UK Health Security Agency

Mpox: scenarios and technical elements of preparedness and response for clade I

Technical briefing 9

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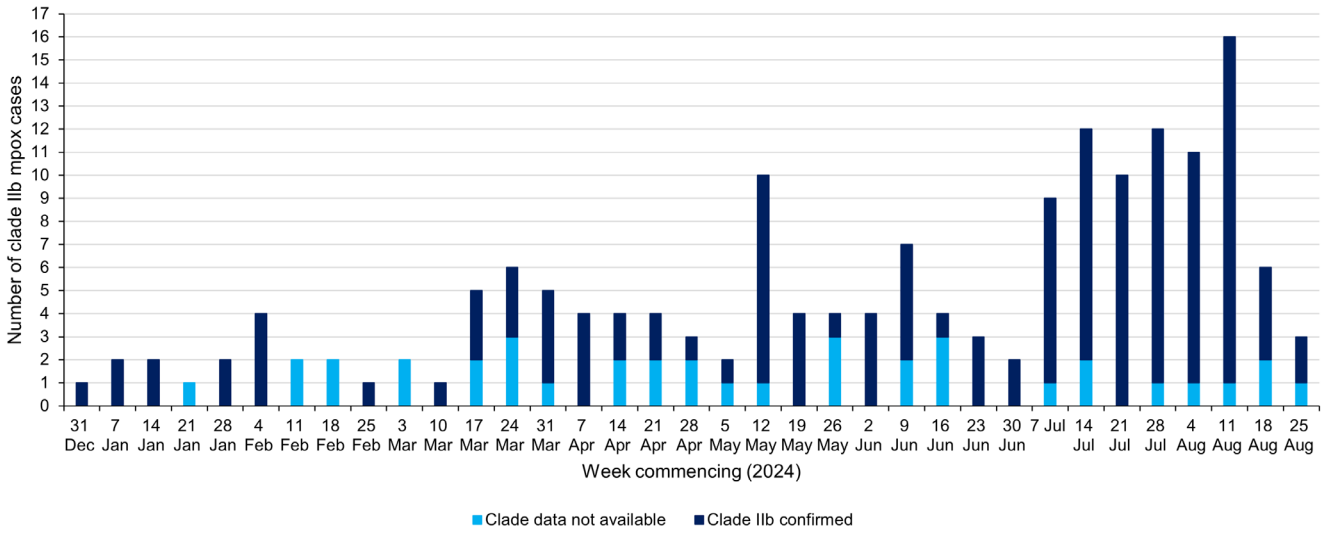
Contents

Introduction

The UK Health Security Agency (UKHSA) is working with the NHS and the public health agencies of the 4 nations on preparedness and response to mpox, the disease caused by the virus MPXV. This briefing is produced to share data useful to other public health agencies and academic partners undertaking related work. It includes early evidence and preliminary analyses which may be subject to change.

There is an ongoing outbreak of mpox caused by clade I MPXV in Central Africa, including increased clade Ia cases in Democratic Republic of the Congo (DRC) and a spreading outbreak of clade Ib. There is evidence of sustained human to human transmission for clade Ib, which is a novel clade with limited characterisation. Clade I MPXV is reported to cause more severe disease than clade II and is currently considered a High Consequence Infectious Disease (HCID) in the UK. Whilst there are low numbers of clade II cases in the UK (Figure 1), no clade I has been detected in the UK to date. This briefing covers technical elements of risk assessment, preparedness and response activities for clade I mpox with a domestic UK focus. The Foreign, Commonwealth and Development Office (FCDO) leads on the UK's activities in support of affected countries.

Figure 1. Confirmed mpox cases in the UK, showing proportion referred to the UKHSA reference lab RIPL for clade typing



Part 1. Potential scenarios for a mpox clade I outbreak in the UK

A key uncertainty in the epidemiology of clade Ib is transmissibility and mode of transmission. The following 3 scenarios have been developed to illustrate how MPXV with different levels of transmissibility between humans might spread, and the challenges that they might pose to the UK health system. These are illustrative scenarios and are not predictions or projections, neither are they exhaustive.

All scenarios presented here assume there is an ongoing outbreak in Africa which seeds other countries regularly through international air travel. The UK is highly connected by air travel, and it is assumed that the UK receives multiple separate importations of infection. The scenarios are focused on clade Ib, which shows genomic evidence of sustained human-to-human transmission (Vakaniaki and colleagues) and is associated with the geographically spreading outbreak.

Each scenario posits a different level of transmissibility, that is a different probability that any given contact of a case will become infected. Transmissibility relates to multiple different viral properties such as amount of shedding, duration of shedding and mode of transmission, but these are not considered separately for the purposes of the illustrative scenarios.

Scenario A: incursions and small clusters of cases

- Clade Ib MPXV is transmissible enough to spread effectively within very close contact settings and some highly connected sexual networks. This allows it to propagate in its current location and potentially other areas of the world where there are equivalent conditions. At this level of transmissibility, international sexual and close contact networks will not be sufficient to sustain a widespread global outbreak.
- It is highly likely that imported cases will occur in the UK, but they will be detected, and the low transmissibility of the virus means that they can be controlled by isolation of cases, contact tracing, post-exposure vaccination and quarantine of contacts. Where index cases are not detected, there may be small transmission clusters that would not be sustained.
- UK population immunity will not factor into this scenario as transmission will terminate regardless of immunity.
- A package of advice at the border to travellers from affected areas, aircraft declaration, and general messaging in immigration may help to identify imported cases or to facilitate their presentation to healthcare. This supports containment and reduces small clusters.
- Pre-travel advice and vaccination of deployed healthcare workers reduces the number of importations to a lesser extent.

- The commissioned High Consequence Infectious Diseases (HCID) NHS system cares for imported cases of clade Ib mpox, reducing risk of poor outcomes through expert infectious diseases input, while clinical and epidemiological information emerges.

Scenario B: a controllable epidemic

- Clade Ib is as transmissible or slightly more transmissible than clade IIb, which caused the 2022 outbreak. It spreads efficiently within high-contact sexual networks but is not transmissible enough to spread more widely into other population groups. In this scenario, the outbreak is not self sustaining without a sexual transmission component.
- By the time cases are detected in the UK, there will be established chains of sexual transmission in country.
- Transmission is primarily through gay, bisexual and other men who have sex with men (GBMSM) and heterosexual individuals with high numbers of sexual partners including sex workers. There are superspreader events internationally at sex tourism destinations.
- Non-sexual transmission is not self sustaining (similar to 2022), though it does occur sporadically, for example in households or other settings with close contact. Most cases are adults, although limited onwards transmission means that small numbers of children are affected with potential for severe disease in young children.
- A high proportion of GBMSM with high numbers of sexual partners have natural or vaccine-mediated immunity from the clade II outbreak. While this level of immunity is likely to allow some breakthrough infections, it will reduce severe disease in this population.
- There is very little prior immunity in heterosexuals with high numbers of partners, including sex workers. There will be some older individuals vaccinated against smallpox (pre-1971) who are also likely to retain some protection against severe disease if not immunosuppressed by other conditions.
- There are clusters of infections in closed settings including schools and early years settings, care homes, prisons and places of detention that can be effectively controlled by contact tracing, quarantine of contacts, and post-exposure vaccination.
- It is reasonable to assume that a similar-sized outbreak would occur in the UK compared to the global clade IIb outbreak with a potential increase in severity. It is likely that this would need to be managed more widely in the NHS than within infectious diseases services. If there were larger numbers of children affected, paediatric services may have pathway and capacity challenges; consideration will also need to be given to clinical pathways for pregnancy and the immunocompromised.
- Vaccination of sex workers and heterosexuals with high number of sexual partners, in addition to GBMSM, reduces transmission, however targeting vaccination at these individuals will be significantly more difficult than the GBMSM community who are

engaged with sexual health services through regular sexually transmitted infection (STI) testing, HIV PrEP (Pre-Exposure Prophylaxis) and other regular vaccination programmes.
- Contact tracing is enhanced and ring vaccination of close contacts of cases, and potentially contacts of contacts, occurs around clusters identified in schools, hospitals, care homes and other closed settings, limiting onwards spread.
- Highly accessible testing which allows individuals to access diagnosis conveniently, rapidly, and potentially remotely (for example, postal polymerase chain reaction (PCR) kit) helps to reduce transmission. Rapid diagnostic home sampling kits with sufficient sensitivity may have a role in control if they can be developed and are acceptable for use.

Scenario C: community transmission

- There is considerable uncertainty on whether it is possible for mpox to be more transmissible than experienced in 2022; however, this possibility should not be discounted as a future scenario in this or other potential emergent mpox outbreaks.
- In this scenario, clade Ib has substantially increased transmissibility compared to the 2022 outbreak virus. It spreads not only through very close contact including sexual contact but can also establish long chains of transmission through touch and possibly respiratory transmission in some circumstances.
- There is non-sexual transmission that is sufficiently effective to drive multiple outbreaks in household and other close-contact settings and groups (for example, early years childcare and some school settings, care homes, hospitals, prisons). Sexual transmission may remain an important driver of the outbreak, or touch borne transmission may be successful enough to drive the outbreak entirely.
- Wider community transmission occurs. Chains of transmission would be difficult to control through close contact isolation and post-exposure vaccination. Depending on the level of transmissibility and the ease with which infections can be identified, this may result in anything from difficulty to control outbreaks in specific settings such as schools and hospitals, or more widespread community transmission in population groups with high degree of touch contact, such as early years school age children and the elderly in care settings.
- In many countries chains of transmission are established before the identification of the first cases. A wide demographic group is affected early.
- Existing population immunity has little effect on transmission. In the UK, 0.14% of the population were vaccinated in response to the 2022 outbreak. Outside this group there is almost no immunity in those born after 1971. Older adults may have some residual immunity through smallpox vaccination, of uncertain effect.
- Standard public health measures such as contact tracing, and quarantine may have limited impact particularly if there is a high level of asymptomatic or pre-symptomatic transmission. Vaccination will need to be prioritised to those at risk of severe disease and healthcare workers, until a global supply is available; alternative vaccines using

different technology will require large scale clinical trials and production. Response in the NHS and public health will require large scale surge plans, especially if there is a significantly higher case fatality rate in children and adults than is observed with clade IIb. Where there is significant morbidity or mortality, public health and social measures to reduce spread may be required while pharmaceutical (for example new vaccines or increased vaccine supply of current vaccines; effective therapeutics to use as treatment and post exposure prophylaxis) and non-pharmaceutical interventions (for example rapid diagnostic home tests) are scaled for a global response.

Indicators and determining trajectory

Assessment of global epidemiology and limited laboratory data is available to support determining which scenario we are in. A set of indicators has been developed to support assessment of this data (Table 1). Currently indicators are most compatible with scenario A, but in some parts of the outbreak, indicators are also compatible with scenario B. There are no confirmed indicators of scenario C, but it cannot be completely excluded given the limited available data.

Table 1. Indicators used for situational assessment against scenarios

Indicator	Supports scenario	Current assessment
Importation to new countries, without onwards transmission	A	Met
A high proportion of cases are in defined risk groups with very high contact connections	A	Met in some parts of the outbreak
A high proportion of cases are in sexual networks	B	Met in some parts of the outbreak
There is a high growth rate in sexual networks which is not demonstrated outside these networks	B	Unclear
New cases do not have detectable link to known outbreak (for example travel)	B	Met in some parts of the outbreak in Africa
In vitro, in vivo or case characterisation data demonstrating characteristics related to transmissibility with findings similar to clade IIb.	B	Not met
A higher overall growth rate than the maximum in 2022 or very high growth in population groups linked by touch (for example young children)	C	Not met
A high secondary attack rate in households with an ability to reduce touch and clean environment	C	Unclear
Epidemiological evidence of non-sexual, non-household transmission (an early signal may be the route of exposure of exported cases)	C	Not met
Evidence of respiratory transmission outside households	C	Not met
In vitro, in vivo or case data demonstrating characteristics compatible with higher transmissibility than clade IIb.	C	Not met
Frequent outbreaks in settings without close touch or sexual contact	C	Not met

Part 2. Current situation and risk to the UK

The risk of importation into the UK is considered low to medium.
The risk of onwards transmission in the UK should importation occur is considered low to medium as indicators suggest that either scenario A or B could plausibly occur.
The risk of acquisition in the UK is currently low.
The risk to travellers depends on their activities in country and for most travellers will range from low to medium.

Table 2. Situational assessment framework: Future risk to the UK from an overseas outbreak and current risk to UK population (cells highlighted in green indicate the current level)

Risk level	Very low	Low	Medium	High
Future risk to the UK from an overseas outbreak: mpox specific risk assessment – clade Ib outbreak				
Probability of Importation	A single case or localised outbreak in another country, well defined and monitored, with no evidence of sustained community transmission.	Community transmission in another country or countries; these countries have limited travel links to the UK.	Community transmission in another country or countries; including countries with stronger travel and diaspora links to the UK and/or cases exported to intermediate locations that may increase the risk to the UK.	Community transmission in multiple countries; strong travel links to the UK
Potential for spread in the UK once introduced	N/A	Disease is likely to be contained at a small, localised outbreak (for example, household), see scenario A.	Disease is likely to cause transmission in the UK in specific risk groups, see scenario B.	Disease is likely to cause widespread population transmission in multiple groups, see scenario C.
Severity of disease	Similar to clade IIb.	Intermediate between clades IIb and Ia.	Similar to clade Ia.	Higher than clade Ia.
Countermeasures	There are effective vaccines and/or treatments, which are available.	There are effective vaccines and/or treatments; there is limited availability.	There are vaccines and treatments of limited or unproven effectiveness.	There are no effective countermeasures.
Current risk to the UK population				
Risk of acquisition in the UK	Human exposure to the pathogen in the UK is very unlikely; there is no suggestion that importation or transmission are occurring	Human exposure to the pathogen in the UK is unlikely; it is possible that importation is occurring,	Human exposure to the pathogen in the UK is possible, limited to a specific risk groups.	Human exposure to the pathogen in the UK is possible and not limited to a specific risk groups.
Risk of acquisition to UK population travelling to affected areas	Infection is limited to a single localised outbreak; travellers can avoid any exposure.	Infection is spreading in clearly delineated areas outside the UK with known modes of transmission. It is generally easy for travellers to avoid exposure.	Infection is transmitting widely in some groups or with multiple or unknown modes of transmission. It is difficult to avoid exposure, or some activities undertaken by travellers may have exposure risks.	It is not possible to avoid exposure.

Part 3. Preparedness and response

Borders

All direct flights from currently affected countries land at a single UK airport, however a high proportion of incoming travellers will arrive by indirect routes. Mpox has a long incubation period and causes a range of disease syndromes, including localised genital disease. This means that even if there were infected incoming travellers, a high proportion of them may either be incubating and thus asymptomatic or have disease that could not be easily detected, at the time that they crossed the border.

The measures implemented currently, and rationale are shown in Table 3. The full range of border health measures are kept under review.

Table 3. Public health measures at the border

Measure	Currently implemented	Rationale
Mpox health advice to travellers on direct flights from affected countries	Yes	Improve the likelihood of mild or early disease presenting to healthcare which is essential for control.
Mpox health advice visible at airports and ports	Yes	Improve the likelihood of mild or early disease presenting to healthcare which is essential for control.
Planes from affected countries to declare presence of unwell passengers before or at landing	Yes	Provides an extra safety check to identify overtly symptomatic patients and ensure a safe healthcare pathway is available from plane.
Symptom checks and/or diagnostic testing at airport	No	Mpox has a long incubation period; symptom checks or diagnostic tests at airport are likely to miss a high proportion of infected people. Testing of socially acceptable sites (for example, throat) is of variable sensitivity especially with no rash.
Quarantine of travellers	No	Expected prevalence of mpox in incoming travellers very low; long incubation period.

Which countries are considered affected?

The list of affected countries is used for 2 purposes:

- to identify patients with suspected mpox who are considered to be at risk of having clade I – these patients need to access rapid testing with clade differentiation and a specialist medical pathway
- to determine which entry routes to the UK are selected for targeted border health measures such as health advice for passengers

The affected country list is produced by scoring each country according to the framework (Table 4) as follows:

Low risk	Score less than or equal to 5
Medium risk	Score greater than 5, and less than or equal to 8
High risk	Score above 8

To be placed on the affected country list, a country must be assessed as medium or high risk. This means that a country reporting low numbers of imported cases with no evidence of onwards transmission can be assessed as low risk and will not be included in the affected country list for the purposes of testing or border health advice. A country can be placed on the affected country list without reporting confirmed clade I cases, including when there is evidence of exported clade I from that country, or when there are cases without clade typing, which are assessed as likely to be clade I based on epidemiology.

In addition, for testing only, travellers from countries with shared borders with those on the country list may be included in those able to access the rapid testing pathway.

A country is eligible for consideration for removal from list if no new cases are reported in the last 63 days (3 times the maximum incubation period for mpox).

Assessing connectedness

Countries placed on the affected country list are further assessed for UK connectedness, and are assigned as minimal (no direct flights, under 500 passengers per week arrive in the UK), moderate (500 to 1,000 passengers per week arrive in the UK), and major UK connectedness (more than 1,000 passengers per week arrive in the UK). This allows for countries on the affected country list to be described as, for example, ‘high risk with minimal UK connectedness’, and is used to inform the importation risk assessment as the outbreak progresses.

Table 4. Summary of methodology for assigning countries to the 'affected country' list clade I

	Epidemiology	Ascertainment	Geographic spread	Transmission
Minimal (score = 1)	Fewer than 10 total suspected, probable or confirmed cases as per World Health Organization (WHO) case definitions.	It is highly likely or almost certain that the reported number of cases is reflective of the true number of cases.	• no more than one administrative division [note 1] reporting cases and: • no locally acquired cases linked to an urban centre	Sporadic zoonotic cases or imported cases with no evidence of onwards transmission.
Moderate (score = 2)	• between 10 and 99 confirmed cases reported cumulatively in previous 28 days and: • stable [note 2] or decreasing number of new cases	It is likely or a realistic possibility that the reported number of cases is reflective of the true number of cases.	• cases reported from more than one administrative division [note 1] or: • locally acquired cases linked to an urban centre	Transmission within close contact networks including household transmission and high-risk groups [note 3].
Major (score = 3)	• increasing number of new cases with a doubling time of less than 2 weeks. or: • at least 100 confirmed cases reported cumulatively in previous 28 days	It is unlikely, highly unlikely or a remote chance that the reported number of cases is reflective of the true number of cases.	• cases and outbreaks reported from more than 25% of a country's administrative divisions [note 1] or: • locally acquired cases linked to an urban centre with significant regional or international links	Evidence of community transmission outside of household settings and outside high-risk groups.

[note 1] Where data is available, the uppermost level of administrative division is used. If no regional data is available, the second criteria assessing links to urban centres is the sole indicator.

[note 2] 'Stable' is defined as a no more than a plus or minus 10% change in the weekly number of cases.

[note 3] High-risk groups include but are not limited to sex workers, long-distance truck drivers, people living with HIV and other immunocompromised individuals, displaced people and GBMSM. Additional high-risk groups may be identified as the outbreak continues.

Testing

Any person suspected of mpox, without risk factors for clade I, is tested through routine pathways for mpox and samples are referred onwards for clade typing. Primary routine testing for mpox is available at several public health and NHS laboratories across the UK.

A person with risk factors for clade I (travel to an affected country, a link to a case from those countries, or a link to a clade I case), is referred to the UKHSA Imported Fever Service (IFS) which supports rapid assessment and clade testing. Both the clinical advisory service through the IFS, and diagnostic testing service for primary and clade testing at the UKHSA Rare and Imported Pathogens Laboratory (RIPL) are available 24 hours a day, 7 days per week.Clade Ib contains a deletion affecting the C3L gene target used by the standard mpox clade typing assay (Masirika and colleagues), which will potentially cause the assay to report false negative for clade I. UKHSA has implemented the new assay published by Schuele and colleagues which targets the C3L flanking regions which are conserved in the clade Ib strain but absent from clade II. This assay does not identify clade Ia, and therefore the C3L assay will continue to be used in parallel. Clade-specific testing is now being implemented in the public health agency laboratories in Wales and Scotland.

Research co-ordination

In 2023, all government funders of health research and related partners (including UKHSA, Defence Science and Technology Laboratory (DSTL) and representatives of all four nations) developed a cross-government research and development framework and governance structure for pandemic prevention, preparedness and response. The aim is to enable UK government research funders to collaborate more effectively by determining research infrastructure needs, research priorities, and appropriate funding routes to rapidly deliver research that may help to prepare for and respond to emerging infectious disease threats in the UK and contribute to improving global health security.

The research and development framework was activated by Department of Health and Social Care (DHSC) and FCDO Chief Scientific Advisers to co-ordinate the UK's international (FCDO led) and domestic (DHSC led) research response to mpox following the World Health Organization (WHO)'s declaration of a Public Health Emergency of International Concern (PHEIC). New research to respond to the outbreak in Africa has been funded by FCDO, DHSC, UKRI, Department for Environment, Food and Rural Affairs (Defra) and Wellcome. Active mapping and coordination of UK investments is helping ensure effects co-ordination and prioritisation. DHSC funding to Global Research Collaboration for Infectious Disease Preparedness (GloPID-R) is enabling the Pandemic Pact database to collate up to date information on mpox research funding globally, generate rapid evidence reviews, and identify outstanding research gaps. FCDO and DHSC funding to Coalition for Epidemic Preparedness Innovations (CEPI) is enabling the development and evaluation of new mpox vaccines. FCDO research and development is also supporting improved diagnostics, support to Africa-led

research and development programmes, and social science input into national responses in affected African countries. UKHSA is supporting CEPI with diagnostic validation.

In the UK, research questions have been identified and prioritised by UKHSA in collaboration with chief scientific advisors across government. These have been shared with UK Research and Innovation (UKRI), National Institute for Health and Care research (NIHR) and Defra.

Government funders are reviewing whether their existing portfolio of studies can incorporate research on mpox, directly or through pivoting work programmes already funded. Funders will also utilise these research prioritisation exercises to prepare to mount a rapid domestic research response if mpox spreads to the UK. This includes plans across all the pillars of the response (Understand, Prevent, Detect, Respond) and the related science and research (for example, epidemiology, transmission dynamics, surveillance, diagnostics, therapeutics, vaccine, public health and social measures, among others).

Regardless of whether there is an outbreak in the UK, these preparations will strengthen the UK's pandemic research plans.

Vaccine eligibility

The Joint Committee on Vaccination and Immunisation (JCVI) advice and the Green Book should be referred to for detail of vaccine eligibility. Vaccination of the following groups will be implemented in line with timelines for operationalisation and supply and is based on the current situational assessment.

1. Gay, bisexual and other men who have sex with men (GBMSM) who are at highest risk of exposure to mpox identified using risk criteria including:
    a. a recent history of multiple partners
    b. a recent history of participating in group sex
    c. a recent history of attending sex-on-premises venues
    d. proxy markers such as recent bacterial sexually transmitted infection (in the past year)
2. Other individuals who have frequent close and intimate contact with the high risk GBMSM network at risk of mpox, irrelevant of gender.
3. Certain people at occupational risk of exposure, such as those who work in specialist roles where exposure to mpox is likely to be more frequent and prolonged:
    a. workers in laboratories where pox viruses are handled or cultured, and others who work in highly specialist laboratories undertaking procedures with a significantly higher risk of exposure
    b. staff working in HCID units, including those who clean areas where mpox patients have been cared for
    c. staff regularly undertaking environmental decontamination around cases of mpox
    d. UK health care and laboratory workers being deployed to respond to a mpox outbreak or incident overseas

   e. UK humanitarian aid workers who will be living or working in close contact with the local population in areas affected by a MPXV outbreak or incident overseas
   f. Pre-exposure vaccination may also be considered for those about to start providing prolonged or close care for a patient with confirmed mpox
4. Post-exposure prophylaxis to adult and children who are contacts with the highest exposure risk as part of confirmed case management (post-exposure vaccination with MVA-BN should be given within 4 days of exposure, although it may be offered up to 14 days post exposure to potentially modify disease in those who are at higher risk of the complications of mpox).

In addition to these eligible groups, reactive immunisation may be used following an imported case of clade I. As well as the vaccination of contacts (outlined above) this might expand to include household contacts of contacts. Targeting a wider ‘ring’ within which the case occurred, aims to prevent tertiary cases and further waves of transmission in children and adults in that population. The group eligible for vaccination should be based on the available epidemiological data and local risk assessment. The Green Book provides further detail on potential cohorts.

Healthcare preparedness

Mpox clade I is currently designated a HCID in the UK. This may change as the evidence base develops. The HCID expert assessment group (EAG) considered that there was insufficient data to separate subclades of clade I at present and assessed clade I MPXV as a single entity.

The EAG reviewed it against the HCID framework on 12 August 2024, as described in Table 5, below.

Table 5. Assessment of clade I against the HCID framework

Criteria	Assessment
Acute infectious disease	Yes
Typically has a high case fatality rate (CFR)	Historically a high CFR has been reported with clade I MPXV. Changing ascertainment and local health context mean that there is uncertainty about the true CFR in the current outbreak and how this may translate to the UK population.
May not have effective prophylaxis or treatment	Tecovirimat is available but there is no published randomised controlled trial evidence demonstrating efficacy. MVA-BN is available and expected to provide cross protection to clade I MPXV, although verification data for clade Ib is lacking. Deployment strategy in the UK needs developing for different scenarios and testing for likely effectiveness in containment.
Often difficult to recognise and detect rapidly	There may be clinical challenges in recognising mpox presenting in contexts different to the 2022 outbreak. Testing is available including clade differentiation.
Ability to spread in the community and within healthcare settings	Yes.
Requires an enhanced individual, population, and system response to ensure it is managed effectively, efficiently, and safely	The EAG considered that in the light of the assessment of points in this table, and in particular whilst significant uncertainty about severity and countermeasures, an enhanced response would be required with a high level of coordination between NHS and public health services.

Given the lack of evidence specific to clade I, the following principles have been used to support operational guidance in the health system and are based on the available data and emerging evidence.

Transmission

- All MPXVs can spread by direct (touch) contact with an infected person or their body fluids or contact with surfaces or items contaminated with the virus.

- Whilst evidence is gathered on modes of transmission in this new outbreak, it is recommended that respiratory transmission risks are mitigated, noting that virus and/or lesions can be present in the respiratory tract in some cases.
- Transmission by sexual contact appears to be contributing to the spread of clade Ib MPXV in some of the currently affected countries. The transmission pattern of clade Ia is less well described but may be driven by person to person (non-sexual) close contact.
- There is little evidence available on MPXV in genital secretions as opposed to skin lesions on or near genitalia. Therefore, on a precautionary basis, genital secretions (for example, semen) should be considered as potentially infectious for 12 weeks after symptoms have resolved.
- MPXV should be assumed present in the respiratory tract of infected patients and in healthcare settings the standard aerosol generating procedure infection control practices should be applied. Deroofing lesions and throat swabs are not considered to be aerosol-generating procedures (AGPs) although they may generate droplets. A list of AGPs is available in the local country-specific national infection prevention control manuals.

Incubation and infectious periods

- The incubation period usually lasts between 6 and 13 days but with a maximum described range of 5 to 21 days. There may be a prodrome; if so, the rash appears between 1 and 5 days after the initial onset of symptoms.
- The assumed infectious period is from the onset of symptoms until lesions have scabbed over and the scabs have fallen off and a fresh layer of skin has formed underneath. Shedding of clade II MPXV DNA in upper respiratory tract swabs has been detected for at least 3 weeks but is of unclear significance for transmission.
- There are insufficient data on which to assess transmission of clade I before a person develops symptoms, but this will be kept under review.

Clinically at-risk groups

- There is currently insufficient information available to fully characterise the severity of clade I. The reported case fatality rate is lower than that of clade Ia, although not as low as clade IIb; however, the different populations affected by the outbreaks may mean that the current CFRs are setting specific.
- Based on available data from both clade I and clade II, children under the age of 15 are considered to be a group at risk of severe disease, with children under 5 at highest risk.
- Based on available data from clade II, immunocompromised people and pregnant people are considered to be a group at risk of severe disease from clade I.

- There is no available data to assess severity in the elderly. On a precautionary basis and despite prior smallpox vaccine, elderly individuals will be managed as an additional high-risk group.

Virus survival

- Poxviruses show high environmental stability and can survive in the environment and on different types of surfaces from 1 to 56 days depending upon the temperature and room humidity. Evidence on the survival of MPXV is limited; however, viable MPXV has been detected on household surfaces at least 15 days after contamination of the surface.
- There is currently limited data on transmission of poxviruses via contaminated objects or materials, aside from linens such as clothing or bedding. Therefore, thorough environmental decontamination is required to reduce the risk of transmission from contaminated objects or materials.

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UKHSA is responsible for protecting every member of every community from the impact of infectious diseases, chemical, biological, radiological and nuclear incidents and other health threats. We provide intellectual, scientific and operational leadership at national and local level, as well as on the global stage, to make the nation heath secure.

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