lymph nodes

However, not all individuals with mpox will experience all these symptoms.

Approximately 1 to 5 days after the onset of fever (if present), a rash develops, often starting on the face or genital area before spreading to other parts of the body.

The rash progresses through various stages, eventually forming scabs which eventually fall off. Some lesions may ulcerate and heal slowly, forming granulation tissue.

Areas with heavy exposure to the virus, such as exposed skin and exposed mucosal surfaces may have more numerous and severe lesions.

Sexual transmission of mpox can lead to lesions concentrated in areas involved in sexual activity, including the genitals, the perianal area, rectum, and oral cavity (mouth and throat).

Up to date clinical features of mpox can also be found in the UKHSA guidance on mpox: background information.

3. Case definition

On 15 August 2024, UKHSA issued an urgent public health message to all NHS providers regarding Clade I mpox outbreaks in parts of Africa and updated the operational mpox HCID case definition.

Individuals to be managed as HCID cases

Patients with confirmed or clinically suspected mpox but clade not yet known should be managed as a HCID mpox case whilst further information is pending, if either (or both):

- there is a travel history to the Democratic Republic of the Congo (DRC) or specified countries where there may be a risk of Clade I exposure, or a link to a suspected case from those countries (listed below), within 21 days of symptom onset

Or:

- there is an epidemiological link to a case of Clade I mpox within 21 days of symptom onset

Cases when mpox is NOT considered an HCID

Mpox is not considered an HCID in the following circumstances:

- a case has a laboratory confirmed Clade II MPXV infection

or:

- a confirmed or clinically suspected mpox case of an unknown clade, and none of the epidemiological characteristics listed in the UKHSA operational management as HCID apply

Countries currently listed by the UKHSA with laboratory confirmed Clade I cases include:

- Democratic Republic of the Congo (DRC)
- Republic of Congo
- Central African Republic
- Burundi
- Rwanda
- Uganda
- Kenya
- Cameroon
- Gabon

Countries listed where there may be a risk of Clade I mpox exposure (based on sharing a border with DRC) currently include Angola, South Sudan, Tanzania, and Zambia.

Given the evolving situation and rapid spread of Clade I in the African Region, ensure that your systems are regularly updated by checking the gov.uk UKHSA mpox webpages for any changes in the list of countries at risk or with confirmed cases.

Important note

Not meeting the operational mpox HCID case definition does not preclude the patient from other HCID or infectious disease considerations.

Patients should be managed according to their clinical presentation.

The differential diagnosis can be wide; please speak to your local infection specialist to support clinical decision making.

4. Diagnostics

Healthcare workers treating patients with suspected mpox who may meet the HCID operational definition (as outlined above) should contact the Imported Fever Service (0844 778 8990) to expedite testing, after discussion with their local infection service.

Additionally, please refer to the following resources for further guidance:

- UKHSA information on taking, submitting, and processing samples which potentially contain MPXV
- Rare and Imported Pathogens Laboratory (RIPL): Specimen referral guidelines and service user manual (downloads PDF)

5. Risk assessment (hierarchy of controls)

Risk assessments must be conducted in all areas where there is possibility of encountering or caring for individuals with clinically suspected or confirmed cases of mpox.

These assessments should be carried out by a competent person who has the necessary skills, knowledge, and experience to identify and manage the risks associated with mpox. This individual could be the employer, or someone specifically appointed for this task.

The results of these risk assessments should be communicated to all employees who may be involved in the care and management of mpox cases. This information can also be integrated into local risk management systems.

To effectively control and reduce the spread of mpox in healthcare settings, the hierarchy of control measures should be applied. Safe systems of work established through these measures are crucial components of IPC.

Key considerations and measures include:

- Elimination
  - where feasible, physically remove the hazard
  - for example, by substituting in-person assessments or treatments with virtual consultations (such as telephone or video calls)
- Substitution
  - although not always possible, consider virtual consultations as an alternative in primary or outpatient care settings

- Engineering
  - implement measures to control, mitigate, or isolate the hazard
  - such as ensuring that ventilation systems comply with national recommendations for air changes in areas where mpox cases are cared for
- Administration
  - establish and follow safe systems of work, including the implementation of IPC measures
- Personal protective equipment (PPE)
  - ensure the availability and adequacy of PPE, including respiratory protective equipment (RPE), to protect healthcare staff

6. Infection prevention and control measures

All healthcare staff must be familiar with the principles of SICPs and TBPs, as outlined in NHS England's NIPCM for England.

The following sections provide specific guidance on applying these measures for managing clinically suspected or confirmed cases of mpox.

6.1 Triage

Staff should be aware that **any** patients presenting with fever and rash may be infectious (for example, measles, varicella zoster virus) and must take immediate action to prevent further transmission.

Whenever possible, conduct telephone triage to assess symptoms and the risk of mpox before face-to-face contact. Contact the local infection service for advice.

On arrival, patients must be promptly assessed for infection risk. Triage and testing should be carried out by clinical staff trained in mpox case definitions and testing. This should be done in a designated area.

Refer to sections 6.3 and 6.4 for patient placement and PPE requirements during triage/initial assessment of suspected cases for suspected Clade I and Clade II mpox cases.

Refer to NHS England mpox pathway action cards.

6.2 Source control

All clinically suspected and confirmed mpox cases should be provided with a fluid-resistant surgical mask (FRSM) upon arrival in healthcare settings.

Instruction should be provided on the correct use of FRSM as source control, including removal, disposal, and the need to perform hand hygiene.

Outpatients, including those in urgent and emergency care (UEC) and primary care, should wear an FRSM if tolerated and deemed safe. The mask should remain in place throughout the consultation or treatment unless removed for clinical reasons.

Inpatients are not required to wear an FRSM while in a single or isolation room. However, patients with clinically suspected or confirmed mpox moving between care areas should wear an FRSM, unless contraindicated.

The use of FRSMs must never compromise clinical care, such as during oxygen therapy or in cases where the mask causes significant distress (for example, in paediatric or mental health settings).

Covering mpox lesions with clothing or dressings may reduce the risk of transmission in shared or public spaces.

Where clinically appropriate, before attending or upon arrival at the healthcare setting, advise individuals with clinically suspected mpox to cover any external lesions.

Lesions should remain covered during transfer between care areas and until clinical assessment.

6.3 Patient placement

If a suspected case presents in person at a primary care, outpatient, or community setting they should be isolated/socially distanced and a virtual assessment should take place (for example, by phone) staff should not physically assess the patient without PPE (see section 6.4).

Advice should be sought from the local infection service, including transfer to secondary care and immediate precautions.

Suspected Clade I MPXV infection

For suspected Clade I MPXV infection in acute care settings, isolation in a negative pressure isolation room with ensuite facilities is optimal.

Suspected Clade II MPXV infection

For suspected Clade II MPXV infection, a single room with en suite facilities is optimal.

6.4 PPE in all healthcare settings

All healthcare organisations are responsible for ensuring they have sufficient supplies of the required PPE, and that their staff are trained and competent in its proper use.

The government scheme for free PPE provision to health and social care sectors in response to Covid-19 has ended.

Primary care providers, like all NHS providers, are now responsible for sourcing and purchasing their own PPE, including FFP3 respirator masks and fit testing, to maintain safe working conditions for IPC.

PPE requirements for clinically suspected or confirmed mpox cases are determined by risk assessment that includes HCID classification, patient's presenting symptoms, and type and duration of patient contact and care.

Tables 1 and 2 (below) outline the required PPE for different clinical settings and scenarios for each clade of mpox.

NHS England's NIPCM addendum on HCID PPE outlines the unified ensemble organisations should transition to by March 2025 – **in acute settings only**.

In all other healthcare settings, airborne PPE is required, as outlined in appendix 5b of the NIPCM (also see table 1).

Providers should only purchase PPE items for ensembles that their staff are trained to use. Do not purchase items such as hoods for the unified HCID ensemble if this has not yet been implemented in your organisation; continue with airborne PPE in line with staff training.

Important note

the requirements for suitable and adequate PPE in the ambulance service may differ due to the settings and conditions in which they operate.

The ambulance service should continue to follow advice on HCID PPE set out by the National Ambulance Resilience Unit (NARU).

Table 1: PPE requirements for clinically suspected and confirmed Clade I mpox

Minimum PPE required for:	PPE required
Where an individual with clinically suspected mpox presents in person at a primary care, community or outpatient setting and requires immediate clinical care. -- In acute settings (physical and mental health) for triage and assessment of suspected cases against the mpox operational case definition.	Airborne PPE: • single pair of disposable gloves, • disposable, long-sleeved, fluid-resistant gown • eye/face protection (full face visor) • FFP3 respirator (fit-tested and fit-checked)
In acute settings where a patient with clinically suspected mpox has been admitted for clinical care while awaiting results of diagnostic testing. -- In acute settings where a patient with confirmed Clade I mpox is being clinically cared for while awaiting transfer to a designated HCID treatment centre.	Unified HCID PPE ensemble: • filtering face piece 3 (FFP3) respirator • hood • longer-length visor • long rear-fastening fluid-resistant surgical gown tied to the side • medium thickness apron • inner gloves • middle gloves taped to the gown with microporous tape • outer gloves • wellington boots OR: If the unified ensemble has not yet been implemented, staff must be trained and competent in the use of any alternative ensemble.[1] **As a minimum**, airborne PPE as described above must be used; additional contact measures for this pathogen may include a form of head covering and fluid-resistant footwear such as clogs or wellington boots.

[1] Organisations which have transitioned to the unified HCID PPE ensemble should continue to follow the NIPCM addendum on HCID PPE. Where organisations have not yet implemented the unified HCID PPE ensemble, staff must be trained, practised and competent against current local policy for airborne HCID PPE.

Table 2: PPE requirements for clinically suspected and confirmed Clade II mpox

Minimum PPE required for:	PPE:
Any individual presenting with an unexplained rash/symptoms suggesting clinically suspected mpox. -- If the individual has respiratory symptoms or extensive lesions/deteriorating condition a higher level of PPE is required.	• disposable, fluid-resistant apron (or disposable, long-sleeved, fluid-resistant gown where extensive manual handling or unavoidable skin-to-skin contact is anticipated) • FRSM (Type IIR) • eye/face protection (if there is a risk of spraying/splashing), and • single pair of disposable gloves • eye/face protection (full face visor) • FFP3 respirator (fit-tested and fit-checked) or equivalent – for example, powered air purifying respirator (PAPR),[2] rather than FRSM
Any clinically suspected or confirmed Clade II mpox case with respiratory symptoms and/or with severe disease and/or extensive vesicular lesions. -- Or inpatient management of a case which requires close clinical contact.	• disposable, long-sleeved, fluid-resistant gown (coveralls may be worn in some settings, such as an ambulance) • FFP3 respirator (fit-tested and fit-checked) or equivalent – for example, powered air purifying respirator (PAPR)[2] • full face visor • single pair of disposable gloves

Guidance for safe donning and doffing of airborne PPE is available in appendix 6 of the NIPCM.

Refer to appendices 2 and 3 of the NIPCM addendum on HCID PPE for resources on donning and doffing the unified ensemble.

Refer to the NIPCM addendum on HCID PPE for the management of used HCID PPE, including disposal and decontamination of any potentially reusable components, for example wellington boots.

[2] PAPR are a suitable alternative to FFP3 for management of **non-HCID cases only**. Decontamination protocols must be in place for any reusable components with responsibility assigned. If a PAPR is used for a confirmed Clade I mpox case, **it must be disposed of as category B waste**.

6.5 Environmental decontamination procedures for mpox cases

Staff responsible for decontamination of healthcare environments where clinically suspected or confirmed mpox cases are managed must be properly trained in the correct use of all products and the necessary PPE (see section 6.4 above).

6.5.1 Primary care, community, and outpatient settings

If a clinically suspected or confirmed mpox case or a contact visits the setting, the following decontamination procedures should be carried out after they leave:

- Decontaminate reusable non-invasive care equipment in the room before removal (as per section 6.6).
- Remove waste (see section 6.7).
- Remove bed screens and curtains – dispose of or clean according to section 6.8 (safe management of linen), and section 6.7 (safe management of waste).

Clean and disinfect waiting areas, facilities (such as toilets), treatment or assessment areas, and any reusable equipment used. Use either:

- a combined detergent/disinfectant solution with a concentration of 1,000 parts per million (ppm) available chlorine (av.cl)

or

- a general-purpose neutral detergent in warm water followed by a disinfectant solution of 1,000ppm av.cl. (or an alternative locally agreed cleaning product)

Clean from highest to lowest points and from the least to most contaminated areas, ensuring all equipment and surfaces (including floors) are decontaminated.

6.5.2 Inpatient settings

Only clinical staff trained and competent in HCID PPE should enter the at-risk clinical environment for suspected or confirmed HCIDs.

These staff may need to perform tasks such as environmental cleaning that are typically handled by other groups.

Patient isolation rooms/areas must be decontaminated at least daily, or more frequently based on infection prevention and control team (IPCT) advice. Use either:

- a combined detergent/disinfectant solution with a concentration of 1,000 ppm av.cl

or

- a general-purpose neutral detergent in warm water followed by a disinfectant solution of 1,000ppm av.cl (or an alternative locally agreed cleaning product)

Increase the frequency of in areas prone to higher contamination such as:

- toilets and commodes
- frequently touched surfaces (for example, door/toilet handles, locker tops, over bed tables and bed rails)

Terminal decontamination

After a patient is transferred, discharged, or deemed no longer infectious, the following steps should be taken:

- Decontaminate reusable non-invasive care equipment in the room before removal (as per section 6.6).
- Remove waste (see section 6.7).
- Remove bedding, bed screens, and curtains– dispose of or clean according to section 6.8 (safe management of linen), and section 6.7 (safe management of waste).

Decontaminate the room using either:

- a combined detergent disinfectant solution with a concentration of 1,000ppm av.cl

or

- a general-purpose neutral detergent in warm water followed by a disinfectant solution of 1,000ppm av.cl (or an alternative locally agreed cleaning product)

Clean from highest to lowest points and from the least to most contaminated areas.

6.6 Decontamination of reusable equipment in all healthcare settings

Dedicate patient care equipment to individual patients and minimise the amount of equipment and stock in the room.

Decontaminate reusable patient care equipment using either:

- a combined detergent/disinfectant solution with a concentration of 1,000 ppm av.cl

or

- a general purpose neutral detergent in warm water followed by a disinfectant solution of 1,000ppm av.cl (or an alternative locally agreed cleaning product)

Follow standard operating procedures (SOPs) and manufacturers' guidelines for the decontamination of medical/surgical equipment, for example dialysis machines.

6.7 Safe management of waste

According to international agreement, waste and samples from individuals suspected or confirmed to have mpox should be treated as healthcare (clinical) Category B waste.

This waste can be disposed of in an orange bag for alternative treatment and does not require incineration. It is classified under UN 3291 as clinical waste.

If the waste contains chemical or pharmaceutical contaminants, it must be placed in a yellow container (or purple if cytotoxic or cytostatic), and either incinerated or sent to a permitted site for disposal as per national regulation.

Mpox waste management should adhere to Health Technical Memorandum 07:01 'Safe Management of Healthcare Waste' (NHS England website).

6.8 Safe management of linen

Linen from a clinically suspected or confirmed Clade I mpox case **must not be returned to the laundry**.

Ideally, infectious linen should be stored securely until diagnostic results are available.

If Clade I mpox is confirmed, the linen must be disposed of as Category B waste as outlined in section 6.7.

If storing infectious linen while awaiting diagnostic test results is not feasible, it should be disposed of as Category B waste as a precautionary measure.

Linen from a confirmed Clade II mpox case can be reprocessed as infectious linen.

All linen should be treated as infectious and bagged in a water soluble or soluble seam (alginate) bag, then placed in a polythene bag or impermeable sack (refer to appendix 8 of the NIPCM).

When handling linen from a clinically suspected or confirmed mpox cases, ensure a laundry receptacle is placed as close as possible to the point of use for immediate deposit.

Avoid the following:

- Rinsing, shaking or sorting linen when removing it from beds or trolleys.
- Placing used linen on the floor or other surfaces such as lockers and tabletops.
- Re-handling infectious linen once it has been bagged.
- Overfilling laundry receptacles (fill only up to two-thirds full).

Ensure the patient is given information on the management of their personal linen (clothing).

If home laundering is considered, ensure the person undertaking this is provided with up to date information for safe handling, transportation, and laundering in line with national and local guidance.

7. IPC guidance for ambulance and patient transport services (PTS)

The IPC guidance outlined in this document applies to all ambulance and PTSs.

These services should adhere to ambulance SOPs for managing individuals with infectious diseases, including HCIDs.

8. Visitor guidelines

Visits to patients who are clinically suspected or confirmed mpox patients should be restricted. However, clinicians should use their discretion in circumstances where visitor restriction is considered inappropriate, and individualised guidance should be obtained from the local infection service or IPCT for parents, carers, or guardians.

Visiting requests for any HCID patient including clade 1 mpox must be discussed with the clinicians and the HCID Network.