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Laboratory Bulletin

DATE:	2022 July 18
TO:	All physicians and clinicians
FROM:	Public Health Laboratory (ProvLab), Alberta Precision Laboratories
RE:	**Monkeypox virus (MPXV) testing (UPDATED from June 9, 2022)**

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Key Message

- Monkeypox is an illness caused by the monkeypox virus (MPXV), which is a zoonotic orthopoxvirus.
- Since May 2022, there has been a multi-country outbreak of MPXV affecting countries in North America, Europe, and many other countries outside the normal endemic areas where MPXV has been traditionally found.
- Testing for MPXV is available through the Public Health Laboratory (ProvLab) in Alberta.
- **The preferred and optimal way to diagnose MPXV is to collect at least three swabs of puss/fluid material contained within skin lesions after deroofing the lesion. It is advised you use the same collection kit that is used for herpes simplex (HSV)/varicella zoster (VZV) skin lesion testing.**
- Clinicians are advised to consult with the Virologist-on-call (VOC) **and** the Medical Officer of Health (MOH) on-call for **all** suspected cases of MPXV.
- Further details regarding the specimen types and tests available can be found in the APL Test Directory and below.

Background

- MPXV is an illness caused by a zoonotic orthopox virus. Since May 2022, there has been an evolving multi-country outbreak of MPXV outside of the African continent. This outbreak is due to MPXV Clade 3 (lineage B.1).
- MPXV is classically an illness contracted by humans upon exposure to infected forest animals in traditionally endemic areas of Africa. Human-to-human transmission occurs primarily through close contact (usually skin-to-skin) with infected material from skin lesions or other infectious body fluids. It is also felt to be contagious from an infectious individual via prolonged face-to-face contact. Other human-to-human methods of transmission include direct contact with bodily fluids, including sexual contact, and indirect contact with lesion material, such as through contaminated clothing or linens. Individuals with MPXV infection are considered contagious until all skin lesions scab and heal.
- The incubation period upon exposure is believed to be 7-14 days (range 5-21 days dependent upon mode of transmission). The illness is characterized by an initial phase involving systemic symptoms of fever, chills, myalgias, lymphadenopathy, headache followed by a characteristic rash. This rash starts on the trunk and spreads peripherally and can involve any body area, including the face, peri-oral areas, intra-oral areas, and genital areas (inguinal folds, anywhere on the penis or scrotum, vaginal areas, and perianal areas).

- Cases from the current 2022 multi-country outbreak tend to present in an atypical fashion. It is characterized by fewer lesions and more atypical appearing lesions, with more lesions observed in genital areas.
- The differential diagnosis of MPXV infection may include other pathogens such as HSV, VZV, enterovirus/parechovirus, and others. It is advised clinicians also consider other differential diagnoses, based on patient history, physical examination, and clinical presentation.

Virologic diagnosis of MPXV

- MPXV is diagnosed in the laboratory by direct detection of viral DNA using a nucleic acid amplification test (NAAT) (also known as polymerase chain reaction, (PCR)).

What do I do if I suspect a patient has MPXV?

1. Ensure appropriate infection prevention and control measures are implemented.

- Use contact + droplet + airborne precautions.
    - These recommendations may change as more data becomes available.
- If seen in a community clinic/urgent care center, provide the patient a surgical/procedure mask and place them in a separate room with the door closed immediately upon arrival. After the patient leaves, the room should remain empty with the door closed for 2 hours, and then cleaned using routine cleaning/disinfection protocols. Please note, this recommendation may change – see below.
- For up-to-date recommendations, please refer to the:
    - AHS Infection and Prevention and Control (IPC) Acute Care Resource Manual – Diseases Conditions Table (https://www.albertahealthservices.ca/assets/healthinfo/ipc/hi-ipc-resource-manual-main-document.pdf; page 150).
    - Alternatively, you can also access the AHS IPC Community-based Service Resource Manual (https://www.albertahealthservices.ca/assets/healthinfo/ipc/hi-ipc-community-based-services-resource-manual.pdf), and search for 'Monkeypox' using the alphabetical search tool in the document.

2. It is advised that **prior** to specimen collection for MPXV testing, clinicians should consult with the Medical Officer of Health (MOH) on-call **and** the Virologist on Call (VOC).
    - The MOH can be paged via locating at:
        - North Zone – Grande Prairie Regional Hospital (+1 825 412 4000)
        - Edmonton Zone - University of Alberta Hospital (+1 780 407 8822)
        - Central Zone – Red Deer Regional Hospital (+1 403 343 4422)
        - Calgary Zone - Foothills Medical Centre (+1 403 944 1110)
        - South Zone – Chinook Regional Hospital (+1 403 388 6111)
    - The VOC at ProvLab can be paged by calling +1 403 944 1200 (Calgary) or +1 780 407 8822 (Edmonton).

3. Specimens acceptable for testing (**note: this has been updated):**

Specimen Type	How to Submit (all tests are for MPXV PCR/NAAT):
Preferred sample type Swab of fluid/purulent material from skin lesions after deroofing.	First deroof lesions being swabbed. Collect a viral flocked swab of the fluid/purulent material contained in each lesion and *place in Universal Transport Media (UTM) (red top tube with pink-coloured liquid).* Be sure to consider other related differential diagnoses. *NOTE: Dry swabs are no longer accepted.* **It is advised to collect at least 3 separate lesion swabs for monkeypox virus PCR/NAAT to rule out infection.**
Lesion crust material or scab.	Submit specimens in sterile containers. Ideally 1.5-5.0 mL tubes. If not available, use a sterile orange top container.
Tissue and biopsies	Fresh biopsy tissue should be placed in sterile containers.
Blood	Collect blood in an EDTA (lavender top) tube for molecular detection. In adults, it is ideal to have at least 3-5mL of blood. **A negative PCR/NAAT of the blood does NOT rule out monkeypox virus infection.** ***There are no serology tests available for monkeypox.***
Nasopharyngeal swabs	Collect flocked swab and *place in Universal Transport Medium (red top tube with pink-coloured liquid).* **A negative PCR/NAAT on a nasopharyngeal swab does NOT rule monkeypox virus infection.**
Urine	Collect in sterile container (orange top). **A negative urine PCR/NAAT does NOT rule out monkeypox virus infection.**

If in doubt as to how to collect specimens, please consult with the VOC at ProvLab (page via +1 403 944 1200 in Calgary or at +1 780 407 8822 in Edmonton).

4. Avoid sending patients to outpatient collection facilities for bloodwork unless directed to do so following a discussion with the VOC.
5. If specimens are collected in a hospital system, please avoid use of the pneumatic transport tubes. Specimens collected from outpatient (clinics) may require different arrangements from the laboratory. Any specimen collected from a patient with suspected or confirmed MPXV should be transported as per the following:
    a. Call APL courier dispatch +1 403 770 3311 OR +1 844 770 3311. DynaLife Dx dispatch can be contacted via +1 780 451 3702 (extension 8117). Please call the applicable number to advise that a ?MPXV specimen is requiring pickup. If transport is required from a physician's office, one of these numbers should be called. APL/DynaLife will bring packaging.
    b. Any specimens collected for MPXV PCR/NAAT testing must be transported using Transport of Dangerous Goods (TDG) regulations B (for ground) or TDG A regulations for air. These are regulations developed by Transport Canada.
    c. A temporary certificate is in place to transport query or confirmed Monkeypox specimens as Category B via **GROUND. However, the box must have the following phrase: *TU 0886* and must be transported separately from other category B specimens**.

Further information regarding MPXV can be found from

- Alberta Health MPXV Information Page
- Alberta Health Services MPXV Information Page
- Public Health Agency of Canada MPXV Information Page

Inquiries and feedback may be directed to

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