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Laboratory Bulletin

DATE:	19 August 2024
TO:	All Physicians and Clinicians
FROM:	Alberta Precision Laboratories (APL) – Public Health Laboratory
RE:	**Mpox – Public Health Emergency of International Concern (PHIEC)**

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Key Message

- **On August 14, 2024, the WHO declared the spread of Mpox virus (clade 1b) on the African continent a Public Health Emergency of International Concern (PHIEC).**
- **This strain of Mpox has a higher mortality rate than previous strains identified in Canada.**
- **It is important to consider Mpox virus infection in the differential diagnosis of pustular/vesicular skin lesions in those with a travel history or close/intimate contact with those who have travelled.**
- **Mpox testing is readily available from the ProvLab in Alberta and can be carried out on the same viral swabs sent for HSV/VZV testing. However, Mpox testing must be specifically requested.**
- **For best results, deroof the pustular/vesicular skin lesions and swab the base of the lesion.**

Background

- On August 14, 2024, the World Health Organization (WHO) declared a Public Health Emergency of International Concern over the spread of Mpox virus (clade 1b) on the African continent. Mpox virus (clade 1b) infections are occurring in Kenya, Uganda, Cameroon, Rwanda, Uganda, Burundi, and the Democratic Republic of Congo (DRC) with a heightened risk in countries surrounding DRC. An imported clade 1b infection in a returning traveler from one of these affected countries has also been reported in Sweden.
- Preliminary reports from Africa indicate that clade 1b cases have been recorded in **both** children (~40% of cases) and adults, with ~40% of all cases in females. The secondary attack rate within households with a known Mpox case is very high (see https://emergency.cdc.gov/han/2024/han00513.asp).
- A previous outbreak declared by the WHO in 2022-2023 involved global spread of Mpox clade 2b, including 44 infections in Alberta in 2022, 3 cases in 2023, and 7 thus far in 2024). The current strain (clade 1b) causes more severe disease, with a ten-fold higher mortality rate of 10-12% (especially in children <5 years) compared to clade 2b that continues to cause infections in Canada. Mpox virus is zoonotic with a reservoir in rodents and other animals in Africa and spreads person-to-person mainly via close contact (*including intimate/sexual contact*).

Clinical Presentation

- After exposure, Mpox virus infection begins as non-specific symptoms of fever, lymphadenopathy, malaise, and headache (incubation period of up to 21 days – usually 5-13 days). Within 3-5 days after fever onset (at times 1-2 days before fever), individuals develop a rash on the face or genital area, which then spreads. The rash evolves into pustular or vesicular lesions of varying sizes as clusters or single lesions anywhere on the body (including anogenital areas). It is important that clinicians consider Mpox in their differential diagnosis of causes of pustular/vesiculopustular lesions (*especially when evaluating genital or anogenital lesions*). See https://www.cdc.gov/poxvirus/mpox/clinicians/clinical-recognition.html for details.

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Differential diagnosis of pustular/vesiculopustular lesions:

Herpes simplex virus (HSV1/HSV2)	Varicella zoster virus (VZV)	Mpox virus	Enterovirus
Impetigo (*S. aureus* or *S. pyogenes*)	Primary syphilis chancre	Molluscum contagiosum virus	Orf virus
Less common: lymphogranuloma venereum (*Chlamydia trachomatis* L1-L3), vaccinia virus, other pox virus (usually based on epidemiologic history). Smallpox (Variola) has been eradicated (though remains a biowarfare concern); the rash is very similar to Mpox but more extensive and with a higher mortality.			

Who should I consider to test for Mpox virus infection?

- Testing is recommended for individuals of all genders, presenting with **acute rash or ulcers** with or without systemic symptoms (fever, headache, myalgia, arthralgia, back pain, or lymphadenopathy) **AND** in the **last 21 days** had **one or more** of the following risk factors:
    - Sexual contact with new, anonymous or multiple partner(s);
    - Sexual contact with a person(s) who had sexual contact with new, anonymous or multiple partner(s);
    - Significant contact with a person who had skin lesions such as macules, papules, pustules, vesicles, or ulcers with no known alternate cause;
    - Contact with a known or probable case of mpox;
    - Visiting or recently returned from a country with high rates of Mpox virus circulation (including those listed in the *Background*).
- These criteria (pustulovesicular rash + exposure history) should guide clinical decision-making and **mpox testing**. It is also important to consider **testing for common causes of acute vesicular/vesiculopustular rash** as outlined in the differential diagnosis table above. Co-infection is also possible, and therefore Mpox testing should be considered in addition to testing for other pathogens (both bacteria and viruses) in clients with atypical symptoms.
- For individuals without the risk factors above, Mpox testing may be indicated. Consultation with the ProvLab Microbiologist/Virologist-on-call (MVOC) is advised.

How to test for Mpox virus infection?

- The preferred test is a viral swab (using the same swabs and pink-liquid transport medium used to evaluate for herpes simplex virus, HSV). Swab type: see Appendix.
- It is important to deroof the lesion (e.g. using a sterile needle) and vigorously swab the fluid contents and base of the lesion.
- Ideally, swab several lesions to optimize detection of virus on the swab.
- Test: Mpox NAT (PCR).
- Mpox virus NAT/PCR can be added onto a swab already sent for HSV/VZV NAT (PCR) testing. To do so, consult with the Microbiologist/Virologist-on-call at the ProvLab.
- **Swabs for Mpox virus testing must be collected by a clinician.** The laboratory will under no circumstances collect swabs for Mpox testing.
- Do **NOT** send patients to APL Patient Service Centers (PSCs) for 'Mpox swab testing'. **Clinicians must collect the swabs and send them to the lab appropriately labeled with a properly filled requisition** (requisition: https://www.albertahealthservices.ca/frm-20087.pdf).

Is there a role for asymptomatic testing:

- No. Testing of asymptomatic individuals for Mpox virus infection should not be done.
- Testing for Mpox virus requires swabs of vesicular lesion material.

Is there serology available?

- Serology for Mpox virus is **NOT** available.
- There is no clinically validated Mpox serology assay available.
- All requests for Mpox serology will be canceled.

Can other samples be tested?

- Please refer to the APL Test Directory.
- Testing from other specimens may be possible, but the sensitivity is very low, and hence cannot rule out infection.

Infection Prevention & Control Information related to Mpox virus

- Refer to the AHS Infection Prevention & Control Resource Manual website:
  - Diseases and Conditions Table
  - Rash Algorithm: Assessing the Need for Additional precautions/Isolation (Acute Care)
- Community clinics: see Information for Healthcare Providers on the AHS Mpox website.

Is a vaccine for Mpox available?

- Yes. A vaccine is available for eligible individuals through Public Health vaccination clinics.
- It is effective towards both clades 1 and 2 of the Mpox virus.
- Details of vaccination and eligibility, can be found on the AHS Mpox website or Alberta Health Mpox Virus website.

How do I contact the ProvLab Microbiologist/Virologist-on-call (MVOC)?

- The ProvLab MVOC can be paged via locating at the University of Alberta Hospital (780-407-8822; Edmonton) or the Foothills Medical Centre (403-944-1110; Calgary).

Action Required

- Be aware that spread of the Mpox virus (including a new strain with higher mortality) is a global health concern.
- It is very important that Mpox virus be considered in the differential diagnosis of a patient being evaluated for vesicular/pustulo-vesicular lesions. Mpox virus testing should be strongly considered.
- Testing is carried out in an identical manner to HSV/VZV and using the same swab type; Mpox testing must be requested on the lab requisition.

Inquiries and feedback may be directed to

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This bulletin has been reviewed and approved by

- Dr. Hong Yuan Zhou, Acting Medical and Scientific Director, Public Health Laboratory, Alberta Precision Laboratories

Relevant references

1. World Health Organisation Mpox PHIEC Information (August 14, 2024). Link: https://www.who.int/news/item/14-08-2024-who-director-general-declares-mpox-outbreak-a-public-health-emergency-of-international-concern.
2. Alberta Notifiable Guideline: Mpox. Link: https://open.alberta.ca/publications/mpox.
3. Public Health Agency of Canada: Mpox for Health Professionals. Link: https://www.canada.ca/en/public-health/services/diseases/mpox/health-professionals.html.
4. Alberta Health Services Mpox resource page: https://www.albertahealthservices.ca/topics/Page18034.aspx.
5. Alberta Health: Mpox virus resource page: https://www.alberta.ca/monkeypox-virus.
6. APL Test Directory: https://www.albertahealthservices.ca/webapps/labservices/indexAPL.asp.

Appendix:

Type of swab that should be used to swab the material inside suspected Mpox virus lesions (after deroofing):

Image is taken from https://www.thermofisher.com.

This swab is the same as that used for COVID-19 testing, respiratory viruses, and testing for HSV/VZV.