Health Care Provider Communication - Monkeypox

This resource is intended for use by clinicians in practice in order to provide best possible evidence-based care and information to patients with or about Monkeypox.

1. What is monkeypox?

Monkeypox is caused by an infection with the monkeypox virus, which belongs to the *Orthopoxvirus* genus. Other related viruses in this genus includes the variola virus, which causes smallpox, and the vaccinia virus, which is used in the smallpox/monkeypox vaccine.

2. How does monkeypox spread?

Monkeypox is most commonly transmitted from person-to-person through:

- Direct contact with infectious rash, bodily fluids, and/or scabs
- Contact with respiratory secretions during prolonged, face to contact
- Close, physical interactions including hugging, kissing, and sexual activity
- Fomite transmission, such as contact with materials and objects (e.g. clothing, bedding, towels, eating utensils, and dishes) that have been contaminated by infectious rash or bodily fluids

Vertical transmission of monkeypox has also been documented (WHO). At this time, it is unknown if monkeypox can spread via semen or vaginal fluids (CDC).

3. What is the epidemiological situation of monkeypox in Ontario?

Since early May 2022, cases of monkeypox have been spreading globally with over 3,400 confirmed cases in 50 countries, most of which were previously non-endemic for the virus.

In Ontario, as of July 4, 2022, a total of 148 cases of monkeypox have been confirmed. The vast majority of these cases have occurred in men between the ages of 20 to 65 years (average 37.0) who reside in the greater Toronto area (i.e., Toronto, Halton, Durham, and Peel).

The most commonly reported risk factors include engaging in sexual or intimate contact with new and/or multiple partners. Although cases have mostly been identified among males who report sexual or intimate contact with other males (MSM), anyone can get monkeypox.

4. What is the clinical presentation for monkeypox?

Monkeypox is usually a mild and self-limiting disease and most people who are infected recover within 2-4 weeks. However, severe illness can occur in some individuals.

Initial prodromal symptoms of monkeypox may include fever, chills, fatigue/weakness, headaches, myalgia, pharyngitis, coryza, cough, and lymphadenopathy that can last for 1-3 days

prior to onset of a rash. The rash usually begins on the face and then spreads to elsewhere in the body. It can affect the mucous membranes in the mouth, tongue, and genitalia, as well as the palms of hands and soles of the feet. The rash can last for 2−4 weeks and progresses through the following stages: macules, papules, vesicles, pustules, and scabs.

In some cases, the onset of symptoms started with genital, perianal, or oral rash/lesion(s) prior to prodromal symptoms and without spreading to other parts of the body.

Depending on the patient's history, risk factors, and presentation, the differential diagnosis may include other acute illnesses associated with rashes including enteroviruses/coxsackieviruses (e.g., hand-foot-and-mouth disease), varicella zoster, herpes zoster, measles, herpes simplex, syphilis, chancroid, lymphogranuloma venereum.

5. Who should be tested for monkeypox?

Patients with a compatible clinical illness where monkeypox is suspected should undergo laboratory testing (see **Clinical presentation**, above).

Additional testing considerations: Although monkeypox is not exclusively a sexually transmitted illness, in this current outbreak acquisition of the infection has predominantly been through sexual and/or other intimate activity**. As such, clinicians should also consider testing for other STIs concurrently, including HIV, chlamydia, gonorrhea, and syphilis.**

Pediatric populations: PHO Laboratory is conducting enterovirus testing on all pediatric specimens requesting monkeypox, of which 70% are enterovirus-positive. This suggests that children with rash consistent with enterovirus illness (e.g. hand, foot and mouth disease) and without epidemiological risk factors (e.g. contact with a confirmed case) do not require monkeypox testing.

Note: Clinicians must use Public Health Ontario's laboratory requisition form. Do not use the Ministry of Health laboratory requisition for Monkeypox testing.

6. Where should patients be tested for monkeypox?

Patients can be tested in any health care setting (e.g., hospitals, primary care clinics, sexual health clinics) that:

- Has appropriate personal protective equipment and infection control practices are in place
- Can appropriately package and transport specimens to the laboratory for testing.

7. What infection prevention and control precautions are required to see patients with suspected, probable, or confirmed monkeypox infection?

In addition to Routine Precautions, the following measures are recommended for health care workers when interacting with individuals with suspected, probable, or confirmed monkeypox infection:

- Place individual with suspect, probable or confirmed monkeypox infection in a single-patient room, with the door closed. Inpatients should be placed in a single-person room with a dedicated bathroom.
- Perform hand hygiene as per the Four Moments of Hand Hygiene.
- Recommended Personal Protective Equipment (PPE) includes gloves, gown, eye protection (e.g., face shields, safety glasses or goggles), and a fit-tested and seal checked N-95 respirator (or equivalent); perform seal check after donning N95 respirator.
- Patients should wear a well-fitting medical mask (IDSA)
- Routine environmental cleaning and disinfection: Ensure all horizontal surfaces that may be touched by the patient, and equipment that may have been used by or shared between patients, are cleaned and disinfected after every use.

See Public Health Ontario's Infection Prevention and Control (IPAC) Recommendations for Monkeypox in Health Care Settings for more information on IPAC in health care settings including hospitals and outpatient settings.

Note: Screening for symptoms of communicable diseases (e.g., fever, rash, cough) in health care settings is part of Routine Practices to identify infectious patients, including for monkeypox.

8. Which specimen types are the best for monkeypox testing?

Accepted specimen types are skin/rash, nasopharyngeal/throat, and blood. Where available, skin specimens are preferred as they have a much higher sensitivity (85-90%) than nasopharyngeal/throat (60-70%) and blood (40-50%) based on analysis done by PHO.

Therefore, patients with 2-3 skin lesions that can be swabbed generally do not require blood or respiratory specimens collected for monkeypox testing.

In patients suspected to have monkeypox infection who do not have a skin rash (e.g. a close contact of a case with a febrile illness but no rash) or have skin rash that cannot be reliably swabbed (e.g., macular and/or papular rash only), clinicians should submit a nasopharyngeal or throat swab in addition to a blood sample.

Clinicians can also consult with Public Health Ontario with any questions regarding testing indications, specimen collection or transportation: PHOL Customer Service Centre at 416-235-6556/1-877-604-4567 or the after-hours Duty Officer at 416-605-3113. Also see: https://www.publichealthontario.ca/en/laboratory-services/test-information-index/monkeypox-virus

9. How should specimens be stored, packaged, and transported from clinic/hospital to the laboratory?

Specimen storage: Specimens can be (re-)packaged and placed in the fridge for up to 3 days.

Specimen packaging and transportation: **Monkeypox specimens require the same packing and transportation/courier systems that are used for other microbiological testing in outpatient and acute care settings (e.g., Chlamydia, Gonorrhea).**

Transport Canada has temporarily reclassified clinical specimens from patients undergoing monkeypox testing as UN3373 Biological Substance, Category B for land transport. In addition to the routine Category B requirement, the outer packaging must be marked, on a contrasting background, with **"TU 0886"**, **"Temporary Certificate – TU 0886"** or **"Certificat Temporaire – TU 0886"**. A copy of this label here (4x2) can be printed on A4 paper, cut out and affixed with tape to the outside of the package. For full details on packaging and transporting, go to: Temporary Certificate TU 0886 and https://tc.canada.ca/en/dangerous-goods/shipping-infectious-substances#packaging.

The same courier systems that currently pick up specimens for microbiology testing from healthcare provider practice locations can be utilized for transporting monkeypox specimens to the testing laboratory. In the case it is not packaged at the time the courier arrives, specimens can be stored in the fridge and be picked up at a later time or next day.

Note: Improperly packaged specimens may be rejected for transportation which will delay testing and the turnaround time for results. Please ensure they are packaged and labeled correctly as per above.

For more detailed information on all aspects of laboratory testing for monkeypox, refer to PHO's laboratory services Monkeypox Virus Test Information Sheet.

10. Is monkeypox reportable?

Monkeypox is a reportable disease of public health significance in Ontario. All confirmed, probable, or suspect cases, as well as any persons under investigation, should be reported to the local public health unit.

11. How do you manage a patient with a monkeypox infection?

Treatment is primarily symptomatic and supportive (alleviation of fever and pruritus, hydration), including prevention and treatment of secondary bacterial infections. In severe cases, antiviral medications are available on a limited, case-by-case basis.

In order to limit the potential spread to others, patients who are confirmed or probable cases of monkeypox should also be counseled to self-isolate at home until the end of the period of communicability – i.e., until lesion scabs have fallen off and new intact skin has formed below, a process which varies by individual but typically takes 2-4 weeks. Other advice should include:

- Stay in a separate room/area away from other household members if possible and use a separate bathroom if available/feasible
- Avoid contact with those at higher risk of severe monkeypox illness including immunosuppressed people, pregnant women, and children under age 12 years

- Avoid leaving the home unless necessary (e.g., to seek essential medical care)
- Avoid non-essential household visitors
- Wear a mask for source control (medical mask preferred), especially if respiratory symptoms are present
- Cover skin lesions as much as possible (e.g., long sleeves, long pants)
- Avoid contact with animals, including household pets. If possible, ask someone else in the home who is not sick and who has not been exposed to care for the pet. This is especially important for rodents, rabbits and non-human primates. Otherwise, take precautions such as wearing a medical mask and ensure good hand hygiene.

Public health units will also follow up with cases to provide guidance about isolation, including identifying potential resources to support self-isolation, and for contact tracing.

12. Are there any antiviral medications available for the treatment of monkeypox?

Yes, Tecovirmat (TPoxx®) is an antiviral medication that targets and inhibits an orthopoxviral envelope protein required for viral maturation and dissemination. It is authorized in Canada for the treatment of human smallpox disease in adults and pediatric patients weighing at least 13 kg based on limited clinical testing in humans.

A limited supply of TPoxx® is available in Ontario for individuals who are severely ill/disabled due to monkeypox infection or at high risk for severe disease off-label. Clinicians can request TPoxx® by contacting the Ministry of Health Emergency Operations Centre (MEOC) at EOCoperations.MOH@ontario.ca or by calling the Healthcare Provider Hotline at 1-866-212-2272. When contacting MEOC, you should include the exact number of patients that have consented to receive the TPoxx® treatment as well as their clinical indication.

TPoxx should be considered for the following:

- Hospitalized patients with severe disease (e.g., hemorrhagic disease, sepsis, encephalitis, myocarditis, or other conditions requiring hospitalization)
- Persons who may be at high risk of severe disease:
    - Persons who are severely immunocompromised (e.g., HIV with CD4 counts <200 or with uncontrolled viral loads, leukemia, lymphoma, generalized malignancy, solid organ transplantation, therapy with alkylating agents, antimetabolites, radiation, tumor necrosis factor inhibitors, high-dose corticosteroids, being a recipient with hematopoietic stem cell transplant (HSCT) <24 months post-transplant or ≥24 months but with graft-versus-host disease or disease relapse, or having autoimmune disease with immunodeficiency as a clinical component);
    - Pediatric populations, particularly patients younger than 8 years of age;
    - Pregnant or breastfeeding women;
      Persons with one or more complications (e.g., secondary bacterial skin infection; gastroenteritis with severe nausea/vomiting, diarrhea, or dehydration; bronchopneumonia; concurrent disease or other comorbidities).
- Persons with monkeypox virus infections with lesions that are leading to significant disability (e.g., proctitis, keratitis or other ocular involvement, pharyngitis/epiglottitis or other breathing/swallowing compromise).

For more information, refer to the Monkeypox Antiviral Guidance Document and Information sheet that are available on the Ministry of Health's website.

13. Is there a vaccine for monkeypox?

Yes, Imvamune® is a live attenuated, non-replicating vaccine that is approved in Canada for protection against smallpox, monkeypox, and other orthopoxvirus related illnesses. For more information, refer to the Monkeypox Vaccine Guidance Document and Information sheet that are available on the Ministry of Health's website.

14. Who is eligible to receive the Imvamune® vaccine?

There is a limited supply of the Imvamune® vaccine in Ontario and they are available through local public health units. The goal of the vaccination program is to limit ongoing transmission with the explicit goal of preventing exportation of monkeypox to unaffected areas. This approach is continually being evaluated as the epidemiology evolves and vaccine supply expands.

Currently, in Ontario, one dose of Imvamune® is offered in the following circumstances:

1. **Pre-Exposure Prophylaxis (PrEP),** which means receiving the vaccine prior to any monkeypox exposure (for those who are likely to be exposed). See eligibility criteria below for PrEP.

2. **Post-Exposure Prophylaxis (PEP),** which means receiving the vaccine after a potential exposure. A single dose of the vaccine should be offered to individuals who have had a high risk exposure to a confirmed or probable case of monkeypox, ideally within 4 days (up to 14 days) from the date of the last exposure. The provision of Imvamune® for PEP requires an assessment of the risk of exposure by the public health unit. Anyone who self-identifies as a contact of a confirmed or probable case of monkeypox should be encouraged to contact their local public health unit for further assessment to see if PEP would be recommended.

Individuals with diagnosis of monkeypox infection or presenting with signs or symptoms of monkeypox infection should not receive the vaccine.

Two doses are recommended for moderately to severe immunocompromised patients and for certain research laboratory employees. For more information, refer to the Monkeypox Vaccine Guidance Document and Information sheet that are available on the Ministry of Health's website.

Patients should be directed to their local public health units if they are interested in obtaining the Imvamune® vaccine.

15. What is the eligibility criteria for PrEP vaccines for monkeypox?

Imvamune® vaccines are offered for PrEP to the following individuals:

- Trans- or cis-gender individuals who self-identify as belonging to the gay, bisexual and other men who have sex with men (gbMSM) community AND at least one of the following:
    - Received a diagnosis of a bacterial STI (e.g., chlamydia, gonorrhea, syphilis) in the past two months
    - Have had two or more sexual partners within the past 21 days or may be planning to
    - Have attended venues for sexual contact within the past 21 days (i.e., bath houses, sex clubs) or may be planning to, or who work/volunteer in these settings
    - Have had anonymous sex in the past 21 days (e.g., using hookup apps) or may be planning to
    - Engage in sex work or may be planning to, or are a sexual partner of a sex worker
- Individuals who are immunocompromised, pregnant, or breastfeeding may be at higher risk for severe illness from a monkeypox infection. These individuals should contact their local public health unit for consideration of PrEP if they are at risk for contracting monkeypox.

16. What are the side effects associated with the Imvamune® vaccine? Who is contraindicated from receiving this vaccine?

The most common side effects include reactions at the injection site like pain, erythema, induration and swelling. The most common systemic reactions observed after vaccination are fatigue, headache, myalgia, and nausea. Most of the reported adverse drug reactions observed in clinical trials were of mild to moderate intensity and resolved within the first seven days following vaccination.

Individuals who are hypersensitive to this vaccine or to any ingredient in the formulation or component of the container should not receive the vaccine. A list of ingredients can be found in the product monograph.

Older generation (i.e., replicating) smallpox vaccines have been associated with myocarditis. No case of myocarditis or pericarditis was identified in clinical trials of Imvamune®, however post market surveillance of vaccine recipients identified cardiac adverse events of special interest (AESIs) including asymptomatic troponin elevation, abnormal ECG findings, tachycardia, and palpitations. Cardiac AESIs were reported to occur in 1.4% (91/6,640) of Imvamune® recipients and 0.2% (3/1,206) of placebo recipients who were smallpox vaccine-naïve. Individuals should be counselled to seek medical attention if cardiac symptoms (i.e., chest pain, shortness of breath, palpitations) develop following vaccination with Imvamune®.

Reports of any Adverse Event Following Immunization (AEFI) following Imvamune® vaccine should be made using the Ontario AEFI form and sent to the local public health unit. Please see Public Health Ontario's vaccine safety webpage and Fact Sheet –Adverse Event Following Immunization Reporting for Health Care Providers in Ontario for additional guidance.
Co-Administration of Imvamune®

Data on co-administration of Imvamune® and other vaccines are not available. Therefore, it is recommended to not co-administer Imvamune® with other vaccines, and to reschedule any other vaccines until at least 14 days after administration of Imvamune®. The administration of

Imvamune® as post-exposure prophylaxis should not be delayed in an individual who has recently received another vaccine.